

TOWN OF HILTON HEAD ISLAND, SOUTH CAROLINA



Repetitive Loss Area Analysis

Prepared July 2024 by:
Town of Hilton Head Island
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Executive Summary

The Town of Hilton Head Island is subject to periodic flooding from heavy rains associated with tropical systems, storm surge, flash flooding and king tides. One measure of the intensity and impact of these floods is flood insurance claims. Between 1978 and 2024, there have been 1,307 historical paid losses against the NFIP totaling more than \$43 million in losses due to flood damage.

Several properties in the Town have been subject to repetitive flood losses. Nationally, the cost of paying repetitive insurance claims have made mitigation of these properties a priority for the National Flood Insurance Program. Instead of focusing on the 88 unmitigated properties that have flooded two or more times in a 10-year period, this analysis looks at Repetitive Loss Areas. An area contains the repetitive loss properties designated by the Federal Emergency Management Agency (FEMA) and other nearby properties that are exposed to the same flood risk. The Town has 25 Repetitive Loss Areas containing a total of 982 properties.

The analysis includes maps and summary data on the 25 Repetitive Loss Areas within the Town. The data was gathered from a windshield survey, claims data and records archives. The exact location of the 88 unmitigated properties cannot be identified because of the Privacy Act; however, all properties exposed to the same flood risk deserve attention.

The analysis concludes with a discussion of the advantages and disadvantages of potential mitigation alternatives. Although there is no mandate for property owners to mitigate flood risk, this analysis provides a guide and resources available to property owners to make improvement to protect their property.

Section 1 Repetitive Loss Area Analysis

Background

Flooding is the most common natural hazard in the United States. More than 20,000 communities experience floods and this hazard accounts for more than 70 percent of all Presidential Disaster Declarations. In the United States, over 8 million residential and commercial structures are currently built in areas at risk to flooding. The cost of recovery is spread over local, state and federal governments and the victims themselves, who are directly affected by these disasters.

The National Flood Insurance Program (NFIP) is continually faced with the challenge of balancing the financial soundness of the program with the competing expectation of keeping premiums affordable. Repetitive loss properties are one of the two largest obstacles to achieving financial soundness of the NFIP. Since the inception of the NFIP, almost \$9 billion has been paid to repetitive loss properties, about one-fourth of all NFIP payments. While the NFIP has resulted in forty years of successful floodplain management, and many of these structures are no longer insured, repetitive loss properties are still a drain on the NFIP. Currently, repetitive loss properties represent 1.3% of all policies, but are expected to account for 15% to 20% of future losses.



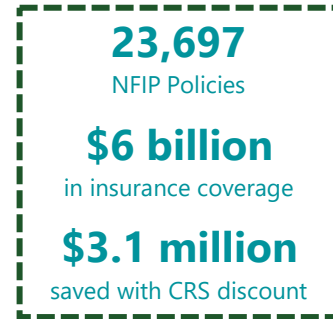
Private insurance companies faced with high losses have several options to keep turning a profit. They can raise income through premium rate increases, decrease payments to insurers or reduce the exposure to the hazard. Unfortunately, the NFIP can only do what is allowed by statute. If losses increase, the Federal Emergency Management Agency (FEMA) is authorized by Congress to make incremental adjustments to increase the premium rates and reduce overall coverage. FEMA is not permitted to eliminate coverage for any policy holder including high-risk properties. Actuarial rates cannot be charged to buildings built before State and local floodplain management regulations went into effect. Since repetitive flood claims must be paid, FEMA has no choice but to spread these costs among all policyholders.

Sometimes floodplain management regulations mitigate repetitive flood losses when a building is substantially damaged. A structure where the cost to repair is equal to or exceeds 50 percent of the building's value is considered substantially damaged. A substantially damaged building must be brought up to the same flood protection level as a new building under a community's floodplain management ordinance. Many repetitive loss buildings are not in a regulated floodplain or they do not get substantially damaged and remain at risk to future damage.

Many owners of properties that experience repetitive flooding are not aware of the magnitude of damage they are exposed to because they either purchased the property after the last flood or the seller or lender did not disclose the flood hazard. Disclosure of repetitive flooding is a problem because Repetitive Loss Areas are not shown on Flood Insurance Rate Maps (FIRMs).

The Town of Hilton Head Island, South Carolina, (CID-450250) has been participating in the regular phase of the NFIP since September 30, 1977. In addition to meeting the basic requirements of the NFIP, the Town of Hilton Head Island has completed additional components to participate in the Community Rating System (CRS) program. The Town of Hilton Head Island is currently a CRS Class 5 which rewards all FEMA flood insurance policyholders with a 25 percent reduction in their flood insurance premiums. The Town of Hilton Head Island has been participating in the CRS program since October 1, 1991.

As of April 2024, there are currently 23,697 NFIP Policies in force in the Town of Hilton Head Island with annual premiums of \$12,443,750 and insurance coverage of almost \$6 billion. The Town has 1,307 historical paid losses against the NFIP totaling more than \$43 million. A repetitive loss property does not have to currently be carrying a flood insurance policy to be considered a repetitive loss property or a severe repetitive loss property. In some cases, a community will find that properties on its repetitive loss list are not currently insured. An insured property and claims on that property will make it a repetitive loss property.



Terminology

Repetitive Loss: Any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978. Two of the claims paid must be more than 10 days apart but, within 10 years of each other. A repetitive loss property may or may not be currently insured by the NFIP.

Severe Repetitive Loss (SRL): As defined by the Flood Insurance Reform Act of 2004, SRLs are 1-4 family residences that have had four or more claims of more than \$5,000 or at least two claims that cumulatively exceed the building's value. The Act creates new funding mechanisms to help mitigate flood damage for these properties.

Once it is designated as a repetitive loss property, that property remains as a repetitive loss property from owner to owner; insured policy to no policy; and even after that property has been mitigated. Currently, 63% of unmitigated repetitive loss buildings in the Town of Hilton Head Island are currently insured by a FEMA flood insurance policy.

Setting

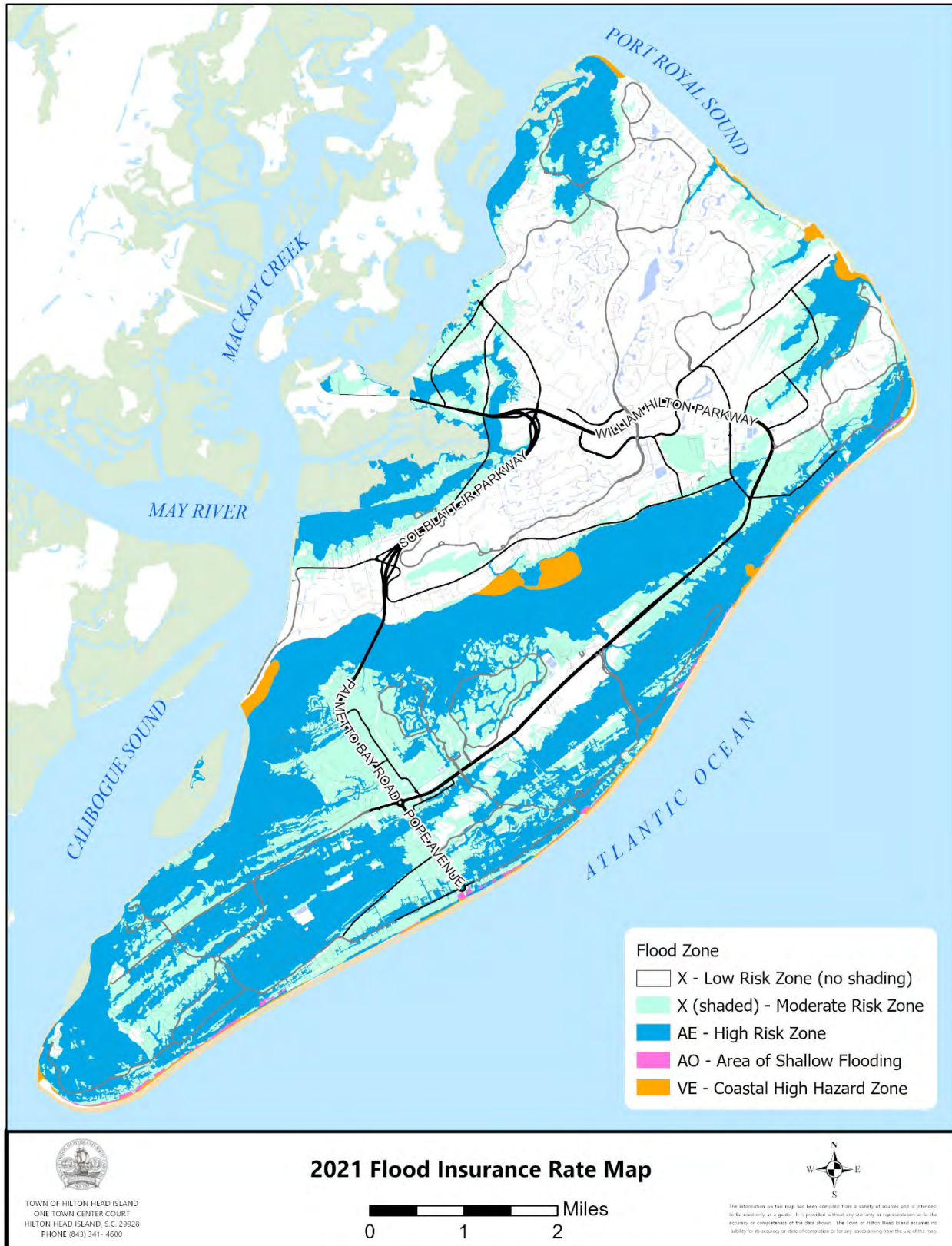
The Town of Hilton Head Island is a barrier island along the Atlantic Coast in Beaufort County in southeastern South Carolina, with a population of 37,661 as of the 2020 U.S. Census.

The Island is bound on the northeast by Port Royal Sound, Calibogue Sound to the southwest, and Skull Creek, part of the Atlantic Intracoastal Waterway, to the north and is situated on a low coastal plain with much of its surrounding area consisting of tidal marshes. The Town has a total land area of approximately 23,000 acres or 54 square miles and is approximately 12 miles long and 5 miles wide. Elevations range from sea level along the coast to approximately 24 feet on the north end of the island.

Flooding within the Town of Hilton Head Island can be attributed to four sources:

1. Heavy Rains: Hurricanes, tropical storms, and summer thunderstorms have the potential to generate heavy rainfall, which inundates drainage systems and causes flooding.
2. Storm Surge: Water that is pushed toward the shore by strong winds can cause severe flooding in coastal areas.
3. Flash Flooding: Flash flooding is caused by sudden heavy rainfall and can occur in just a few hours or less. Moving water from flash floods can move debris and damage structures.
4. King Tides: Especially high tides can flood streets and low-lying areas. King Tides are occurring more frequently due to sea-level rise.

Figure 1.1 - Flood Zones, Town of Hilton Head Island



Repetitive Loss Requirement

Repetitive loss data must be maintained and updated annually in order to participate in the CRS. Since many of the losses under the NFIP come from repetitively flooded properties, addressing these properties is a priority for participating in the CRS Program. Depending on the severity of the repetitive loss problem, a CRS community has different responsibilities.

- **Category A:** A community with no unmitigated repetitive loss properties. No special requirements from the CRS.
- **Category B:** A community with at least one, but fewer than 50, unmitigated repetitive loss properties. Category B communities are required by the CRS to research and describe their repetitive loss problem, create a map showing the showing the location of all repetitive loss properties (areas) and complete an annual outreach activity directed to repetitive loss properties.
- **Category C:** A community with 50 or more unmitigated repetitive loss properties. Category C communities are required to do everything in Category B and prepare either a floodplain management plan that covers all repetitive loss properties (areas) or prepare a RLAA for all Repetitive Loss Areas.

According to repetitive loss data received from FEMA in 2024, the Town is designated as a Category C repetitive loss community. The Town data includes a total of 88 (63%) unmitigated, one of which is a severe repetitive loss property and 51 (37%) mitigated repetitive loss properties.

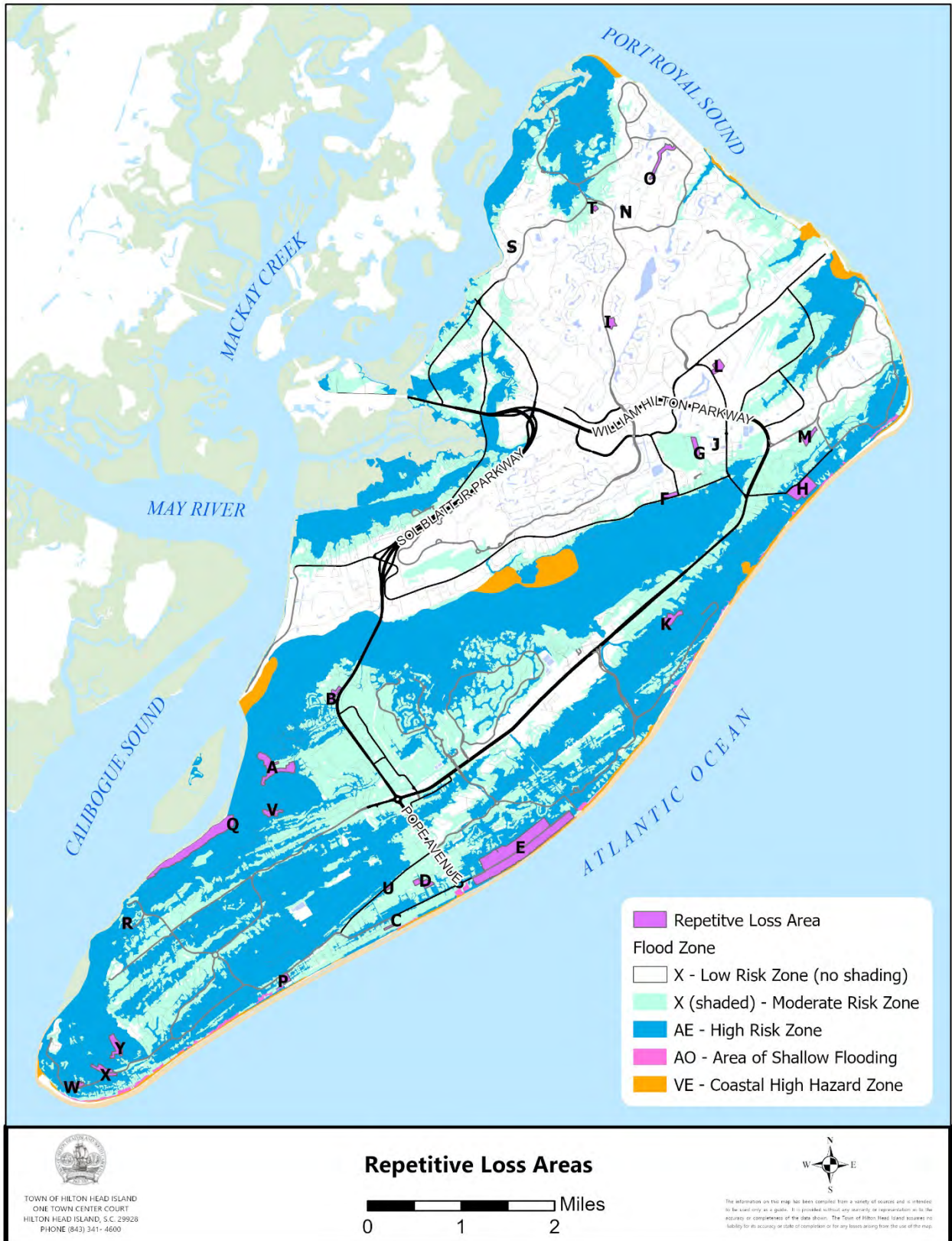
Town of Hilton Head Island has opted to complete a Repetitive Loss Area Analysis (RLAA) using the 2017 CRS Coordinator's Manual to assess individual properties. The RLAA will benefit the Town by examining potential mitigation measures for specific Repetitive Loss Areas and increasing its credit in the CRS Program.

Mapping Repetitive Loss Areas

In accordance with the principles outlined in the CRS guidance titled *Mapping Repetitive Loss Areas for CRS* dated October 2015, 25 Repetitive Loss Areas were identified within the Town of Hilton Head Island. The 25 Repetitive Loss Areas included the 88 unmitigated repetitive loss properties, 341 historic repetitive loss properties (those with one paid claim against the NFIP), plus an additional 553 properties that have the same or similar flood conditions but have not had any claims paid against the NFIP. Therefore, a total of 982 properties were included within the RLAA.

An overview map of the Town of Hilton Head Island Repetitive Loss Areas is shown in Figure 1.2. A detailed map of each Repetitive Loss Area is provided in Section 2.

Figure 1.2 – Repetitive Loss Areas



Section 2 The RLAA Planning Process

The RLAA planning process incorporated requirements from Section 510 of the 2017 *CRS Coordinator's Manual*. The planning process also incorporated requirements from the following guidance documents: 1) FEMA publication *Reducing Damage from Localized Flooding: A Guide for Communities*, Part III Chapter 7; 2) CRS publication *Mapping Repetitive Loss Areas* dated October 2015; and 3) Center for Hazards Assessment Response and Technology, University of New Orleans draft publication *The Guidebook to Conducting Repetitive Loss Area Analyses*. Most specifically, this RLAA included all five planning steps included in the 2017 *CRS Coordinator's Manual*:

- Step 1:** Advise all the properties in the Repetitive Loss Areas that the analysis will be conducted and request their input on the hazard and recommended actions.
- Step 2:** Contact agencies and organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies and organizations must be identified in the analysis report.
- Step 3:** Visit each building and collect basic data.
- Step 4:** Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible,
- Step 5:** Document the findings. A separate analysis report must be prepared for each area.

Beyond the 5 planning steps, additional credit criteria must be met:

1. The community must have at least one Repetitive Loss Area delineated in accordance with the criteria in Section 503.
2. The Repetitive Loss Area must be mapped as described in Section 503.b. A Category "C" community must prepare analyses for all of its Repetitive Loss Areas if it wants to use RLAA to meet its repetitive loss planning prerequisite.
3. The Repetitive Loss Area analysis report(s) must be submitted to the community's governing body and made available to the media and the public. The complete Repetitive Loss Area analysis report(s) must be adopted by the community's governing body or by an office that has been delegated approval authority by the community's governing body.
4. The community must prepare an annual progress report for its area analysis.
5. The community must update its Repetitive Loss Area analyses in time for each CRS cycle verification visit.

STEP 1. Advise All Property Owners

Before field work began on the RLAA, property owners within the 25 identified Repetitive Loss Areas were mailed an informational postcard requesting participation in an online survey to provide relevant information on flooding in their area. Figure 2.1 shows an example of the property owner information postcard and Figure 2.2 is the Flood Protection Questionnaire used for the online survey. The questionnaire asks about the type of foundation, if the building has experienced any flooding and the type of flooding, cause of flooding, flood protection measures and whether the owner has flood insurance.

A total of 982 postcards were mailed to buildings of repetitive loss properties, historical repetitive loss properties (those with one paid claim against the NFIP), and additional properties added to the Repetitive Loss Areas which have no claims paid against the NFIP. The postcards were mailed to the property owners listed in Appendix A on July 8, 2024. (Note: In accordance with the Privacy Act of 1974, Appendix A will not be shared with the general public).

Figure 2.1 – Example Postcard

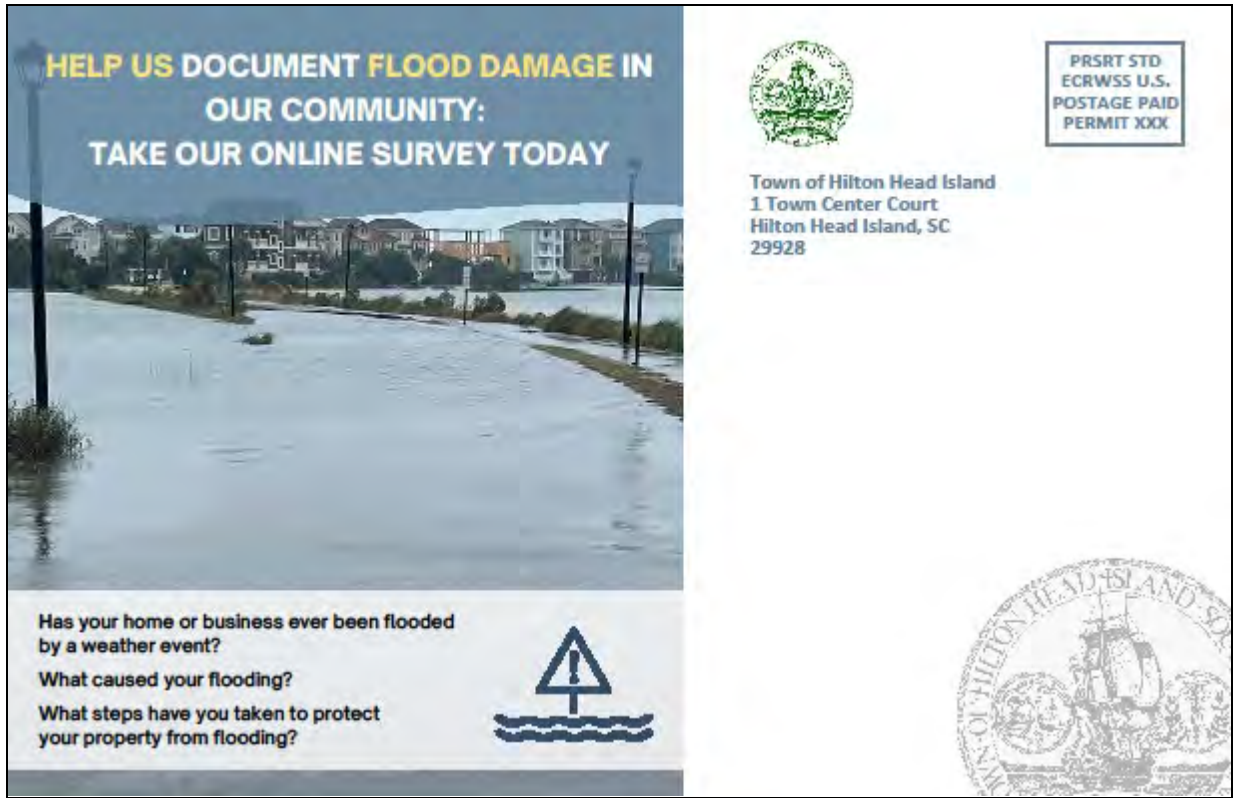


Figure 2.2 – Flood Protection Questionnaire

Introduction

Repetitive Flood Loss Area Analysis Survey

Property owners are encouraged to provide any relevant flooding information by taking a brief survey to assist the Town in evaluating properties that have experienced repetitive flood damage.

Introduction

As part of the Town of Hilton Head Island's participation in the National Flood Insurance Program's (NFIP) Community Rating System (CRS), the Community Development Department is evaluating properties that have experienced repetitive flood damage. This analysis will include the review of all previous flood data and studies conducted in these locations.

The repetitive loss analysis involves the collection of the following property level data elements:

- Building permit records (including application and associated records)
- Structure and site elevation information (elevation certificate, if available)
- District map and parcel number
- Building property value on record (assessed value, replacement value or both)
- Land property value on record
- Building codes/floodplain development regulations exceeding minimum standards
- Historical flood event information (when events occurred, amount of damage to property, etc.)

In addition, the Town of Hilton Head Island will assess each property to survey the flood risk and make flood protection recommendations. Property owners are encouraged to provide any relevant flooding information by taking an online survey. The survey will remain open until August 1, 2024.

The results of the repetitive loss area analysis will include review of alternative approaches for property protection measures or drainage improvements where feasible. Once the analysis is complete, a copy of the report can be obtained from the Community Development Department or by calling Shari Mendrick, Floodplain Administrator, at 843-341-4687.

Figure 2.2 (Continued) – Flood Protection Questionnaire Survey Questions

Repetitive Flood Loss Area Analysis Survey

Property owners are encouraged to provide any relevant flooding information by taking a brief survey to assist the Town in evaluating properties that have experienced repetitive flood damage.

Survey Questions

QUESTION 1

Name (optional)

QUESTION 2

Property Address

QUESTION 3

Is this property a business or residence?

- Business
- Residence

QUESTION 4

How many years have you occupied the structure at this address?

- Less than 1 year
- 1-5 years
- 5-10 years
- More than 10 years

QUESTION 5

Do you own or rent this structure?

- Own
- Rent

QUESTION 6

What type of foundation does the structure have?

- Concrete slab
- Crawlspace
- Post, piers, piles
- Other

QUESTION 7

Has this structure or property ever been flooded or had a water problem as a result of a weather event?

- Yes - Structure Only
- Yes - Property Only
- Yes - Structure and Property
- No

QUESTION 8

In what year(s) did the structure or property flood?

QUESTION 9

Where did you get water?

- Yard only
- In crawlspace or under lowest floor
- Over 1st floor
- Water was kept out of building by sandbagging or other protective measure

QUESTION 10

How deep did the water get?

QUESTION 11

What is the longest time that water stayed in the structure or on the property?

QUESTION 12

What do you feel was the cause of your flooding? (Check all that apply)

- Flooding from excessive rainfall
- Flooding from storm surge
- King-tide flooding
- Storm sewer backup
- Standing water next to house/building
- Drainage from nearby properties
- Saturated ground
- Other

Figure 2.2 (Continued) – Flood Protection Questionnaire Survey Questions

Repetitive Flood Loss Area Analysis Survey

Property owners are encouraged to provide any relevant flooding information by taking a brief survey to assist the Town in evaluating properties that have experienced repetitive flood damage.

QUESTION 13

Have you taken any of these flood protection actions on the property? (Check all that apply)

- Installed sump pump
- Waterproofed outside wall
- Re-graded yard to keep water away
- Moved things out of crawlspace
- Installed backup power/generator
- Sandbagged
- Other

QUESTION 14

Which flood protection measures (checked in previous question) worked?

QUESTION 15

Is this building located in the FEMA floodplain?

- Yes
- No
- I do not know

QUESTION 16

Do you have flood insurance for this building?

- Yes
- No

QUESTION 17

Please provide any additional information and comments you may have about flooding on this structure, property or the surrounding area.

Out of the 982 mailed informational postcards, the Town received 6 responses which corresponds to a response rate of less than 1% percent. The lack of response is likely due to the large number of short-term rental property with absentee owners.

Survey responses are summarized below. Note: Respondents may have skipped questions and/or provided more than one response to a question.

Question 1: Name (optional)

Responses Received	Number Responding
Answered	1
Skipped	5
Total	6

Question 2: Address (optional)

Responses Received	Number Responding
Answered	6
Skipped	0
Total	6

Question 3: Is this property a business or residence?

Responses Received	Number Responding
Residence	6
Business	0
Total	6

Question 4: How many years have you occupied the structure at this address?

Responses Received	Number Responding
1-5 years	1
More than 10 years	5
Total	6

Question 5: Do you own or rent this structure?

Responses Received	Number Responding
Own	6
Rent	0
Total	6

Question 6: What type of foundation does the structure have?

Responses Received	Number Responding
Concrete slab	4
Post, piers, piles	2
Total	6

Question 7: Has this structure or property ever been flooded or had a water problem as a result of a weather event?

Responses Received	Number Responding
Yes	0
No	6
Total	6

Question 8: In what year(s) did the structure flood?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 8: In what year(s) did the structure flood?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 9: Where did you get water?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 10: How deep did the water get?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 11: What is the longest time that water stayed in the structure or on the property?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 12: What do you feel was the cause of flooding?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 13: Have you taken any of these flood protection actions on the property? (Check all that apply)

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 14: What flood protection measures (checked in previous question) worked?

Responses Received	Number Responding
Answered	0
Skipped	6
Total	6

Question 15: Is the building located in the FEMA floodplain?

Responses Received	Number Responding
Yes	4
No	0
I do not know	2
Total	6

Question 16: Do you have flood insurance for this building?

Responses Received	Number Responding
Yes	6
No	0
Total	6

STEP 2. Contact Agencies and Organizations

The Town of Hilton Head Island contacted external agencies and internal departments that have plans or studies that could affect the cause or impacts of flooding within the identified Repetitive Loss Areas. The data collected was used to analyze the problems further and to help identify potential solutions and mitigation measures for property owners. Those agencies contacted and reports which were analyzed and reviewed included:

- Town of Hilton Head Island Stormwater Management Program
- Town of Hilton Head Island Public Projects & Engineering Administration
- FEMA – Flood Insurance Study (FIS) for Beaufort County, South Carolina and Incorporated Areas and Repetitive Flood Insurance Claims Data

Summary of Studies and Reports

FEMA Flood Insurance Study

FEMA’s FIS for Beaufort County, South Carolina and Incorporated Areas is dated March 23, 2021. The FIS revises and updates information on the existence and severity of flood hazards within the County including the Town of Hilton Head Island. The FIS also includes revised digital Flood Insurance Rate Maps (FIRMs) which reflect updated Special Flood Hazard Areas (SFHAs) and flood zones for the Town. SFHA boundaries within the Town were updated due to new engineering analysis performed throughout the County. The updated modeling produced new flood zone areas and new base flood elevations and leveraged the County’s LiDAR-based topographic data.

Flood Insurance Claims Data

The Privacy Act of 1974 (5.S.C.522a) restricts the release of flood insurance policy and claims data to the public. This information can only be released to state and local governments for use in floodplain management related activities. Therefore, all claims data in this report are only discussed in general terms.

Capital Improvement Program

The Capital Improvement Program (CIP) is the Town of Hilton Head Island's program for planning and implementing capital improvements within the Town. The Program follows a yearly planning and budgeting process. The Town has an online projects dashboard, which is an interactive online map to visualize the projects geographically. As of July 2024, there are seven active stormwater improvements projects.

STEP 3. Building Data Collection

FEMA has developed the National Flood Mitigation Data Collection Tool to assemble information related to risk, building construction and costs of mitigation measures. This tool was not utilized in this effort, but most of the information required by the tool was incorporated into the survey.

The site survey for this analysis was conducted in July 2024. Each building in the Repetitive Loss Area was visited to collect data and make a preliminary determination of repetitive flooding and appropriate mitigation measures. The on-site field surveys investigated numerous factors including, but not limited to, drainage patterns around the building, location and elevation of HVAC units, the condition of the structure, the foundation, gutters and downspouts, nearby drainage ditches and storm drains. The data collection table is included in Appendix A, (Note: In accordance with the Privacy Act of 1974, Appendix A will not be shared with the general public).

Data was also gathered, when possible, through conversations with property owners and/or residents. These conversations provided detail on the extent of flooding, potential causes of flooding, and recollections from past flood events, which help to better understand flooding issues for these areas.

Other data incorporated from off-site research included a review of the FEMA Flood Insurance maps, the location of the Repetitive Loss Areas in relation to FEMA flood zones and the Beaufort County Tax Assessor's website.

The Town of Hilton Head Island has identified 25 Repetitive Loss Areas as follows:

Repetitive Loss Area A

Repetitive Loss Area A (Figure 2.3) is located on the south end of the island and is situated at the confluence of Broad Creek and the Calibogue Sound. The neighborhood is an older, established neighborhood, with original structures built in the mid-1960s and 1970s; however, a majority of the structures are post-FIRM. These properties are in a low-density residential zoning district.

Repetitive Loss Area A contains 7 unmitigated and 2 mitigated repetitive loss properties, and 48 additional properties for a total of 55 properties with similar topographic and drainage characteristics. One of the mitigated structures was demolished and reconstructed and the other was elevated with grant assistance through FEMA's Flood Mitigation Assistance grant program.

Problem Statement: Properties in Repetitive Loss Area A are located in Flood Zone AE with base flood elevations ranging from 7-9 feet and the 500-year floodplain (Zone X-Shaded). The pre-FIRM structures, which are slab-on-grade, are at risk due to the low-lying nature of this area. Residents have reported nuisance flooding from king tide events on properties that are adjacent to the sound; however, the flooding inundates the roadway and areas under the elevation portions of buildings. No structural damage has been reported. Although the overall drainage pattern satisfactory, infrastructure is maintained by the South Carolina Department of Transportation, such that, if there is a failure in the infrastructure, it often takes a considerable amount of time for repairs to be completed.

Example Property

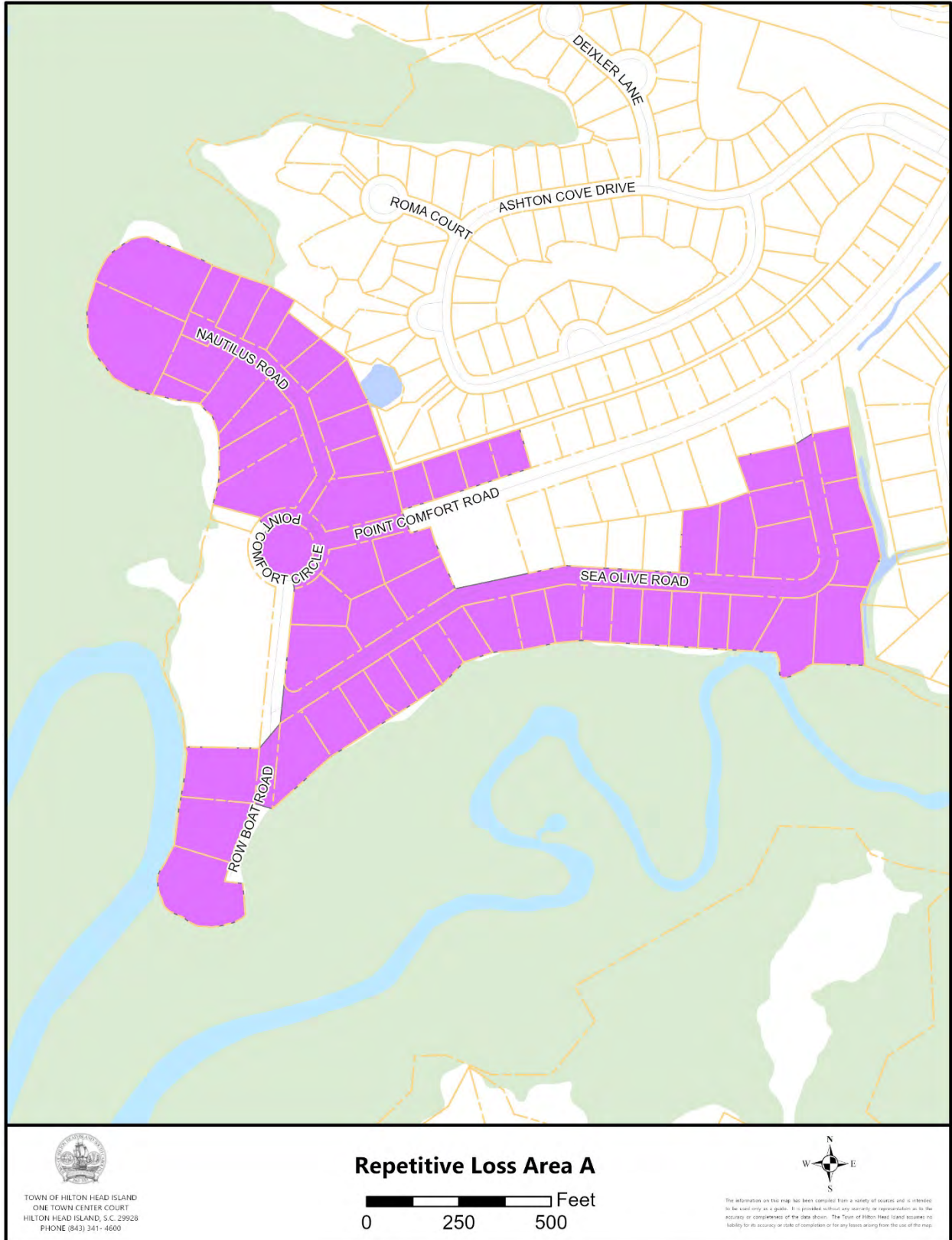
Before Mitigation



After Mitigation



Figure 2.3 – Repetitive Loss Area A



Repetitive Loss Area B

Repetitive Loss Area B (Figure 2.4) is located on the south end of the island bound by on the west by Palmetto Bay and on the east by a drainage channel maintained by Beaufort County. The neighborhood is an older, established neighborhood, with all structures built between 1966 and 1979. These properties are in a low-density residential zoning district, but adjacent to a high-density retirement community.

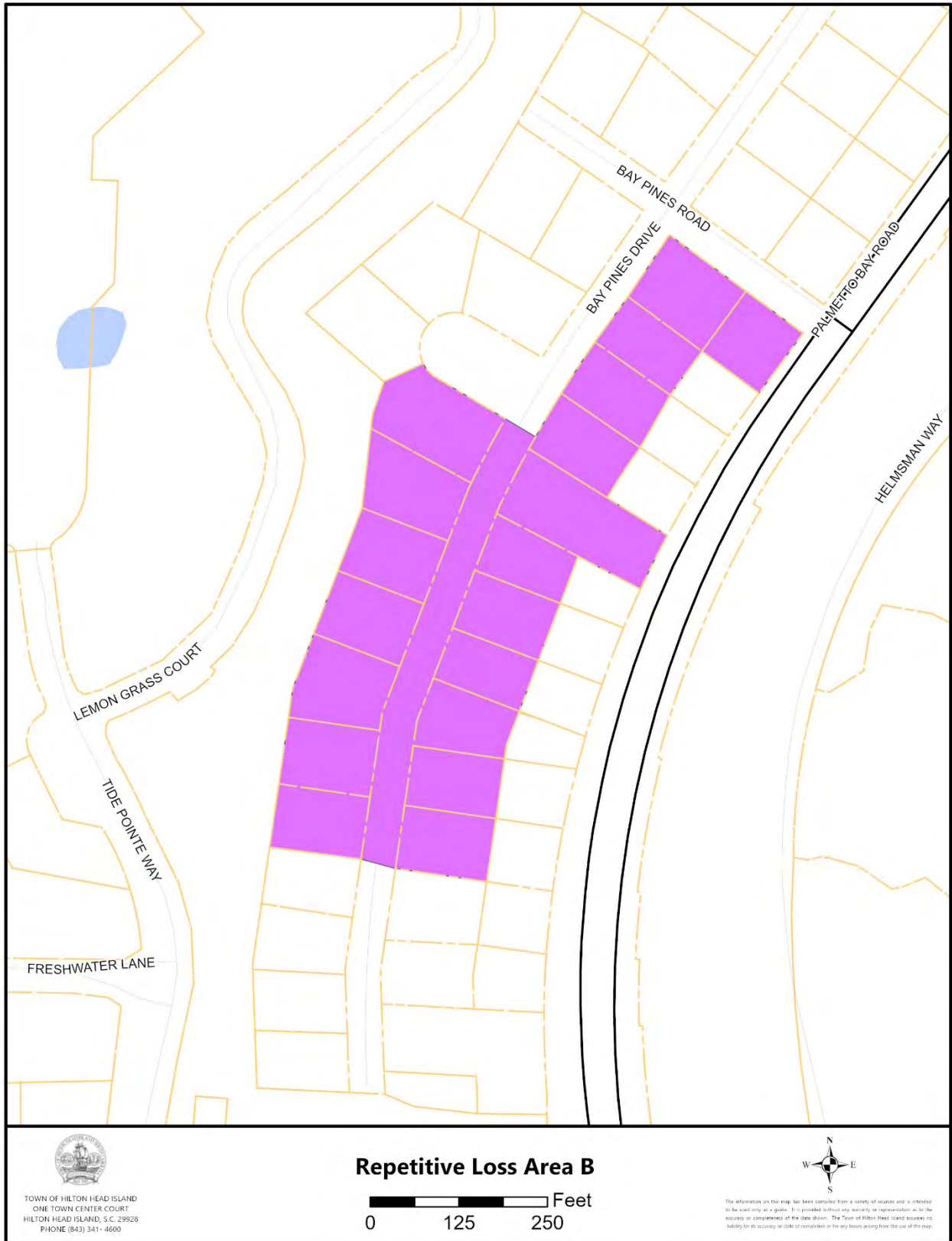
Repetitive Loss Area B contains 1 unmitigated and 18 additional properties for a total of 19 properties with similar topographic and drainage characteristics. This area was not mapped as a single-loss area because several properties have had at least one flood loss.

Problem Statement: Properties in Repetitive Loss Area B are located in the 500-year floodplain (Zone X-Shaded). All the structures have a slab-on-grade foundation and are subject to periodic flooding from poor drainage and minimal infrastructure. Infrastructure is maintained by Beaufort County, such that, if there is a failure in the infrastructure, it often takes a considerable amount of time for repairs to be completed.

Example Properties



Figure 2.4 – Repetitive Loss Area B



Repetitive Loss Area C

Repetitive Loss Area C (Figure 2.5) is located on the south end of the island in the southern part of the Forest Beach neighborhood and adjacent to the Atlantic Ocean. The neighborhood is an older, established neighborhood, with most structures built in the mid-1950s and early 1960s. These properties are in a low-to moderate-density residential zoning district.

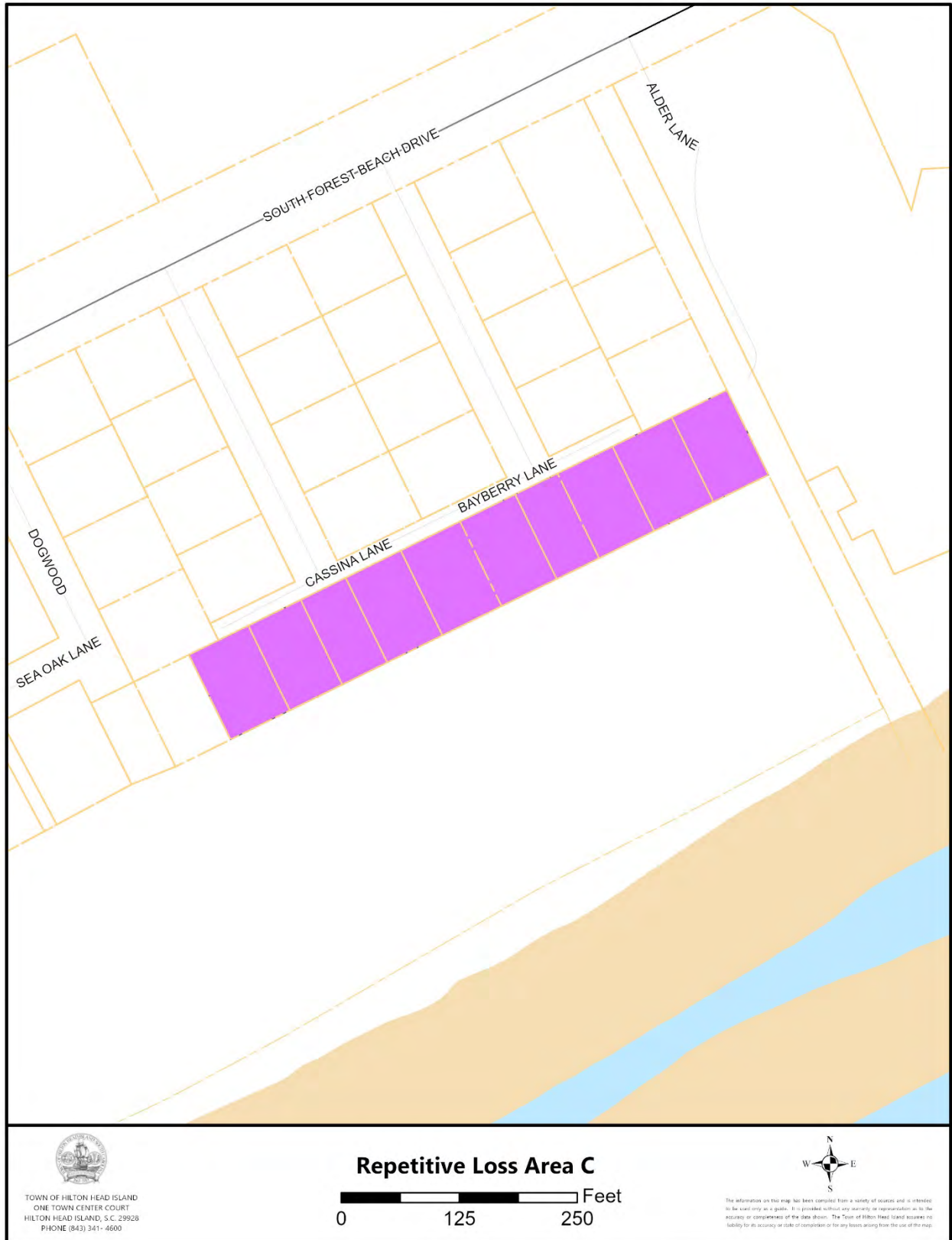
Repetitive Loss Area C contains 1 unmitigated, the Town's only severe repetitive loss property, and 6 additional properties for a total of 8 properties with similar topographic and drainage characteristics. A demolition permit has been issued and finalized for the severe repetitive loss property and construction of a new elevated home is underway.

Problem Statement: Properties in Repetitive Loss Area C are located in 500-year floodplain (Zone X-Shaded). The pre-FIRM structures, which are slab-on-grade, are at risk due to the low-lying nature of this area. The Town conducted a comprehensive Island Wide Drainage Study in 1995, which inventoried existing drainage facilities, determined major drainage paths, identified bottlenecks and recommended prioritized improvements. After implementation in 2003, improvements in these areas provide protection from shallow flooding caused by heavy rains associated with a 25-year storm but hurricane related flooding would still damage these structures. Sediment traps were also installed in several grate inlets, which are cleaned biannually by the Town.

Example Property



Figure 2.5 – Repetitive Loss Area C



Repetitive Loss Area D

Repetitive Loss Area D (Figure 2.6) is located on the south end of the island in the Forest Beach neighborhood on Deallyon Avenue. This area encompasses two condominium complexes containing 100 multifamily dwelling units constructed in 1974 and 1975. These properties are in a high-density mixed use zoning district aimed at serving the island visitor.

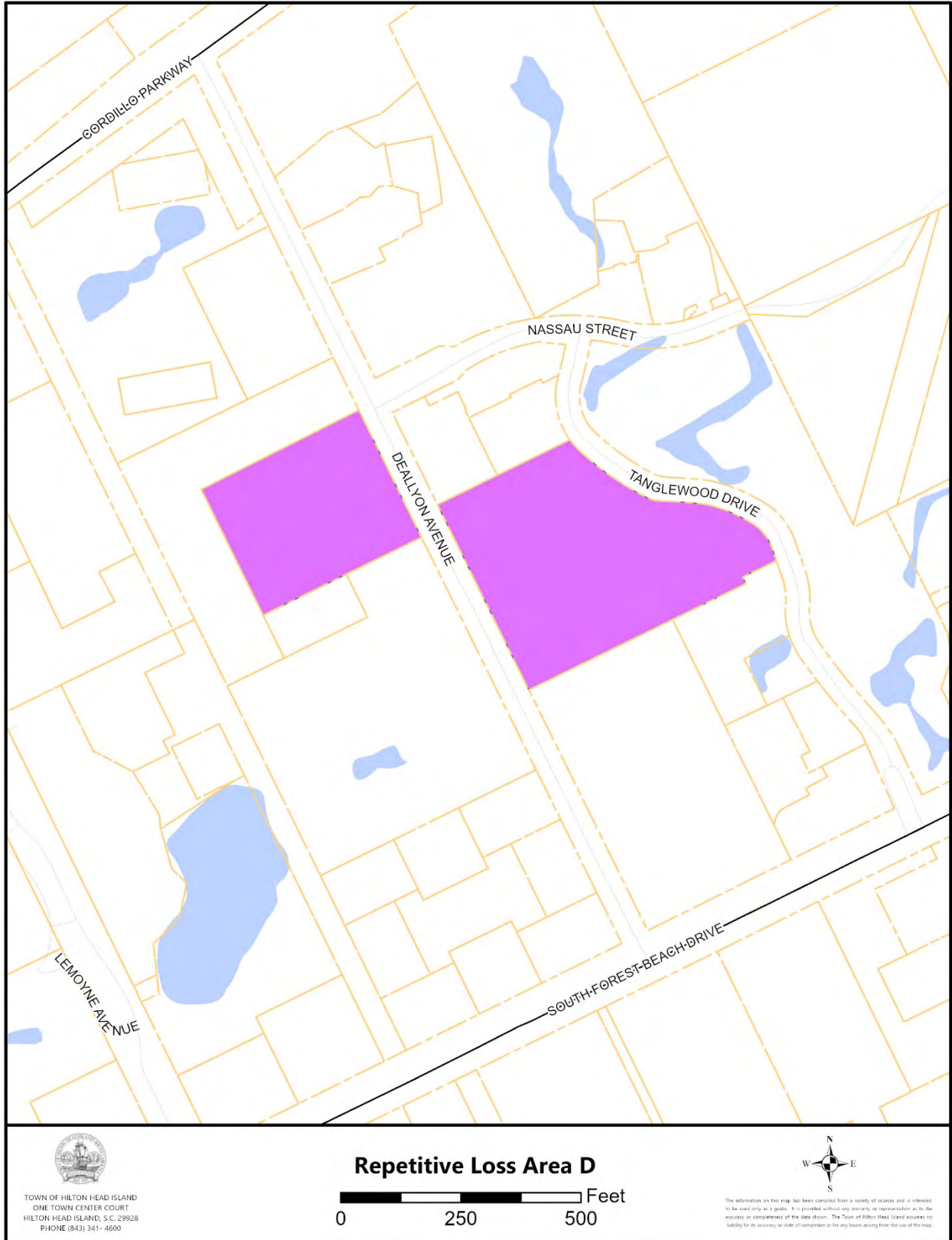
Repetitive Loss Area D contains 3 unmitigated buildings and 10 additional buildings for a total of 13 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area D are located in Flood Zone AE with a base flood elevation of 9 feet and the 500-year floodplain (Zone X-Shaded). The pre-FIRM structures, which are slab-on-grade, are at risk due to the low-lying nature of this area. A CIP was completed to improve drainage and infrastructure along South Forest Beach Drive, Tanglewood Drive and Deallyon Avenue in 2002. Also, the adjacent Celebration Park Project, completed in 2021, resulted in improved drainage and infrastructure along Nassau Street and improved upstream detention and conveyance.

Example Property



Figure 2.6 – Repetitive Loss Area D



Repetitive Loss Area E

Repetitive Loss Area E (Figure 2.7) is located on the south end of the island in the northern part of the Forest Beach neighborhood and adjacent to the Atlantic Ocean. The neighborhood is an older neighborhood established in the 1950s. The original homes were bungalow style vacation homes; however, the original homes are slowly being replaced by large modern beach houses. These properties are in a low-to moderate-density residential zoning district.

Repetitive Loss Area E contains 5 unmitigated and 10 mitigated repetitive loss properties, and 329 additional properties for a total of 344 properties with similar topographic and drainage characteristics. All of the mitigated structures were demolished and reconstructed as an elevated structure.

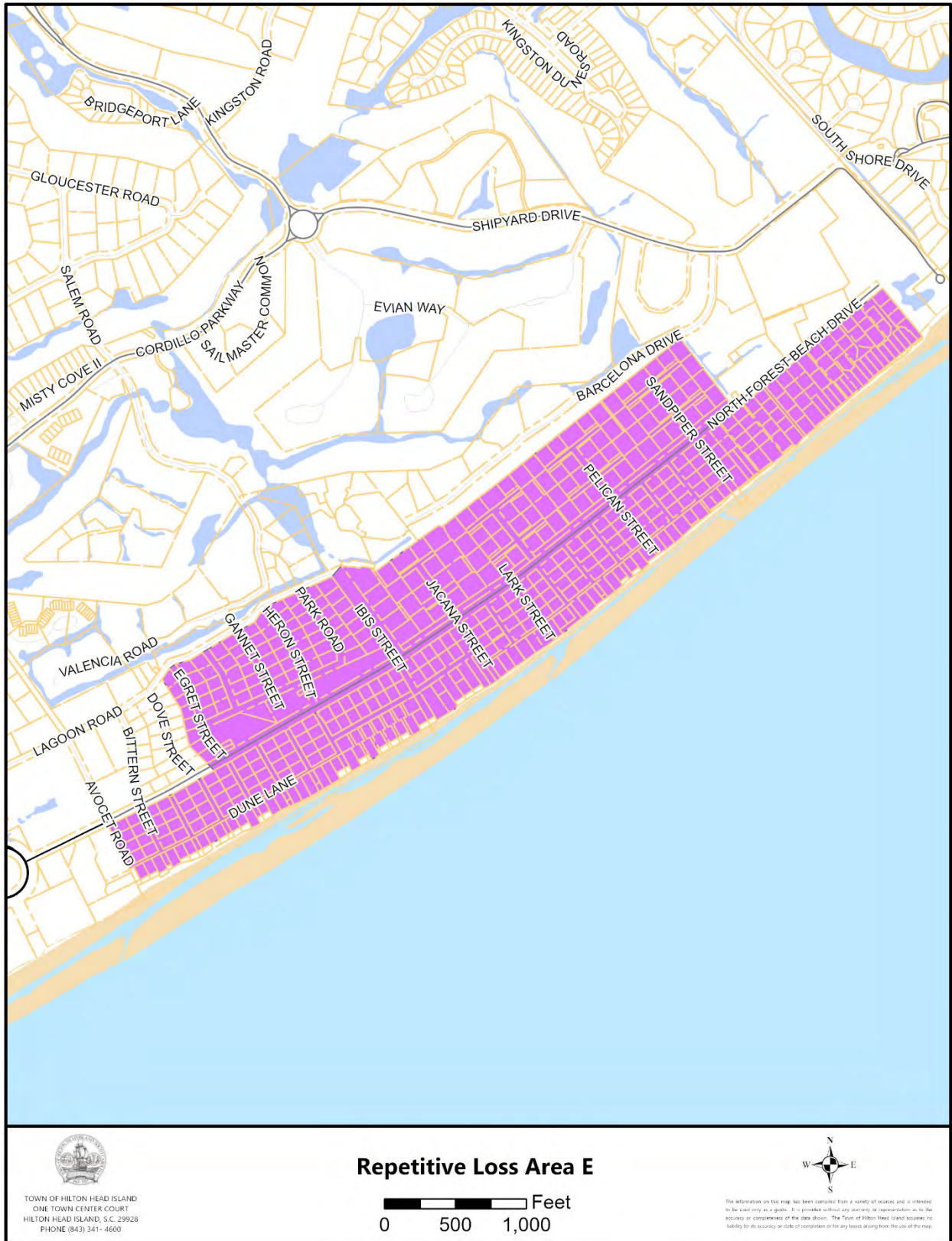
Problem Statement: Properties in Repetitive Loss Area E are located in Flood Zone AE with base flood elevations ranging from 9-13 feet, Zone AO with a 1' depth of flooding and the 500-year floodplain (Zone X-Shaded). Zone VE is located seaward of the beach front lots but does not encroach on any buildable properties. 37% of the structures are pre-FIRM slab-on-grade structures, whereas the remaining 63% are elevated on either foundation walls or post, pier, piles or columns. In 2002, a CIP was completed to improve drainage and infrastructure along North Forest Beach Drive. The project included connection of the drainage system to the adjacent lagoon system and installation of two pump stations to draw down the lagoon levels to provide additional storage capacity when a tropical system is forthcoming.

Example Property





Figure 2.7 – Repetitive Loss Area E



Repetitive Loss Area F

Repetitive Loss Area F (Figure 2.8) is located mid-island and bound to the east by Leg O' Mutton Road and the south by Marshland Road. This area encompasses a townhome complex containing 59 multifamily dwelling units constructed in 1972 and 1973. These properties are in a low-to moderate-density residential zoning district.

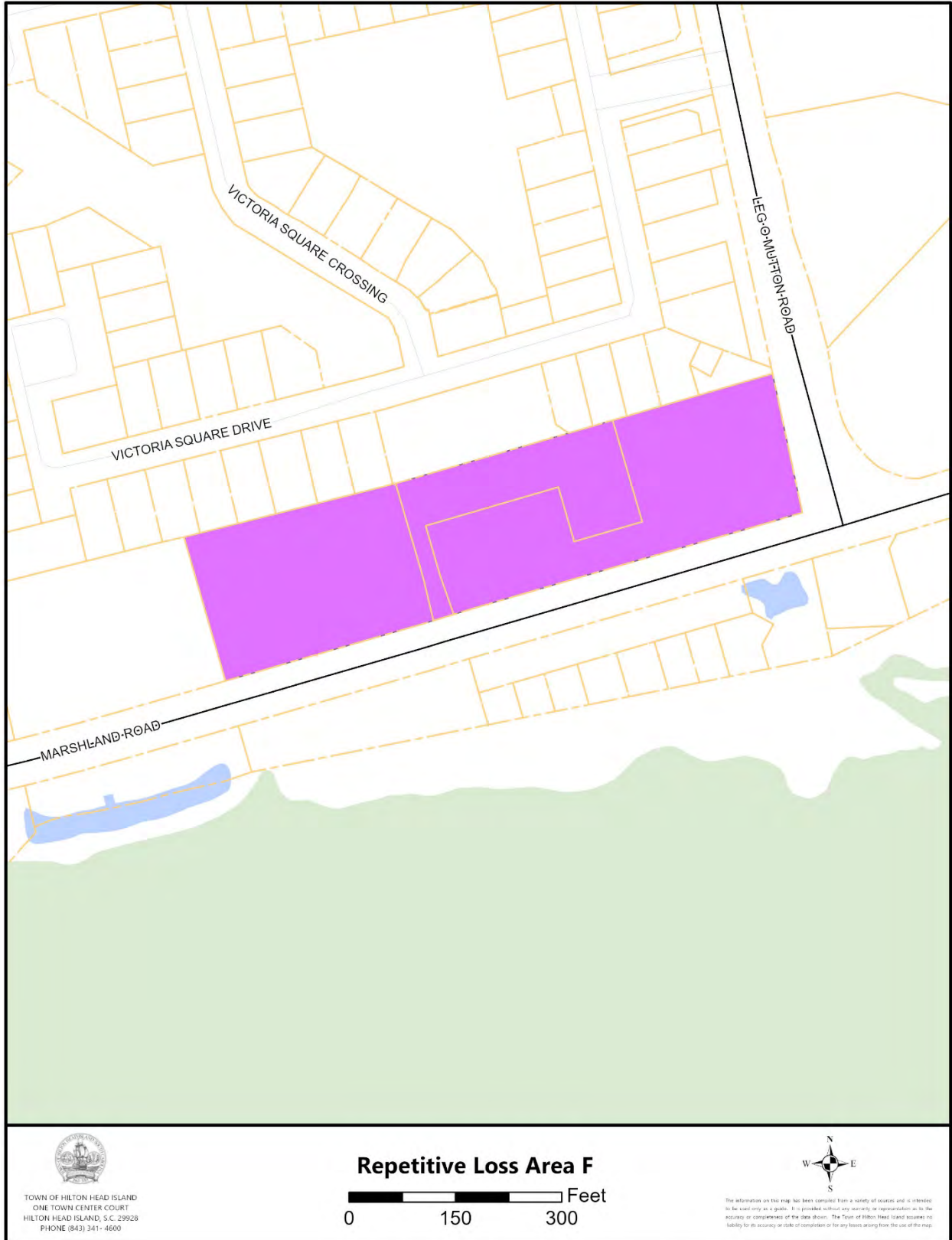
Repetitive Loss Area F contains 1 unmitigated building and 4 additional buildings for a total of 5 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area F are located in the 500-year floodplain (Zone X-Shaded) and Zone X. The pre-FIRM structures, which are slab-on-grade, are at risk due to the low-lying nature of this area and poor drainage infrastructure. The adjacent roadways are maintained by the South Carolina Department of Transportation and they are periodically notified of the drainage concerns in this area.

Example Property



Figure 2.8 – Repetitive Loss Area F



Repetitive Loss Areas G

Repetitive Loss Area G (Figure 2.9) is located off Island Drive on the north end of the island near the Hilton Head Island Airport in an older, established neighborhood with structures built between 1978 and 1991. These properties are in a low- to moderate-density residential zoning district surrounded by moderate- to high-density mixed use and light industrial use properties.

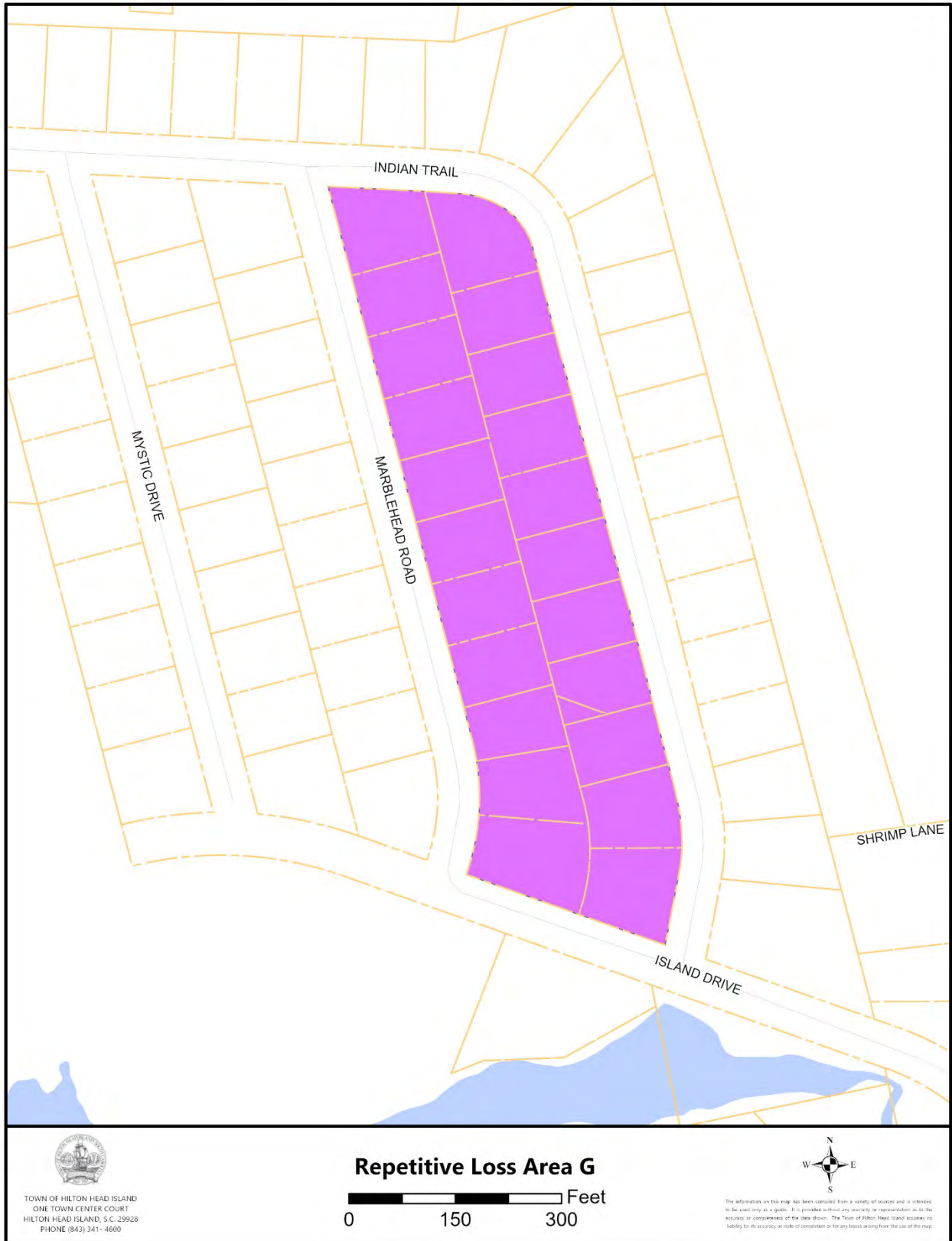
Repetitive Loss Area G contains 2 unmitigated properties and 20 additional properties for a total of 22 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area G are located in the 500-year floodplain (Zone X-Shaded). All of the structures have a slab-on-grade foundation and are subject to periodic flooding from poor drainage and infrastructure that is maintained by Beaufort County.

Example Property



Figure 2.9 – Repetitive Loss Area G



Repetitive Loss Area H

Repetitive Loss Area H (Figure 2.10) is located mid-island between Folly Field Road and the Atlantic Ocean. The neighborhood is an older neighborhood established in the 1950s. The original homes were bungalow style vacation homes; however, the original homes are slowly being replaced by modern beach houses. These properties are in a low-to moderate-density residential zoning district.

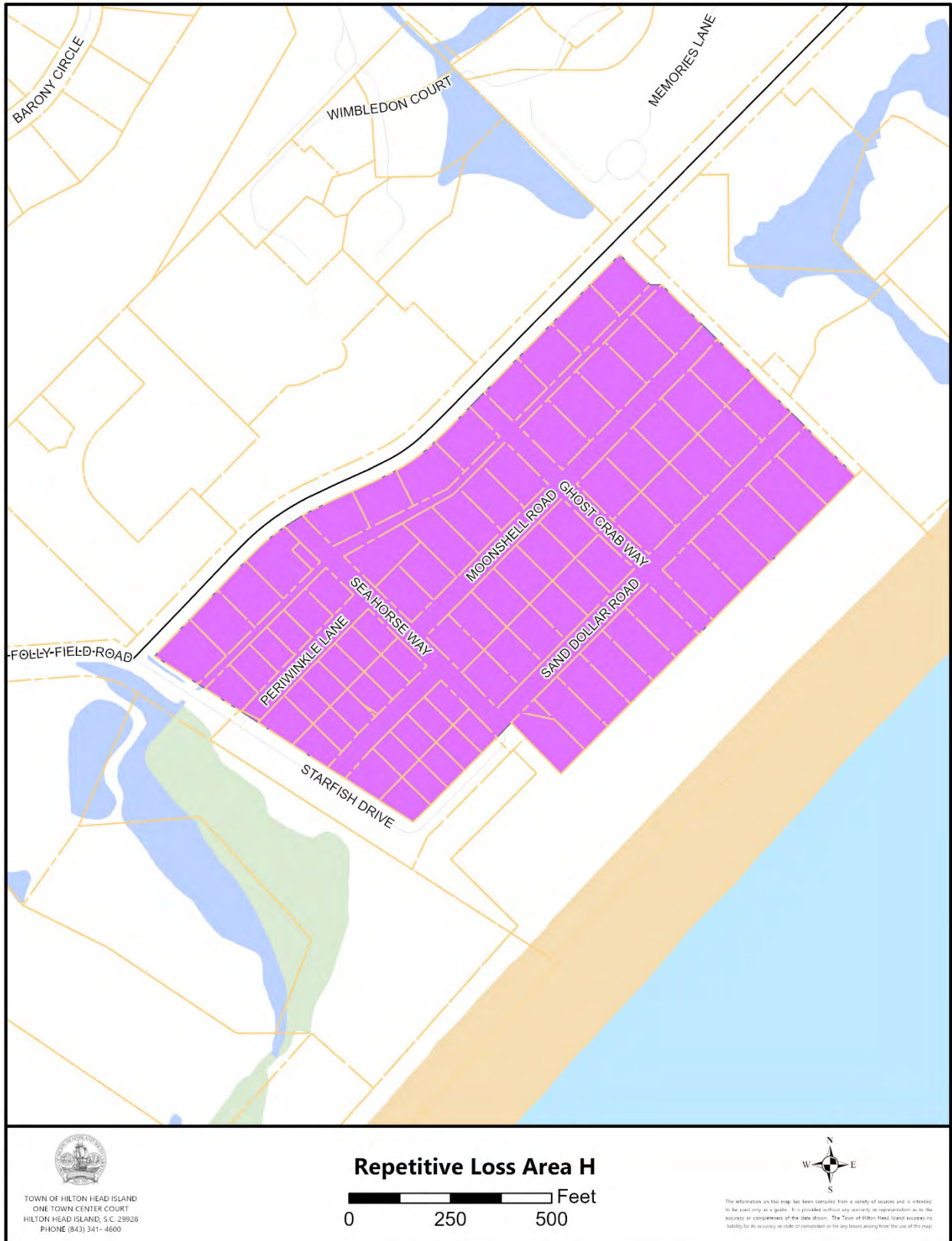
Repetitive Loss Area H contains 3 unmitigated and 77 additional properties for a total of 80 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area H are located in Flood Zone AE with a base flood elevation of 9 feet. 50% of the structures in this area are slab-on-grade and 50% of the structures are elevated on either foundation walls or post, pier, piles or columns. The Town has documented nuisance flooding from king tide events that is beginning to encroach on Starfish Drive. Town maintained drainage channels are on a routine maintenance schedule and are cleaned biannually. The Town is actively permitting a CIP drainage improvement project to improve efficiency and reduce long-term maintenance costs along the existing Folly Field ditch.

Example Property



Figure 2.10 – Repetitive Loss Area H



Repetitive Loss Area J

Repetitive Loss Area J (Figure 2.11) is located on Mathews Drive on the north end of the island near the Hilton Head Island Airport in an older, established townhome community with structures built in the early 1980s. These properties are in a low- to moderate-density residential zoning district surrounded by moderate- to high-density mixed use and light industrial use properties.

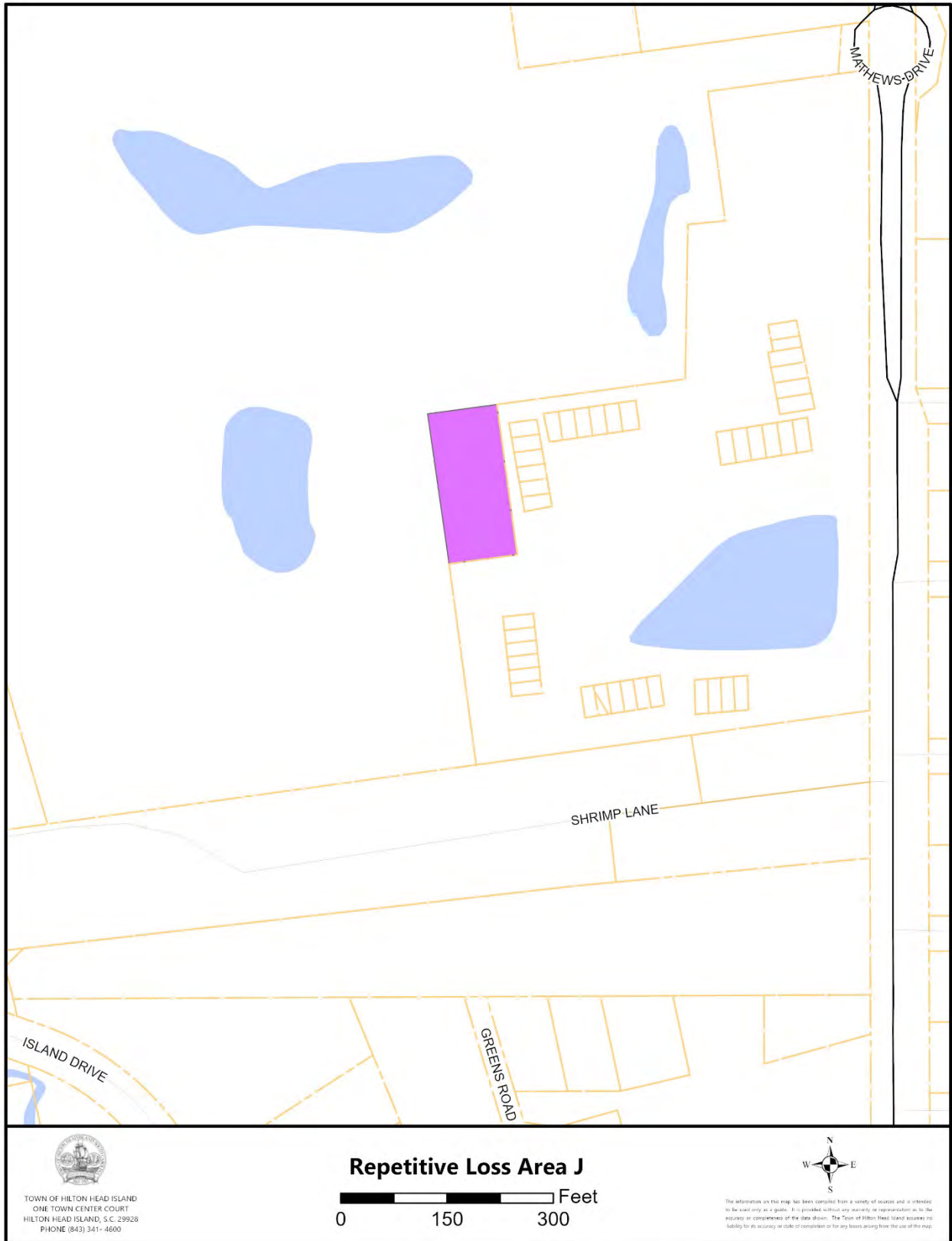
Repetitive Loss Area J contains 1 unmitigated building and 1 additional buildings for a total of 2 properties containing 8 dwelling units with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area J are located in Zone X. The structures are slab-on-grade and are at risk due to the low-lying nature of this area and poor drainage infrastructure. The infrastructure in the community is privately owned.

Example Property



Figure 2.11 – Repetitive Loss Area J



Repetitive Loss Area L

Repetitive Loss Area L (Figure 2.12) is located on Cardinal Drive and Cardinal Court on the north end of the island near the Hilton Head Island Airport in the Palmetto Headlands. The structures we built from the early 1980s to early 1990s. All the properties have a commercial use and are in the light commercial and light industrial zoning districts.

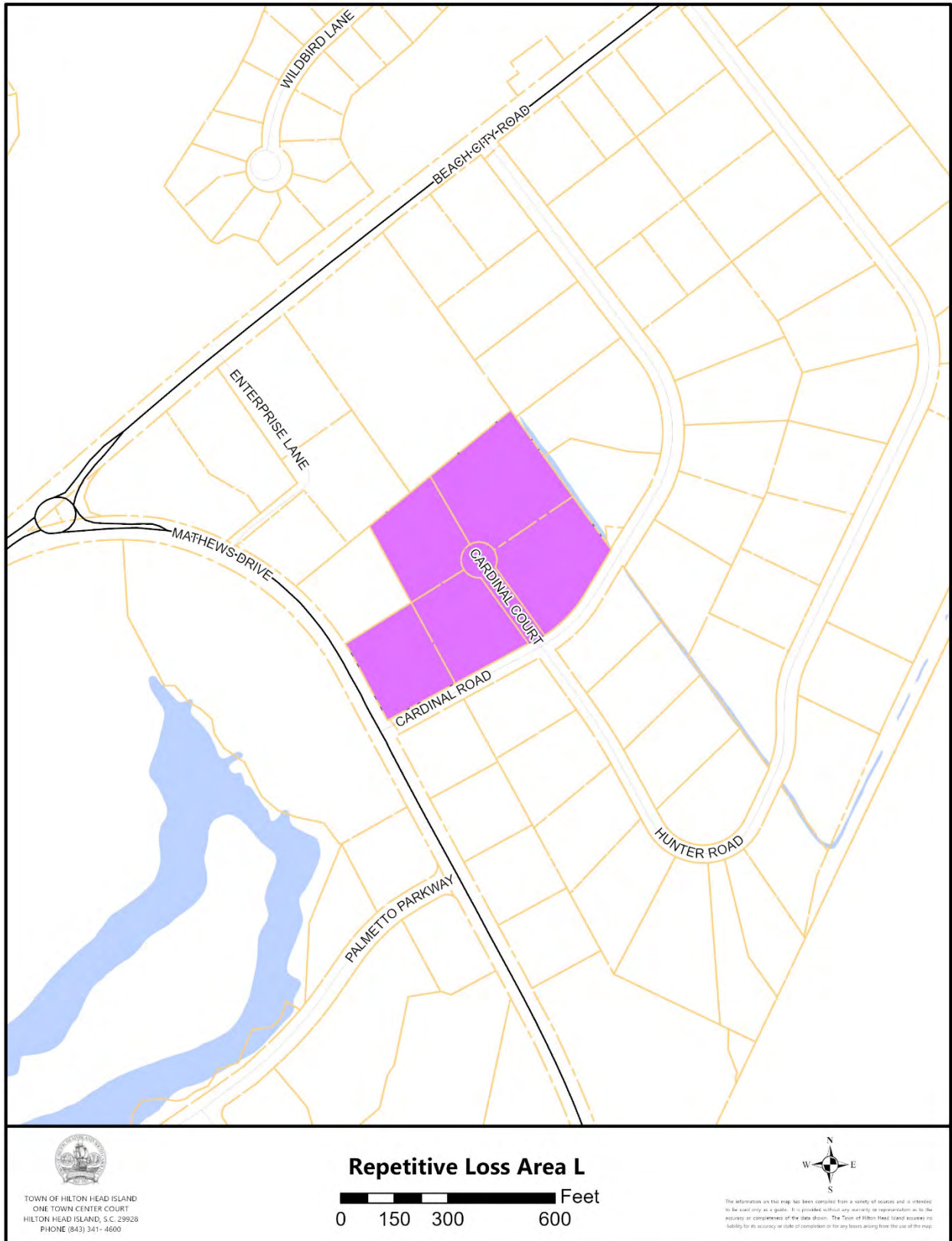
Repetitive Loss Area L contains 1 unmitigated property and 4 additional properties for a total of 5 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area L are located in Zone X. The structures are slab-on-grade and are at risk due to the low-lying nature of this area. The roadway and property-specific infrastructure in the is privately owned; however, there is a large conveyance channel that runs along the northeast side of the properties that is maintained biannually by the Town.

Example Property



Figure 2.12 – Repetitive Loss Area L



Repetitive Loss Area O

Repetitive Loss Area O (Figure 2.13) is located on the north end of the island in Hilton Head Plantation and is in close proximity to the Port Royal Sound. The neighborhood is a Planned Unit Development (PUD), which was developed under an approved Master Plan that included drainage infrastructure. A majority of the structures are post-FIRM and were constructed from the early 1980s to mid-1990s.

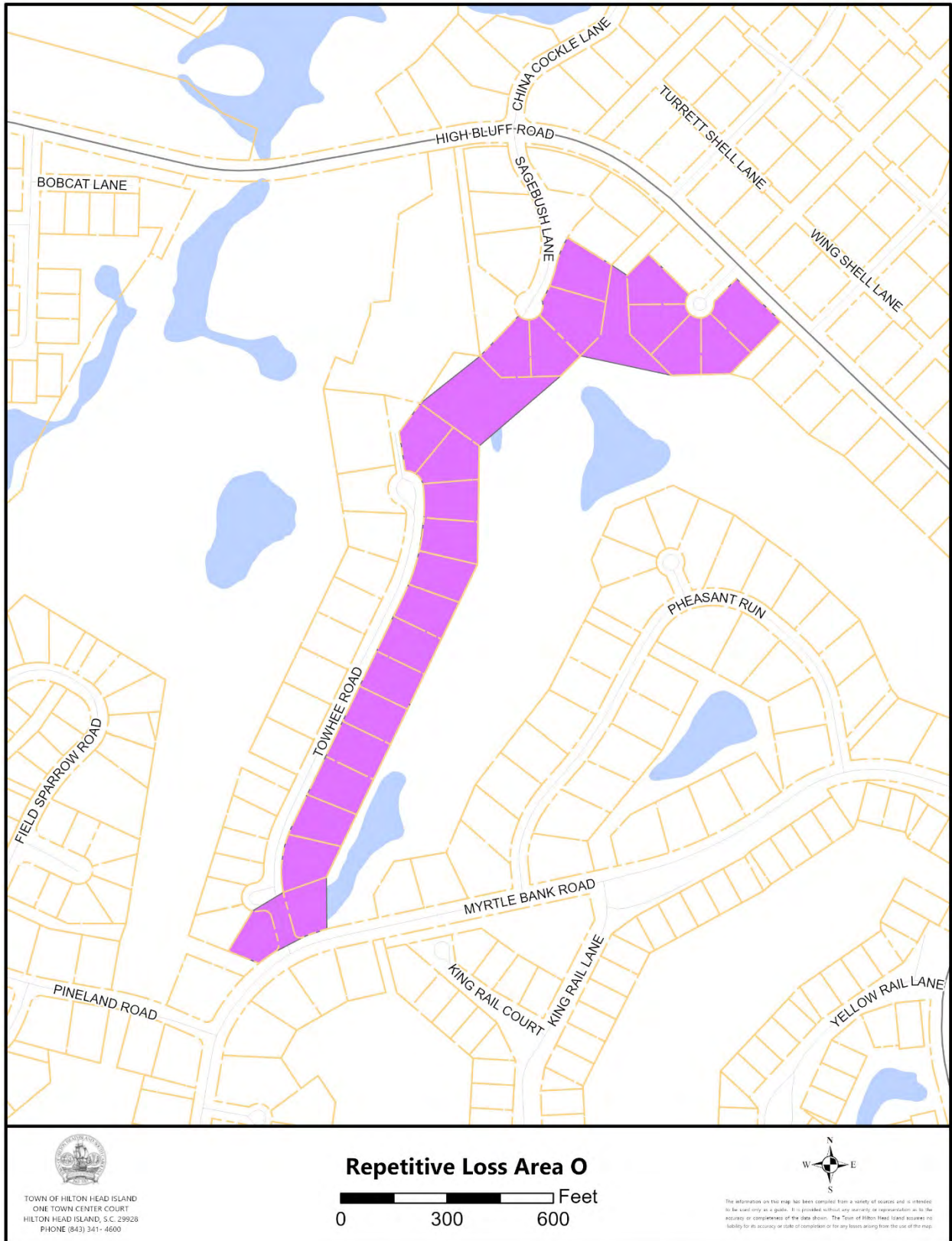
Repetitive Loss Area O contains 2 unmitigated and 1 mitigated repetitive loss properties, and 20 additional properties for a total of 23 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area O are located in Flood Zone X. They are slab-on-grade; however, the average grade in this area is 17', which is significantly higher than the typical base flood elevation in the island. Residents reported that the drainage system is periodically cleaned; however, the pipes quickly fill with sediment and may need to be cleaned more frequently. There is a drainage channel between the structures and adjacent golf courses that is managed by the Property Owners Association.

Example Property



Figure 2.13 – Repetitive Loss Area O



Repetitive Loss Area Q

Repetitive Loss Area Q (Figure 2.14) is located on the south end of the island and is situated on the Calibogue Sound. The properties are located in a PUD, which was developed under an approved Master Plan that included drainage infrastructure. The neighborhood was established in the late 1960s. The original homes were vacation homes that are slowly being replaced by modern elevated structures.

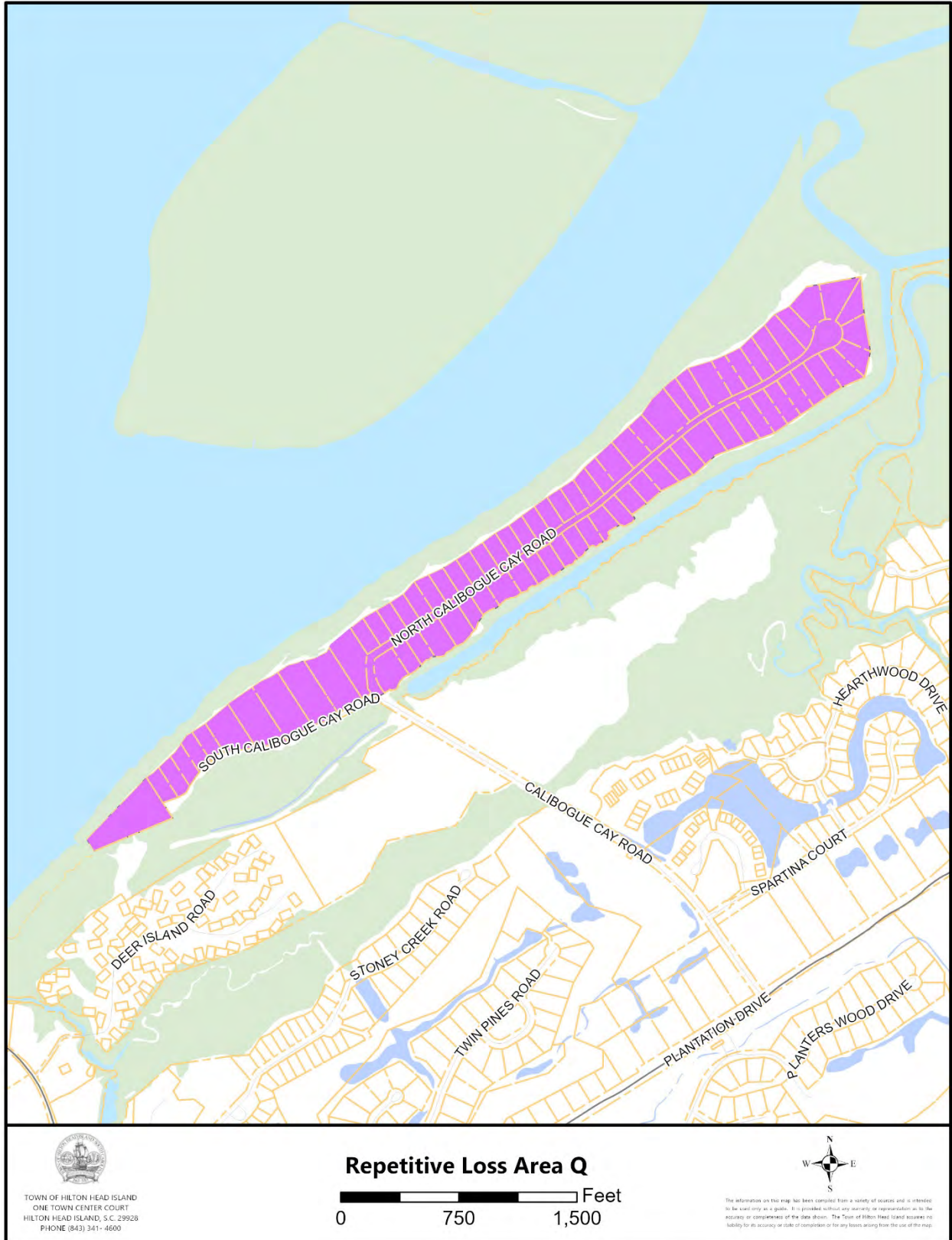
Repetitive Loss Area Q contains 7 unmitigated and 1 mitigated repetitive loss properties, and 71 additional properties for a total of 79 properties with similar topographic and drainage characteristics. Several homes in this area have been elevated to migrate past flooding events.

Problem Statement: Properties in Repetitive Loss Area Q are located in Flood Zone AE with base flood elevations ranging from 8-9 feet and the 500-year floodplain (Zone X-Shaded). Approximately 50% of the structures are pre-FIRM. These structures are slab-on-grade and are at risk due to the low-lying nature of this area. Residents have reported that flooding inundates the roadway during heavy rainfall events. The infrastructure in the community is maintained by the Property Owners Association.

Example Property



Figure 2.14 – Repetitive Loss Area Q



Repetitive Loss Area R

Repetitive Loss Area R (Figure 2.15) is located on the south end of the island and is situated in close proximity to the Calibogue Sound. The properties are located in a PUD, which was developed under an approved Master Plan that included drainage infrastructure. This area encompasses two condominium complexes containing 28 multifamily dwelling units constructed in 1980 and 1971.

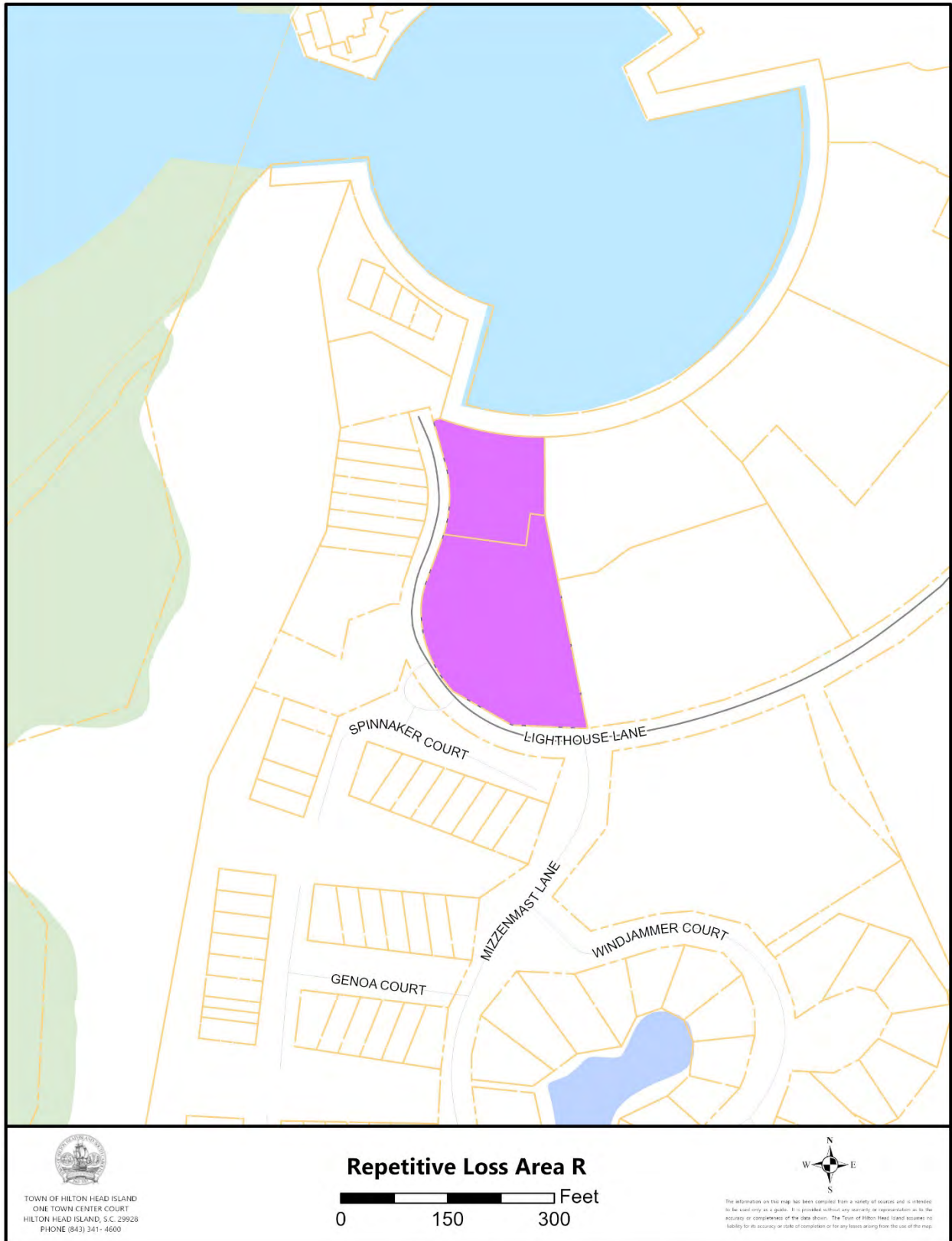
Repetitive Loss Area R contains 3 unmitigated buildings and 1 additional buildings for a total of 4 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area R are located in Flood Zone AE with a base flood elevation of 8 feet and the 500-year floodplain (Zone X-Shaded). The FIRM structures are at risk due to the low-lying nature of this area. The infrastructure in the community is maintained by the Property Owners Association.

Example Property



Figure 2.15 – Repetitive Loss Area R



Repetitive Loss Area U

Repetitive Loss Area U (Figure 2.16) is located on the south end of the island in the Forest Beach neighborhood on Cordillo Parkway. This area encompasses three condominium buildings containing 16 multifamily dwelling units constructed in 1973. These properties are in a high-density mixed use zoning district aimed at serving the island visitor.

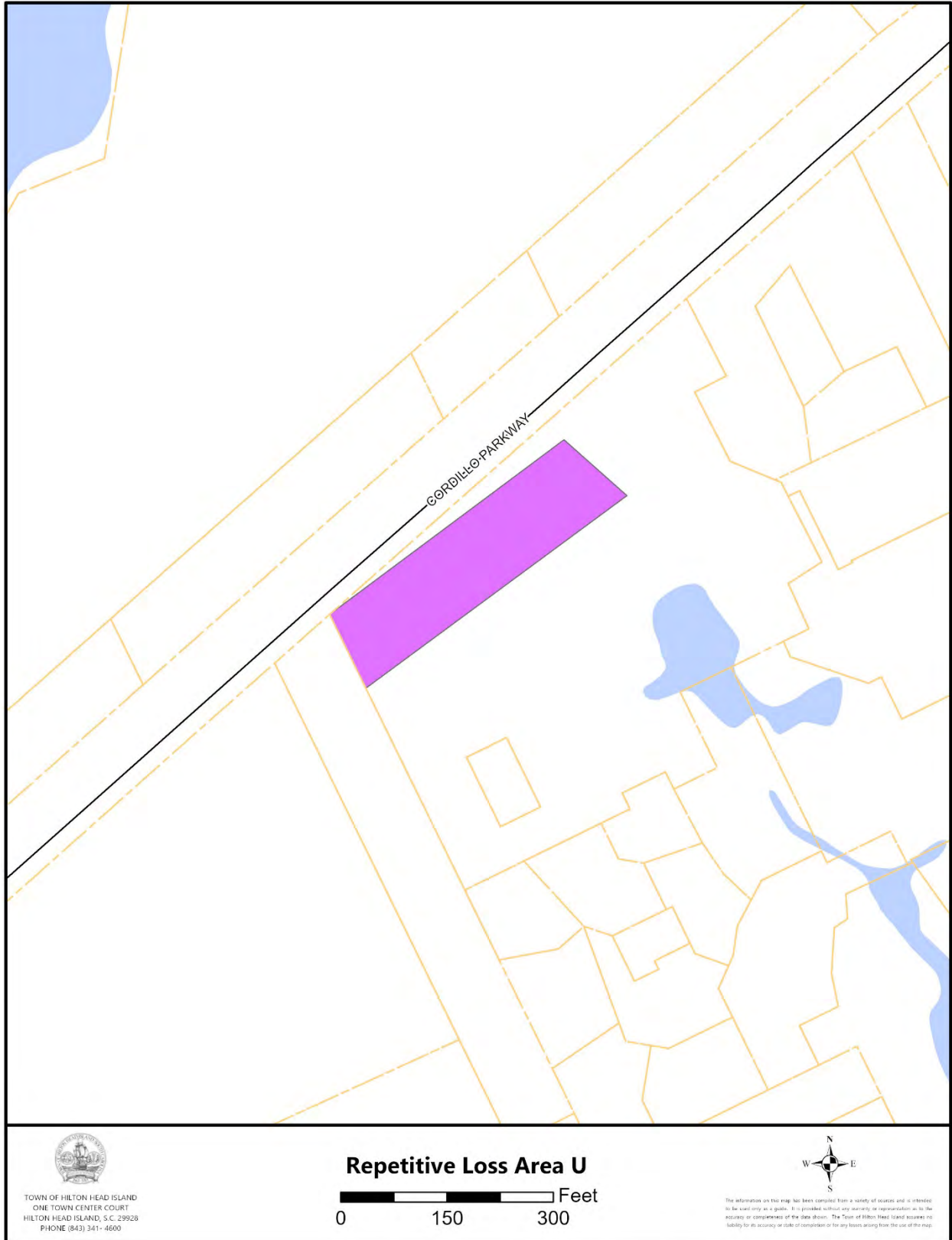
Repetitive Loss Area U contains 1 unmitigated building and 2 additional buildings for a total of 3 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area U are located the 500-year floodplain (Zone X-Shaded). The pre-FIRM structures, which are slab-on-grade, are at risk due to the low-lying nature of this area. Also, the adjacent roadway is approximately 3 feet higher than the building slabs. The infrastructure in the community is privately owned.

Example Property



Figure 2.16 – Repetitive Loss Area U



Repetitive Loss Area V

Repetitive Loss Area V (Figure 2.17) is located on the south end of the island and is situated on the Calibogue Sound. The properties are located in a PUD, which was developed under an approved Master Plan that included drainage infrastructure. The structures in this area are duplexes and triplexes and were constructed between 1981 and 2000.

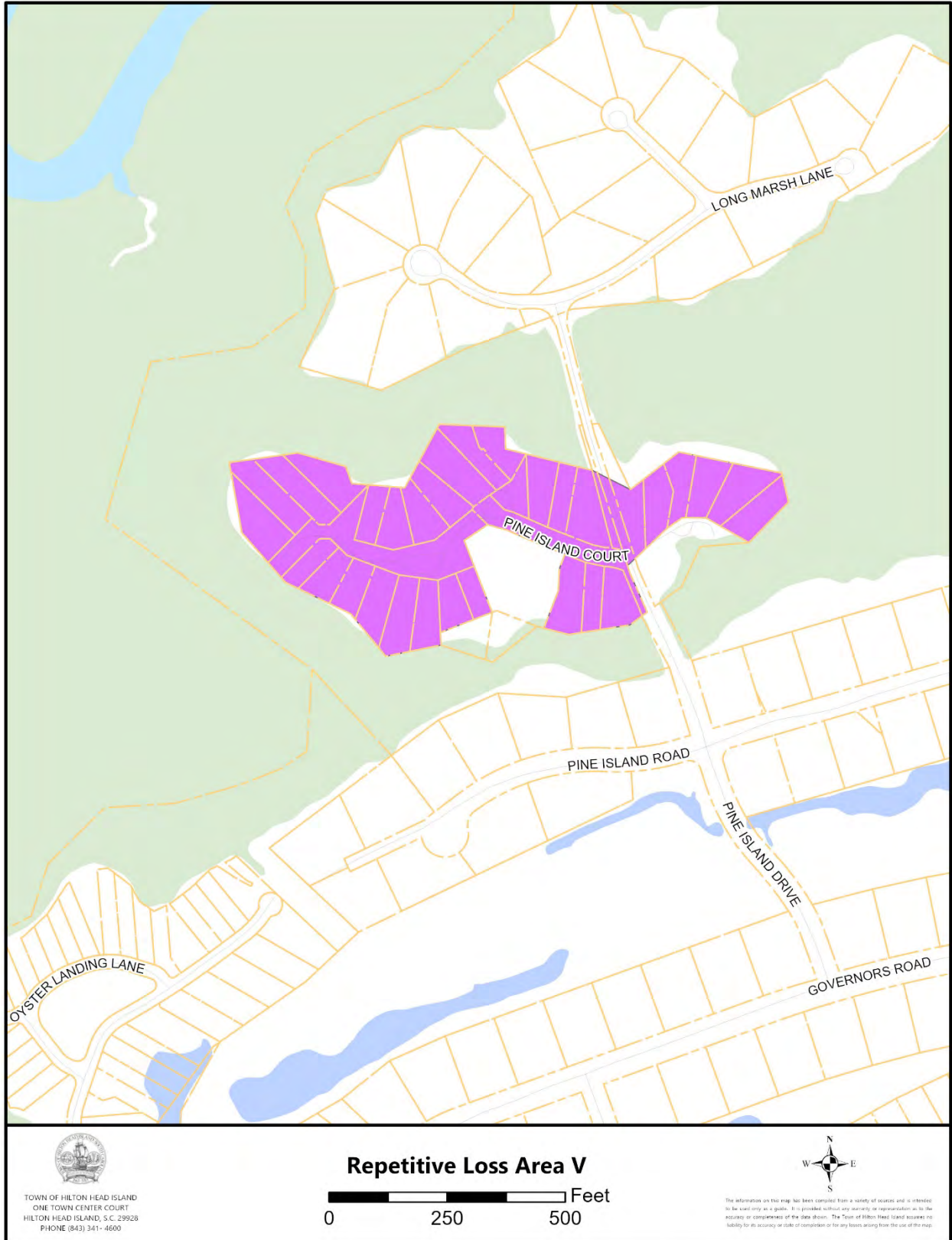
Repetitive Loss Area V contains 11 unmitigated and 2 additional properties for a total of 13 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area V are located in Flood Zone AE with base flood elevations ranging from 7-8 feet. All of the structures are elevated to varying elevations depending on the year of construction. Residents have reported that flooding inundates the roadway during heavy rainfall events and although not inundating any structures, king tide events saturate the yards and water is slowly encroaching on the structures. The infrastructure in the community is maintained by the Property Owners Association.

Example Property



Figure 2.17 – Repetitive Loss Area V



Repetitive Loss Area W

Repetitive Loss Area W (Figure 2.18) is located on the south end of the island and is situated between the Calibogue Sound and Atlantic Ocean adjacent to an unnamed tidal creek. The properties are located in a PUD, which was developed under an approved Master Plan that included drainage infrastructure. The neighborhood was established in the 1970s and the original homes were vacation homes that are slowly being replaced by modern elevated structures.

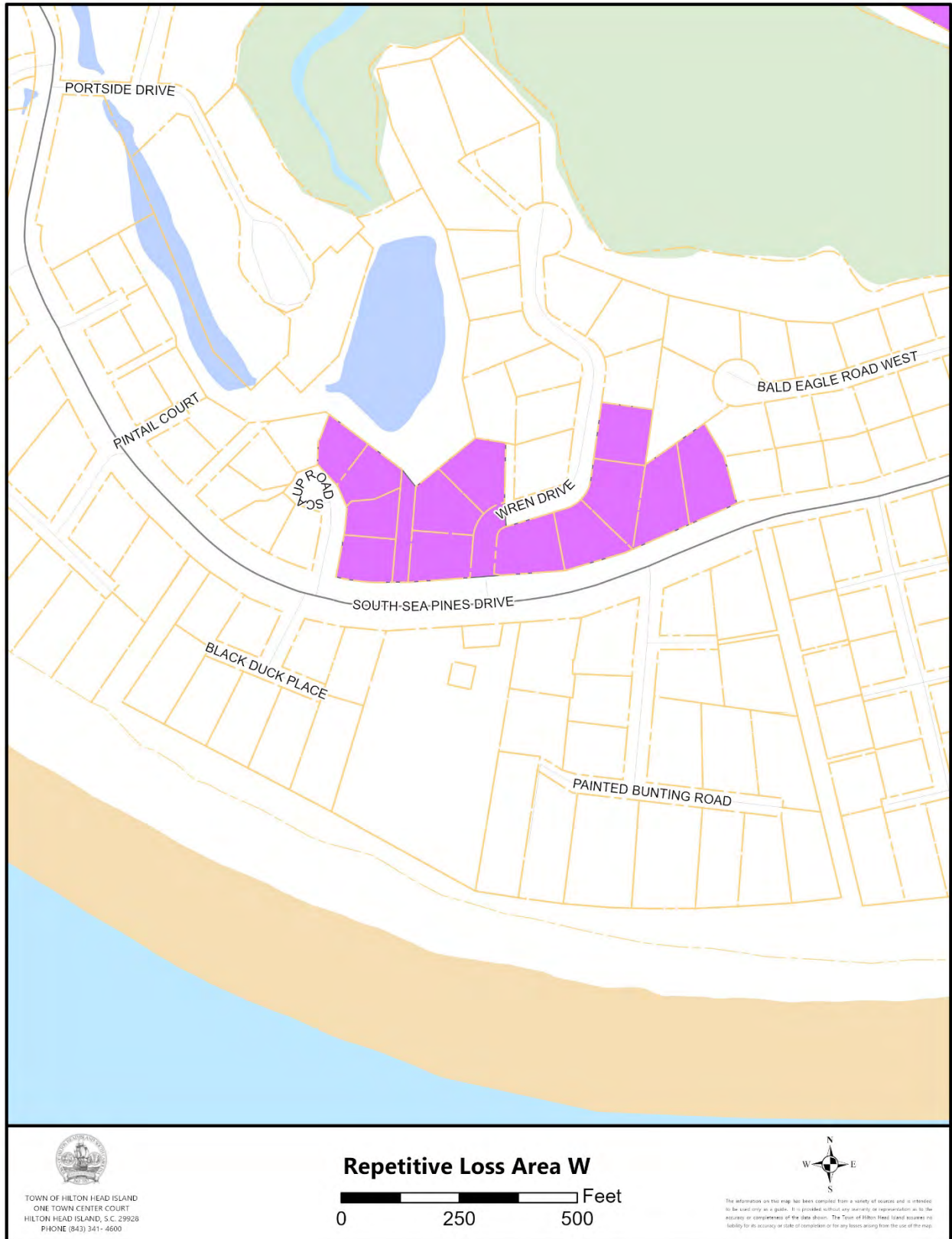
Repetitive Loss Area W contains 3 unmitigated and 10 additional properties for a total of 13 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area W are located in Flood Zone AE with base flood elevations of 8 feet. All of the structures are elevated to varying elevations depending on the year of construction. The infrastructure in the community is maintained by the Property Owners Association.

Example Property



Figure 2.18 – Repetitive Loss Area W



Repetitive Loss Area X

Repetitive Loss Area X (Figure 2.19) is located on the south end of the island and is situated between the Calibogue Sound and Atlantic Ocean adjacent to an unnamed tidal creek. The properties are located in a PUD, which was developed under an approved Master Plan that included drainage infrastructure. The neighborhood was established in the 1970s and the original homes were vacation homes that are slowly being replaced by modern elevated structures.

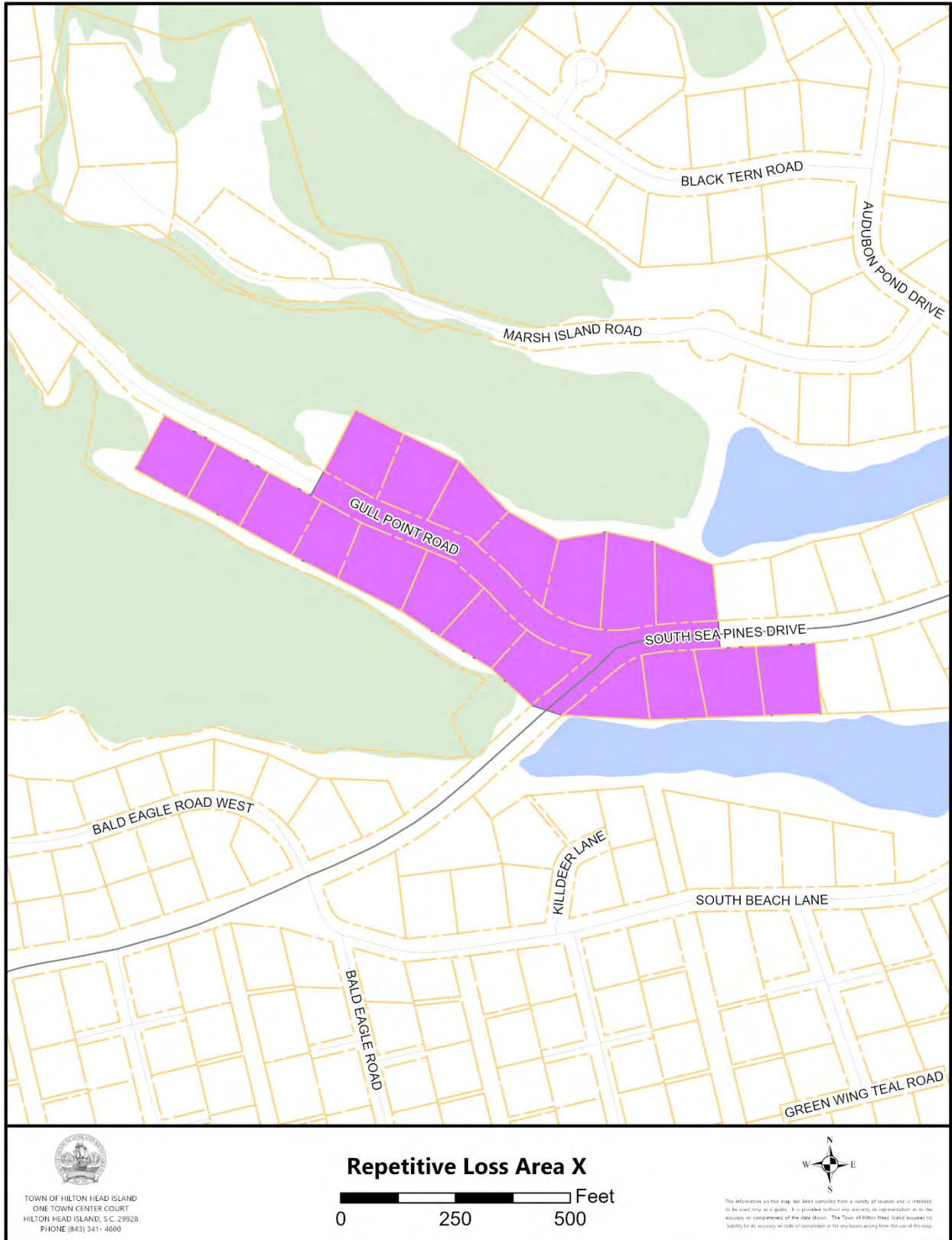
Repetitive Loss Area X contains 4 unmitigated and 13 additional properties for a total of 17 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area X are located in Flood Zone AE with base flood elevations of 8 feet. All of the structures are elevated to varying elevations depending on the year of construction. The infrastructure in the community is maintained by the Property Owners Association.

Example Property



Figure 2.19 – Repetitive Loss Area X



Repetitive Loss Area Y

Repetitive Loss Area Y (Figure 2.20) is located on the south end of the island and is situated between the Calibogue Sound and Atlantic Ocean adjacent to an unnamed tidal creek. The properties are located in a PUD, which was developed under an approved Master Plan that included drainage infrastructure. The neighborhood was established in the 1970s with most of the homes constructed between 1972 and 1992.

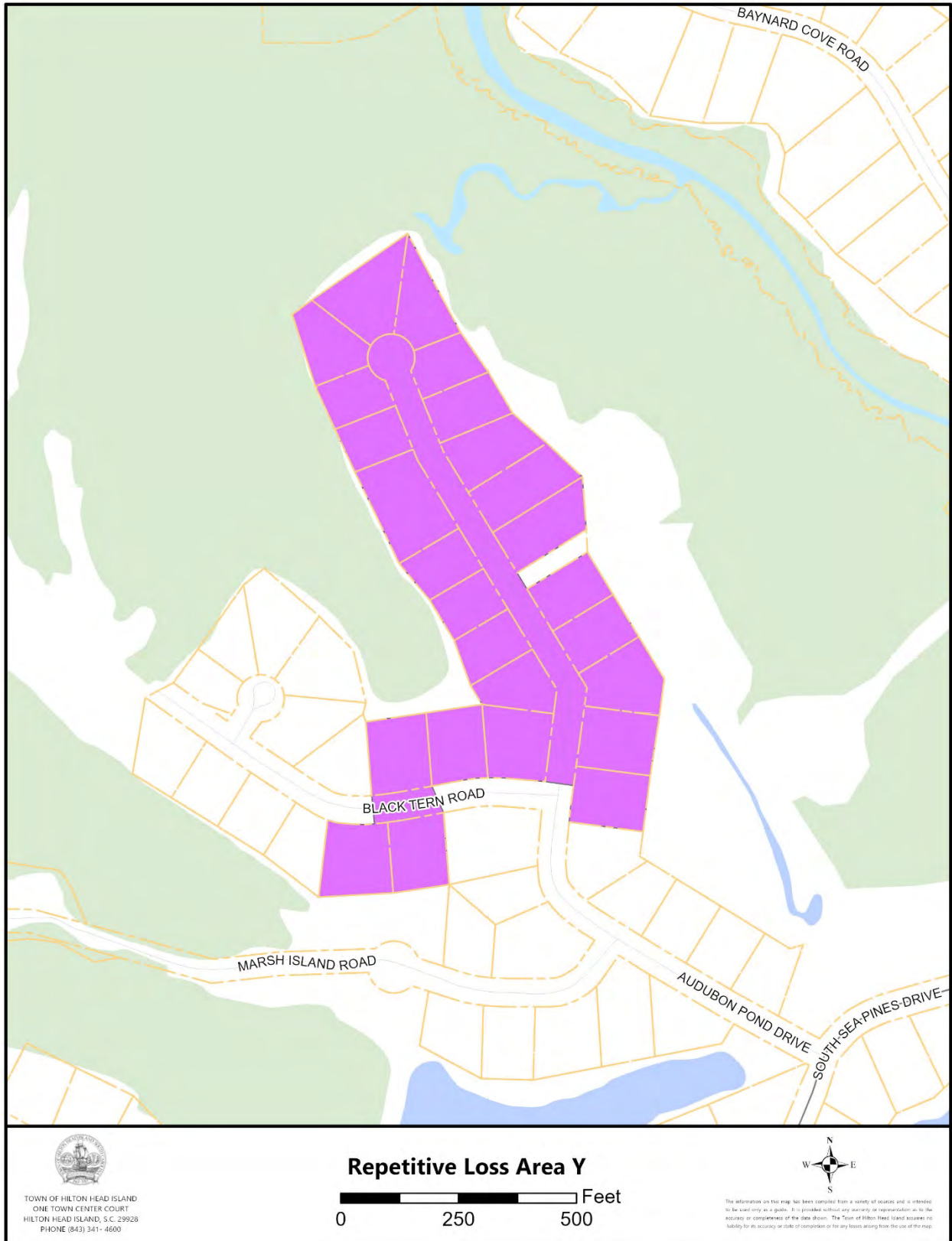
Repetitive Loss Area Y contains 5 unmitigated and 20 additional properties for a total of 25 properties with similar topographic and drainage characteristics.

Problem Statement: Properties in Repetitive Loss Area Y are located in Flood Zone AE with base flood elevations of 8 feet. All of the structures are elevated to varying elevations depending on the year of construction. The infrastructure in the community is maintained by the Property Owners Association.

Example Property




Figure 2.20 – Repetitive Loss Area Y




TOWN OF HILTON HEAD ISLAND
ONE TOWN CENTER COURT
HILTON HEAD ISLAND, S.C. 29928
PHONE (843) 341-4600

Repetitive Loss Area Y
0 250 500 Feet


The information on this map has been compiled from a variety of sources and is intended to be used only as a guide. It is provided without any warranty or representation as to the accuracy or completeness of the data shown. The Town of Hilton Head Island assumes no liability for its accuracy or state of completion or for any losses arising from the use of the map.

Single-Property Repetitive Loss Areas I, K, M, N, P, S, and T

Repetitive Loss Areas I, K, M, N, P, S, and T (Figures 2.21 through 2.27) are all single-property repetitive loss areas. All 7 single-property repetitive loss areas are located within PUDs, which was developed under an approved Master Plan that included drainage infrastructure.

Below is summary table of the single-property repetitive loss areas:

Repetitive Loss Area	Flood Zone	Number of Structures with Similar Characteristics
I	X	28
K	AE (9) and AE (10)	17
M	X-Shaded	11
N	X	4
P	AE(9) and X-Shaded	16
S	X	4
T	X-Shaded	6

Problem Statement: Properties in the single-property repetitive loss areas all have site specific drainage problems.

Example Property



Figure 2.21 – Repetitive Loss Area I

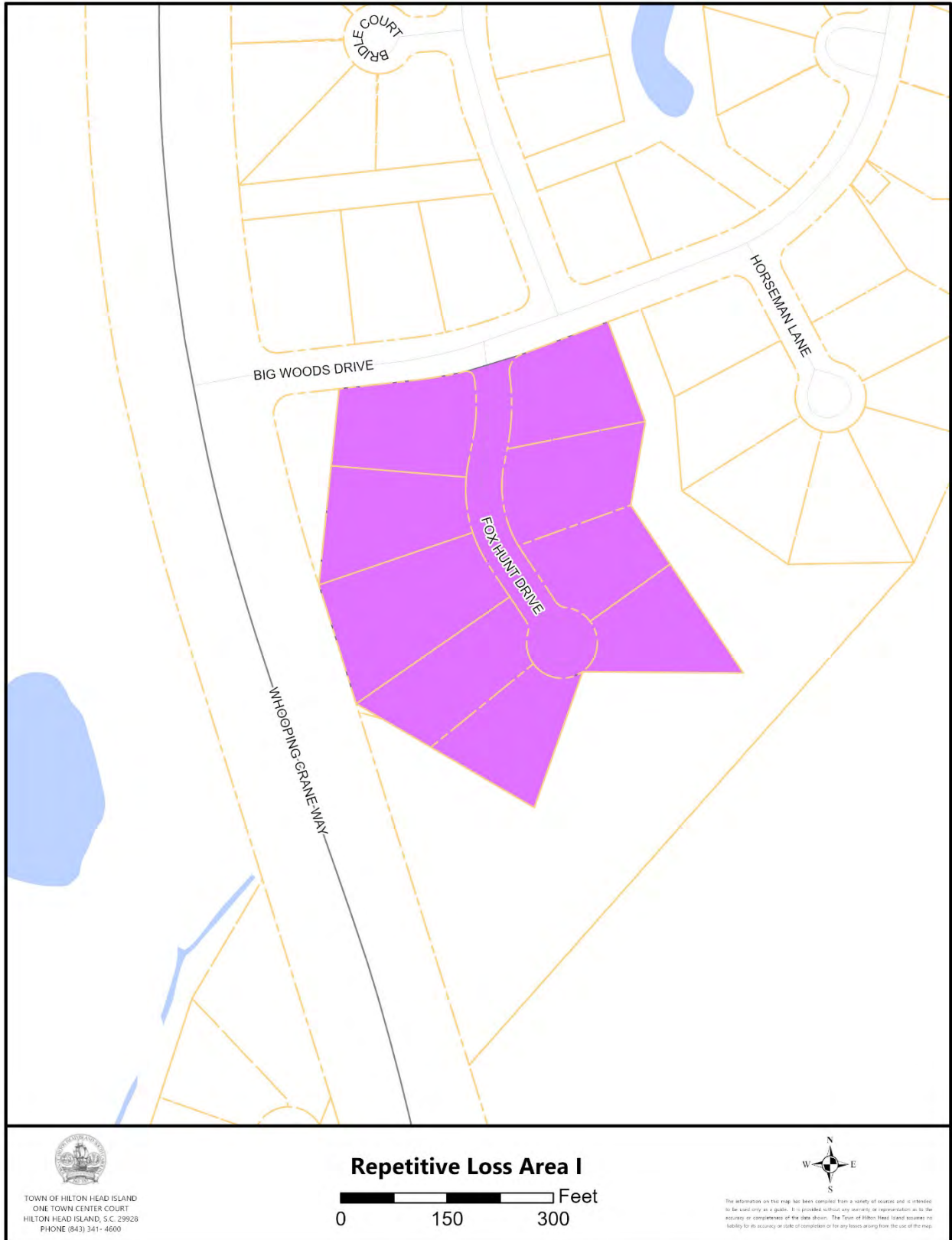


Figure 2.22 – Repetitive Loss Area K

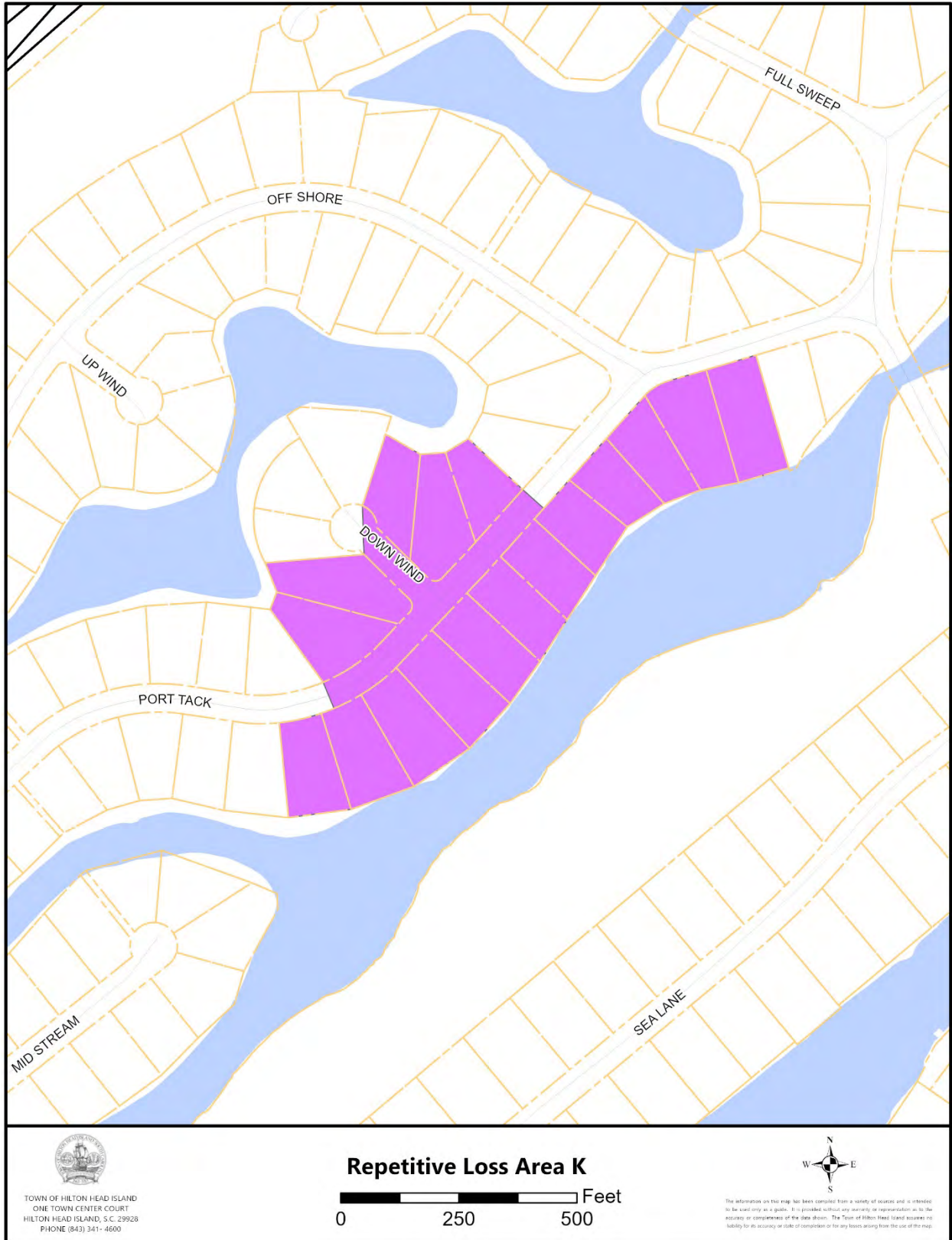


Figure 2.23 – Repetitive Loss Area M

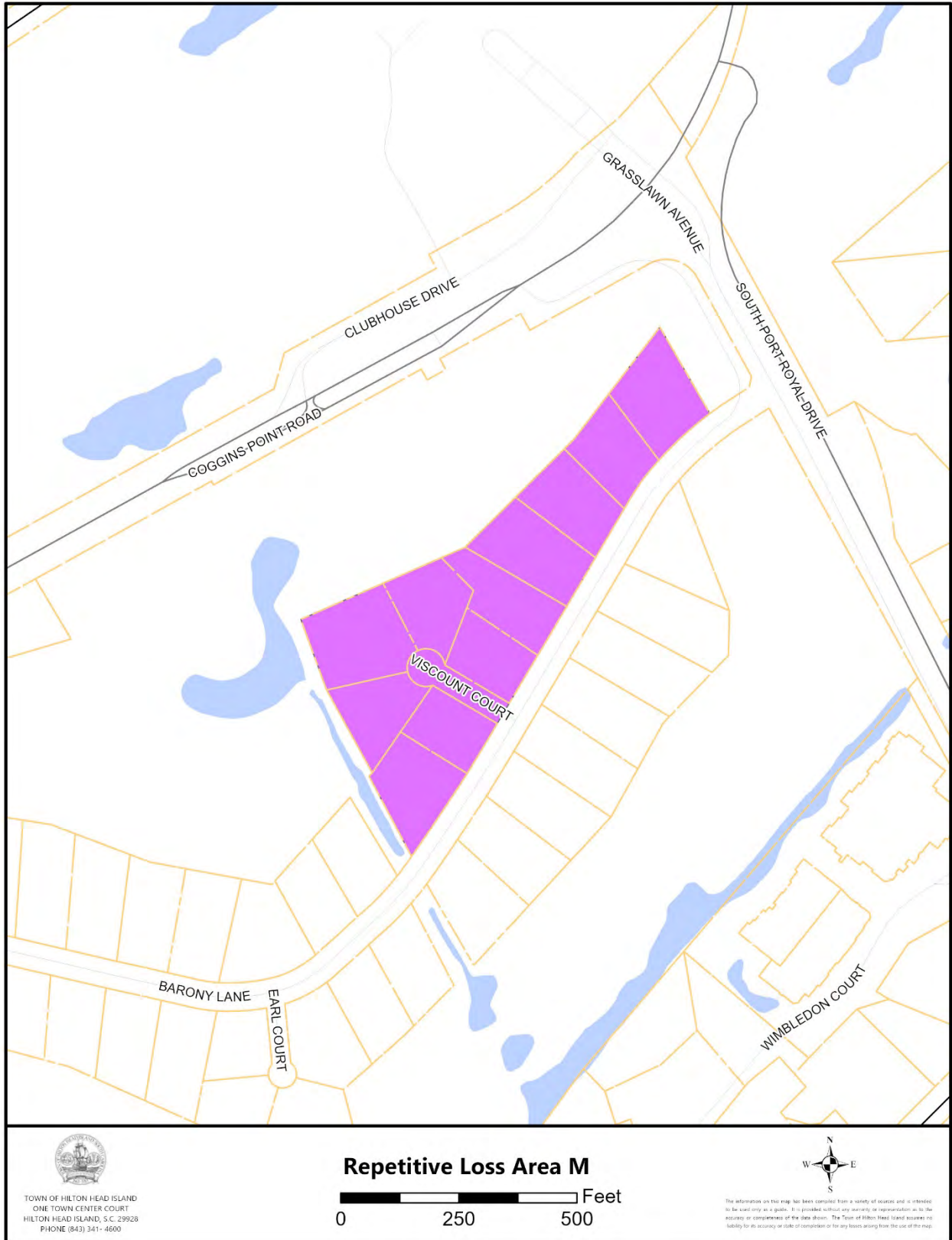


Figure 2.24 – Repetitive Loss Area N

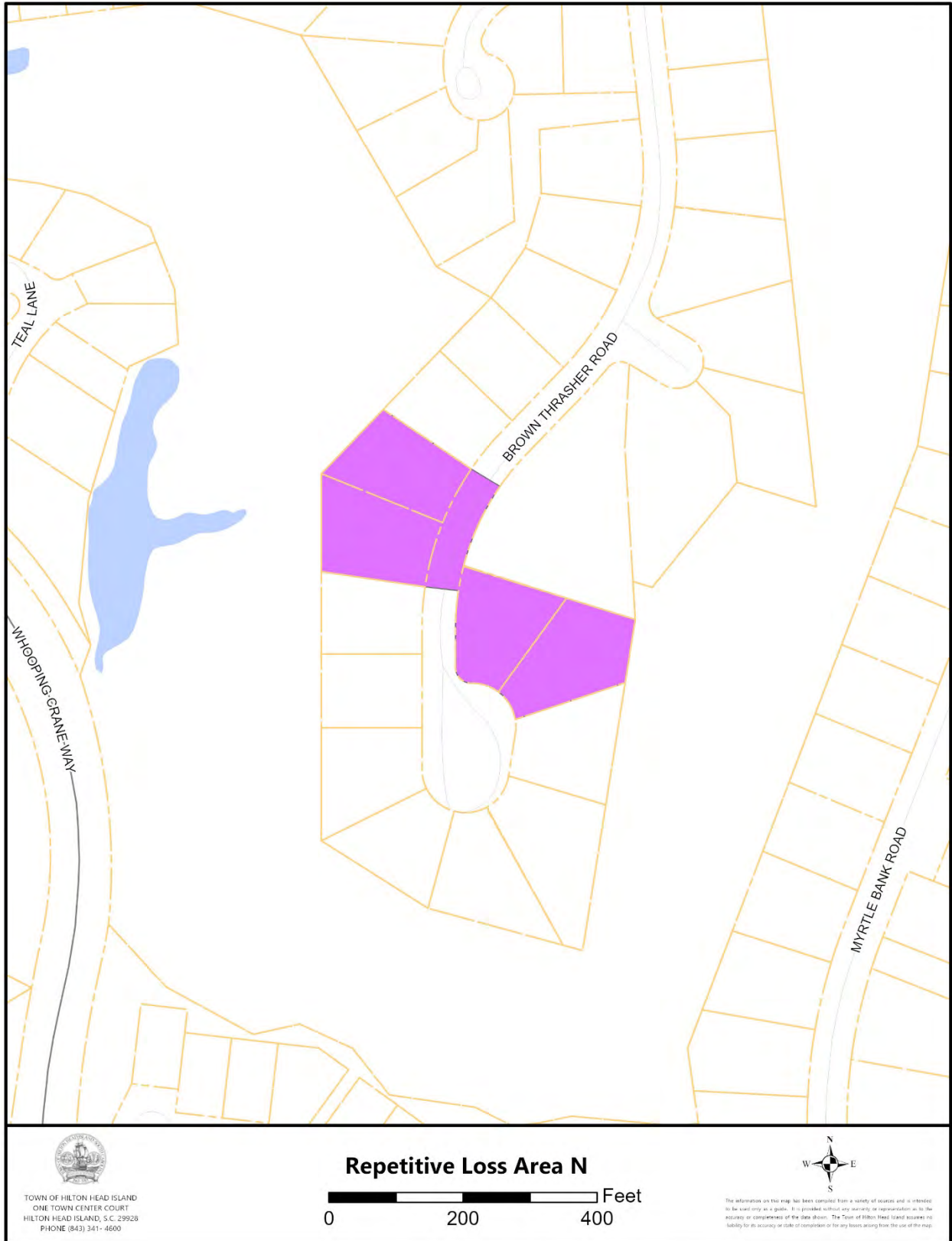


Figure 2.25 – Repetitive Loss Area P

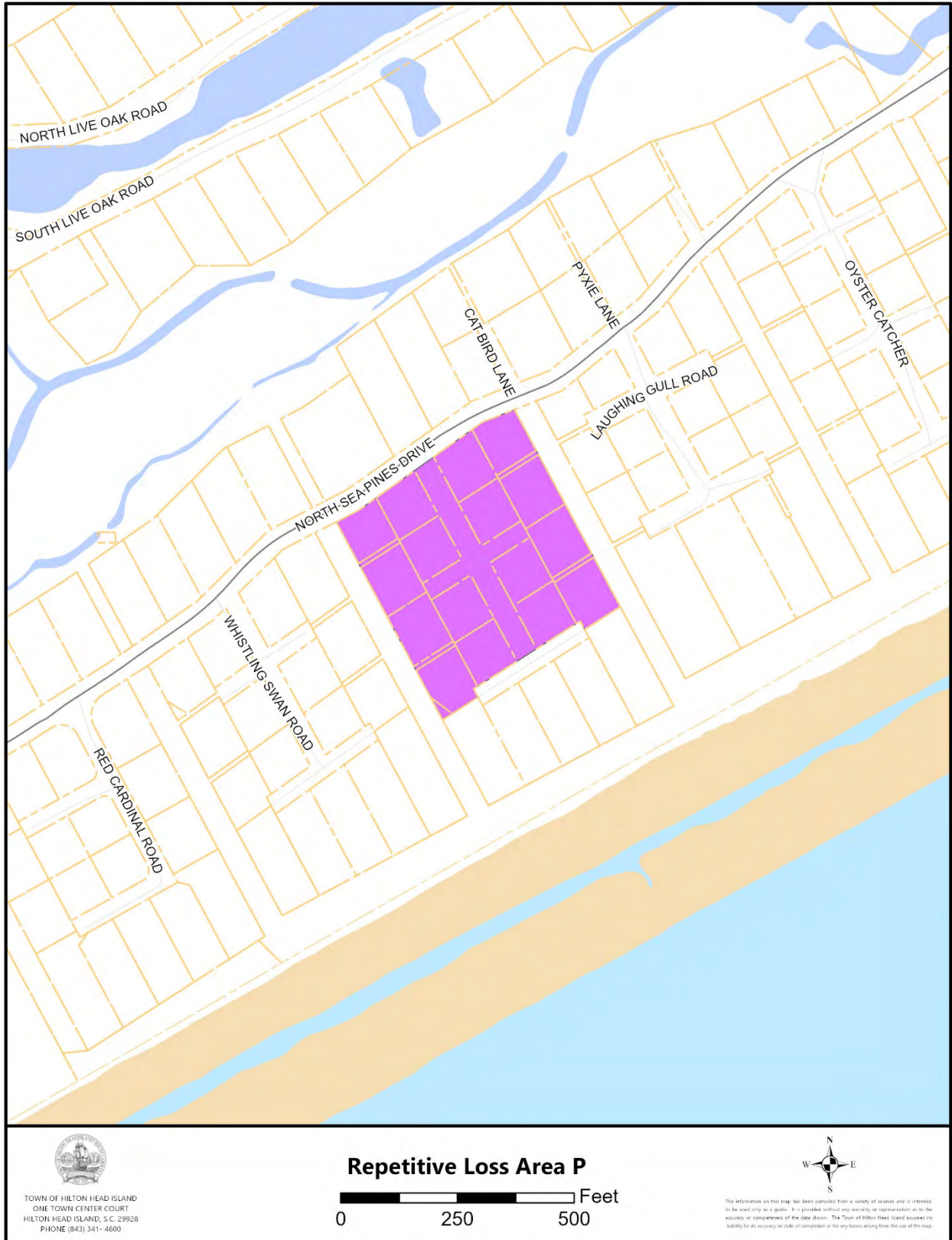


Figure 2.26 – Repetitive Loss Area S

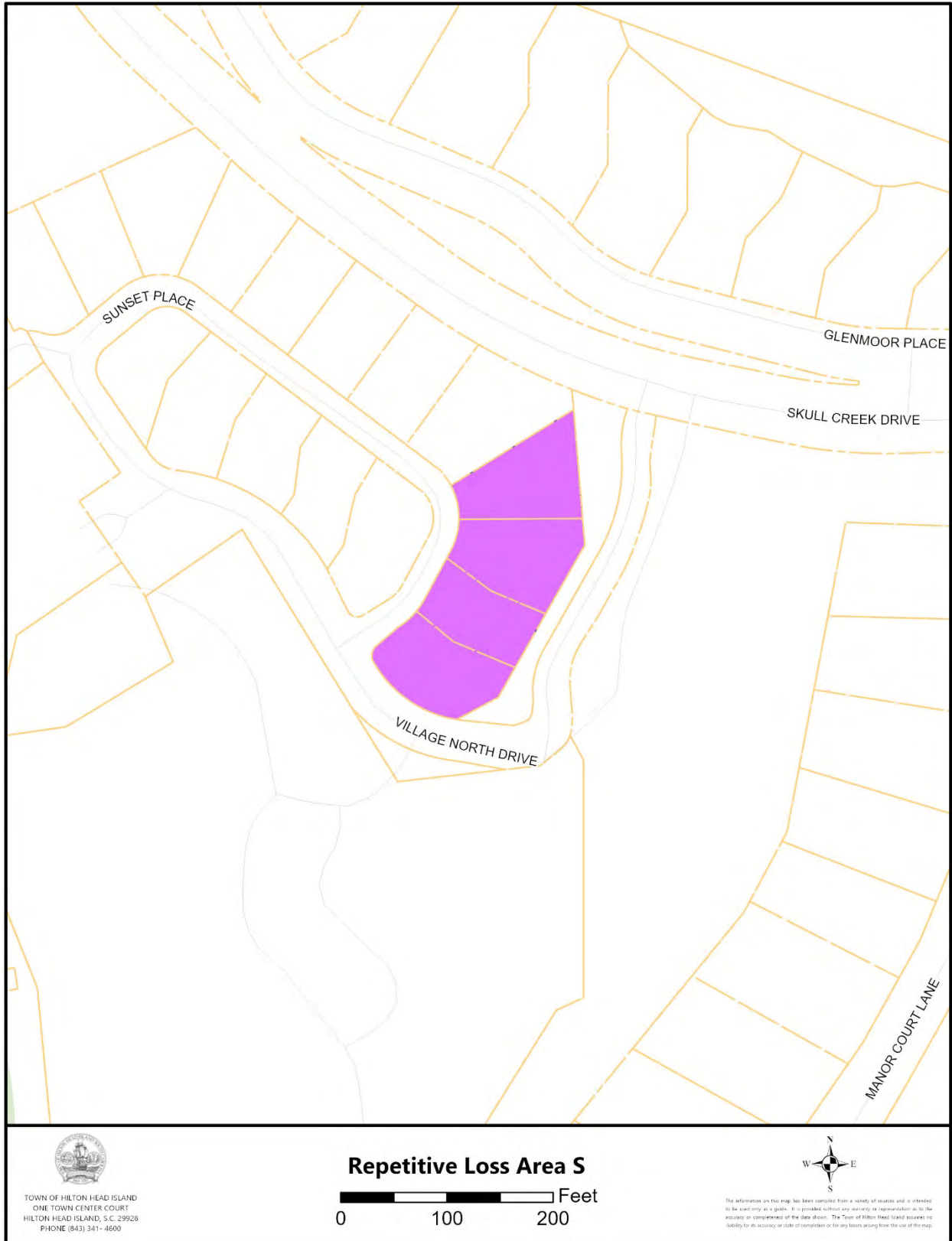
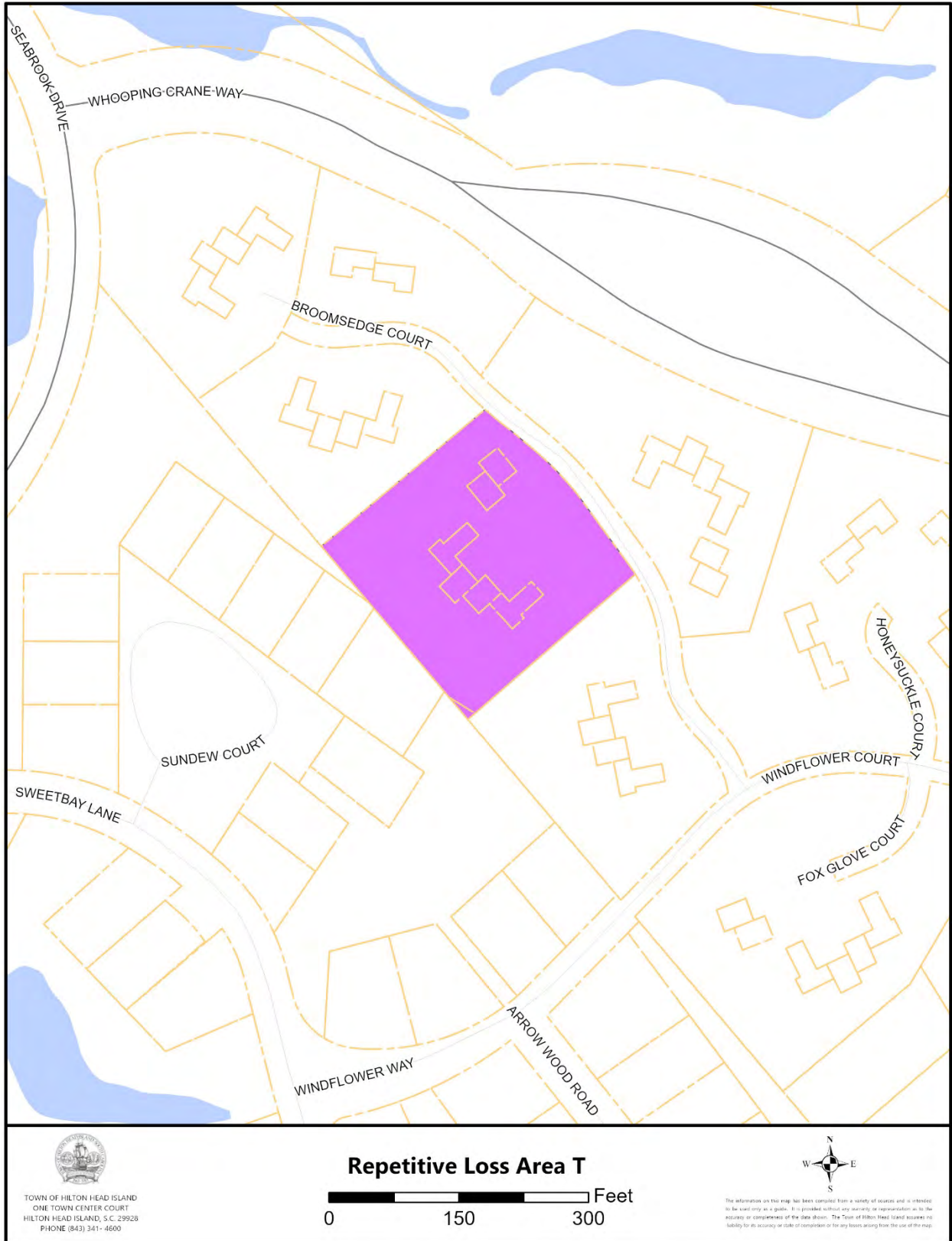


Figure 2.27 – Repetitive Loss Area T



STEP 4. Mitigation Alternatives

According to the 2017 CRS Coordinator's Manual, mitigation measures should fall into one of the following floodplain management categories:

- Prevention
- Property Protection
- Natural Resource Protection
- Emergency Services
- Structural Projects
- Public Information and Outreach

Property protection is essential to mitigating repetitive loss properties and reducing future flood losses. There are many ways to protect a property from flood damage. Property protection measures recognized in the 2017 CRS Coordinator's Manual include relocation, acquisition, building elevation, retrofitting, sewer backup protection, and insurance. Different measures are appropriate for different flood hazards, building types and building conditions. The following property protection measures are recommended:

- Demolish the building or relocate it out of harm's way.
- Elevate the building above the flood level.
- Elevate damage-prone components, such as the furnace or air conditioning unit.
- Dry floodproof the building so water cannot get into it.
- Wet floodproof portions of the building so water won't cause damage.
- Construct a berm or redirect drainage away from the building.
- Maintain nearby streams, ditches, and storm drains so debris does not obstruct them.
- Correct sewer backup problems.

Mitigation Funding

There are several types of mitigation measures, listed in the table below, which can be considered for each repetitive loss property. Each mitigation measure qualifies for one or more grant programs. Depending on the type of structure, severity of flooding and proximity to additional structures with similar flooding conditions, the most appropriate measure can be determined. In addition to these grant funded projects, several mitigations measures can be taken by the homeowner to protect their home. Please note, the Biggert-Waters 2012 National Flood Insurance Reform Act eliminated the previously available Repetitive Flood Claims grant program.

Table 2.1 - Mitigation Grant Programs

Types of Projects Funded	HMGP ^{1,2}	FMA ¹	BRIC ¹	SRL ¹	ICC ³	SBA ^{2,4}
Acquisition of the entire property by a gov't	✓	✓	✓	✓		
Relocation of the building to a flood free site	✓	✓	✓	✓	✓	✓
Demolition of the structure	✓	✓	✓	✓	✓	✓
Elevation of the structure above flood levels	✓	✓	✓	✓	✓	✓
Replacing the old building with a new elevated	✓			✓	✓	✓
Local drainage and small flood control projects	✓			✓		
Dry floodproofing (non-residential buildings)		✓	✓	✓	✓	✓
Percent paid by Federal program	75%	75%	75%	75%	100%	0%

Notes:

1. Requires a grant application from the local government.
2. Only available after a Federal Disaster Declaration.
3. Requires the building to have a flood insurance policy and be declared substantially damaged due to flooding by the local government. Pays 100% up to \$30,000.
4. This is a low interest loan that must be paid back.

Mitigation Measures

The following table compares potential mitigation measures for repetitive loss areas and provides detailed information on the implementation of the structural (table 2.2) and nonstructural alternatives (table 2.3)

Table 2.2 - Structural Alternatives

Potential Mitigation Measures	Current Mitigation Projects
<p>Dry floodproofing. Commercial structures and even residential structures are eligible for dry floodproofing; however, in many instances this requires human intervention to complete the measure and ensure success. For example, installing watertight shields over doors or windows requires timely action by the homeowner, especially in a heavy rainfall event.</p>	<p>Commercial structures with a lowest floor elevation below the Town's design flood elevation are required to be dry floodproofed.</p>
<p>Wet floodproofing. Wet floodproofing a structure involves making the uninhabited portions of the structure resistant to flood damage and allowing water to enter during flooding. For example, in a basement or crawl space, mechanical equipment and ductwork would not be damaged.</p>	<p>All enclosures below the Town's design flood elevation are required to have adequate flood venting, to include attached and detached garages and accessory structures used only for parking, and limited storage.</p>
<p>Elevate structures and damage-prone components, such as the air conditioning unit, above the base flood elevation (BFE).</p>	<p>The Town has a design flood elevation for all new and substantially improved structures and equipment that is significantly higher than the minimum design flood elevation required by FEMA.</p>
<p>Improve stormwater system maintenance to ensure inlets and canals are free of clogging debris.</p>	<p>The Stormwater Department has implemented a comprehensive drainage system maintenance program that includes a biannual schedule for inspection and maintenance of Town-owned infrastructure. The plan also includes detailed protocols that are implemented in advance of tropical systems.</p>
<p>Implement drainage improvements such as increasing capacity in the system (up-sizing pipes) and provide additional inlets to receive more stormwater.</p>	<p>The following drainage improvements projects have been funded for FY25:</p> <ul style="list-style-type: none"> • Improvement of the conveyance system along the Folly Field ditch. • Drainage improvements along Gum Tree Road between Katie Miller Drive and Georgianna Drive. • Installation of flap gates on the outfall pipes discharging stormwater from the Jarvis Creek Pump Station outfall system. • Main Street drainage improvements. • Capacity improvements and addition of backflow prevention devices at the Palmetto Hall outfall. • Wexford Pump Station overhaul.
<p>Construct engineered structural barriers, berms, and floodwalls (Note: Assuming lot has required space for a structural addition).</p>	
<p>Acquire and/or relocate properties.</p>	

Table 2.3 - Nonstructural Alternatives

Potential Mitigation Measures	Current Mitigation Projects
Provide public education through posting information about local flood hazards on the Town’s website, posting signs at various locations in neighborhoods or discussing flood protection measures at local neighborhood association meetings.	The Town has implemented a Program for Public Information (PPI) as part of the Community Rating System Program. The PPI is a comprehensive outreach program to provide flood-related information to property owners and visitors.
Promote the purchase of flood insurance.	Flood Insurance promotion is one of ten key topics addressed in the PPI.
Implement volume control and runoff reduction measures in the Town’s Stormwater Management Regulations.	The Town requires that all new construction retain the first 1” of rainfall over all new impervious surfaces and the first 1.5” of rainfall within ½ mile of a shellfish bed.
Implement impervious surface setbacks from tidal waters and wetlands.	The Town requires undisturbed buffers from tidal and freshwater wetlands for new construction. Impervious surfaces must be setback an additional 5’ from the standard buffer.
Preserving natural areas or restoring areas to a natural state.	The Town has minimum open space requirements for new development and encourages preservation of natural areas.
Protection of wetlands to allow additional storage of floodwaters.	Alteration to a wetland as part of any development is allowed only when documentation is provided that clearly demonstrates that wetland alteration cannot be avoided.
Protecting the coastline by preserving natural habitat and increasing construction setbacks.	The Town has beach and dune protection regulations that include required setbacks for vertical construction adjacent to the shoreline.
Relocate internal supplies, products/goods above the flooding depth.	This information is included in pre-Hurricane season presentations to the Town’s residential neighborhoods.

Advantages and Disadvantages of Mitigation Measures

Seven primary mitigation measures are discussed here: acquisition, relocation, barriers, floodproofing, drainage, elevation, and insurance. In general, the cost of acquisition and relocation will be higher than other mitigation measures but can completely mitigate risk of any future flood damage. Building small barriers to protect single structures is a lower cost solution, but it may not be able to offer complete protection from large flood events and may impact flood risk on other properties. Where drainage issues are the source of repetitive flooding, drainage improvements can provide flood mitigation benefits to multiple properties. Each of these solutions is discussed in greater detail below.

Acquisition

Property acquisition and/or relocation are complex processes requiring transferring private property to property owned by the local government for open space purposes. Acquisition is a relatively expensive mitigation measure but provides the greatest benefit in the lives and property are protected from flood damage. The major cost for the acquisition method is for purchasing the structure and land. The total estimated cost for acquisition should be based on the following:

- Purchase of structure and land
- Demolition
- Debris removal, including any landfill processing fees
- Grading and stabilizing the property site
- Permits and plan review

Table 2.4 - Advantages and Disadvantages of Acquisition

Advantages	Disadvantages
Permanently removes problem since the structure no longer exists.	Cost may be prohibitive.
Allows a substantially damaged or substantially improved structure to be brought into compliance with the community's floodplain management ordinance or law.	Resistance may be encountered by local communities due to loss of tax base, maintenance of empty lots, and liability for injuries on empty, community- owned lots.
Expands open space and enhances natural and beneficial uses.	
May be fundable under FEMA mitigation grant programs.	

There are 3 criteria that must be met for FEMA to fund an acquisition project:

- The local community must inform the property owners interested in the acquisition program that the community will not use condemnation authority to purchase their property and that the participation in the program is strictly voluntary,
- The subsequent deed to the property to be acquired will be amended such that the landowner will be restricted from receiving any further Federal disaster assistance grants, the property shall remain in open space in perpetuity, and the property will be retained in ownership by a public entity, and
- Any replacement housing or relocated structures will be located outside the 100-year floodplain.

Relocation

Relocation involves lifting and placing a structure on a wheeled vehicle and transporting that structure to a site outside the 100-year floodplain and placed on a new permanent foundation. Like acquisition, this is one of the most effective mitigation measures.

Table 2.5 - Advantages and Disadvantages of Relocation

Advantages	Disadvantages
Removes flood problem since the structure is relocated out of the flood-prone area.	Cost may be prohibitive.
Allows a substantially damaged or substantially improved structure to be brought into compliance with a community's floodplain management ordinance.	Additional costs are likely if the structure must be brought into compliance with current code requirements for plumbing, electrical, and energy systems.
May be fundable under FEMA mitigation grant programs.	

The cost for relocation will vary based on the type of structure and the condition of the structure. It is considerably less expensive to relocate a home that is built on a basement or crawl space as opposed to a structure that is a slab on grade. Additionally, wood sided structures are less expensive to relocate than structures with brick veneer. Items to consider in estimating cost for relocation include the following:

- Site selection and analysis and design of the new location
- Analysis of existing size of structure
- Analysis and preparation of the moving route
- Preparation of the structure prior to the move
- Moving the structure to the new location
- Preparation of the new site
- Construction of the new foundation
- Connection of the structure to the new foundation
- Restoration of the old site

Barriers

A flood protection barrier is usually an earthen levee/berm or a concrete retaining wall. While levees and retaining walls can be large spanning miles along a river, they can also be constructed on a much smaller scale to protect a single home or group of homes.

Table 2.6 - Advantages and Disadvantages of Barriers

Advantages	Disadvantages
Relative cost of mitigation is less expensive than other alternatives.	Property is still located within the floodplain and has potential to be damaged by flood if barrier fails or waters overtop it.
No alterations to the actual structure or foundation are required.	Solution is only practical for flooding depths less than 3 feet.
Homeowners can typically construct their own barriers that will complement the style and functionality of their house and yard.	Barriers cannot be used in areas with soils that have high infiltration rates.

The cost of constructing a barrier will depend on the type of barrier and the size required to provide adequate protection. An earthen berm will generally be less expensive compared to an equivalent concrete barrier primarily due to the cost of the materials. Another consideration is space; an earthen barrier requires a lot of additional width per height of structure compared to a concrete barrier to ensure proper stability.

Key items to consider for barriers:

- There needs to be adequate room on the lot,
- A pump is required to remove water that either falls or seeps onto the protected side of the barrier, and
- Human intervention will be required to sandbag or otherwise close any openings in the barrier during the entire flood event

Floodproofing

Wet floodproofing a structure consists of modifying the uninhabited portions (such as a crawlspace or an unfinished basement) to allow floodwaters to enter and exit. This ensures equal hydrostatic pressure on the interior and exterior of the structure which reduces the likelihood of wall failures and structural damage. Wet floodproofing is practical in only a limited number of situations.

Table 2.7 - Advantages and Disadvantages of Wet Floodproofing

Advantages	Disadvantages
Often less costly than other mitigation measures.	Extensive cleanup may be necessary if the structure becomes wet inside and possibly contaminated by sewage, chemicals and other materials borne by floodwaters.
Allows internal and external hydrostatic pressures to equalize, lessening the loads on walls and floors.	Pumping floodwaters out of a basement too soon after a flood may lead to structural damage.
	Does not minimize the potential damage from a high-velocity flood flow and wave action.

A dry floodproofed structure is made watertight below the level that needs flood protection to prevent floodwaters from entering. Making the structure watertight involves sealing the walls with waterproof coatings, impermeable membranes, or a supplemental layer of masonry or concrete; installing watertight shields over windows and doors; and installing measures to prevent sewer backup.

Table 2.8 - Advantages and Disadvantages of Dry Floodproofing

Advantages	Disadvantages
Often less costly than other retrofitting methods.	Requires human intervention and adequate warning to install protective measures.
Does not require additional land.	Does not minimize the potential damage from high-velocity flood flow and wave action.
May be funded by a FEMA mitigation grant program.	May not be aesthetically pleasing.

Drainage Improvements

Methods of drainage improvements include overflow channels, channel straightening, restrictive crossing replacements, and runoff storage. Modifying the channel attempts to provide a greater carrying capacity for moving floodwaters away from areas where damage occurs. Whenever drainage improvements are considered as a flood mitigation measure, the effects upstream and downstream from the proposed improvements need to be considered.

Table 2.9 - Advantages and Disadvantages of Drainage Improvements

Advantages	Disadvantages
Can increase channel carrying capacity through overflow channels, channel straightening, crossing replacements, or runoff volume storage.	May help one area but create new problems upstream or downstream.
Minor projects may be fundable under FEMA mitigation grant programs.	Channel straightening increases the capacity to accumulate and carry sediment.
May be funded by a FEMA mitigation grant program.	May require property owner cooperation and right-of-way acquisition.

Elevation

Elevating a structure to prevent floodwaters from reaching living areas is an effective and one of the most common mitigation methods. Elevation may also apply to roadways and walkways. The goal of the elevation process is to raise the lowest floor of a structure or roadway/walkway bed to or above the required level of protection.

Table 2.10 - Advantages and Disadvantages of Elevation

Advantages	Disadvantages
Elevating to or above the BFE allows a substantially damaged or substantially improved house to be brought into compliance.	Cost may be prohibitive.
Often reduces flood insurance premiums.	The appearance of the structure and access to it may be adversely affected.
Reduces or eliminates road closures due to overtopping.	May require property owner cooperation and right-of-way acquisition.
May be fundable under FEMA mitigation grant programs.	May require road or walkway closures during construction.

Flood Insurance

Insurance differs from other property protection activities in that it does not mitigate or prevent damage caused by a flood. However, flood insurance does help the owner repair and rebuild their property after a flood, and it can enable the owner to afford incorporating other property protection measures in that process. Insurance offers the advantage of protecting the property, as long as the policy is in force, without requiring human intervention for the measure to work.

Table 2.11 - Advantages and Disadvantages of Insurance

Advantages	Disadvantages
Provides protection outside of what is covered by a homeowners' insurance policy.	Cost may be prohibitive.
Can help to fund other property protection measures after a flood through increased cost of compliance (ICC) coverage.	Policyholders may have trouble understanding policy and filing claims.
Provides protection for both structure and contents.	Does not prevent or mitigate damage
Can be purchased anywhere a community, including outside the high-risk zone.	

STEP 5. Recommendations and Conclusions

Based on the field survey and collection of data, the analysis of existing studies and reports, and the evaluation of various structural and nonstructural mitigation measures, the Town of Hilton Head Island proposes that mitigation measures be implemented for all Repetitive Loss Areas. Table 2.12 examines current mitigation actions within these areas.

Table 2.12 - Current Mitigation Actions

	Mitigation Action
1	Property owners are aware of flooding causes and have been notified through various outreach project identified in the Town's PPI. Some owners have taken specific floodproofing measures at their own expense.
2	The Town has numerous higher regulatory standards in place to protect natural floodplain functions.
3	The Town has a comprehensive drainage system maintenance program that includes a biannual schedule for inspection and maintenance of Town-owned infrastructure. The plan also includes detailed protocols that are implemented in advance of tropical systems.
4	The Town has undertaken numerous capital improvement projects to improve drainage.
5	The Town enforces natural resources protection ordinances to preserve and enhance natural and beneficial floodplain functions.
6	51 repetitive loss properties have been mitigated within the Town. The preferred mitigation method is elevation of structures using mitigation funding or voluntary demolition and replacement of pre-FIRM structures with new elevated structures.

The Town will continue its public education efforts to promote flood insurance and increase awareness of flood preparedness and flood protection measures to include moving valuable items to a higher level and elevating vulnerable equipment such as HVAC units. The Town will also encourage property owners to use floodproofing measures and site-specific drainage improvements to help protect the lower levels of their property. At the same time, the Town will work with property owners, citizens, neighboring communities, the state and other regional and federal agencies to implement capital improvement projects which will help to eliminate flooding in the repetitive loss areas.

Recommendations

Mitigation Action 1 – Flood Insurance Promotions and Flood Awareness

Property owners should obtain and keep a flood insurance policy on their structures (building and contents coverage). The Town will continue, on an annual basis, to target all properties in the repetitive loss areas reminding them of the advantages to maintaining flood insurance through its annual outreach effort. Town staff will continue to conduct annual pre-Hurricane season meetings with each gated community to promote flood awareness and flood preparedness.

Responsibility

The Town's Floodplain Administrator will continue to provide the most relevant up-to-date flood insurance information to all property owners within the repetitive loss areas through annual outreach. The Town's Floodplain Administrator and Emergency Manager will continue to host neighborhood meetings to promote flood awareness and flood preparedness.

Funding

The cost will be paid for from the operating budget through the Planning Department.

Mitigation Action 2 – Property Protection Information

Property owners should not store personal property in crawlspaces since personal property is not covered by a flood insurance policy without contents coverage. The Town will increase its outreach efforts on an annual basis to include information to the outreach materials for the identified repetitive loss areas to include this specific information in outreach materials.

Responsibility

The Town's Floodplain Administrator will provide the most relevant up-to-date information to all property owners within the repetitive loss areas.

Funding

The cost will be paid for from the operating budget through the Planning Department.

Mitigation Action 3 – Floodproofing and Site-Specific Drainage Improvements

When appropriate, property owners should consider wet floodproofing measures such as flood vents for garages to allow flood waters to pass through and minimizing damage to the habitable space. Also, residents and business owners should consider dry floodproofing measures such as flood gates or shields, flood walls, and hydraulic pumps to protect the habitable space.

If the drainage pattern on a property is inadequate, property owners should consider site-specific drainage improvements to include grading around the structure to direct flood waters away from the foundation or installing a rain garden to provide temporary storage of floodwaters.

Responsibility

The Floodplain Administrator and Stormwater Department are available to meet with property owners to provide property protection advice and assistance to property owners who may wish to implement such measures. This service is publicized within the repetitive loss areas through annual outreach.

Funding

The cost will be paid for by individual property owners. Advice and assistance will require staff time.

Mitigation Action 4 – Drainage System Maintenance

Blockages in natural channels and other stormwater conveyance components can cause drainage issues and flooding. If natural channels and drainage features are blocked or filled, they can lose the ability to manage floodwaters, forcing these waters elsewhere where they may cause property damage.

Responsibility

The Town's drainage infrastructure is unique in that a majority of the infrastructure is maintained by other entities to include neighborhood associations, Beaufort County and the South Carolina Department of Transportation (SCDOT). For infrastructure that is maintained by the Town, the Town has implemented a comprehensive drainage system maintenance program that includes a biannual schedule for inspection and maintenance. Furthermore, the Town has worked closely with the neighborhood associations to develop and implement maintenance agreements, such that the neighborhood associations are bound by similar maintenance programs. The Town is currently working with Beaufort County and SCDOT to strengthen their obligation to maintain infrastructure to reduce the risk of flooding for the Town's property owners.

Funding

Drainage system maintenance is funded by the Stormwater Utility Funds. Infrastructure maintained by the neighborhood associations is self-funded through their association dues. Beaufort County and SCDOT have their own means of funding their maintenance programs.

Mitigation Action 5 – Elevate Structures and Equipment

Encourage property owners to elevate their structure and associated inside and outside mechanical equipment above the BFE and install flood resistant materials in crawlspaces.

Responsibility

The Town's Floodplain Administrator will promote effective flood protection measures and provide advice and assistance to property owners who may wish to implement such measures in an on-going program.

Funding

The cost will be paid for by individual property owners. Advice and assistance will require staff time.

Conclusions

This analysis is intended to serve as a guide and provide resources available to property owners interested in protecting their property against future flood losses. Based on the field survey and data collection, the analysis of existing studies and reports and the evaluation of various structural and non-structural mitigation measures, the Town of Hilton Head Island will continue educate property owners about appropriate mitigation measures determined to be beneficial for the Repetitive Loss Areas.

This Repetitive Loss Area Analysis will be evaluated on an annual basis, and more thoroughly reexamined prior to a Community Rating System verification visit. The annual evaluation will consist of an analysis of the progress on recommended actions and to what extent mitigation or building mitigation activities have occurred. The reanalysis will occur prior to a CRS cycle visit and entail a thorough reanalysis and survey of conditions in each Repetitive Loss Area.

Appendix A – Building Survey Data

Note: In accordance with the Privacy Act of 1974, Appendix C will not be shared with the general public.