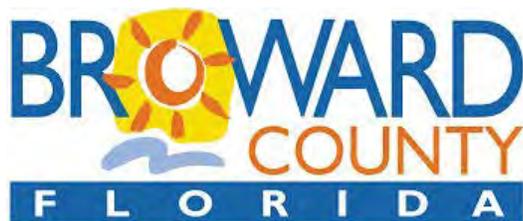


Funded Through: DEP AGREEMENT NO. CM238

Working Towards Resilient Coastal Communities

City of Fort Lauderdale **Vulnerability to Sea Level Rise Assessment Report**

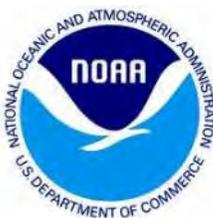


Prepared on: June 14

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City of Fort Lauderdale Vulnerability to Sea Level Rise Assessment Report for CM238

Working Towards Resilient Coastal Communities



This report was funded in part, through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program, by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award No. # *NA11NOS4190073*. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of their subagencies.

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Report Summary

The City of Fort Lauderdale Vulnerability Assessment

Introduction

In the past century, sea level rise in South Florida rose 8-10 inches. In the future, the rate of sea level rise is expected to accelerate due to processes associated with global climate change. Broward County is highly vulnerable to sea level rise (SLR) due to its low lying topography. As a result, inundation, episodic flooding, drainage issues in low-lying areas and saltwater intrusions are significant threats. This document contains the vulnerability assessment of major municipal infrastructure in the City of Fort Lauderdale at one and two foot SLR scenarios using a regional inundation digital elevation model (DEM) which incorporates the most current LiDAR elevation data. Vulnerable areas are displayed by a grid with a 50 foot cell size, categorized as “possible” and “more likely”:

<p style="text-align: center;">LEGEND</p> <p> Possible</p> <p> More Likely</p>	<p>The individual colors are used to describe the uncertainty associated with the variability of the tidal data measurements and LiDAR elevation measurements. The purple areas have a 75-100% certainty of identifying elevations below the high tide and therefore are “More likely” to be vulnerable. Orange areas have a 25-74% certainty of being at elevations below the high tide and represent areas of “Possible” vulnerability.</p>
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Municipal Infrastructure Assessments

Mapping of different sea level rise scenarios can help to identify areas at potential risk and aid in planning for a sustainable community. This Geographic Information Systems (GIS) based study specifically assessed the following municipal infrastructure for the potential impacts of sea level rise:

1. Airports
2. Bridges
3. City Arterial Roads
4. City Hall
5. City Parks
6. Community Redevelopment Areas (CRA)
7. County Parks
8. Evacuation Routes
9. Fire Rescue Stations
10. Hospitals
11. Law Enforcement Assets
12. Schools
13. Water Treatment

Aspects of Specific Interest in the City of Fort Lauderdale

14. WAVE Streetcar

15. Regional Activity Centers (RAC)

This work was funded, in part, through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program.

Municipal Scale Inundation Maps

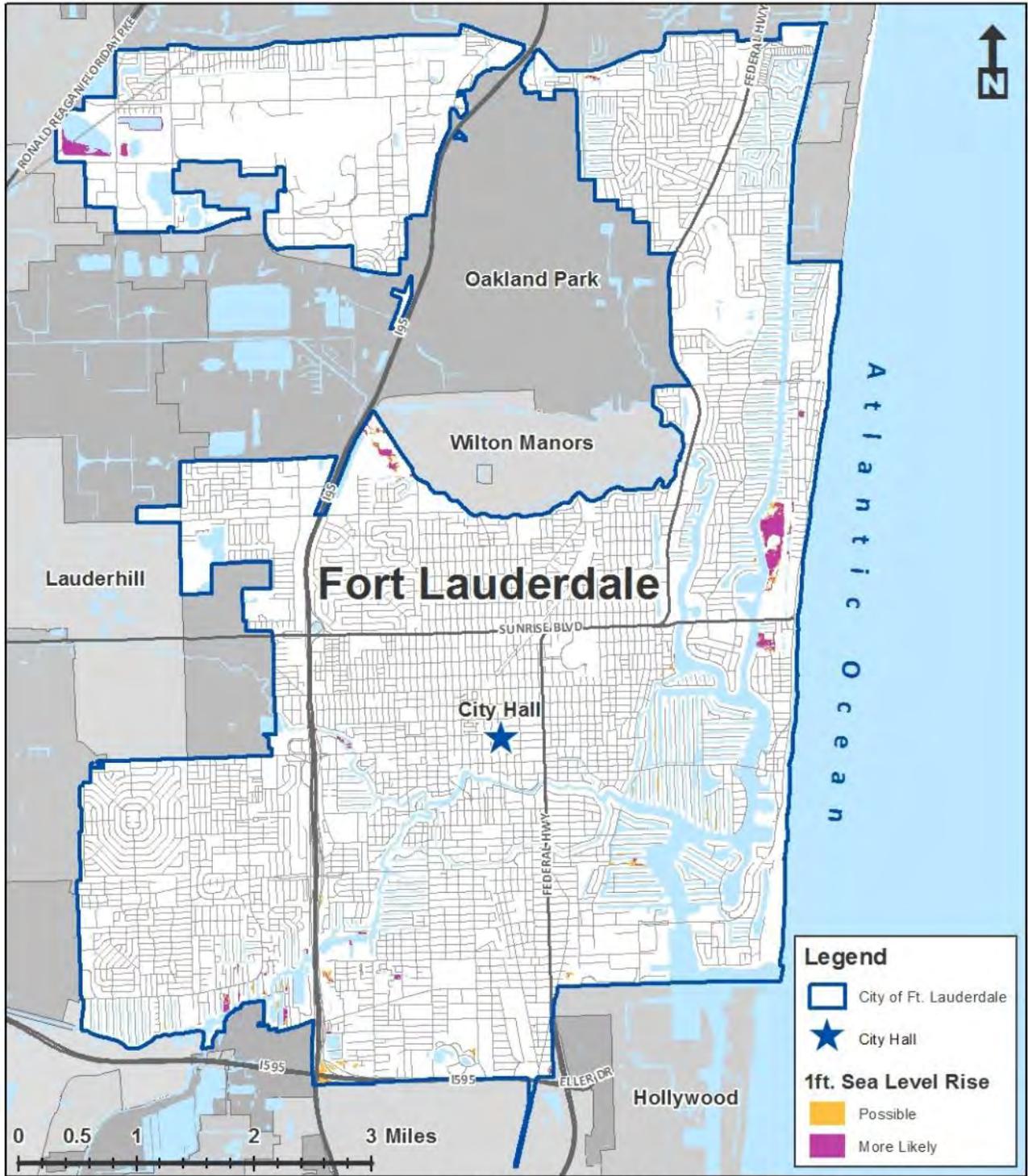
Municipal scale inundation maps provide an at-a-glance overview of areas within the Fort Lauderdale Municipal boundary that are low lying and likely to be vulnerable to flooding associated with sea level rise. The maps on the following two pages show Fort Lauderdale overlaid with the inundation grid for a one and two foot SLR scenario. These map’s primary purpose is to aid in the assessment of vulnerabilities to sea level rise. Note that areas near tidally-influenced water bodies are most vulnerable.

The following table summarized the area of land (by Acre) affected at both the one and two foot scenarios, as shown in the municipal scale inundation maps. The table breaks down the vulnerable acres for each scenario into “more likely,” “possible,” and total. Additionally, a percentage of the total area of the city that is vulnerable is calculated.

City of Fort Lauderdale	Total Acreage	Acreage Vulnerable at One (1) Foot Scenario		Total Acreage Vulnerable at One (1) Foot Scenario	Acreage Vulnerable at Two (2) Feet Scenario		Total Acreage Vulnerable at Two (2) Feet Scenario
		More Likely	Possible		More Likely	Possible	
	23,195 acres	111.2 acres	54.89 acres	166 acres	315.63 acres	300.33 acres	616 acres
		0%	0%	1%	1%	1%	3%

Municipal Scale Inundation Map

One Foot Sea Level Rise



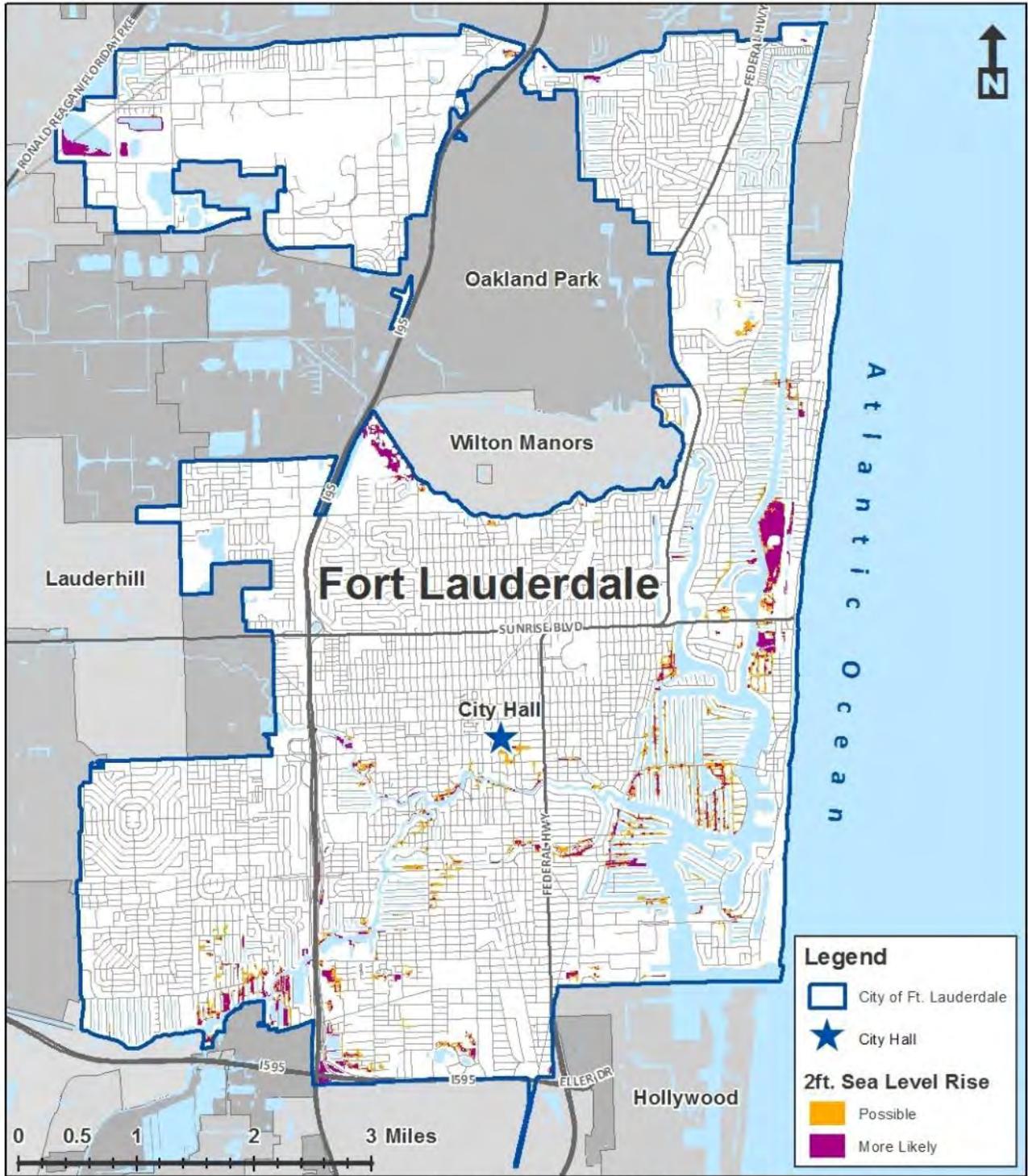
This map is for conceptual purposes only and should not be used for legal boundary determinations.

BROWARD COUNTY FLORIDA
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/12/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Municipal Scale Inundation Map

Two Foot Sea Level Rise



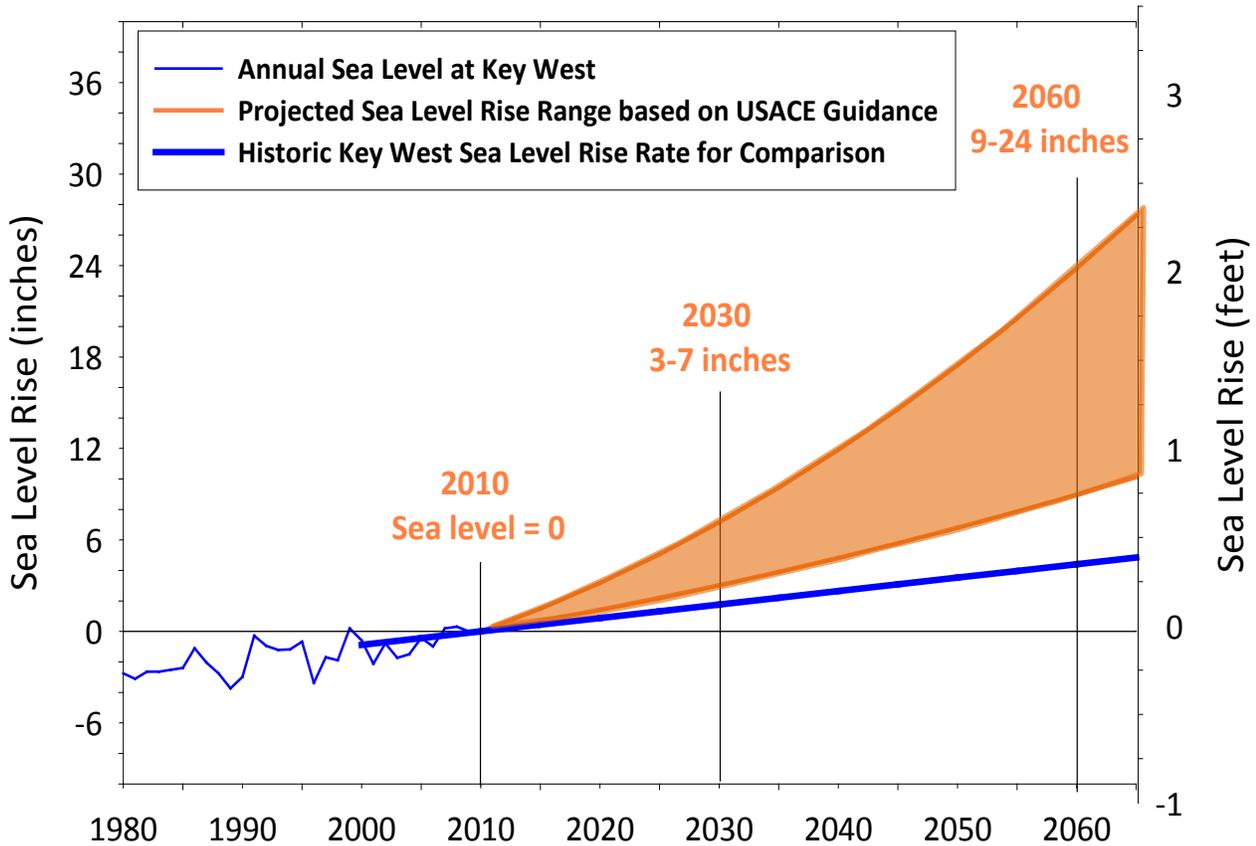
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 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
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Unified Sea Level Rise Projection

The Southeast Florida Regional Climate Change Compact, collaboration among Monroe, Miami-Dade, Broward and Palm Beach Counties, convened a group of scientists and local experts to develop the Unified Southeast Florida Sea Level Rise Projection. This projection allows us to assign timeframes to the given sea level rise scenarios with a one foot sea level rise projected to occur between 2040-2070 and a two foot rise likely to occur between 2060 – 2115.



Unified Southeast Florida Sea Level Rise Projection for Regional Planning Purposes - This projection uses historic tidal information from Key West and was calculated by Kristopher Esterson from the United States Army Corps of Engineers using USACE Guidance (USACE 2009) intermediate and high curves to represent the lower and upper bound for projected sea level rise in Southeast Florida. Sea level measured in Key West over the past several decades is shown. The rate of sea level rise from Key West over the period of 1913 to 1999 is extrapolated to show how the historic rate compares to projected rates.

Methods

Municipal infrastructure (fire rescue stations, schools, roads, etc.) was overlaid with the SLR inundation grid to review which infrastructure may be located at or below projected SLR at a one (1) or two (2) foot scenario. To summarize parcel acreage and the percent of area which may be vulnerable at a given SLR scenario, a python script was created using the ArcGIS intersect tool. Each location was reviewed visually for confirmation.

* This report uses data from a GIS analysis performed in 2012 by David Damian, Natural Resources Planning and Management – Energy and Sustainability Program, using inundation maps developed in collaboration with the Southeast Florida Regional Climate Change Compact with vulnerability methods and oversight by the GIS Section of the Planning and Redevelopment Division. The information contained in the original analysis was modified to include only Fort Lauderdale in its scope. Some additional analysis following these methods was performed by Hannes Ziegler Natural Resources Planning and Management – Coastal Management Program Coastal Partnership Initiative.

Results

The following findings pertain to the vulnerability assessments performed for each of the City of Fort Lauderdale municipal infrastructures listed. Detailed maps and tables follow.

1. Airports:
No airports in the City of Fort Lauderdale showed vulnerability to sea level rise at the one and two foot scenarios.
2. Bridges:
This graphic provides the location of all 117 bridges located in the City of Fort Lauderdale overlaid by the inundation grid, and a focused view of the area in and around Downtown Fort Lauderdale. The idea is to provide an at-a-glance overview of the vulnerability of bridges with the understanding that most bridges are located on tidally-influenced water bodies. Sea level will reduce the clearance under these bridges thereby reducing the number and size of craft that can pass under them.
3. City Arterial Roads:
A total of nine (9) segments of arterial roads maintained by the City of Fort Lauderdale were found to be potentially vulnerable to sea level rise. Only one segment showed “possible” vulnerability at the one foot scenario, amounting to 12% of the total length of the segment. Nine segments showed vulnerabilities at the two foot scenario.
4. City Hall:
Streets within a 1000-foot radius of the Fort Lauderdale City Hall may become affected by sea level rise starting at a two foot scenario.
5. City Parks:
A total of 23 city-owned parks in the City of Fort Lauderdale were found to be potentially vulnerable to sea level rise. Five parks were found to be vulnerable at the one foot scenario, and 23 at the two foot scenario. Note that this number (23) treats Millis Pond Park and the Millis Pond addition, as well as the multiple parcels of Riverwalk, as separate entities.

6. Community Redevelopment Areas (CRA)
The Fort Lauderdale NW Progresso Flagler Heights CRA identifies a low lying area near the North Fork of New River, specifically in the area of North Fork Riverfront Park and the North Fork School Park. This area is affected at both the one and two foot SLR scenarios. For a closer view of the affected area, see the maps for the impacts to city parks.
7. County Parks:
No county parks in the City of Fort Lauderdale showed potential vulnerability to sea level rise at the one or two foot scenarios.
8. Evacuation Routes:
Included is a map of vulnerable Evacuation Routes. The map enables quick assessment of where routes lie below projected sea levels. Six roadways were determined to be vulnerable.
9. Fire Rescue Stations:
Of the 12 fire rescue stations maintained by the City of Fort Lauderdale, only two were found to be at risk by sea level rise. It is of note that Broward County Fire Rescue Station 32, which is not maintained by the City of Fort Lauderdale but is within the municipal boundary, may have street access issues beginning during the one foot sea level rise scenario. This report focuses only on municipal assets.
10. Hospitals:
No hospital building footprints in the City of Fort Lauderdale showed potential vulnerability to sea level rise at the one and two foot scenarios.
11. Law Enforcement Assets:
One law enforcement asset maintained by the City of Fort Lauderdale, the Fort Lauderdale Police Station, may begin to have accessibility issues on streets South-West of the station during the two foot scenario. Also notable, the Main Jail and Courthouse - which are not maintained by the City of Fort Lauderdale but are within municipal boundaries - also showed vulnerability due to sea level rise during the two foot scenario. This report focuses only on municipally maintained assets.
12. Schools:
No school building footprints in the City of Fort Lauderdale showed potential vulnerability to sea level rise at the one and two foot scenarios. Some school parcels were potentially vulnerable to sea level rise at one and two foot scenarios, however, this report only assessed building footprint.
13. Water Treatment:
No water treatment or wastewater treatment plants in the City of Fort Lauderdale showed potential vulnerability to sea level rise at the one or two foot scenarios.

Aspects of Specific Interest in the City of Fort Lauderdale

14. WAVE Streetcar:

This map shows the planned WAVE streetcar guideway overlaid with a two foot sea level rise projection to show which areas may be at or below sea level. The WAVE segment along SE 2nd St. may have areas below projected sea levels at the two foot scenario. At the one foot scenario, no segments are below projected sea levels.

15. Regional Activity Centers (RAC)

RACs in the City of Fort Lauderdale are marginally affected at a one foot sea level rise scenario. All RACs have area that lie below sea level rise at a two foot scenario.

Conclusion

The information contained in this report is intended to be used for planning purposes to begin to identify and address municipal infrastructure at risk. Understanding that a one foot rise could occur in the next 30 years, adaptation strategies should be develop for locations identified as vulnerable in the first scenario. Fort Lauderdale municipal authorities should begin the development of policies to address these risks and institutionalize the consideration of climate issues for adaptation strategies.

Definitions

SLR: Sea Level Rise

- “Possible”: areas that have a 75-100% certainty of identifying elevations below the high tide and therefore are “More likely” to be vulnerable
- “More Likely”: Orange areas have a 25-74% certainty of being at elevations below the high tide and represent areas of “Possible” vulnerability.

PPA: Priority Planning Areas – Identifies areas influenced by tidal water bodies at increased risk of inundation under a 2 foot sea level rise scenario, projected to occur as soon as 2060.

LiDAR: A remote sensing technology whereby elevation is measured by illuminating a target with a laser and analyzing the reflected light.

DEM: Digital Elevation Model – A digital model or 3D representation of a terrain’s surface using topographic information.

Arterial Roads: A major or main road, but not a highway.

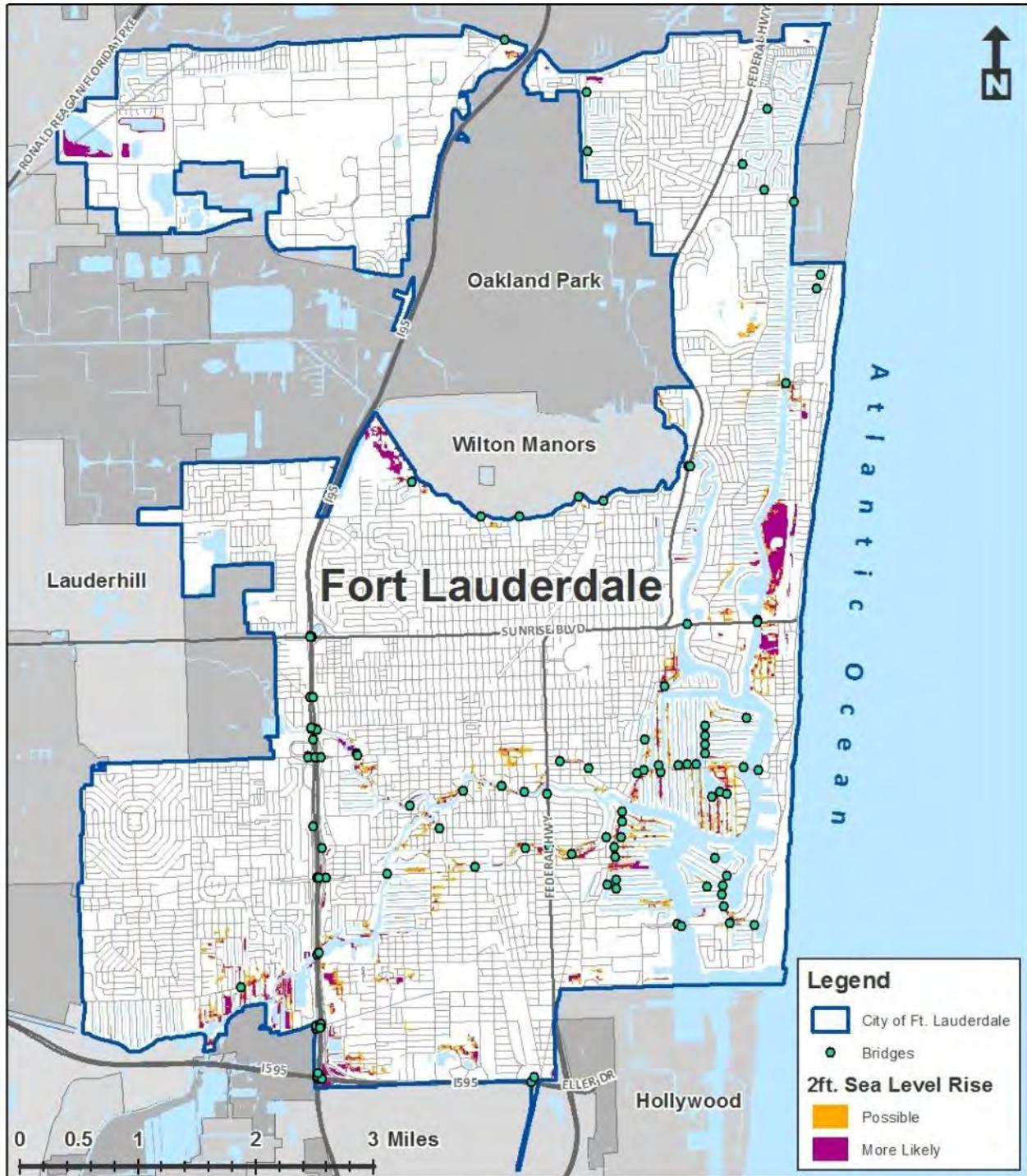
Geographic Information Systems (GIS): A system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data.

ArcGIS: Software for working with maps and geographic information.

Python Script: A widely-used general purpose programming language. It is used in ArcGIS to automate processes whereby new geographic information is created from existing data.

Bridges

Vulnerability Assessment

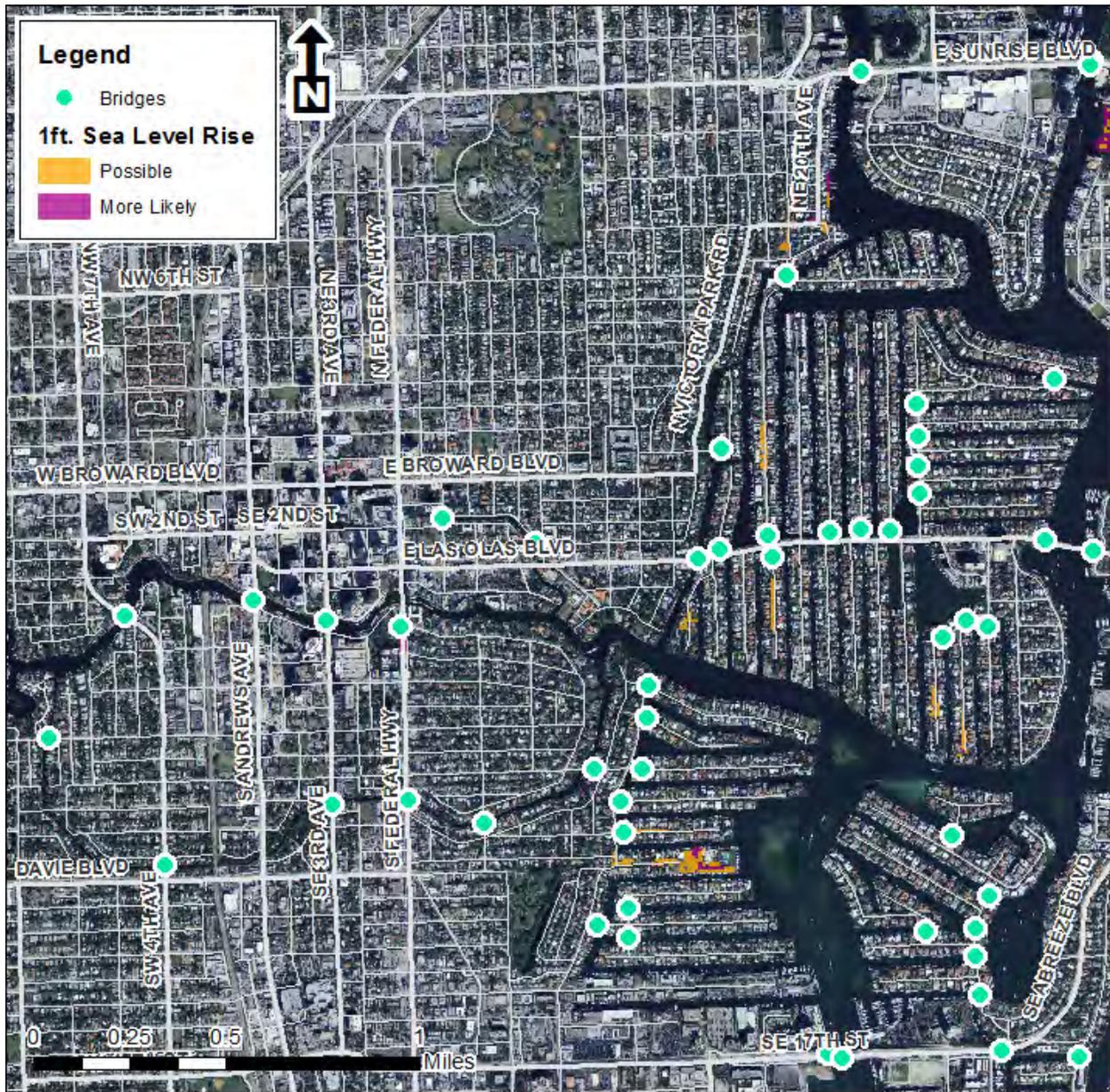


This map is for conceptual purposes only and should not be used for legal boundary determinations.

BROWARD COUNTY
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/12/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Bridges in Downtown Fort Lauderdale and Vicinity One Foot Sea Level Rise Scenario



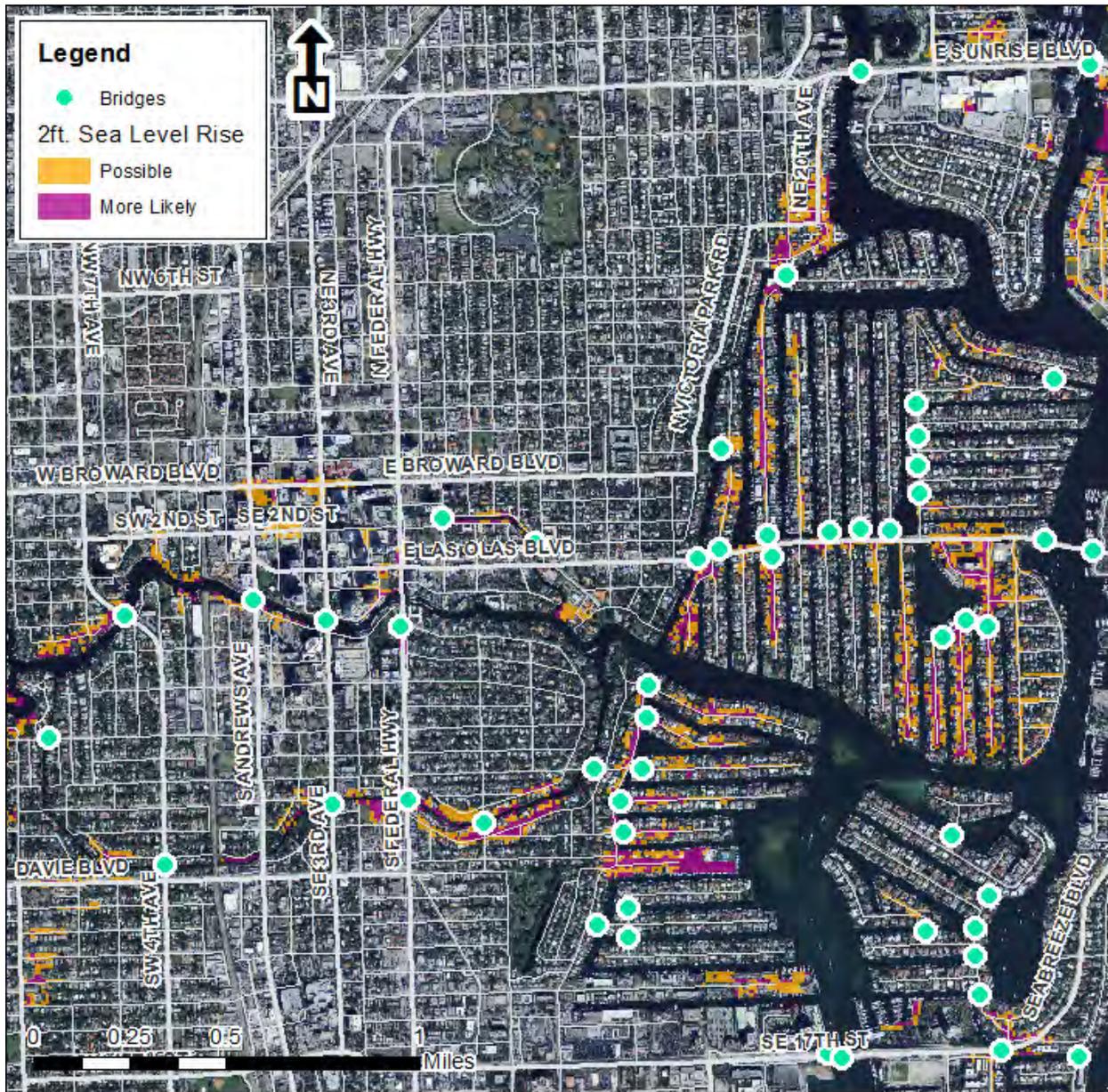
This map is for conceptual purposes only and should not be used for legal boundary determinations.

BROWARD COUNTY
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/28/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map provides a closer look at bridges located in and around Downtown Fort Lauderdale during a one foot sea level rise scenario. Only a few areas may be vulnerable to sea level rise in this scenario, this changes with a two foot scenario (shown on the next page).

Bridges in Downtown Fort Lauderdale and Vicinity Two Foot Sea Level Rise Scenario



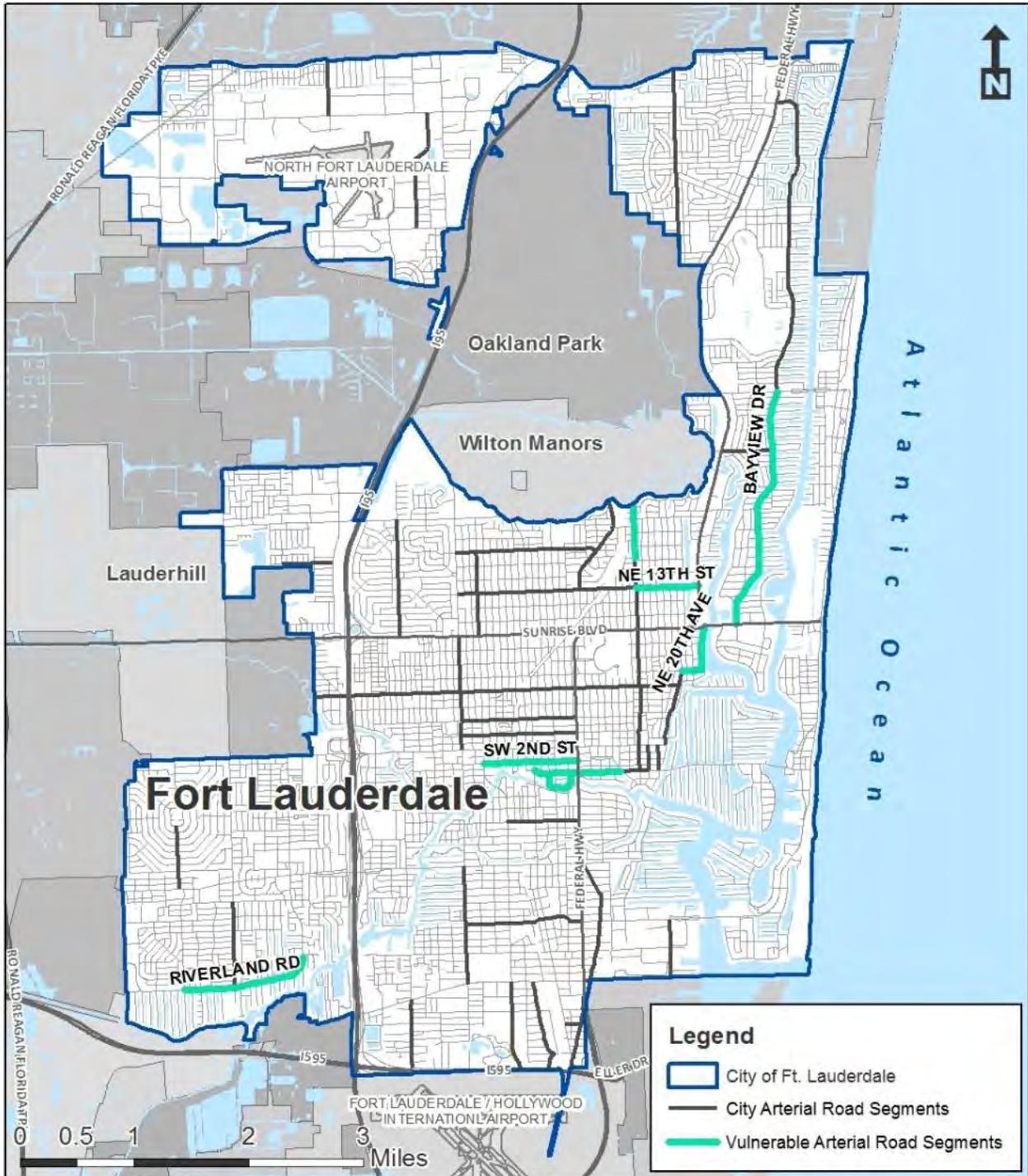
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BROWARD COUNTY
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/28/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map provides a closer look at the bridges located in and around Downtown Fort Lauderdale during a two foot sea level rise scenario. Streets near many bridges in this area may be below sea level rise in this scenario, and are therefore threatened with inundation. Bridge clearance may become a concern for boaters.

City Arterial Roads Vulnerability Assessment



This map is for conceptual purposes only and should not be used for legal boundary determinations.

BROWARD COUNTY
FLORIDA
Prepared By: H. Ziegler
Environmental Protection and Growth Management Department
Natural Resources Planning and Management Division

Date: 11/20/2013
DEP Agreement No. CM238 DEP 55-236(08/11)

Table of Vulnerable City Arterial Roads

The following table lists all nine vulnerable segments of arterial roads maintained by the City of Fort Lauderdale. For each segment, the table provides the miles of vulnerable roadway and the total length with vulnerability expressed in percent for each the one and two foot sea level rise (SLR) scenario.

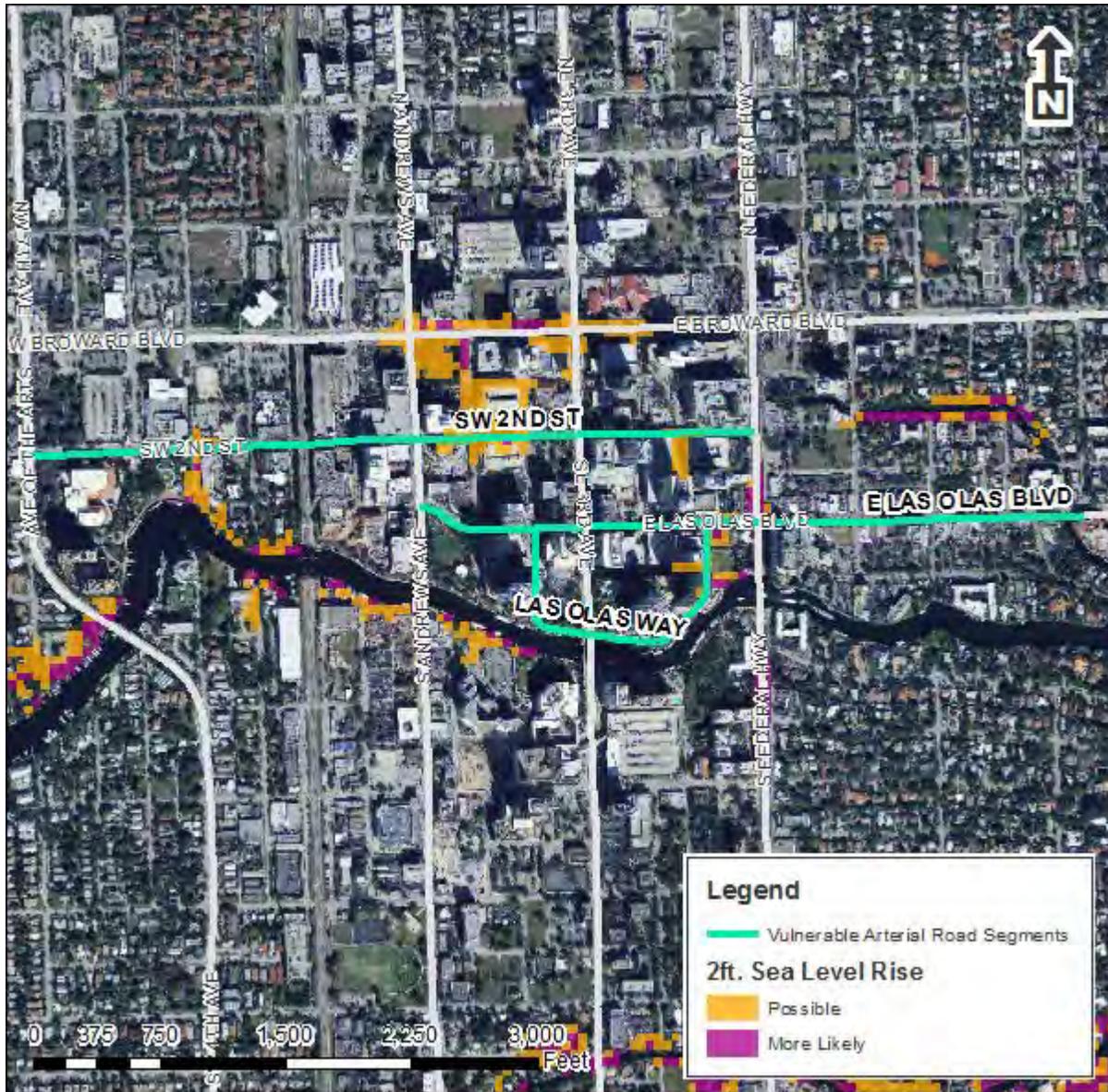
Riverland Rd, from SW 35 Ave to SW			Total Miles
			1.15
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.09	0.05	13%
SW 2 St, from SW 11 Ave to US			Total Miles
			0.82
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.19	0.00	23%
Las Olas Blvd/Alt A1A, from Andrews Ave to US 1			Total Miles
			0.38
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.03	0.00	7%
Las Olas Blvd/Alt A1A, from US 1 to Himmarshee Canal			Total Miles
			0.37
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.03	0.00	8%
N. New River Dr, from SE 2 Ave to SE 5 Ave			Total Miles
			0.41
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.07	0.05	28%

NE 20 Ave, from Victoria Park Rd to Sunrise Blvd			Total Miles
			0.57
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.07	0	12%
2 Foot	0.09	0.23	57%
Bayview Drive, Sunrise Blvd to Oakland Park Blvd			Total Miles
			2.16
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.32	0.00	15%
NE 15 Ave/NE 14 Ave, from NE 15 Ave to Wilton Manors CL			Total Miles
			0.46
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.02	0.00	4%
NE/NW 13 St, from NE 15 Ave to US 1			Total Miles
			0.54
SLR Scenario	Possible (Miles)	More Likely (Miles)	Percent Total
1 Foot	0.00	0.00	0%
2 Foot	0.02	0.00	3%

City-Owned Arterial Roads in Downtown Fort Lauderdale

Two Foot Sea Level Rise Scenario

Downtown Fort Lauderdale



This map is for conceptual purposes only and should not be used for legal boundary determinations.



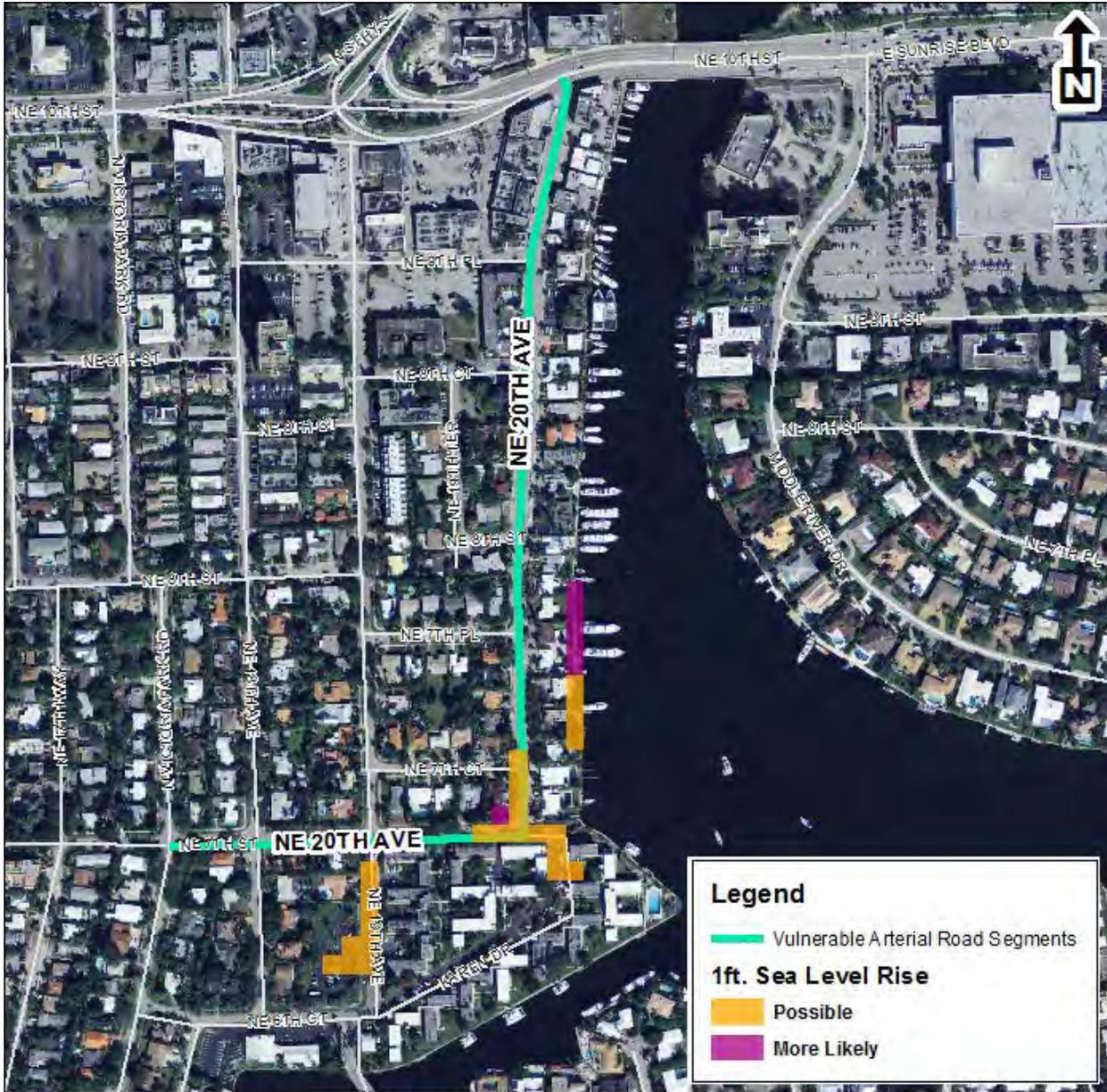
Prepared By: H. Ziegler
Environmental Protection and Growth Management Department
Natural Resources Planning and Management Division

Date: 10/23/2013

DEP Agreement No. CM 238 DEP 55-236(08/11)

Several segments of arterial roads maintained by the City of Fort Lauderdale are vulnerable at the two foot sea level rise scenario. These include SW 2nd Street from Ave of the Arts to N Federal Hwy, E Las Olas Blvd from S Andrews Ave to SE 12th Ave, and Las Olas Way.

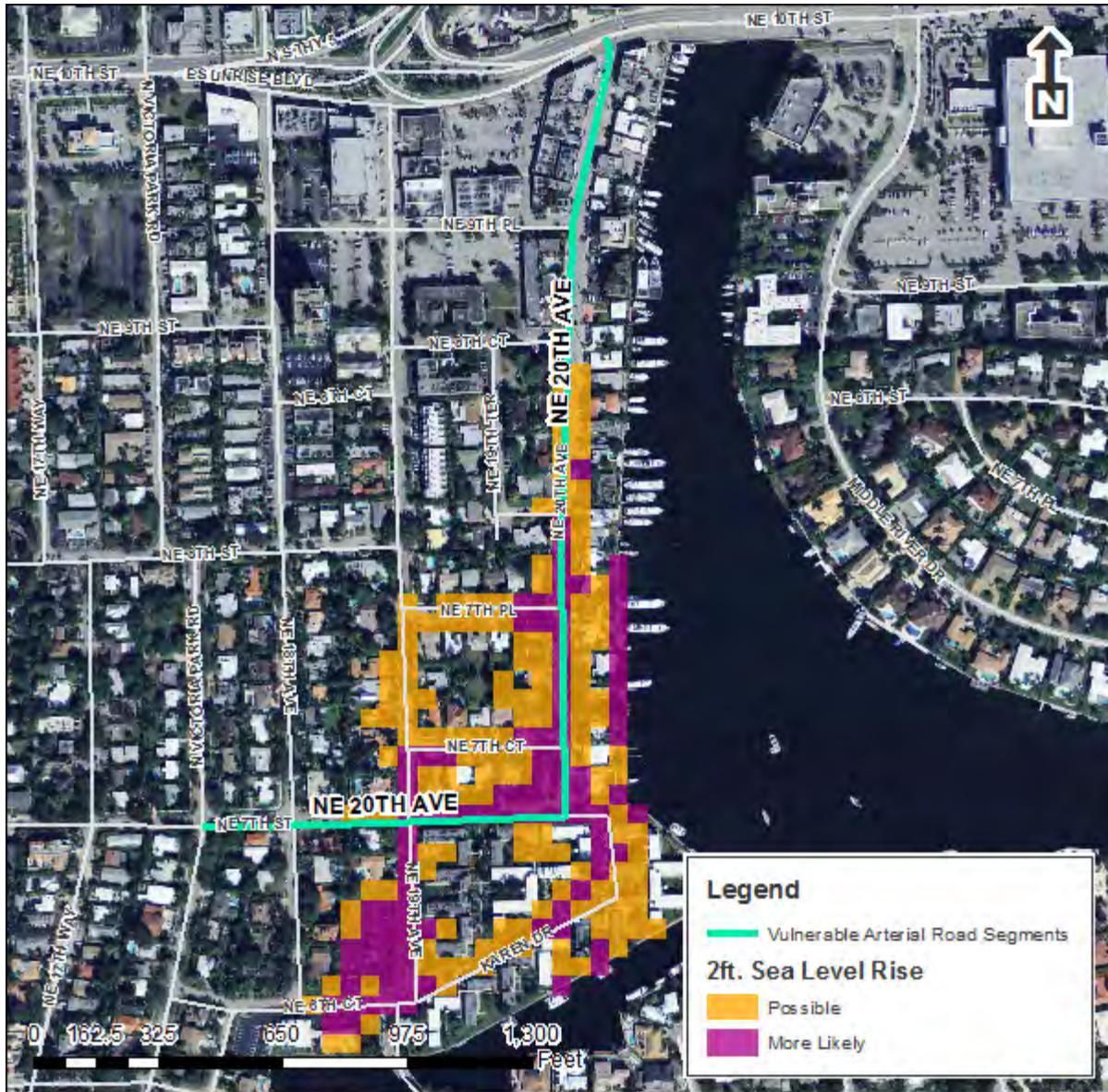
City-Owned Arterial Roads
One Foot Sea Level Rise Scenario
The corner of NE 7th St. and NE 2th Ave



This map is for conceptual purposes only and should not be used for legal boundary determinations.

This map shows the corner of NE 7th St. and NE 20th Ave at a one foot SLR scenario. About 0.7 miles along this segment show “possible” vulnerability to sea level rise in this scenario, affecting a total of 12% of the total length of the road segment.

City-Owned Arterial Roads
Two Foot Sea Level Rise Scenario
The corner of NE 7th St. and NE 2th Ave



This map is for conceptual purposes only and should not be used for legal boundary determinations.



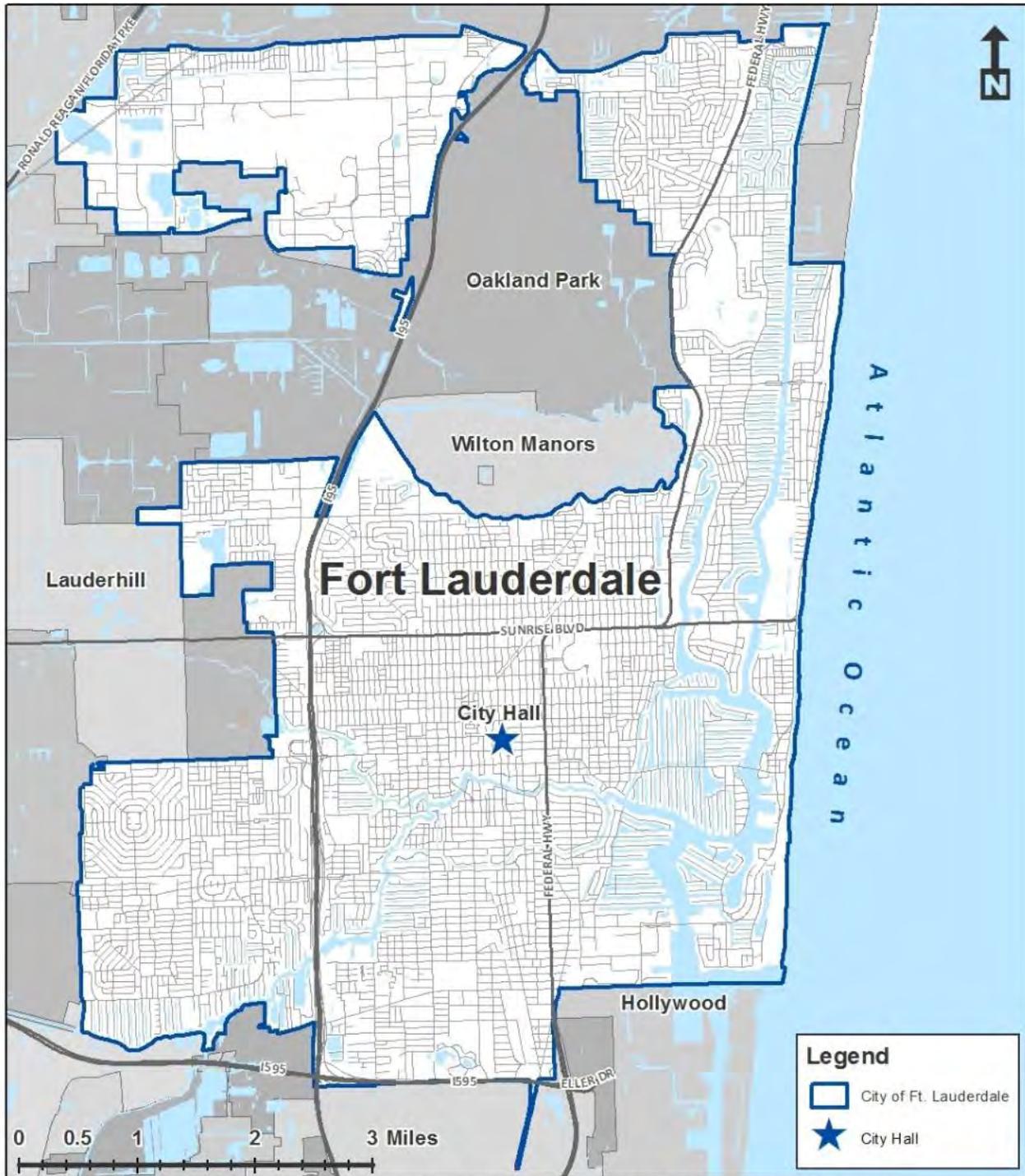
Prepared By: H. Diegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/23/2013
 DEP Agreement No. CM 238 DEP 55-236(08/11)

This map shows the corner of NE 7th St. and NE 20th Ave at a two foot SLR scenario. Nearly a quarter mile (0.23 miles) is “more likely” vulnerable to SLR at the two foot scenario. Another 0.09 miles show “possible” vulnerability, making a total of 57% of the road segment vulnerable to SLR.

City Hall

Vulnerability Assessment



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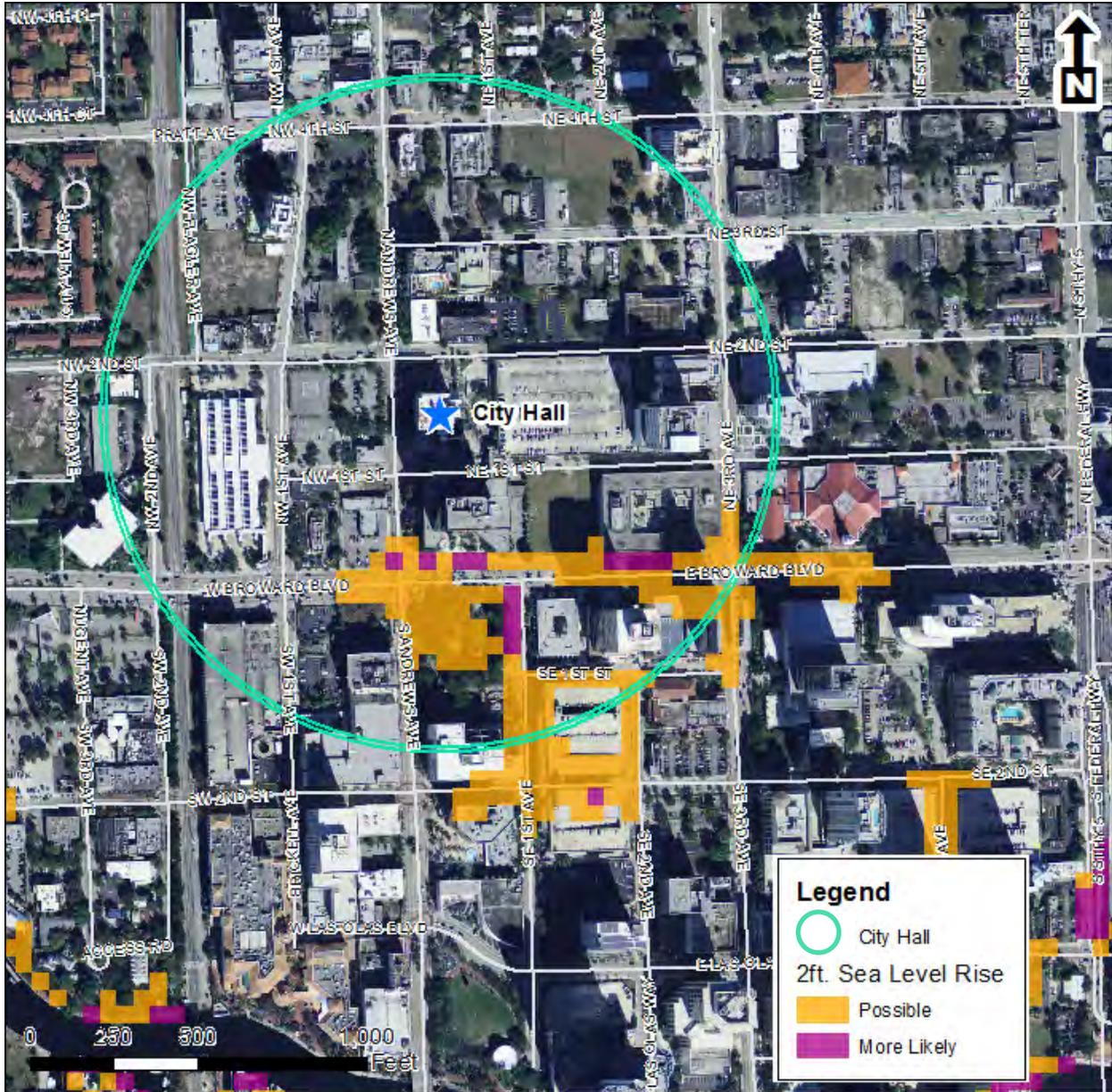
BROWARD COUNTY
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/12/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Fort Lauderdale City Hall

Two Foot Sea Level Rise Scenario

100 North Andrews Avenue, Fort Lauderdale, FL 33301



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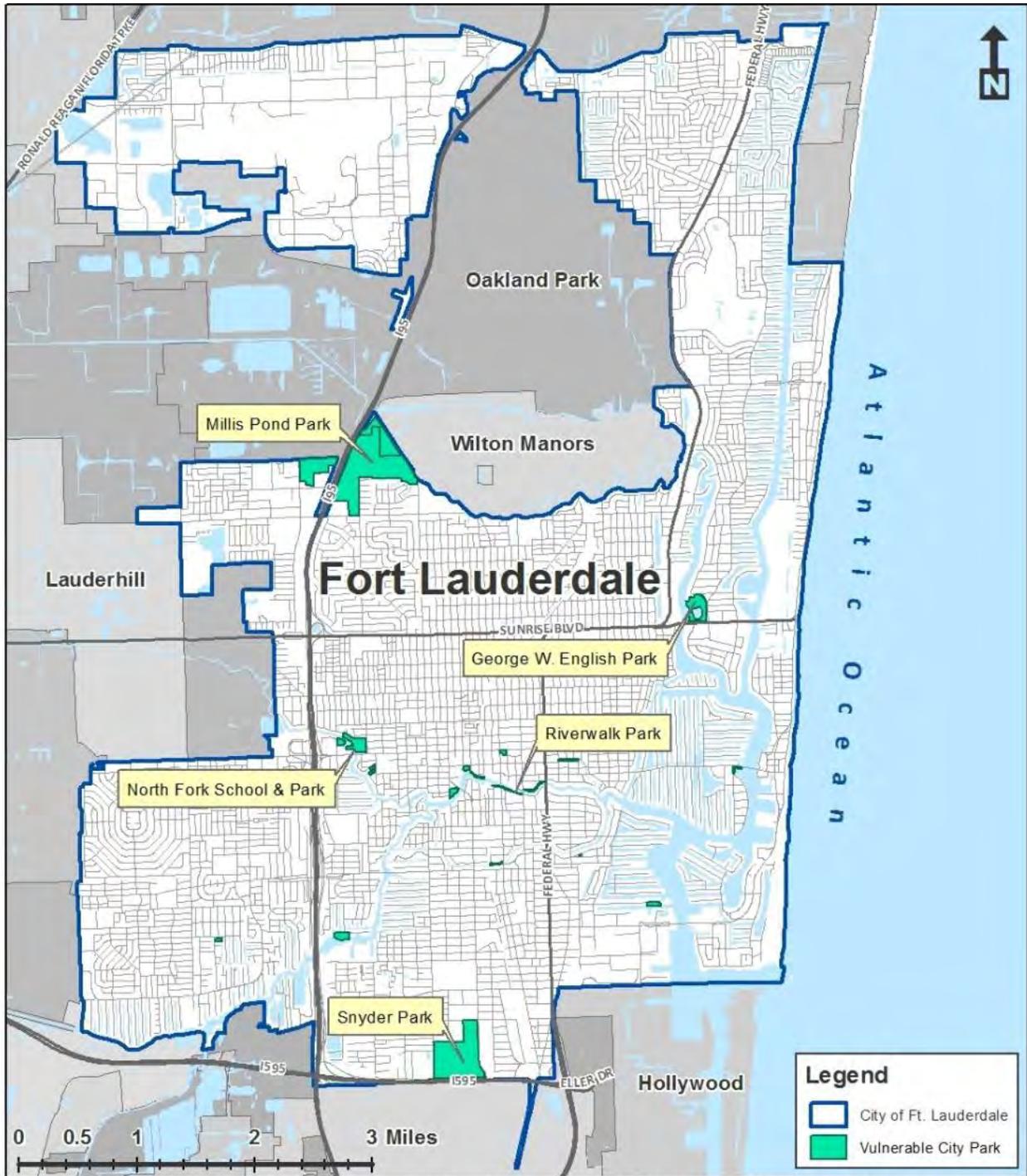
BROWARD COUNTY Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/29/2013
 DEP Agreement No. CM238 DEP 55-236 (08/11)

This map shows the streets around the Fort Lauderdale City Hall affected by a two foot sea level rise scenario within a 1000-foot radius. Accessibility to the city hall from the South may be considerably reduced as Broward Blvd. shows “possible” and “more likely” inundation. No streets are affected at a one foot scenario. The building footprint and parcel of the Fort Lauderdale City Hall show no vulnerability to sea level rise up to a two foot scenario.

City Parks

Vulnerability Assessment



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Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/12/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Table of Vulnerable City Parks

The following table lists all 23 city-owned parks with vulnerabilities. Each park was assessed for a one foot and a two foot sea level rise (SLR) scenario. For each park the table provides the acreage of vulnerable area, and the total area of the park with vulnerability expressed in percent.

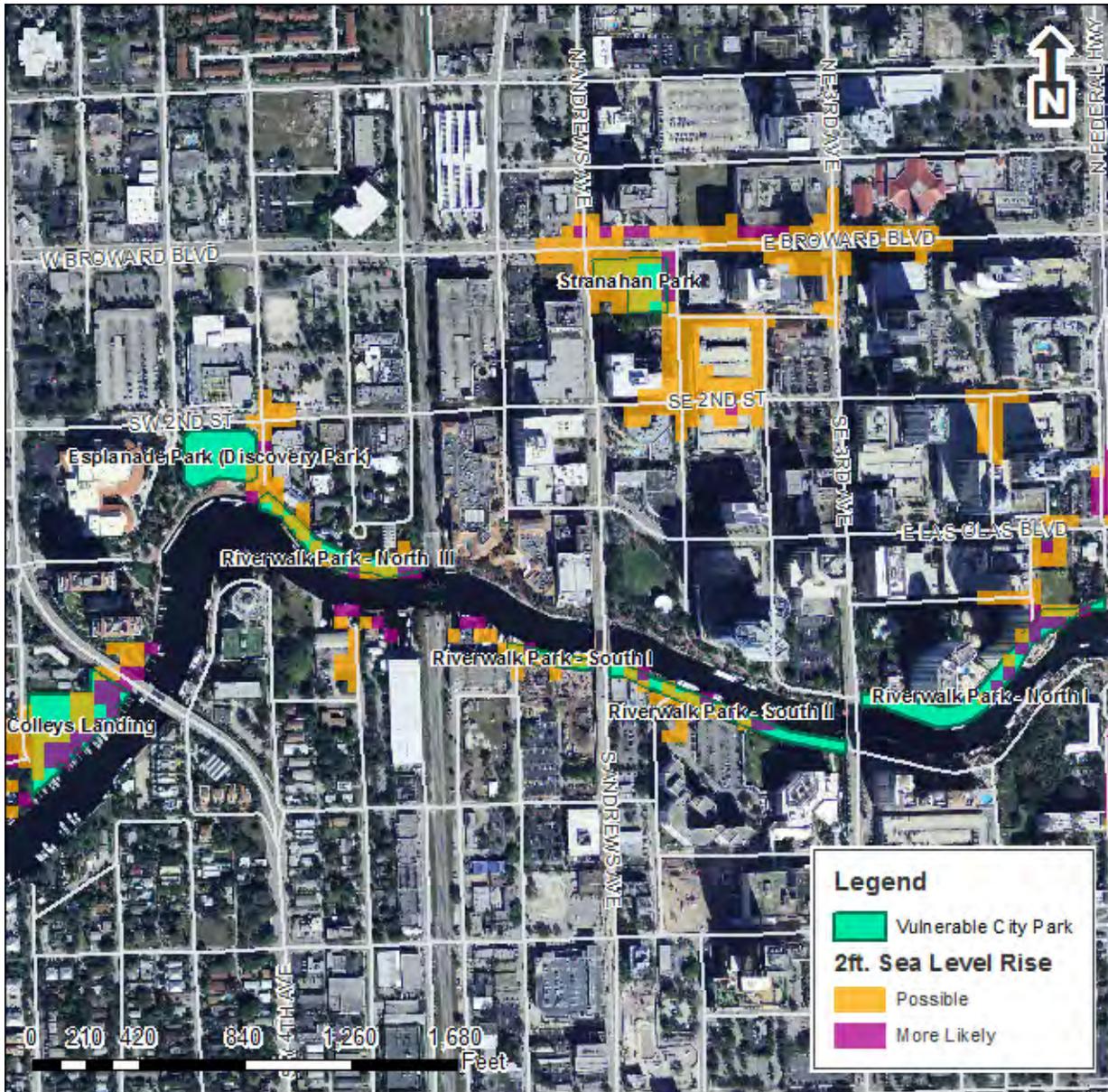
15th St Boat Basin			Total Acreage
			2.03
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.69	0.22	45%
Ann Herman Park			Total Acreage
			0.95
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.51	0.22	77%
Cooley's Landing			Total Acreage
			2.14
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.75	0.66	66%
Denison Property Site 125			Total Acreage
			4.51
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.11	0.52	14%
Esplanade Park (Discovery Park)			Total Acreage
			1.31
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.10	0.00	7%

George W English Park / Boat Ramps			Total Acreage
			15.38
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.08	0.00	1%
Hector Park			Total Acreage
			0.11
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.00	0.11	100%
Himmarsee Park			Total Acreage
			1.22
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.21	0.52	60%
Merle Fogg Park			Total Acreage
			1.04
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.14	0.00	13%
Mills Pond Park (Includes Addition)			Total Acreage
			156.25
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	6.81	9.25	10%
2 Feet	4.87	22.91	18%
North Fork Riverfront Park			Total Acreage
			1.96
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent (Combined)
1 Foot	0.34	0.73	55%
2 Feet	0.21	1.13	68%

North Fork School / Park			Total Acreage
			11.23
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.15	0.31	4%
2 Feet	0.67	0.84	13%
Osswald / Rock Island Park			Total Acreage
			28.30
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.02	0.00	1%
Riverwalk Park - North I			Total Acreage
			1.64
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.25	0.38	38%
Riverwalk Park - North III			Total Acreage
			0.90
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.50	0.07	64%
Riverwalk Park - South I			Total Acreage
			0.37
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.30	0.04	91%
Riverwalk Park - South II			Total Acreage
			0.97
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.32	0.18	51%

Sailboat Bend Preserve			Total Acreage
			0.75
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.28	0.36	85%
Snyder Park			Total Acreage
			90.91
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.98	0.17	1%
2 Feet	6.66	5.11	13%
Stranahan Park			Total Acreage
			1.09
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.83	0.04	80%
Tarpon River Park			Total Acreage
			0.68
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.06	0.39	66%
Townsend Park			Total Acreage
			1.07
SLR Scenario	Possible (Acres)	Likely (Acres)	Percent of Total Acreage
1 Foot	0.00	0.00	0%
2 Feet	0.03	0.11	13%

Riverwalk, Esplanade Park, Stranahan Park, and Cooley's Landing
Two Foot Sea Level Rise Scenario
Downtown Fort Lauderdale



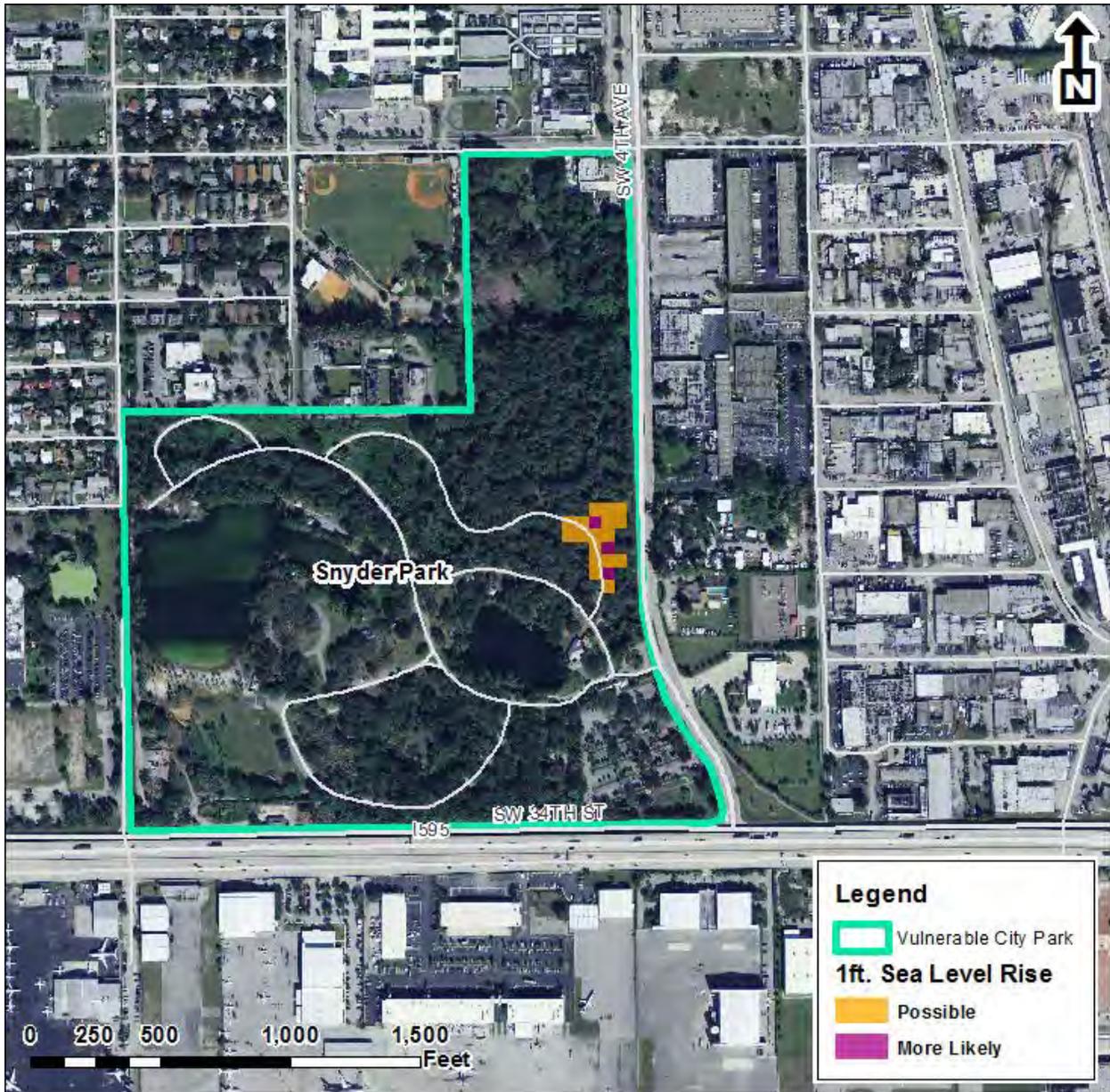
This map is for conceptual purposes only and should not be used for legal boundary determinations.

Broward County
 Florida
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/23/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Areas near New River become vulnerable at a two (2) foot SLR scenario, threatening Riverwalk, Cooley's Landing, and Esplanade Park. Areas further inland in downtown Fort Lauderdale also become vulnerable, including Stranahan Park. A high percentage of land in parks within this area may be below sea level at a two foot scenario. No parks in this area show potential vulnerability at a one foot scenario.

Snyder Park
One Foot Sea Level Rise Scenario
 3299 SW 4th Ave, Fort Lauderdale FL 33315



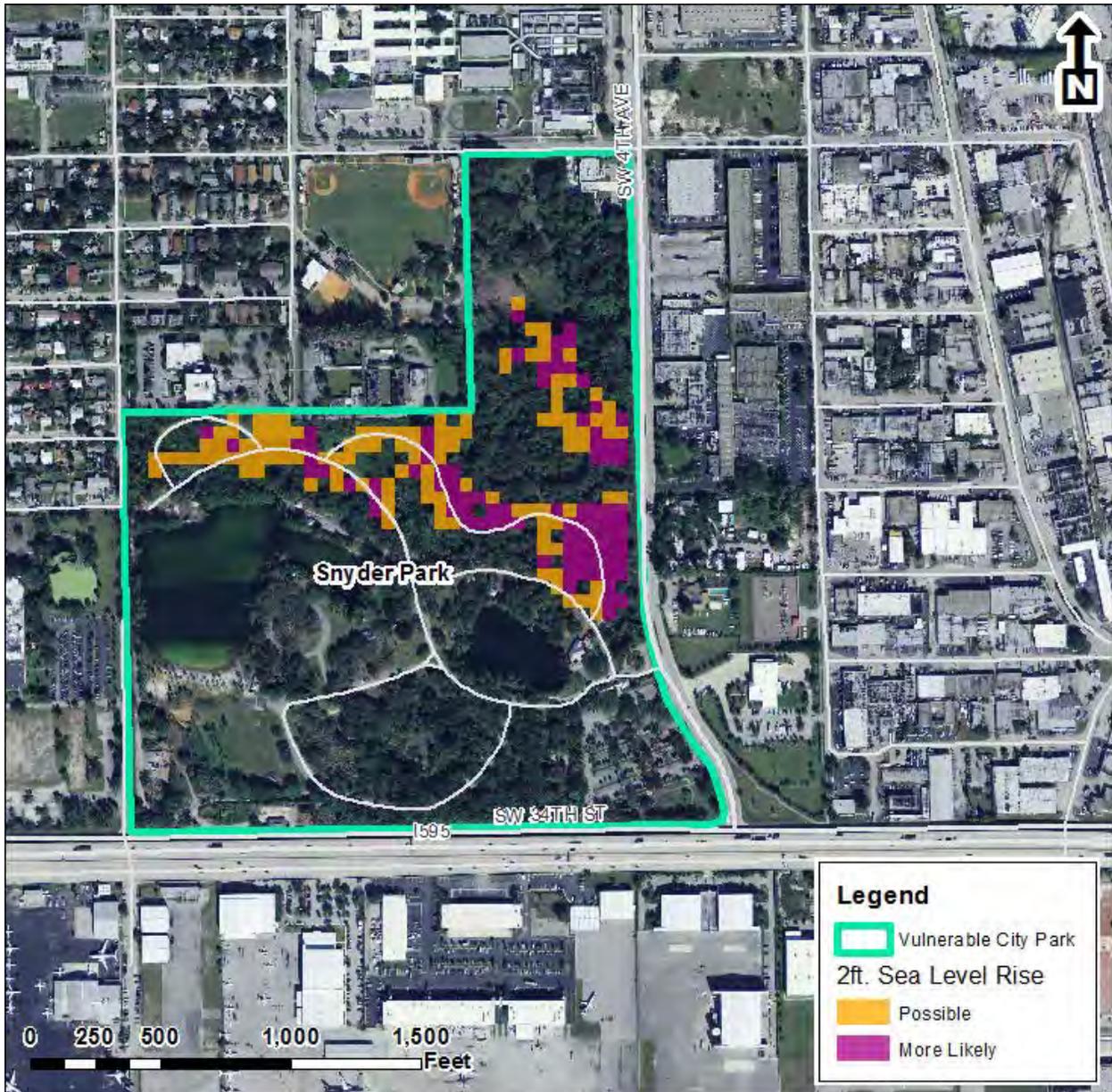
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BROWARD COUNTY
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Prepared By: H. Ziegler
 Date: 10/28/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows Snyder Park at a one foot SLR scenario. The inundation grid intersects roads within Snyder Park.

Snyder Park
Two Foot Sea Level Rise Scenario
 3299 SW 4th Ave, Fort Lauderdale FL 33315



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BROWARD COUNTY
 PREPARED BY: H. ZIEGLER
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

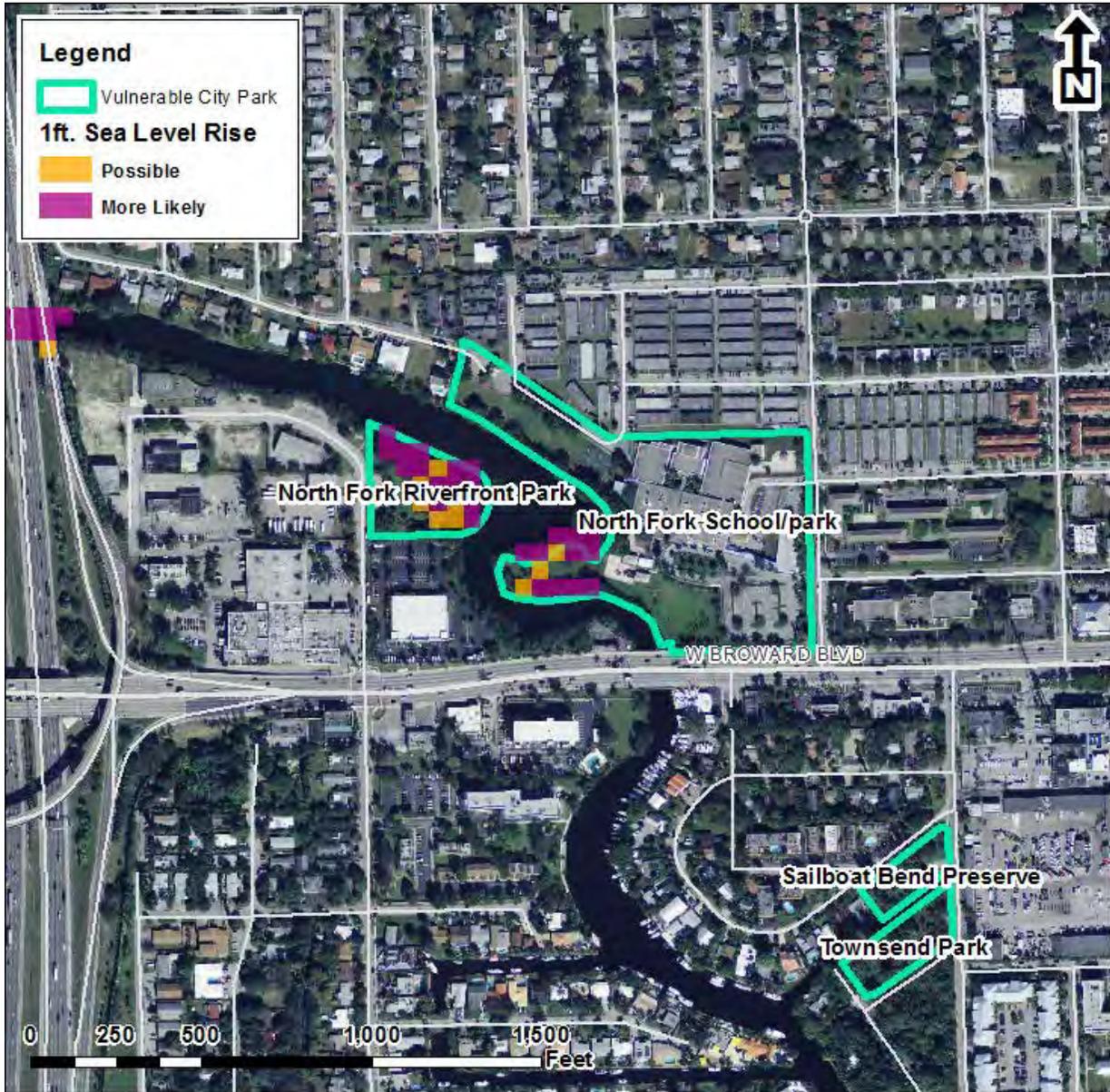
Date: 10/28/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows Snyder Park at a two foot SLR scenario. The inundation grid intersects roads within Snyder Park.

North Fork Riverfront Park, North Fork School Park, Sailboat Bend Preserve, and Townsend Park

One Foot Sea Level Rise Scenario

At the intersection of W Broward Blvd and I-95



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BROWARD COUNTY
 FLORIDA
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

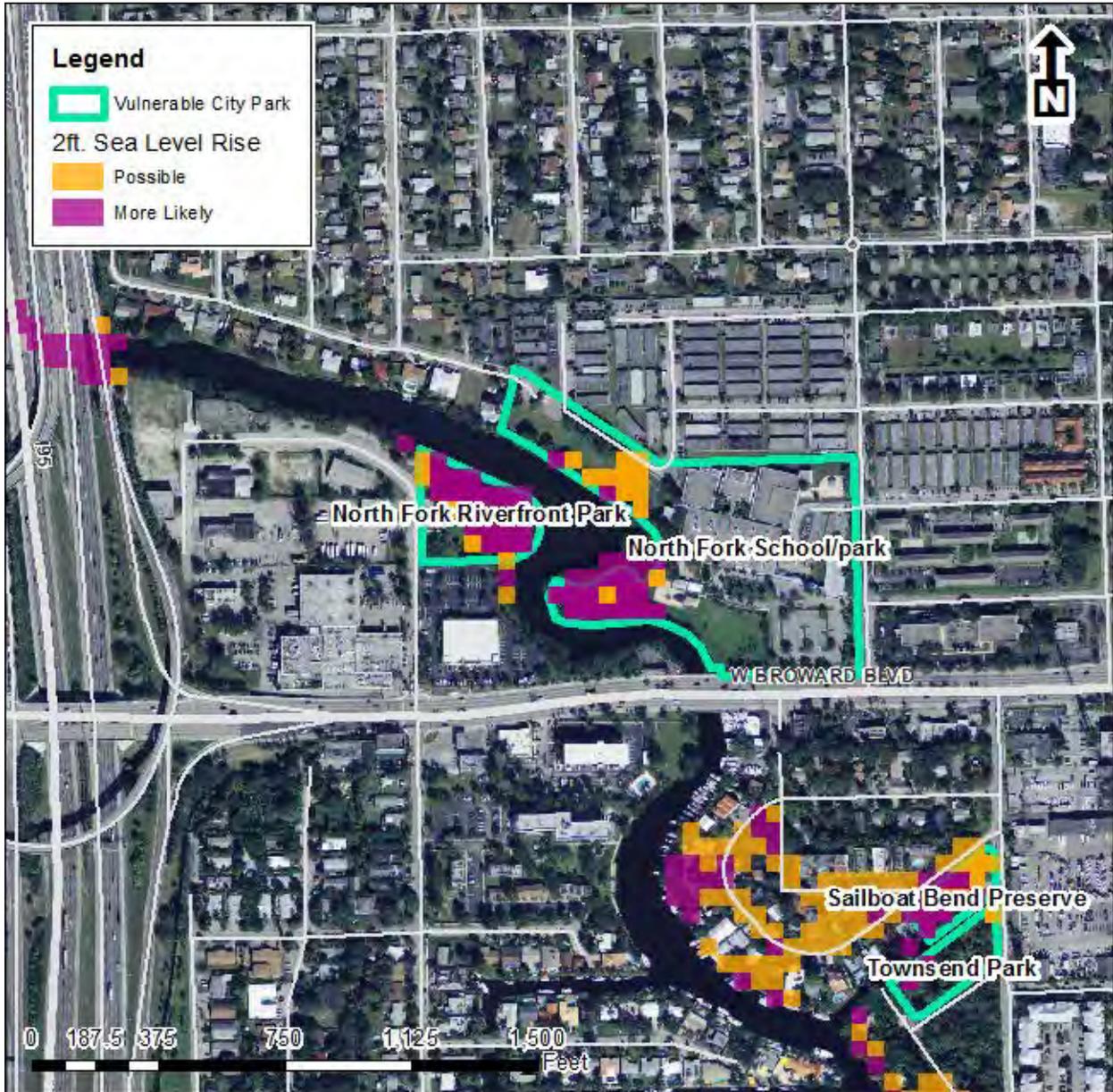
Date: 10/28/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows parks near the North Fork of New River at a one foot SLR scenario. In the one foot scenario, North Fork Riverfront Park may have as much as 55% below sea level. The park area around North Fork School may also become vulnerable.

North Fork Riverfront Park, North Fork School Park, Sailboat Bend Preserve, and Townsend Park

Two Foot Sea Level Rise Scenario

At the intersection of W Broward Blvd and I-95



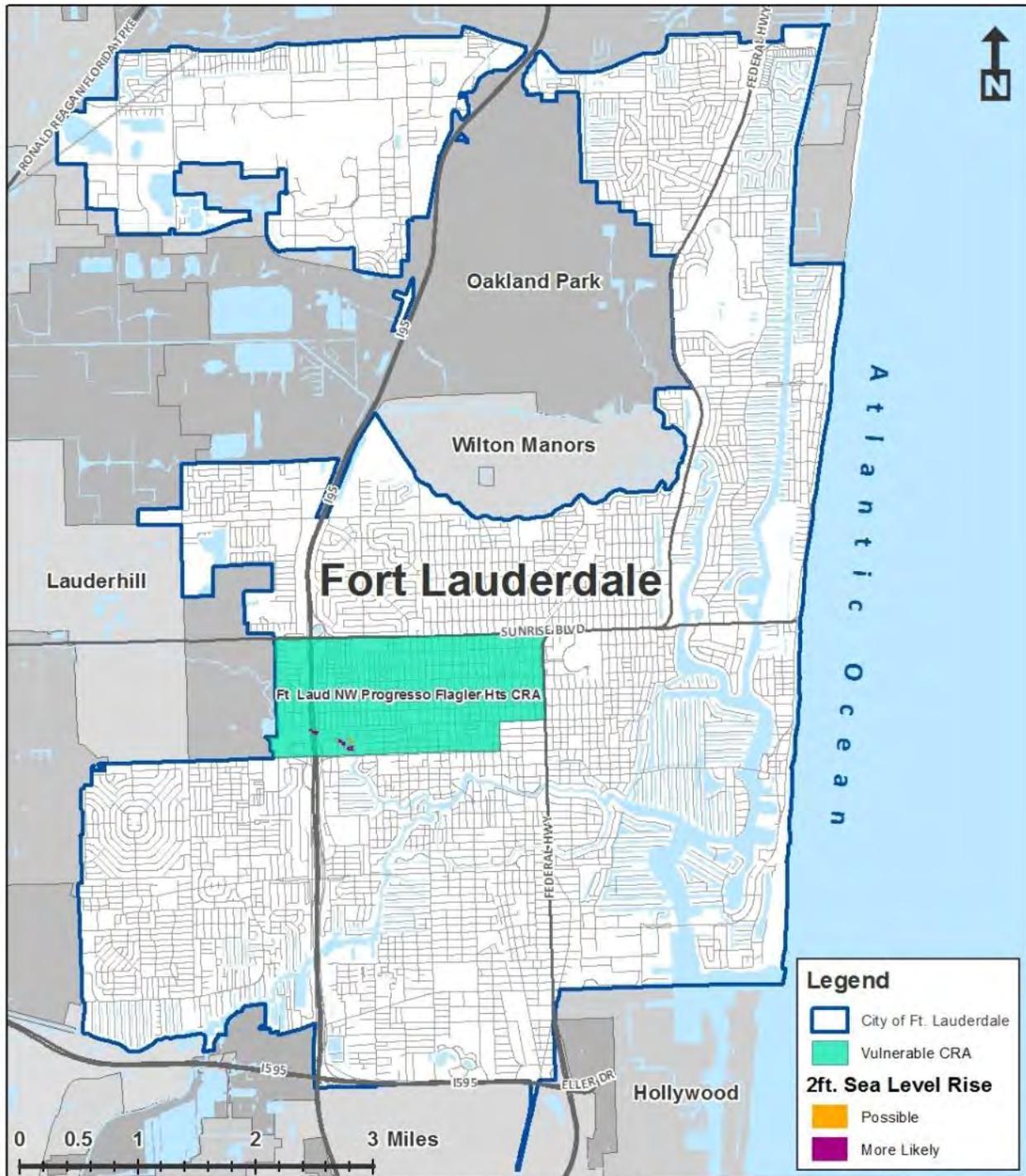
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BROWARD COUNTY
 FLORIDA
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/23/2013
 DEP Agreement No. CM238 DEP 55-236 (08/11)

This map shows parks near the North Fork of New River at a two foot SLR scenario. In a two foot scenario, North Fork Riverfront Park may have as much as 68% below sea level, and Sailboat Bend Preserve may have as much as 85% below sea level. The park area around North Fork School may also become vulnerable starting at a one foot SLR scenario. Townsend Park begins to show vulnerability at the two foot scenario.

Community Redevelopment Areas (CRA) Vulnerability Assessment

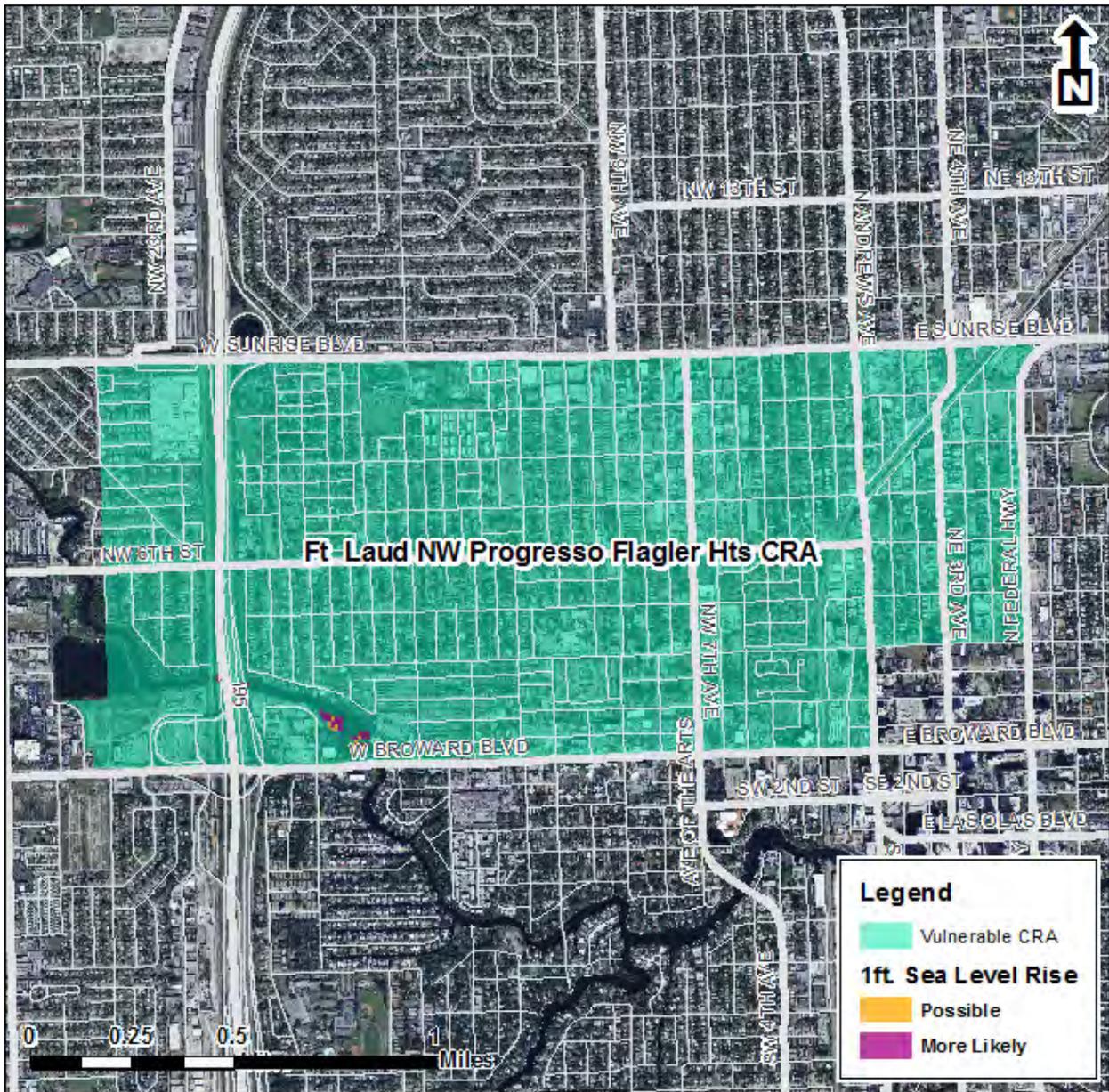


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 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

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Progresso Flagler Heights Community Redevelopment Area One Foot Sea Level Rise Scenario



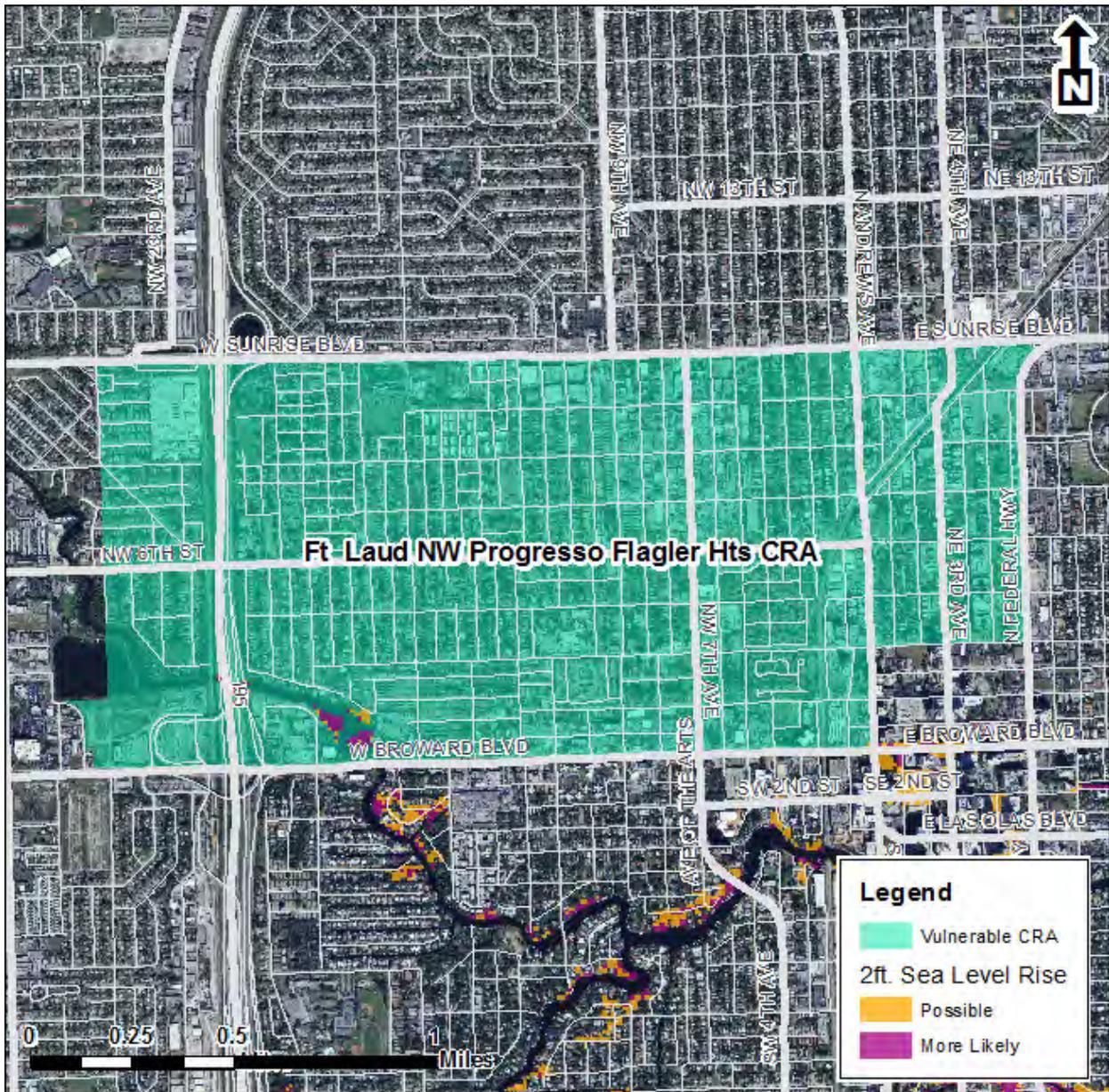
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BROWARD COUNTY
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/28/2013
 DEP Agreement No. CM238 DEP 55-236 (08/11)

This map shows the Fort Lauderdale NW Progresso Flagler Heights Community Redevelopment Area (CRA) Boundary overlaid by the one foot SLR scenario. Due to the North Fork of New River being within the CRA, some areas near the river may be vulnerable to sea level rise starting at a one foot scenario. Specifically, the area near North Fork Riverfront Park and the North Fork School Park are potentially at risk.

Progresso Flagler Heights Community Redevelopment Area Two Foot Sea Level Rise Scenario



This map is for conceptual purposes only and should not be used for legal boundary determinations.

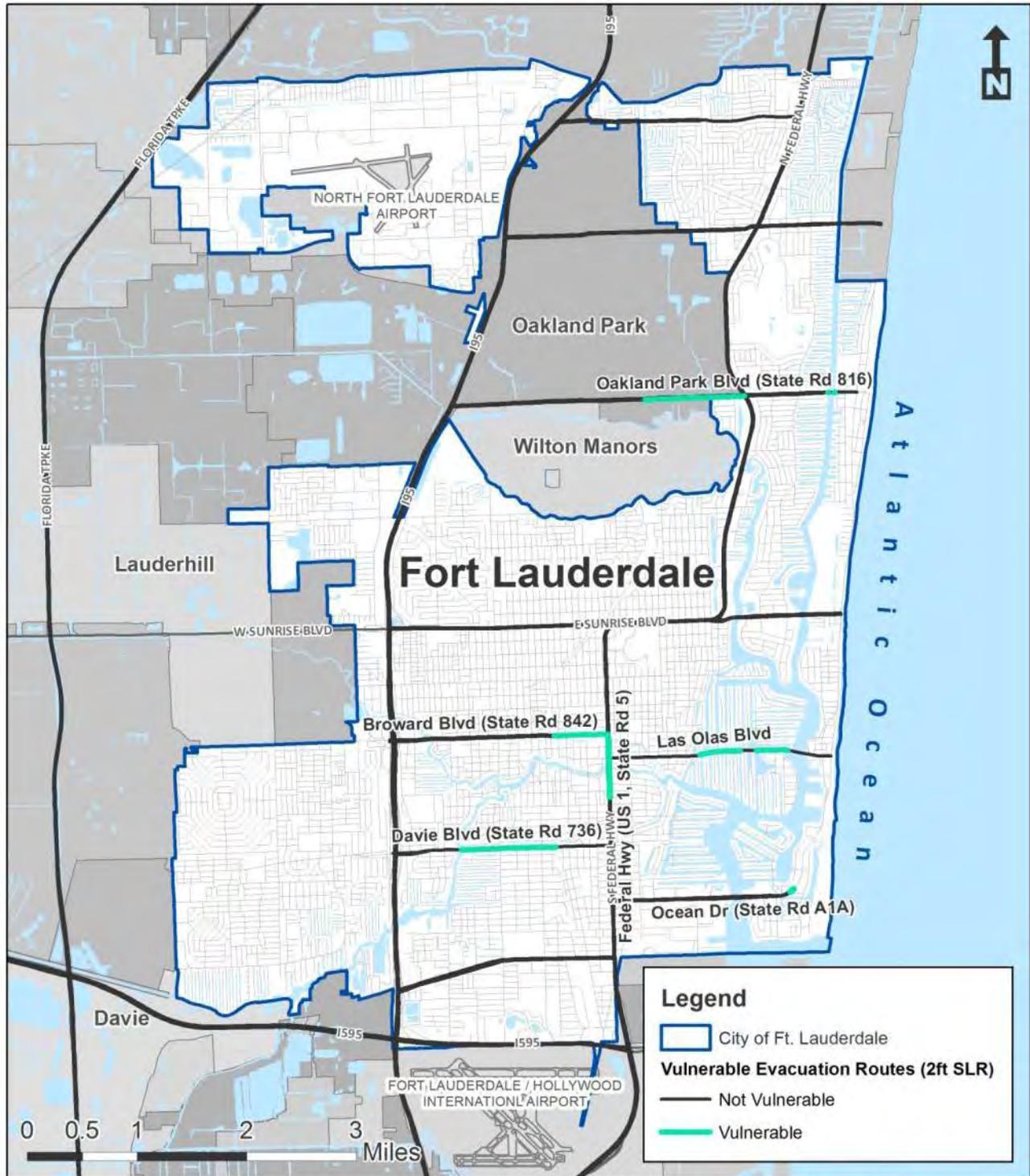
BROWARD COUNTY
FLORIDA
Prepared By: H. Ziegler
Environmental Protection and Growth Management Department
Natural Resources Planning and Management Division

Date: 10/28/2013
DEP Agreement No. CM238 DEP 55-236 (08/11)

This map shows the Fort Lauderdale NW Progresso Flagler Heights Community Redevelopment Area (CRA) Boundary overlaid by the two foot SLR scenario. Due to the North Fork of New River being within the CRA, some areas near the river may be vulnerable to sea level rise starting at a one foot scenario. Specifically, the area near North Fork Riverfront Park and the North Fork School Park are potentially at risk starting at a one foot sea level rise scenario and become slightly more severe at a two foot scenario.

Evacuation Routes

Vulnerability Assessment



This map is for conceptual purposes only and should not be used for legal boundary determinations.

Table of Vulnerable Evacuation Routes

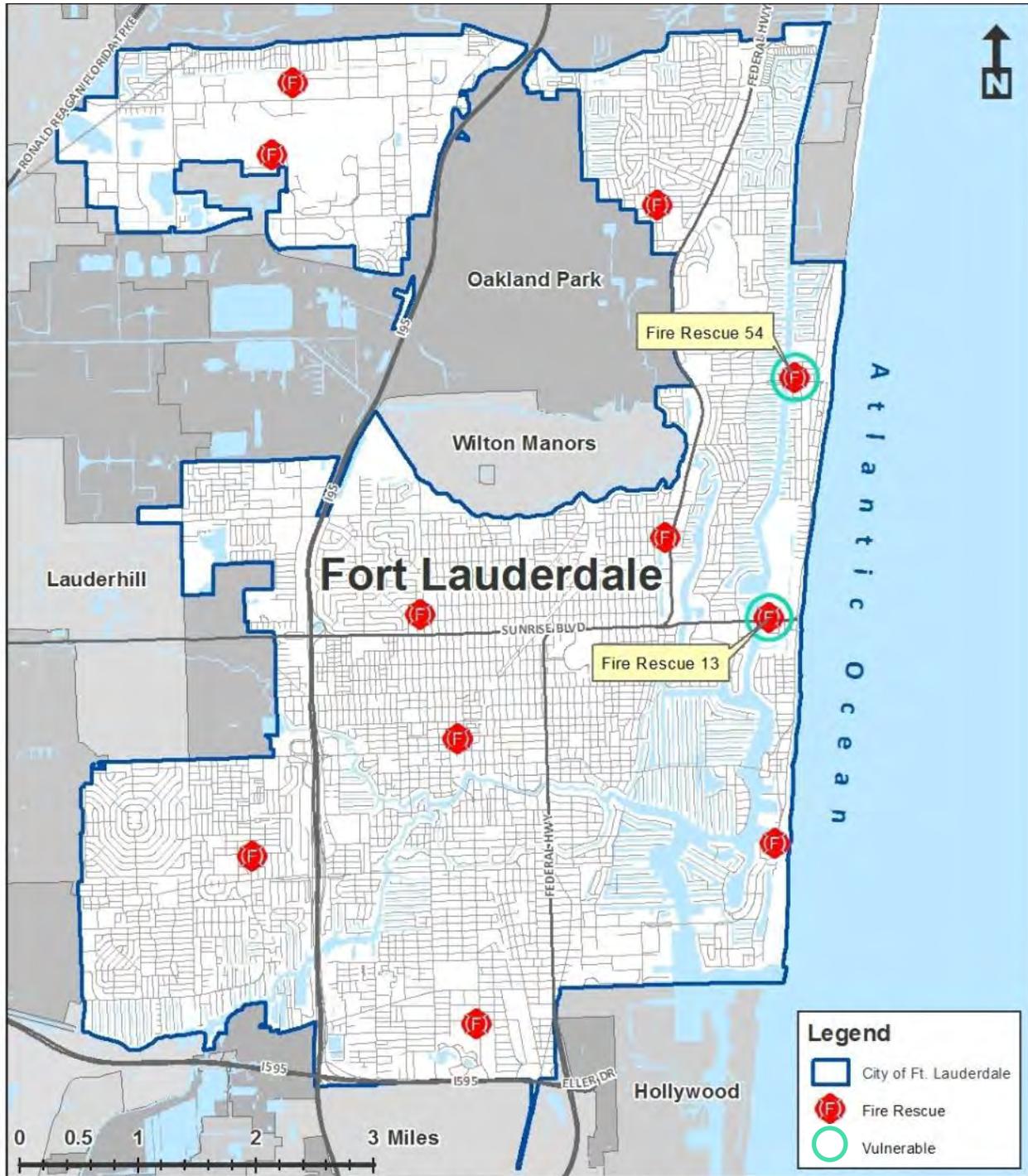
The following table lists road names for all evacuation routes within the City of Fort Lauderdale that have areas affected at a one or two foot sea level rise scenario. There are six total routes that are affected. For each scenario, affected routes receive a Y for yes, or an N for no.

Evacuation Routes Affected by Sea Level Rise within the City of Fort Lauderdale		
Roadway	One Foot Scenario(Y/N)	Two Foot Scenario (Y/N)
Las Olas Blvd.	N	Y
Davie Blvd (State Rd 736)	N	Y
Oakland Park Blvd (State Rd 816)	N	Y
Broward Blvd (State Rd 842)	N	Y
Ocean Dr (State Rd A1A)	Y	Y
Federal Hwy (US 1, State Rd 5)	Y	Y

Key: For Y/N, Y = Yes, N = No

Fire Rescue Stations

Vulnerability Assessment



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 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

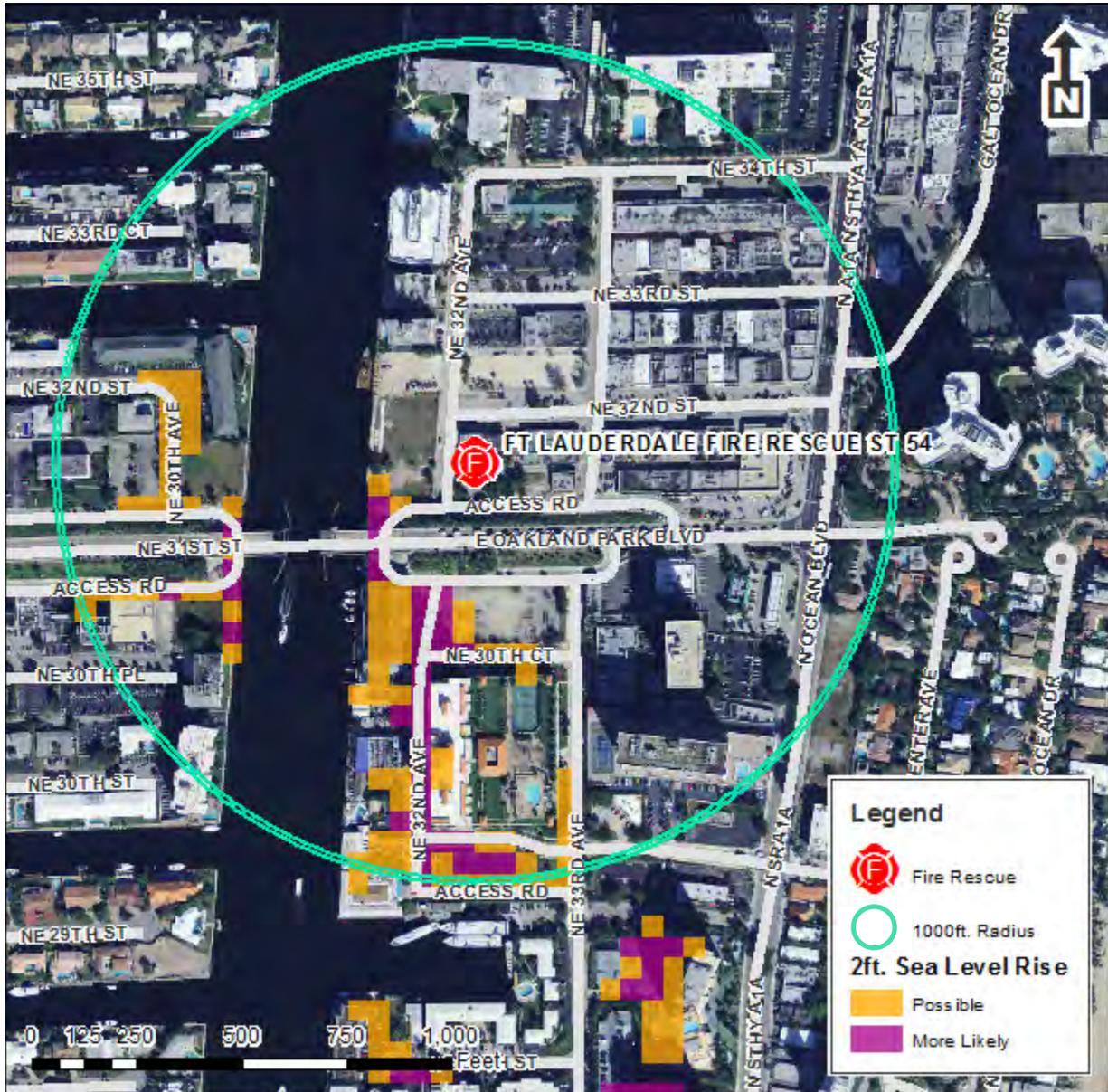
Date: 11/12/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Table of Vulnerable Fire Rescue Stations

The following table shows the locations of Fire Rescue Stations in Fort Lauderdale which have street inundation/access issues within a 1000 foot radius at either a one foot or two foot SLR scenario. Out of the 12 stations, two are vulnerable.

STATION	ADDRESS	One Foot Sea Level Rise LIKELY	Two Foot Sea Level Rise LIKELY
Fort Lauderdale Fire Rescue 54	3200 NE 32nd Street, Fort Lauderdale 33308	NO	YES
Fort Lauderdale Fire Rescue 13	2871 E. Sunrise Blvd, Fort Lauderdale 33304	NO	YES

Fort Lauderdale Fire Rescue Station 54
Two Foot Sea Level Rise Scenario
 3200 NE 32nd Street, Fort Lauderdale, 33308



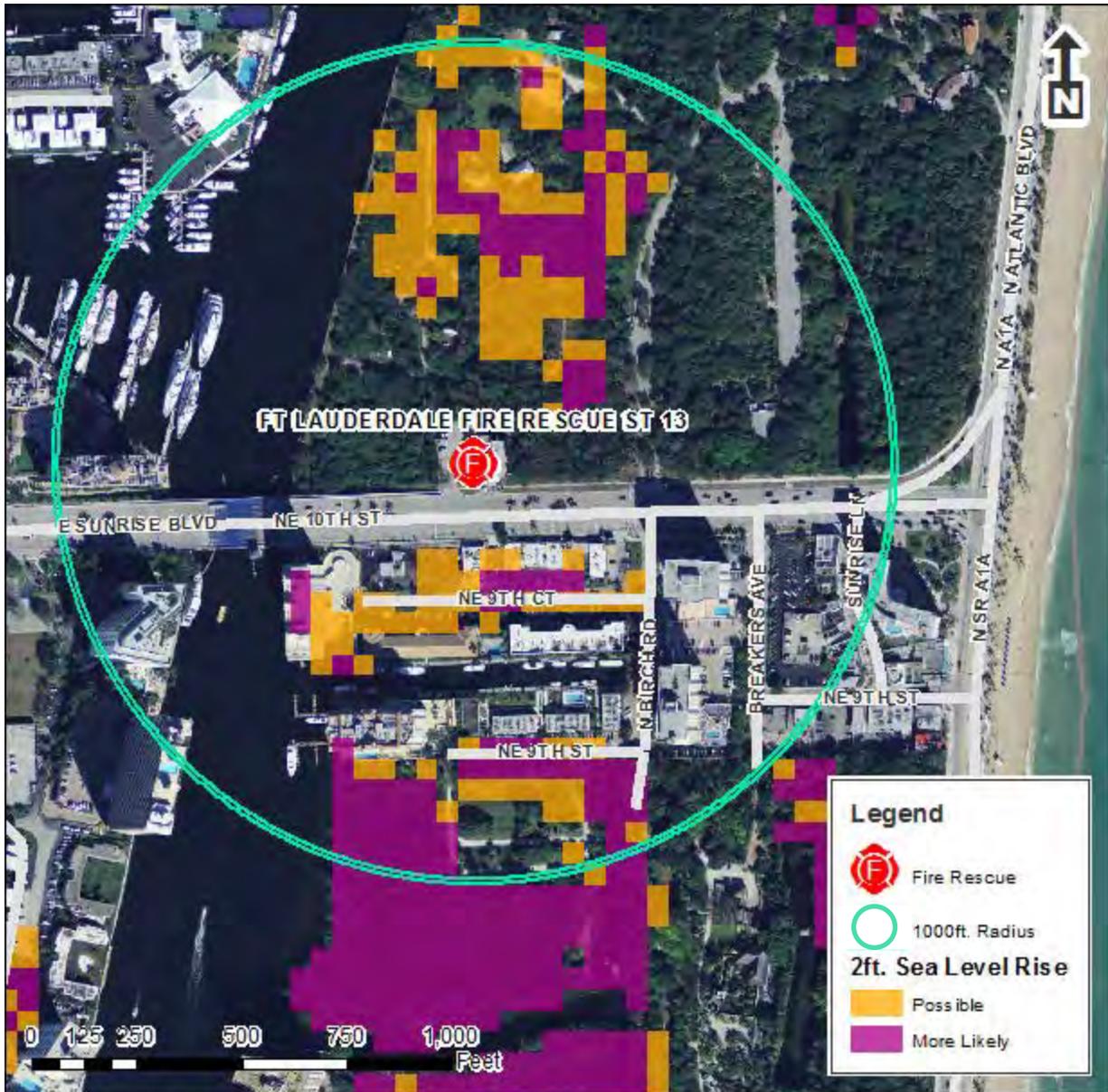
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BROWARD COUNTY Florida
 Prepared By: H. Bogler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/23/2013
 DEP Agreement No. CM 238 DEP 55-236(08/11)

This map shows streets affected by a two foot sea level rise scenario within a 1000-foot radius around Fort Lauderdale Fire-Rescue Station 54. Inundation potentially occurs on nearby streets at a two foot sea level rise scenario. No nearby streets are affected at a one foot scenario.

Fort Lauderdale Fire-Rescue Station 13
Two Foot Sea Level Rise Scenario
 2871 E Sunrise Blvd, Fort Lauderdale 33304



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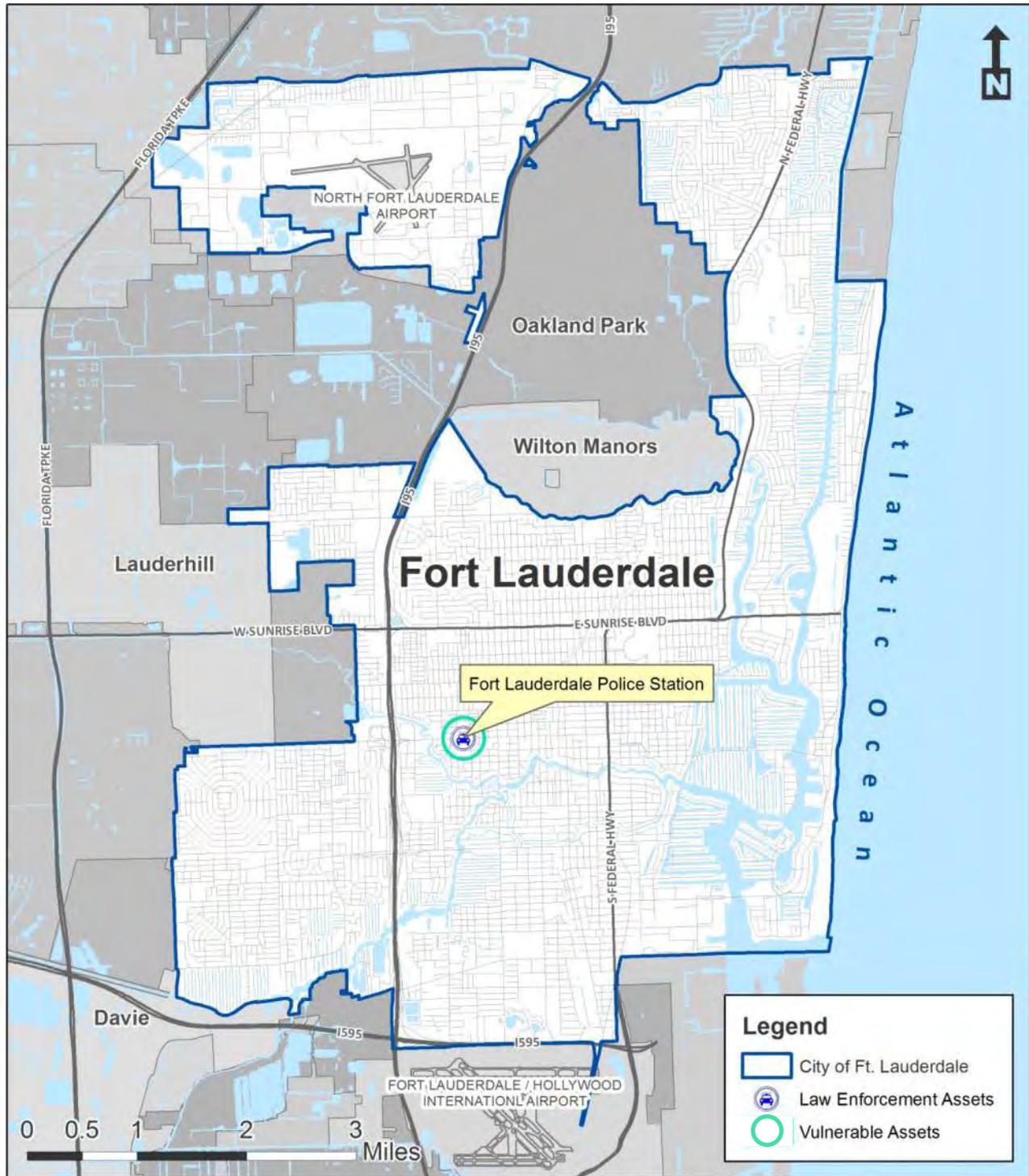
BROWARD COUNTY
 FLORIDA
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 10/23/2013
 DEP Agreement No. CM 238 DEP 55-236 (08/11)

This map shows streets affected by a two foot sea level rise scenario within a 1000- foot radius around Fire Rescue Station 13 located at Hugh Taylor Birch State Park. Inundation potentially occurs within the park parcel and nearby streets at a two foot sea level rise scenario, therefore affecting accessibility to and from the station. No nearby streets are affected at a one foot scenario.

Law Enforcement Assets

Vulnerability Assessment



This map is for conceptual purposes only and should not be used for legal boundary determinations.

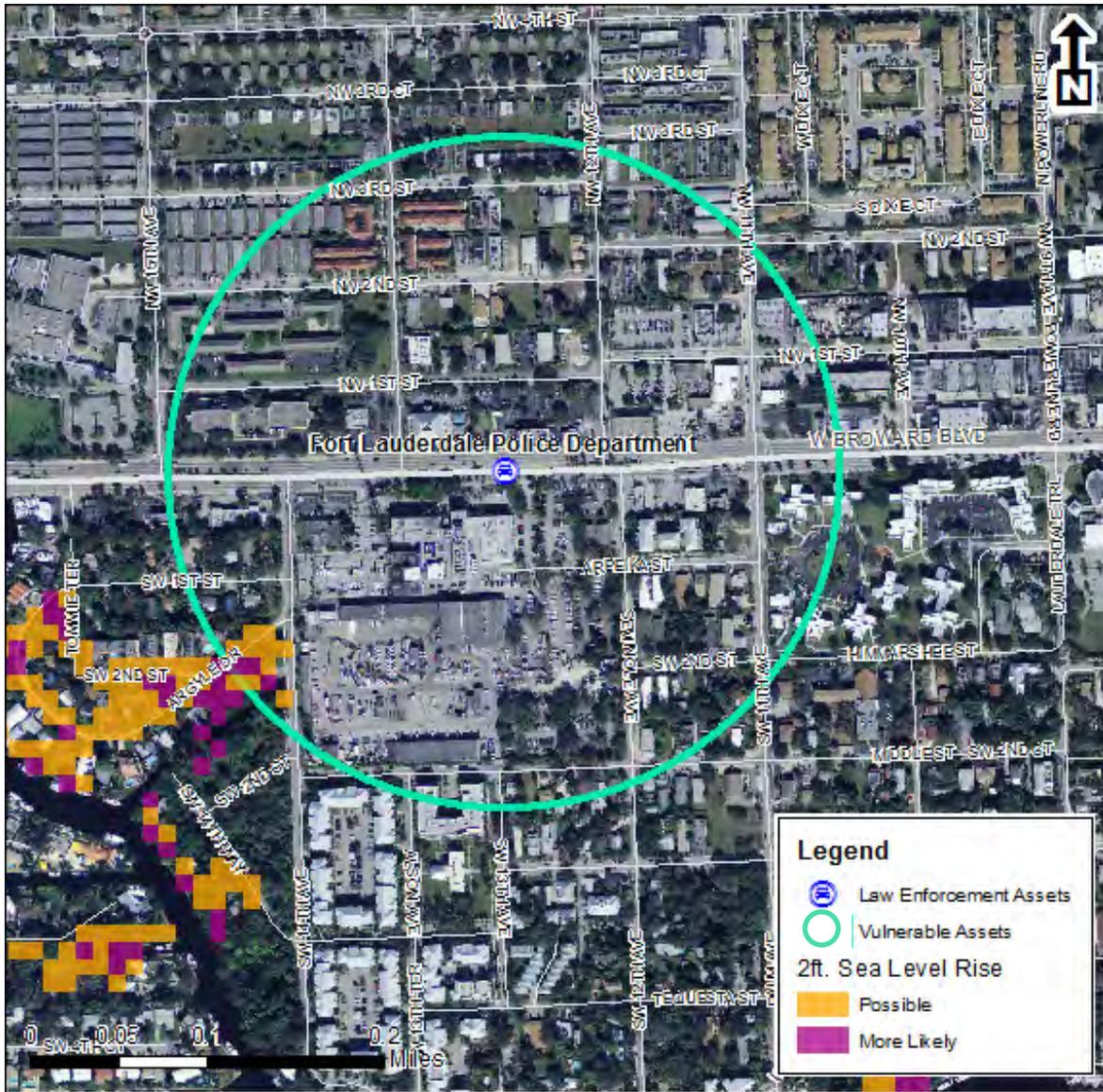
Table of Vulnerable Law Enforcement Assets

The following table shows the locations of municipal law enforcement assets in Fort Lauderdale which have street inundation/access issues within a 1000 foot radius at either the one foot or two foot sea level rise scenario. One municipal station, the Fort Lauderdale Police Station, may have some accessibility issues on adjacent streets within 1000 feet during the two foot sea level rise scenario. Also notable, the Main Jail and Courthouse - which are not maintained by the City of Fort Lauderdale but are within the city boundaries - showed vulnerability due to sea level rise during the two foot scenario. The maps and data in this report show only municipal assets.

Law Enforcement Assets Affected by Sea Level Rise City of Fort Lauderdale		
Station	One Foot Scenario (Y/N)	Two Foot Scenario (Y/N)
Fort Lauderdale Police Station	N	Y

Key: For Y/N, Y = Yes, N = No

Fort Lauderdale Police Station
Two Foot Sea Level Rise Scenario
 1300 Broward Blvd., Fort Lauderdale 33312



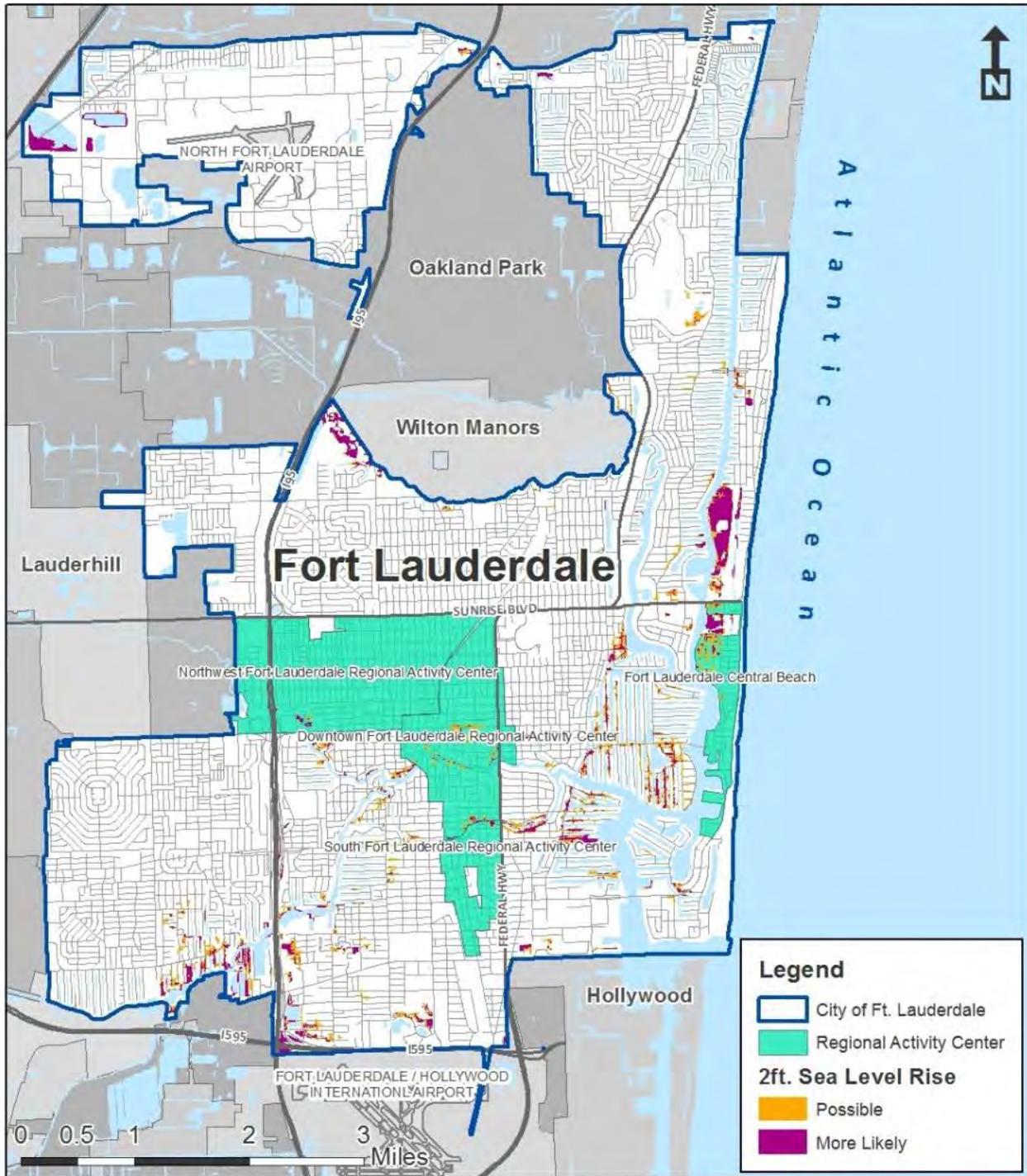
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BROWARD COUNTY
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 6/3/2014
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows streets affected by a two foot sea level rise scenario within a 1000 - foot radius around the Fort Lauderdale Police Station. Inundation potentially occurs along Argyle Dr. and SW 14th Ave., South West of the station. No nearby streets are affected at a one foot scenario.

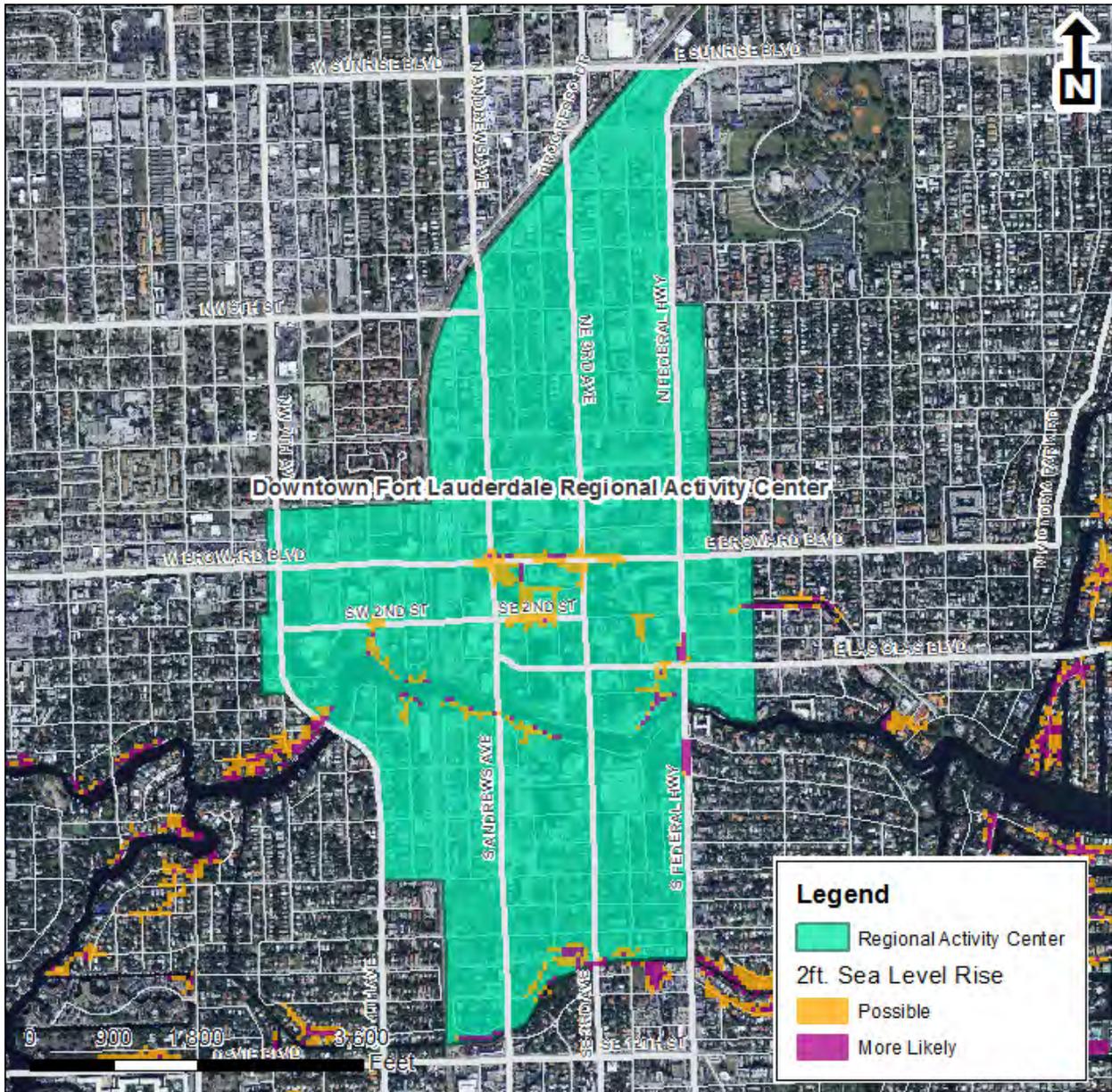
Regional Activity Centers (RAC) Vulnerability Assessment



This map is for conceptual purposes only and should not be used for legal boundary determinations.
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/19/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

Downtown Fort Lauderdale RAC Two Foot Sea Level Rise Scenario



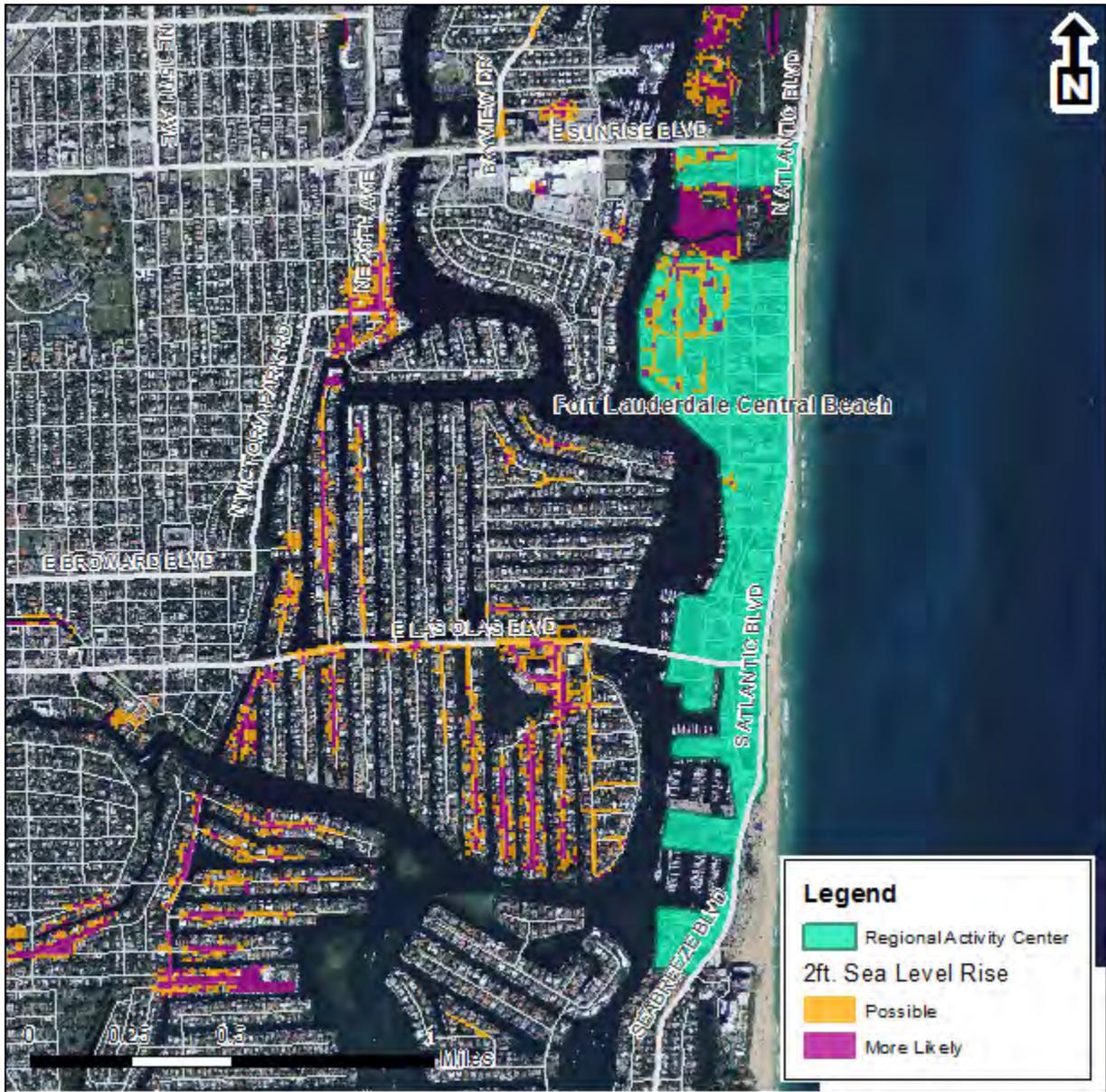
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BROWARD COUNTY Prepared By: H. Ziegler
Environmental Protection and Growth Management Department
Natural Resources Planning and Management Division

Date: 11/19/2013
DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows areas affected at a two foot sea level rise scenario within the Downtown Fort Lauderdale Regional Activity Center (RAC). Areas potentially affected dominate along New River and within the block bordered by Broward Blvd. and SE 2nd St. to the North and South; NE 3rd Ave. and Andrews Ave. to the East and West. The Henry E. Kinney Tunnel (New River Tunnel) is also at risk due to its low topography. Several street segments lie beneath projected sea levels, which may cause access issues. The only area potentially vulnerable at a one foot scenario is Henry E. Kinney tunnel.

Fort Lauderdale Central Beach RAC Two Foot Sea Level Rise Scenario



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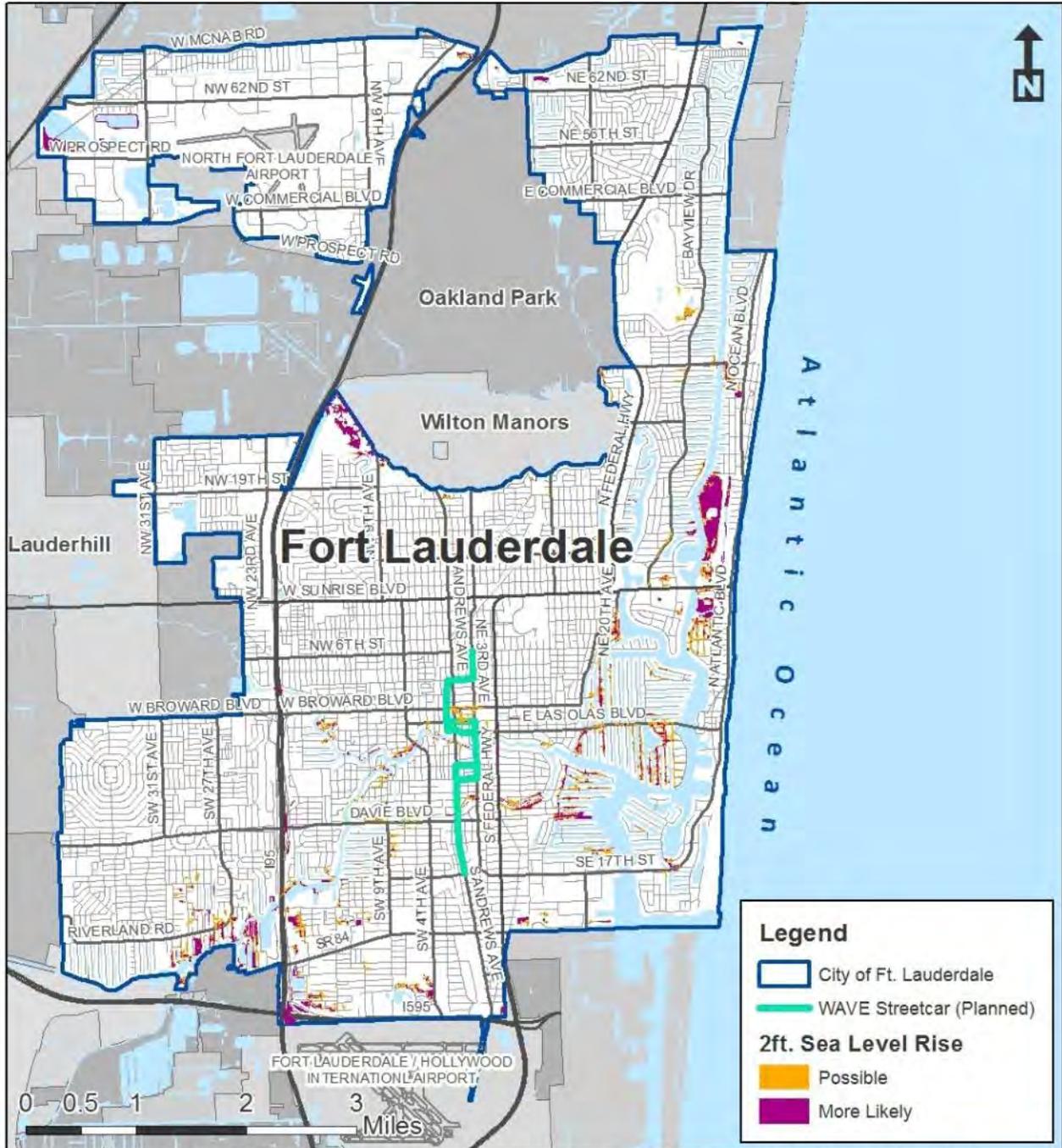
BROWARD COUNTY
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/27/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows areas affected at a two foot sea level rise scenario within the Fort Lauderdale Central Beach Regional Activity Center (RAC). Areas potentially affected are toward the northern neighborhoods of the RAC, between Sunrise Blvd. and Las Olas Blvd. The RAC does not appear to be directly affected at a one foot sea level rise scenario.

WAVE Streetcar (Planned Guideway)

Vulnerability Assessment



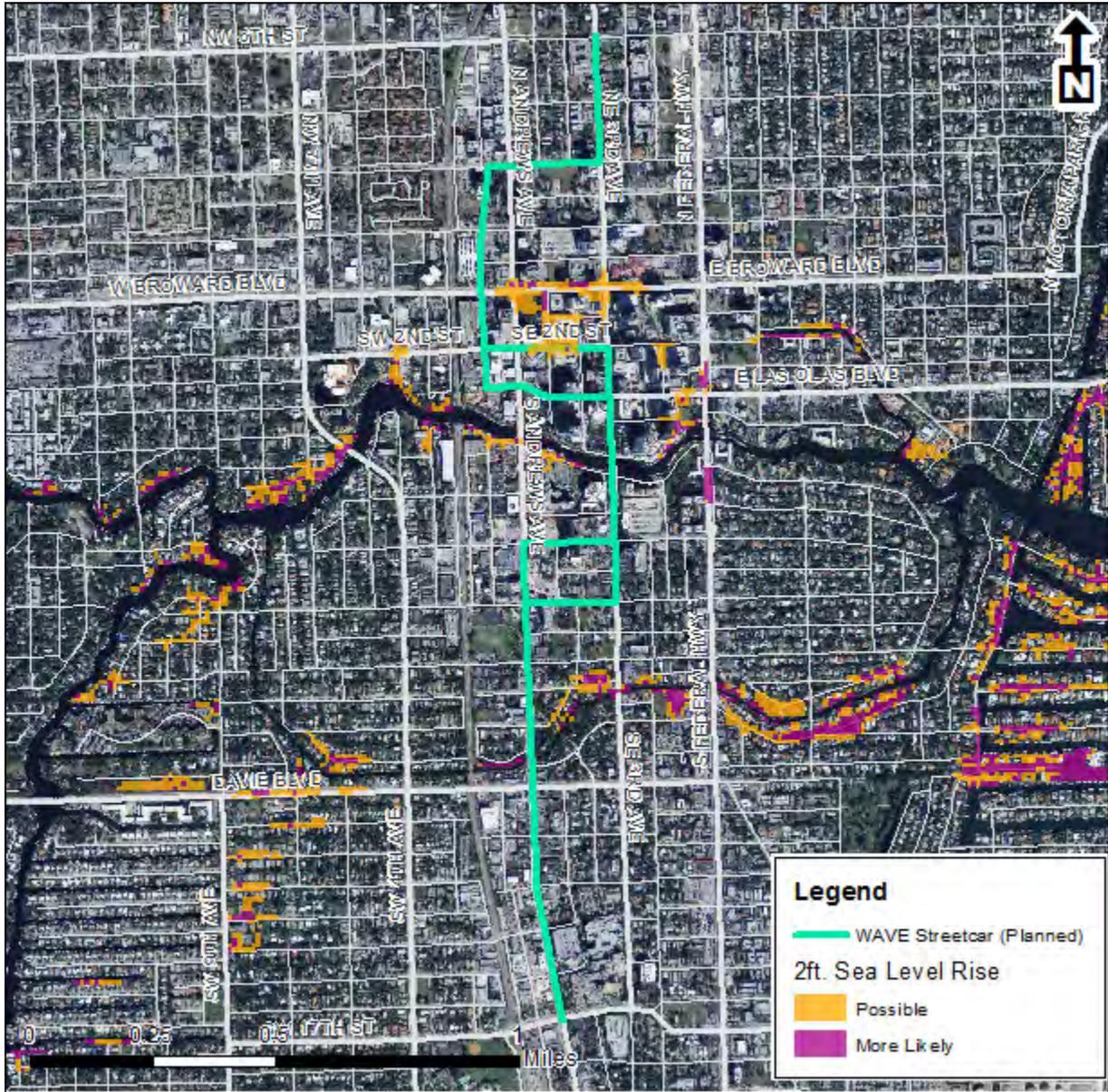
This map of the WAVE Streetcar shows the general location of the primary revenue alignment, as opposed to the exact guideway, nor does it include non-revenue guideway (Save the maintenance facility). The system is currently in the design phase.

This map is for conceptual purposes only and should not be used for legal boundary determinations.

BROWARD COUNTY
 FLORIDA
 Prepared By: H. Ziegler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/25/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

WAVE Streetcar (Planned Guideway) Two Foot Sea Level Rise Scenario



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BROWARD COUNTY
Prepared By: H. Bogler
 Environmental Protection and Growth Management Department
 Natural Resources Planning and Management Division

Date: 11/25/2013
 DEP Agreement No. CM238 DEP 55-236(08/11)

This map shows the planned WAVE streetcar guideway overlaid with a two foot sea level rise projection to show which areas may be at or below sea level. Please note that this map shows the general location of the primary revenue alignment as opposed to the exact guideway, it excludes non-revenue guideway (save the maintenance facility). The system is currently in the design phase. The WAVE segment along SE 2nd St. may have significant vulnerability to sea level rise at the two foot scenario. At the one foot scenario, no segments are below projected sea levels.