



Stephen R. Olmsted, AICP
Planning Director
planning@pinecrest-fl.gov

MEMORANDUM

Department of Building and Planning

December 22, 2014

Ray Eubanks
Plan Processing Administrator
Department of Economic Opportunity
State Land Planning Agency
Caldwell Building
107 East Madison – MSC 160
Tallahassee, FL 32399

RE: Village of Pinecrest Comprehensive Development Master Plan
Transmittal of Proposed Climate Change Element

Dear Mr. Eubanks:

Please find enclosed proposed amendments to the Village of Pinecrest Comprehensive Development Master Development Plan consisting of a new Climate Change Element and supporting data and analysis. One copy is provided on paper and two copies are provided on CD Rom in Portable Document Format (PDF). The proposed amendments to the Village's Comprehensive Development Master Plan were recommended for adoption by the Village of Pinecrest Local Planning Agency (LPA) on December 9, 2014. Following public hearings on the proposed amendments, Village Council subsequently voted to approve the amendments at first reading on December 9, 2014 and authorized transmittal of the proposed amendments to the State Land Planning Agency and other required review agencies.

Pursuant to Florida Statutes, Chapter 163.3184(3)(b), the proposed Comprehensive Plan amendments are being transmitted to you, and to other required review agencies including the Florida Department of Environmental Protection, Florida Department of Transportation, Florida Department of State, Florida Department of Education, South Florida Regional Planning Council, South Florida Water Management District, Miami-Dade County School District, and Miami-Dade Board of County Commissioners. Copies of the proposed Climate Change element were mailed to the above agencies on this date, December 22,



2014. Copies of the Village's Comprehensive Plan and previous amendments were sent to required review agencies at the time of adoption.

In summary, the purpose of the proposed Climate Change element is to provide a planning framework for the identification and resolution of the impacts of global climate change on the Village of Pinecrest. Proposed amendments, consisting of goals, objectives, policies and supporting data and analysis have been prepared for the identification and resolution of issues and impacts related to existing and projected changes in our changing climate. Proposed amendments also include identification of Adaptation Action Areas and specific strategies for the protection, accommodation, and avoidance of the impacts of global climate change within the most vulnerable, lower lying areas of the Village of Pinecrest.

A complete copy of the Climate Change element is attached for your review and consideration.

The Contact person for correspondence related to the proposed amendments is as follows:

Name: Stephen R. Olmsted, AICP
Title: Village of Pinecrest, Planning Director
Address: 12645 Pinecrest Parkway, Pinecrest, Florida 33156
Telephone: (305) 234-2121
Fax Number: (305) 389-0255
E-Mail: Solmsted@pinecrest-fl.gov

The proposed month of adoption of the plan amendments is March, 2015 or as soon as possible consistent with required advertising, notification, and review periods, whichever is sooner.

The proposed amendments are not applicable to an area of critical state concern.

The proposed amendments are not located within Orange, Lake, or Seminole Counties and subject to the Wekiva River Protection Area pursuant to Florida Statutes.

The proposed amendments are not subject to a joint planning agreement.

The Village of Pinecrest has not submitted any previous amendments for consideration in Calendar year 2014.

Copies of the proposed amendments and all related materials are available for public inspection in the office of the Village Clerk, at the Village of Pinecrest Municipal Center, 12645 Pinecrest Parkway, Pinecrest, Florida 33156.

Thank you for your consideration of the proposed Climate Change amendments to the Village of Pinecrest's Comprehensive Development Master Plan. If you have any questions or require additional information, please contact me directly at (305) 234-2121.

Respectfully,

Stephen R. Olmsted, AICP
Planning Director

Attachments/ Comprehensive Development Master Plan - Proposed Climate Change element

C/ South Florida Regional Planning Council
Florida Department of Transportation, District Six
Florida Department of Environmental Protection
Florida Department of State
South Florida Water Management District
Miami-Dade County Board of County Commissioners
Miami-Dade County School Board



Stephen R. Olmsted, AICP
Planning Director
planning@pinecrest-fl.gov

MEMORANDUM

Department of Building and Planning

DATE: December 22, 2014

TO: Yocelyn Galiano Gomez, ICMA-CM, LEED-GA
Village Manager

FROM: Stephen Olmsted, AICP, LEED-GA
Planning Director

RE: Comprehensive Development Master Plan
Climate Change Element

Proposed amendments to the Village's Comprehensive Development Master Plan to address the impacts of current and projected changes in global climate have been prepared for review and consideration of the Local Planning Agency (LPA) and Village Council at first reading on December 9, 2014.

In recent years, the Village Council has completed several initiatives to enhance the natural environment, promote sustainability, and make Pinecrest more resilient and less susceptible to the risks and impacts of climate change and sea level rise. The Village Council has established the Going Green Advisory Committee as a forum for information gathering and dissemination with regards to sustainability; joined ICLEI (International Council for Local Environmental Initiatives) – Local Governments for Sustainability, and pledged to take a leadership role in promoting public awareness of the causes and impacts of climate change; become a member of the Florida Green Building Council; adopted a Green Action Plan for the reduction of greenhouse gas emissions below 1996 levels by 2014; and adopted various amendments to the Village's Land Development Regulations for the development of a sustainable building program and implementation of numerous green, sustainable building practices.

The Village Council has included completion of a Climate Change Element as one of its annual goals. On June 23, 2014, preliminary findings and recommendations relative to a Climate Change Element were presented to the Local Planning Agency. At that meeting, it was confirmed that staff would complete the Climate Change Element and schedule it for formal consideration by the Local Planning Agency and Village Council at scheduled public hearings.



In completion of the proposed amendment to the Village's Comprehensive Development Master Plan to incorporate a Climate Change Element, staff has considered similar efforts recently completed by Broward County, Miami-Dade County, and the City of Fort Lauderdale; reviewed the analysis completed by the Southeast Florida Regional Climate Change Compact; reviewed the Miami-Dade County Sea Level Rise Task Force report and recommendations, completed in July 2014; and consulted with administrative staff of the South Florida Regional Planning Council.

In preparation of the proposed Climate Change Element including review of the supporting data and analysis, it is apparent that climate change and sea level rise are occurring. A recent report entitled, *A region responds to Changing Climate*, prepared by the Southeast Florida Regional Climate Change Compact Counties in October 2012, indicates that sea levels are projected to rise in South Florida within a range that extends from 9 to 24 inches by the year 2060. This projection uses historic tidal information from Key West and was calculated by Kristopher Esterson from the United States Army Corps of Engineers. Completion and adoption of the proposed Climate Change Element will allow the Village to prepare for changing climate conditions and take appropriate measures to mitigate its impacts.

Proposed amendments to the Comprehensive Plan include supporting maps and data, analysis, and incorporation of new goals, objectives, and policies within a new Climate Change element. Proposed amendments have been prepared for the identification and resolution of issues and impacts related to existing and projected changes in global climate. Proposed amendments also include identification of Adaptation Action Areas and specific strategies for the protection, accommodation, and avoidance of the impacts of global climate change within the most vulnerable, lower lying areas of the Village of Pinecrest. It is expected that additional goals, objectives, and policies may be generated as a result of further discussion with the Local Planning Agency and Village Council.

Following consideration of the proposed Climate Change Element at first reading, staff will make necessary changes as directed by the Village Council and transmit the document to the State's Land Planning Agency and other required agencies for review and comment prior to consideration at second reading.

If you have questions or require additional information, please advise. Thank you.

ORDINANCE NO. 2014-_____

AN ORDINANCE OF THE VILLAGE COUNCIL OF THE VILLAGE OF PINECREST, FLORIDA, AMENDING THE VILLAGE OF PINECREST COMPREHENSIVE DEVELOPMENT MASTER PLAN, ORIGINALLY ADOPTED BY ORDINANCE 1999-04, TO INCLUDE A CLIMATE CHANGE ELEMENT AND RELATED DATA AND ANALYSIS; PROVIDING FOR CONFLICT, SEVERABILITY, INCLUSION IN THE COMPREHENSIVE DEVELOPMENT MASTER PLAN, AND AN EFFECTIVE DATE.

WHEREAS, the Village Council has developed a strategic plan that identifies Environmental Sustainability as one of its key priorities and outcomes; and

WHEREAS, the Village Council established the Going Green Advisory Committee as a forum to begin the process of information gathering and dissemination with regards to sustainability; and

WHEREAS, the Village of Pinecrest recognizes the general consensus that climate change is occurring, and that greenhouse gas emissions, primarily from the burning of fossil fuels, are increasing in their atmospheric concentrations; and

WHEREAS, it is recognized that these greenhouse gas emissions may be a contributing factor to our changing climate and rising sea levels; and

WHEREAS, the Village has made it a priority to reduce its overall "carbon footprint"; and

WHEREAS, in 2011, the Village of Pinecrest adopted a Green Action Plan to proactively reduce overall greenhouse gas (GHG) emissions by 7% below 1996 levels by 2014; and

WHEREAS, the Village understands that Southeast Florida is vulnerable to sea level rise and other climate change impacts; and

WHEREAS, on April 12, 2011, the Village of Pinecrest committed to joining ICLEI (International Council for Local Environmental Initiatives) - Local Governments for Sustainability as a full member and pledged to take a leadership role in

promoting public awareness in the community about the causes and impacts of climate change; and

WHEREAS, the Village Council desires to comprehensively consider and address all impacts of global climate change and to further promote environmental sustainability; and

WHEREAS, the Village Local Planning Agency Village and Village Council have reviewed and considered proposed amendments to the Village Comprehensive Development Plan to incorporate a Climate Change Element; and

WHEREAS amendments to the Comprehensive Development Master Plan were prepared in accordance with Chapter 163.3177 Florida Statutes; and

WHEREAS, the Village of Pinecrest Local Planning Agency (LPA) has reviewed the proposed amendments to the Village of Pinecrest Comprehensive Development Master Plan at a public hearing and has forwarded the proposed amendments to the Village Council with a recommendation for approval; and

WHEREAS, the Village Council of the Village of Pinecrest, Florida held a public hearing on December 9, 2014 prior to transmitting the proposed Climate Change Element of the Comprehensive Plan to the Florida Department of Economic Opportunity; and

WHEREAS, said public hearing was advertised in accordance with Chapter 163.3184 and Chapter 166.041, Florida Statutes; and

WHEREAS, the Village Council of the Village of Pinecrest, Florida, hereby finds it to be in the best interest of the public health, safety and welfare of the citizens to adopt the amendments to the Comprehensive Development Master Plan;

NOW, THEREFORE, BE IT ORDAINED BY THE VILLAGE COUNCIL OF THE VILLAGE OF PINECREST, FLORIDA:

SECTION 1. Recitals.

The foregoing "WHEREAS" clauses are hereby ratified and confirmed as being true, correct and reflective of the legislative intent underlying this Ordinance and are hereby made a specific part of this Ordinance.

SECTION 2. Amendment and Adoption.

The amendments to the Goals, Objectives and Policies of the Comprehensive Development Master Plan, attached hereto and incorporated herein as Exhibit "A", are hereby adopted.

SECTION 3. Inclusion in the Comprehensive Plan.

It is the intention of the Village Council and it is hereby ordained that the amendments to the Village of Pinecrest Comprehensive Plan made by this Ordinance as set forth in Exhibit "A" shall become part of the Village of Pinecrest Comprehensive Development Master Plan, and that the sections of this Ordinance may be renumbered and relettered as necessary, and that the word "Ordinance" may be changed to "Section, "Article" or other appropriate word.

SECTION 4. Transmittal.

The Village Clerk is hereby directed to transmit the proposed amendments to the Comprehensive Development Master Plan and supporting Data and Analysis, which is attached hereto as Exhibit B, to the Department of Economic Opportunity of the State of Florida and other appropriate public agencies, and upon adoption of this Ordinance is further directed to ensure that this Ordinance and all other necessary documents are forwarded to the Florida Department of Economic Opportunity and other agencies in accordance with Section 163.3184(3), Florida Statutes.

SECTION 5. Conflicts.

All ordinances or parts of ordinances and all resolutions or parts of resolutions in conflict with the provisions of this Ordinance are hereby repealed.

SECTION 6. Severability.

If any section, clause, sentence or phrase of this Ordinance is for any reason held invalid or unconstitutional by a court of competent jurisdiction, the holding shall not affect the validity of the remaining portions of this Ordinance.

SECTION 7. Effective Date.

This Ordinance shall be effective immediately upon passage by the Village Council on second reading. The effective date of this plan amendment shall be the date a final order is issued by the Department of Economic Opportunity or Administration Commission finding the amendment in compliance in accordance with Section 163.3184(1)(b), F.S., whichever is applicable. No development orders, development permits, or land uses dependent on this amendment may be issued or commence before it has become effective. If a final order of noncompliance is issued by the Administration Commission, this amendment may nevertheless be made effective by adoption of a resolution affirming its effective status, a copy of which resolution shall be sent to the Florida Department of Economic Opportunity, Division of Community Planning, Plan Processing Team. An adopted amendment whose effective date is delayed by law shall be considered part of the adopted plan until determined to be not in compliance by final order of the Administration Commission. Then, it shall no longer be part of the adopted

Note:

~~Strikethrough words~~ are deletions to the existing words in the Comprehensive Plan.

Underlined words are additions to the existing words in the Comprehensive Plan.

plan unless the local government adopts a resolution affirming its effectiveness in the manner provided by law.

PASSED on first reading following an advertised public hearing and transmitted to the Florida Department of Economic Opportunity and other required review agencies this 9th day of December, 2014.

PASSED AND ADOPTED on second reading following an advertised public hearing in open and regular session through roll call vote of the Village Council of the Village of Pinecrest, Florida, this ____ day of _____, 2015.

Cindy Lerner, Mayor

ATTEST:

Guido H. Inguanzo, Jr., CMC
Village Clerk

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

Mitchell Bierman
Village Attorney



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Village of Pinecrest
Comprehensive Development Master Plan
Climate Change Element
Goal, Objectives, and Implementing Policies

AN ORDINANCE OF THE VILLAGE COUNCIL OF THE VILLAGE OF PINECREST, FLORIDA, AMENDING THE VILLAGE OF PINECREST COMPREHENSIVE DEVELOPMENT MASTER PLAN, ORIGINALLY ADOPTED BY ORDINANCE 1999-04, TO INCLUDE A CLIMATE CHANGE ELEMENT AND RELATED DATA AND ANALYSIS; PROVIDING FOR CONFLICT, SEVERABILITY, INCLUSION IN THE COMPREHENSIVE DEVELOPMENT MASTER PLAN, AND AN EFFECTIVE DATE.

Exhibit "A"

First Reading: December 9, 2014

Second Reading:

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Climate Change Element Goal, Objectives, and Implementing Policies

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CHAPTER 9: CLIMATE CHANGE ELEMENT

9-1: CLIMATE CHANGE GOAL, OBJECTIVES AND IMPLEMENTING POLICIES

Goal 9-1: SUSTAINABILITY, RESILIENCY, AND ENERGY EFFICIENCY. Achieve a sustainable, climate resilient community through the promotion of energy efficiency and greenhouse gas reduction strategies; by protecting and adapting public infrastructure, services, natural systems and resources from climate change impacts; and by continuing to coordinate and communicate locally and regionally to monitor and address the changing needs and conditions of the Village of Pinecrest.

Objective 9-1.1: GREENHOUSE GAS EMISSIONS REDUCTION, RENEWABLE ENERGY, PRODUCTION AND DISTRIBUTION. Mitigate the causes of climate change while providing for cleaner energy solutions and a more energy efficient way of life for residents and visitors.

Policy 9-1.1.1: Greenhouse Gas Emission Reduction. The Village of Pinecrest shall mitigate its contribution to global climate change by reducing government operations greenhouse gas emissions to 7% below 1997 levels by 2014. The Village will continue to regularly monitor and track progress of programs and initiatives that contribute to the ultimate reaching of these goals.

Policy 9-1.1.2: Develop Building Standards to Promote Alternative and Renewable Energy Sources. The Village of Pinecrest shall develop building standards that promote increases in the proportion of electricity generated by solar energy sources within the community and shall monitor the initiatives of Miami-Dade County and other regional agencies in the development of other renewable sources for use within South Florida including wind, geothermal and ocean energy technologies.

Policy 9-1.1.3: Work with Legislative Representatives to Reduce Regulatory Encumbrances and Develop Incentives for Renewable and Alternative Energy Installations. The Village of Pinecrest shall, by 2016 promote and support the expansion of alternative and renewable energy from residential, commercial and municipal properties by working with legislative representatives to reduce regulatory encumbrances and to develop incentives for renewable and alternative energy installations.

Policy 9-1.1.4: Continue Expedited Permitting of Alternative Fuel and Electric Vehicle Charging Infrastructure. The Village of Pinecrest shall continue its expedited permitting processes for private installation of alternative fuel and electric vehicle charging infrastructure.

Policy 9-1.1.5: Require Permeable Driveways. Require new construction, redevelopment, additions, retrofits or modifications of property to incorporate permeable

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driveways consisting of porous concrete, open cell unit pavers (turf block), flagstone, or brick pavers; reduce total impervious area; and employ other techniques to reduce run-off, capture and reuse rain water, allow the infiltration of water into the underlying soil, and recharge the Biscayne Aquifer.

Objective 9-1.2: MITIGATION, PROTECTION AND ADAPTATION WITHIN THE BUILT ENVIRONMENT. Improve the climate resiliency and energy-efficiency of new and existing buildings and public infrastructure.

Policy 9-1.2.1: Encourage Greener, Climate Resilient Construction. The Village of Pinecrest shall, by 2016, encourage greener, more efficient and climate resilient construction practices locally by:

- a) Building all new construction of village-owned facilities to published Leadership in Energy and Environmental Design™ (LEED) standards; Florida Green Building Coalition (FGBC) green building standards, or Green Building Initiative (GBI) Green Globes rating standards;
- b) Requiring licensed personnel in the Building and Planning Department to maintain LEED Green Associate certification and obtain at least 8 continuing education units (CEUs) of emerging energy efficiency and renewable energy technologies by 2016;
- c) Re-evaluating finish floor elevation standards with respect to projected sea level rise scenarios and flooding potential following completion of a comprehensive stormwater basin master plan.

Policy 9-1.2.2: Complete a Vulnerability Assessment for the Identification of Property and Infrastructure at Risk from Sea Level Rise. The Village of Pinecrest shall complete a vulnerability assessment to further identify property, public investments and infrastructure at risk from sea level rise, storm surge, groundwater contamination and other climate change related impacts by 2016, and shall update this assessment periodically as new sea level rise projections are published. Specifically, the Village shall complete a stormwater vulnerability assessment to further analyze vulnerability to facilities and services, including but not limited to: property; buildings; water and sewer lines; stormwater systems; roads, bridges, and all transportation infrastructure; electric sub stations; and municipal offices and facilities.

Objective 9-1.3: MITIGATION, PROTECTION AND ADAPTATION WITHIN THE TRANSPORTATION SYSTEM. Enhance transportation choices that reduce fossil fuel use, improve the mobility of people, goods and services; provide a diverse, efficient, and equitable choice of transportation options; and increase the Village's resiliency to the impacts of climate change.

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Policy 9-1.3.1: Minimize Environmental Impacts Associated With Construction of New Roadways. New roadways shall be designed to prevent and control soil erosion, minimize clearing and grubbing operations, minimize storm runoff, minimize exposure and risk of climate change impacts such as increased flood conditions, and avoid unnecessary changes in drainage patterns.

Policy 9-1.3.2: Diversify Fuel Options for Fleet Vehicles. The Village of Pinecrest shall continue to support initiatives which seek to diversify fuel options for fleet vehicles, and expand infrastructure for charging electric and hybrid electric vehicles.

Policy 9-1.3.3: Enhance Bicycle and Pedestrian Mobility. Improve pedestrian and bicycle mobility and connectivity throughout the Village of Pinecrest.

Policy 9-1.3.4: Prepare a Multi-Modal Transportation Plan for the Village of Pinecrest. Complete a multi-modal transportation plan to examine options for traffic calming and expanding availability of mass transit within the Village of Pinecrest.

Policy 9-1.3.5: Complete a Bicycle and Pedestrian Mobility Plan to Enhance Access and Connectivity Adjacent to Pinecrest Parkway. Complete a Bicycle and Pedestrian Mobility Plan for the improvement of pedestrian and bicycle connectivity adjacent to Pinecrest Parkway.

Objective 9-1.4: WATER, SEWER & SOLID WASTE. Coordinate with Miami-Dade County in the improvement of the resiliency of existing water resources, and water and wastewater infrastructure to the impacts of climate variability and change in order to protect future water quality and minimize the potential for flood damage and water shortages.

Policy 9-1.4.1: Identify Septic Tanks At Risk of Malfunctioning and Causing Contamination. The Village of Pinecrest shall coordinate with the Miami-Dade County Department of Economic and Regulatory Resources to identify any existing septic tanks that may be currently at risk of malfunctioning due to high groundwater levels or flooding and shall develop programs to abandon these systems and/or connect users to the public sewer system.

Policy 9-1.4.2: Identify Wells at Risk of Malfunctioning and Contamination. The Village of Pinecrest shall identify existing water wells that may be currently at risk of malfunctioning or contamination due to high groundwater levels or flooding and shall develop programs to abandon these systems and/or connect users to the public water system.

Policy 9-1.4.3: Complete the Phase III Potable Water Project. Coordinate with Miami-Dade County in the completion of Phase III of the Village's potable water system as necessary to provide potable central water service to all properties in the Village of Pinecrest.

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Policy 9-1.4.4: Manage, Reduce and Reuse Stormwater Runoff. The Village shall continue to develop regulations that require new construction, and redevelopment to manage stormwater runoff, incorporate porous materials, reduce total impervious area, and employ other techniques to reduce runoff, capture and reuse rainwater, and recharge the Biscayne Aquifer.

Objective 9-1.5: MITIGATION, PROTECTION AND ADAPTATION WITHIN THE NATURAL ENVIRONMENT. Protect and enhance the Village's natural environment as necessary to maintain a healthy, enjoyable, and climate resilient environment.

Policy 9-1.5.1: Complete a Tree Canopy Survey. The Village of Pinecrest, in cooperation with local academic, governmental and non-profit agencies, shall perform a tree canopy study by 2016 to determine canopy composition and extent, and seek funds to repeat the study every five years in order to measure progress toward the Village's goal of expanding green infrastructure.

Policy 9-1.5.2: Plant Native Trees to Sequester High Levels of Carbon. Pinecrest shall continue to encourage and require the planting of native and other drought tolerant trees known to sequester and store high levels of carbon on available public and private lands, including school and government properties, and conservation lands and shall pursue programs and funding strategies designed to create carbon emission offsets through tree plantings and/or carbon mitigation programs.

Objective 9-1.6: ADAPTATION ACTION STRATEGIES. Develop and implement adaptation strategies for the Village of Pinecrest to address impacts associated with coastal flooding, tidal events, storm surge, flash floods, stormwater runoff, salt water intrusion and other impacts related to climate change or exacerbated by sea level rise with the intent to increase the Village's comprehensive adaptability and resiliency capacities.

Policy 9-1.6.1: Options. Adaptation Action Areas adaptation strategy options may include but not be limited to:

- a. Protection
- b. Accommodation
- c. Managed Retreat
- d. Avoidance
- e. Other Options

Policy 9-1.6.2: Collaborate with the South Florida Water Management District in the Review of Policies Regarding Operation of Flood Control Structures. Work in collaboration with the South Florida Water Management District to review and adjust policies related to the operation of the

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flood and salinity control structures at the S22 and S23 outfalls, and to consider policies and protocol regarding forward pumping as a means of reducing and controlling stormwater flooding levels during periods of inundation.

Policy 9-1.6.3: Backflow Preventers. Consider the installation of backflow preventers on drainage systems that discharge to Biscayne Bay or drainage canals.

Policy 9-1.6.4: Reassess the Village's Required Minimum Base Floor Elevation. Consider increasing the minimum required base floor elevation of all new structures within designated Adaptation Action Areas by one additional foot (freeboard).

Policy 9-1.6.5: Stormwater Drainage Infrastructure. Construct additional stormwater drainage infrastructure necessary to accommodate projected increases in stormwater including drainage wells, injection wells, swales, French drains, and other related structures as recommended in the Village's Stormwater Master Plan.

Policy 9-1.6.6: Collaborate with Governmental Agencies In The Implementation of Mitigation Strategies. Collaborate and coordinate with appropriate local, regional, and state governmental agencies including Miami-Dade County, the South Florida Water Management District, and the South Florida Regional Planning Council toward the implementation of Adaptation Action Area adaptation strategies.

Objective 9-1.7: ADAPTATION ACTION AREAS. The Village of Pinecrest shall continue to identify and designate Adaptation Action Areas as provided by Section 163.3164(1), Florida Statute, and develop policies for adaptation as required for the protection of areas and facilities in the Village of Pinecrest that are vulnerable to the impacts of rising sea levels and climate change.

Policy 9-1.7.1: Areas For Consideration. Consideration of Adaptation Action Areas designation shall include but shall not be limited to:

- a. Areas which have a hydrological connection to coastal waters.
- b. Locations which are within areas designated as evacuation areas for storm surge.
- c. Other areas impacted by stormwater/flood control issues.

Policy 9-1.7.2: Basis For Designation. As the basis for the designation of Adaptation Action Areas, the Village will continue to utilize the best available data and resources such as the Unified Sea level Rise Projection for Southeast Florida in order to identify the risks and vulnerabilities associated with climate change and sea level rise and opportunities to formulate timely and effective adaptation strategies.

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Policy 9-1.7.3: Adaptation Action Areas Identified. Those Areas as identified in Figure 10, Adaptation Action Areas, that are projected to be impacted by 6 or More Inches of Flooding, are designated as Adaptation Action Areas.

Objective 9-1.8: INTERAGENCY COORDINATION. Continue to coordinate with Governmental agencies within the South Florida region and other non-governmental entities and academic institutions in the ongoing assessment of existing and projected conditions related to our changing climate and rising sea levels, and continue to collaborate as necessary in the identification and development of effective solutions and strategies to adapt and improve resiliency.

Policy 9-1.8.1: Continue Coordination with Miami-Dade County and Other Participating Counties in The Development of Goals, Objectives, and Policies to Address Climate Change. The Village of Pinecrest shall coordinate with Miami-Dade County and other participating counties in the Southeast Florida Regional Climate Change Compact in the development of initiatives and goals to address climate change. Additional climate change related objectives and policies that support regional climate change goals shall be integrated into the Comprehensive Development Master Plan as appropriate.

Policy 9-1.8.2: Continue To Coordinate With Other Governmental and Academic Entities In The Ongoing Analysis of Sea Level Rise. The Village of Pinecrest shall continue to coordinate regionally with Southeast Florida counties and municipalities, academia, and state and federal government agencies in the analysis of sea level rise, drainage, storm surge and hurricane impacts and the planning of mitigation and adaptation measures.

Policy 9-1.8.3: Continue To Monitor And Coordinate With The Southeast Florida Regional Climate Change Compact. The Village of Pinecrest shall continue to actively monitor the Southeast Florida Regional Climate Change Compact, and shall coordinate with neighboring municipalities to make our community more climate change resilient by sharing technical expertise, assessing regional vulnerabilities, advancing agreed upon mitigation and adaptation strategies, and developing policies and programs.

Village of Pinecrest
Comprehensive Development Master Plan

Climate Change Element

Data, Inventory and Analysis

AN ORDINANCE OF THE VILLAGE COUNCIL OF THE VILLAGE OF PINECREST, FLORIDA, AMENDING THE VILLAGE OF PINECREST COMPREHENSIVE DEVELOPMENT MASTER PLAN, ORIGINALLY ADOPTED BY ORDINANCE 1999-04, TO INCLUDE A CLIMATE CHANGE ELEMENT AND RELATED DATA AND ANALYSIS; PROVIDING FOR CONFLICT, SEVERABILITY, INCLUSION IN THE COMPREHENSIVE DEVELOPMENT MASTER PLAN, AND AN EFFECTIVE DATE.

Exhibit "B"

First Reading: December 9, 2014

Second Reading:

CLIMATE CHANGE

Climate Change Element Data, Inventory and Analysis

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CLIMATE CHANGE ELEMENT DATA, INVENTORY AND ANALYSIS

INTRODUCTION

Purpose. The purpose of the Climate Change amendments to the Comprehensive Development Master Plan is to provide a planning framework for addressing the physical, economic, environmental, and social impacts that changes in climate are expected to have on the Village of Pinecrest.

The Village of Pinecrest recognizes the general consensus that climate change is occurring, and that greenhouse gas emissions, primarily from the burning of fossil fuels, are increasing in their atmospheric concentrations. It is recognized that these greenhouse gas emissions may be a contributing factor. The Village understands that Southeast Florida is vulnerable to sea level rise, and other climate change impacts and is aware that these impacts will be greater when coupled with significant storm events that may include flooding, hurricanes, and storm surge. As a result of the changes in global and local conditions that are occurring, the Village has made it a priority to reduce its overall “carbon footprint”, and to develop additional strategies to address impacts associated with coastal flooding, tidal events, storm surge, flash floods, stormwater runoff, salt water intrusion, groundwater contamination and other impacts related to global climate change and sea level rise.

On April 12, 2011, the Village of Pinecrest committed to joining ICLEI (International Council for Local Environmental Initiatives) - Local Governments for Sustainability as a full member and pledged to take a leadership role in promoting public awareness in the community about the causes and impacts of climate change. In 2011, the Village of Pinecrest adopted a Green Action Plan to proactively reduce overall greenhouse gas (GHG) emissions by 7% below 1996 levels by 2014.

Goals, objectives, and strategies, based on local data and environmental conditions are included within the Climate Change Element of the Comprehensive Development Master Plan as necessary to address the impacts of climate change. Adoption of a Climate Change Element as an amendment to the Village’s Comprehensive Plan constitutes another important step in protecting the Village of Pinecrest and providing for a more sustainable, and climate resilient community.

Service Area. The proposed amendments are applicable to the Village of Pinecrest. Although the service area is generally confined to the Village of Pinecrest, issues related to climate, natural resources, water resources and flood control impact a larger regional area. The Village encourages adjoining local municipal to consider these larger regional issues and implications in

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their environmental planning initiatives.

Planning Horizon. The proposed amendments anticipate multiple planning horizons to achieve the goal of a sustainable and climate-resilient community. Actions which were identified as being critical to achieving this mission, and able to be taken in the immediate or short-term (0-5 years) with current village resources, are given the target date of 2015. A few mid-term (0-25 year) goals have been set in the 2020 - 2030 timeframe. A 2060 planning horizon is consistent with the Southeast Florida Climate Change Compact’s Regional Unified Sea Level Rise Projection.

DATA AND ANALYSIS

Greenhouse Gas (GHG) Emissions. Global warming and climate change are driven by the amount of greenhouse gases like carbon dioxide (CO₂) in the atmosphere. Human activities such as the burning of fossil fuels and changing of land use patterns are increasing greenhouse gases concentration, thereby trapping more of the sun’s radiant heat in the atmosphere and amplifying the natural greenhouse effect. The National Oceanographic and Atmospheric Administration (NOAA) reports that atmospheric carbon dioxide (CO₂), has risen from about 318 parts per million (ppm) in 1958 to 391 ppm in Jan 2011, fueling global warming and climate instability. The Intergovernmental Panel on Climate Change reported in 2007 that the warming of the climate system was unequivocal. That same year, the U.S. Supreme Court deemed greenhouse gases in the atmosphere a threat to the public health and welfare of current and future generations, and mandated the U.S. Environmental Protection Agency (EPA) to regulate the emissions of these six gases under the Clean Air Act: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Within the Village of Pinecrest, a *Community Greenhouse Gas Emission Inventory and Forecast* completed by Reynolds, Smith, Hills in December 2013, indicates the following emissions for the community.

Table 1: 2010 Community GHG Emissions by Sector

	<u>Residential</u>	<u>Commercial</u>	<u>Transportation</u>	<u>Waste</u>	<u>Other</u>	<u>TOTAL</u>
CO ₂ e (metric tons)	55,392	58,799	140,668	995	561	256,414
% of Total CO ₂ e	22%	23%	55%	0.4%	0.2%	100%

Table 2: 2012 Community GHG Emissions by Sector

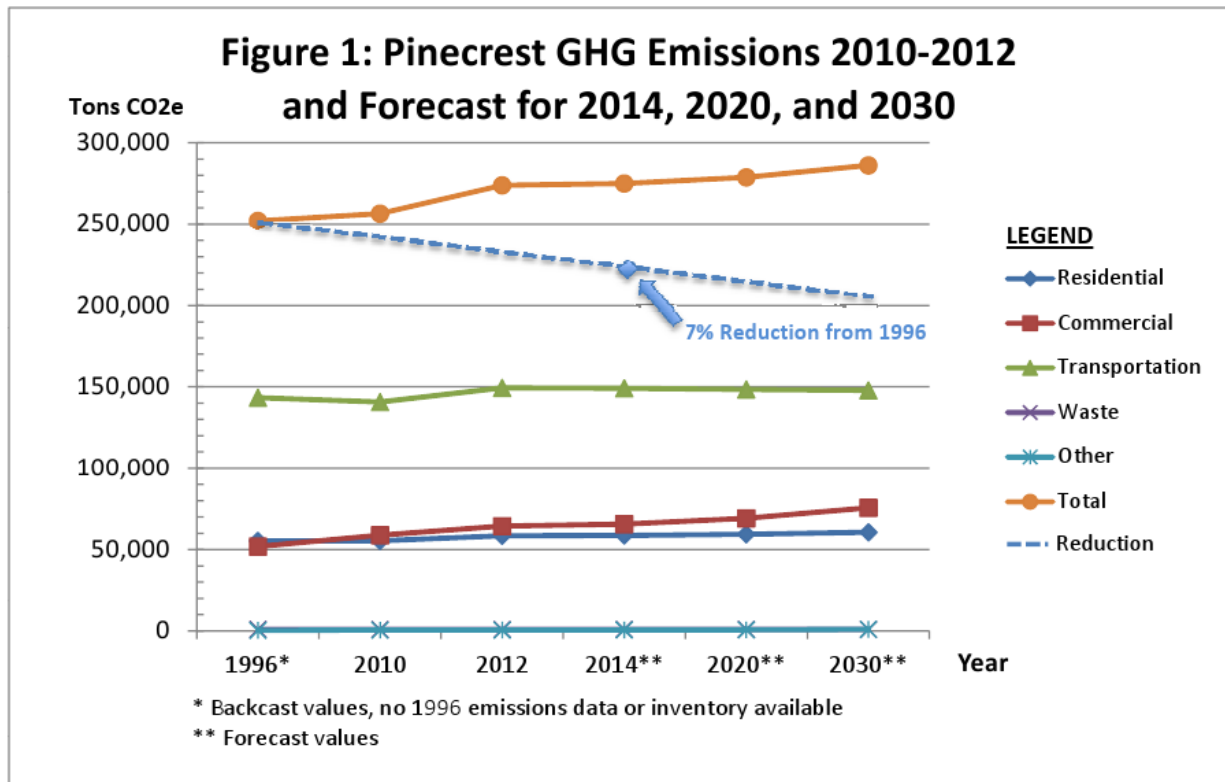
	<u>Residential</u>	<u>Commercial</u>	<u>Transportation</u>	<u>Waste</u>	<u>Other</u>	<u>TOTAL</u>
CO ₂ e (metric tons)	58,477	64,454	149,353	957	578	273,819
Village of Pinecrest Data and Analysis			2			Comprehensive Plan Climate Change

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% of Total CO₂e 21% 24% 55% 0.3% 0.2% 100%

Table 3: 2014 Community GHG Emissions Forecast

	<u>2010</u>	<u>2014</u>	<u>2020</u>	<u>2030</u>	<u>% Chng. 2010-2014</u>
Residential	55,392	58,711	59,418	60,615	6%
Comm./Industrial	58,799	65,613	69,216	75,667	12%
Transportation	140,668	149,067	148,380	147,829	6%
Waste Generation	995	957	957	957	-4%
Other	<u>561</u>	<u>616</u>	<u>742</u>	<u>1,013</u>	<u>10%</u>
TOTAL Tons CO₂	256,414	274,727	278,712	286,080	7%



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Source: *Community Greenhouse Gas (GHG) Emission Inventory and Forecast for the Village of Pinecrest*, December 19, 2013

ASSESSING THE VILLAGE'S VULNERABILITY TO SEA LEVEL RISE

Sea Level Rise Projection – South Florida. A recent report entitled, *A region responds to Changing Climate*, prepared by the Southeast Florida Regional Climate Change Compact Counties in October 2012, indicates that sea levels are projected to rise in South Florida within a range that extends from 9 to 24 inches by the year 2060. This projection is based upon Key West tidal data collected from 1913-1999. Two key planning horizons are highlighted within the report: 2030 when sea level rise is projected to be 3-7 inches and 2060 when it is projected to be 9-24 inches.

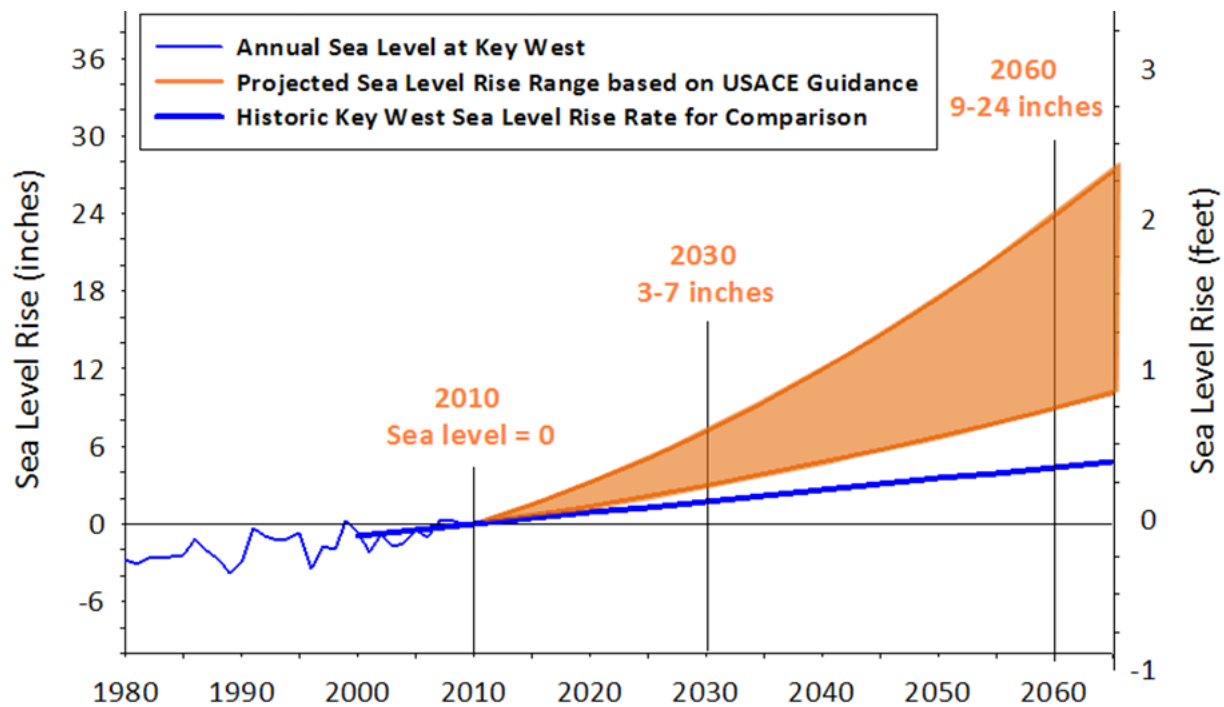


Figure 2: *A Unified Sea Level Rise Projection for Southeast Florida (2011)*

Source: *A Region Responds to a Changing Climate*, Southeast Florida Regional Climate Change Compact Counties, October 2012. This projection uses historic tidal information from Key West and was calculated by Kristopher Esterson from the United States Army Corps of Engineers using Village of Pinecrest Comprehensive Plan Data and Analysis

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Source: Analysis of the Vulnerability of Southeast Florida to Sea Level Rise, August 2012

The southernmost counties are expected to experience the greatest direct impacts, with lessening impacts as one travels northward. Nearly 80 percent of the lands that would potentially be affected regionally by a one-foot rise in sea level are conservation lands including coastal wetlands. Low lying natural systems made up of mangrove and wetlands are significantly impacted in all sea level rise scenarios.

Sea Level Rise and Inundation Mapping – Village of Pinecrest. Although Figure 3 above, as indicated within the *Analysis of the Vulnerability of Southeast Florida to Sea Level Rise*, does not indicate any loss of property due to permanent inundation in the Village of Pinecrest, the areas of indicated inundation are expected to be more severe with associated impacts of storm surge that may occur with a hurricane or the impacts of significant rainfall as would occur with a major storm event.

While Pinecrest is not located immediately adjacent to the Atlantic shoreline, rising sea levels are expected to impact canals, rivers and primary drainage systems within Miami-Dade County and the Village of Pinecrest. As the capacity of primary and secondary drainage systems is compromised, flooding will become more severe during storm events. Areas of flooding within the Village are expected to become progressively more widespread and slower to subside as sea level increases as projected.

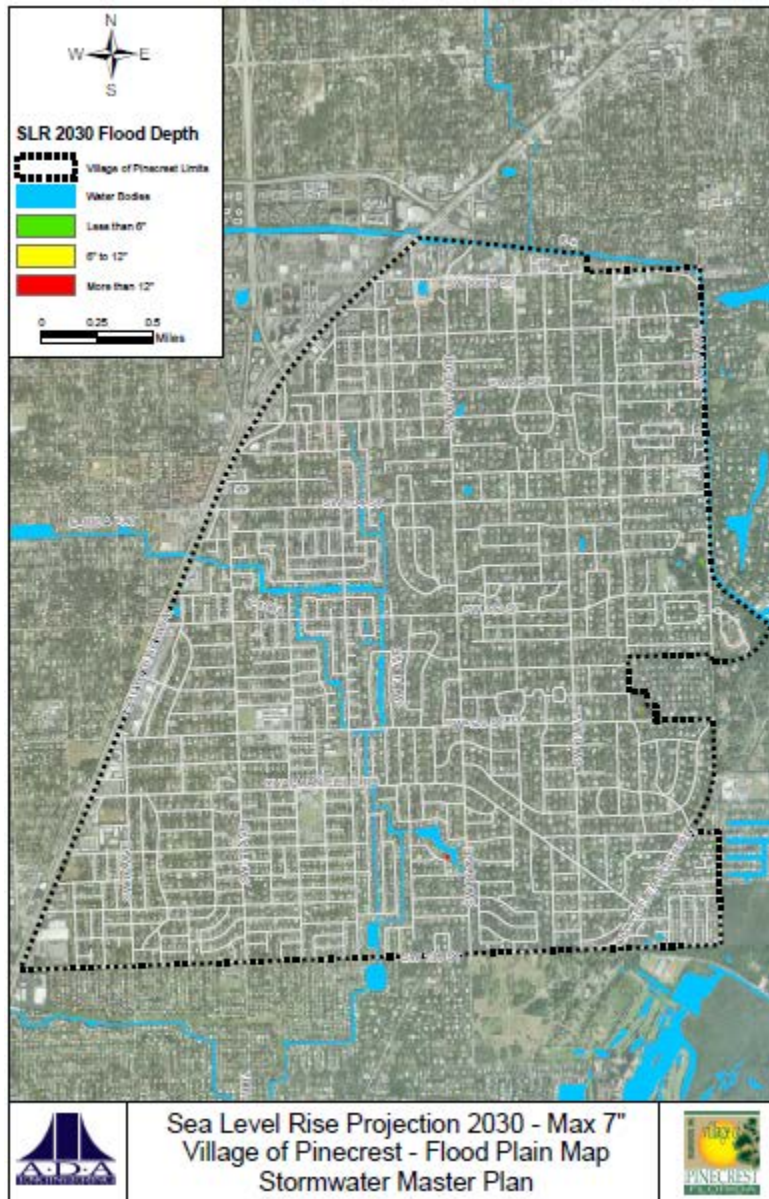
Additional analysis completed and provided by ADA Consultants in conjunction with preparation of a Stormwater Drainage Master Plan for the Village of Pinecrest shows more detailed, location-specific impacts of sea level rise for the Years 2030 and 2060. Completion of the stormwater master plan is scheduled to occur in June 2015.

A series of six maps have been prepared by ADA Consultants in conjunction with preparation of the Village's Stormwater Master Plan. Sea level predictions for the years 2030 and 2060 were selected. The 2030 projection indicates the sea level will rise an additional 3 to 7 inches above current levels by the year 2030 and continue to rise to a level of 9 to 24 inches above current levels by the year 2060. Simulations using the 2014 XP-SWMM Baseline Model were completed by implementing maximum predictions of 7 and 24 inches for the years 2030 and 2060 respectively. These conditions for these two periods were then further analyzed and mapped assuming a 5-year and 100-year storm event respectively.

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Year 2030 Planning Horizon

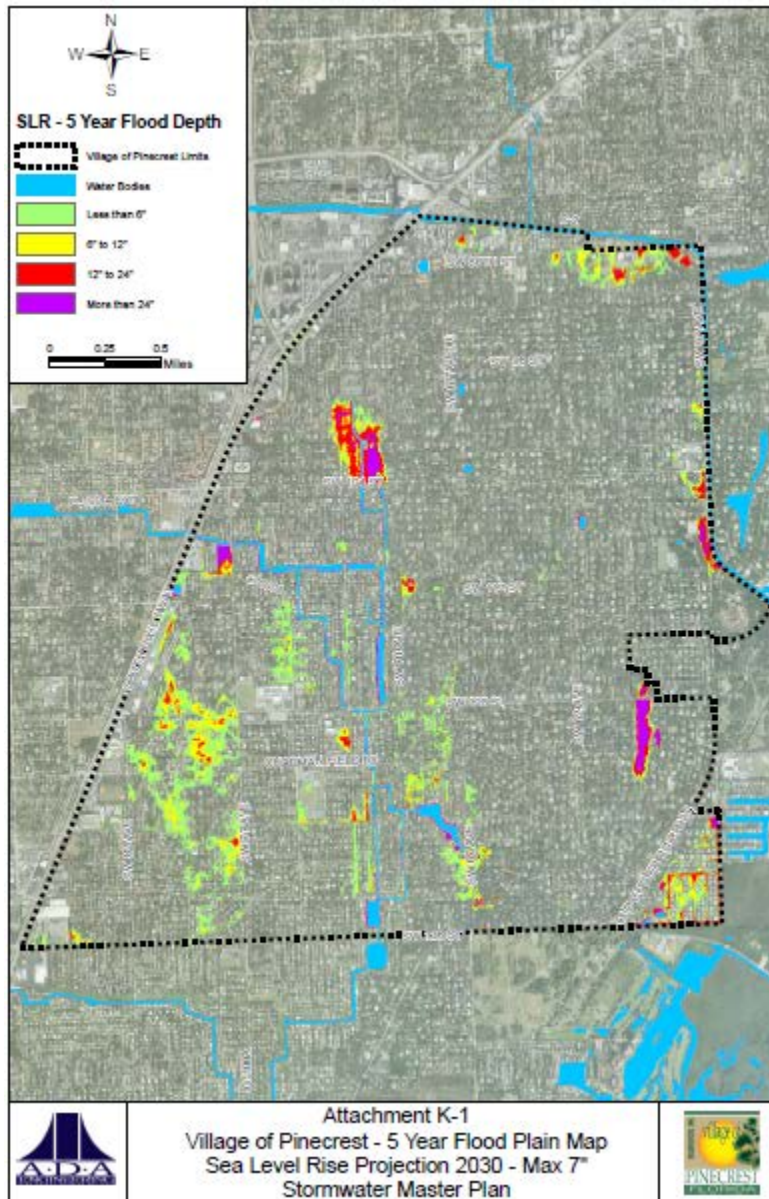
Projected Maximum Sea level Rise - 7 Inches. A projected rise in sea level of 7 inches by the year 2030 will not cause any appreciable inundation beyond current conditions during periods of dry weather.



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Figure 4: Sea Level Rise Projection – Maximum 7 inches (2030) – Dry Conditions

Although no significant impacts of a 7-inch rise in sea level are expected during dry weather conditions, Figures 5 and 6 show that areas of flooding and inundation within the Village will increase during wet weather events. Figure 5 assumes a 5-year flood, while Figure 7 shows areas of flooding and inundation during a 100-year storm event.



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Figure 5: Sea Level Rise Projection – Maximum 7 inches (2030) – 5 Year Flood

A rise in sea level of 7 inches coupled with a 5-year storm will cause flooding of 6 inches or more in the southwestern portion of the Village, west of SW 77 Avenue.

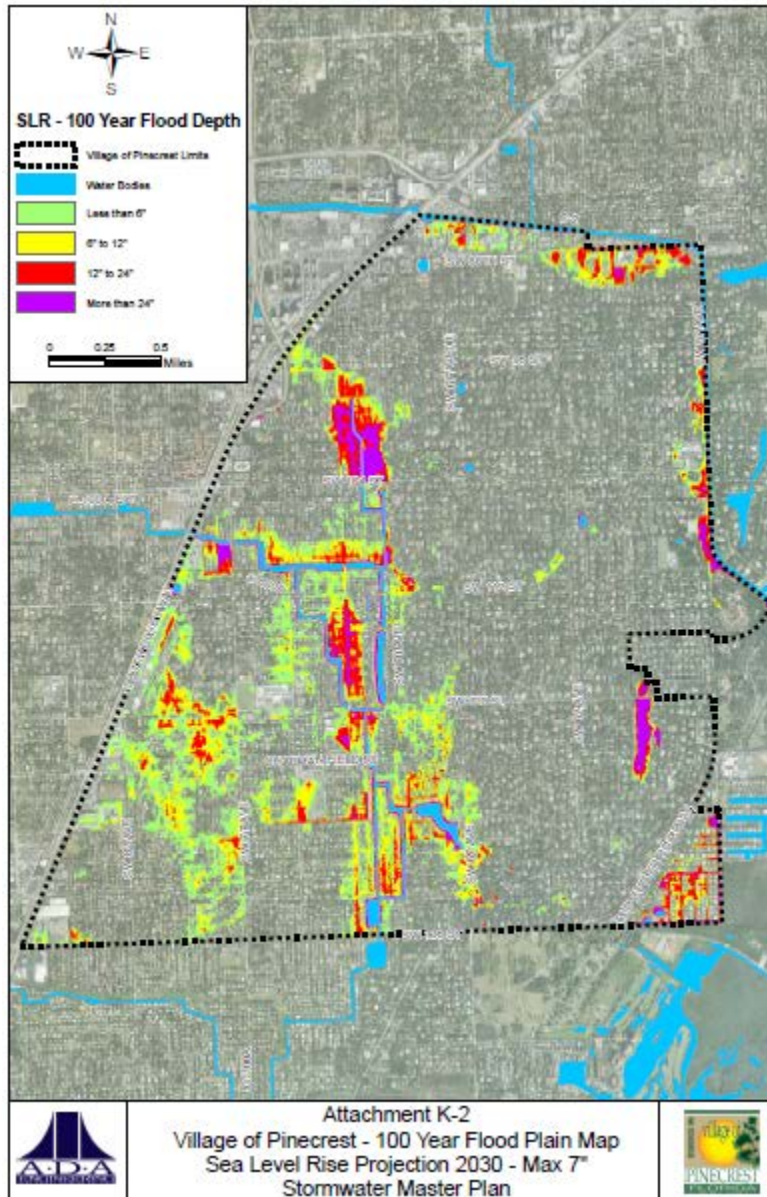


Figure 6: Sea Level Rise Projection – Maximum 7 inches (2030) – 100 Year Flood

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Flooding of more than 12 inches is projected to occur at the northeast quadrant of SW 104 Street and SW 77 Avenue; on the west side of SW 57 Avenue between SW 104 Street and SW 111 Street; adjacent to Pine Needle Lane, south of SW 120 Street; within Pinecrest by-the-Sea; and adjacent to the Village's canals and lakes.

Flooding during a more severe 100-year storm event will cause flooding in a larger overall area as shown in Figure 6. Areas of the Village that will experience the most severe impacts include the following:

- West of SW 72 Avenue
- SW 88 Street and SW 57 Avenue
- SW 57 Avenue/Red Road
- Pinecrest by-the Sea
- Pine Needle Lane
- Both sides of the canal between SW 98 Street and SW 104 Street

Year 2060 Planning Horizon

Projected Maximum Sea level Rise – 24 Inches. As sea level rises to its maximum projected level of 24 inches by the year 2060, areas of inundation remain limited in the absence of a storm event, although the capacity of the soil to absorb rain water will continue to diminish. During periods of dry weather, areas of inundation as shown in Figure 7 appear to be limited to the northeast area of the Village adjacent to SW 88 Street and SW 57 Avenue, and the northwest corner of SW 57 Avenue and SW 111 Street.

In the year 2060, assuming a 24-inch rise in sea level as projected in the U.S. Army Corps of Engineers model, flooding becomes readily apparent during periods of heavy rainfall.

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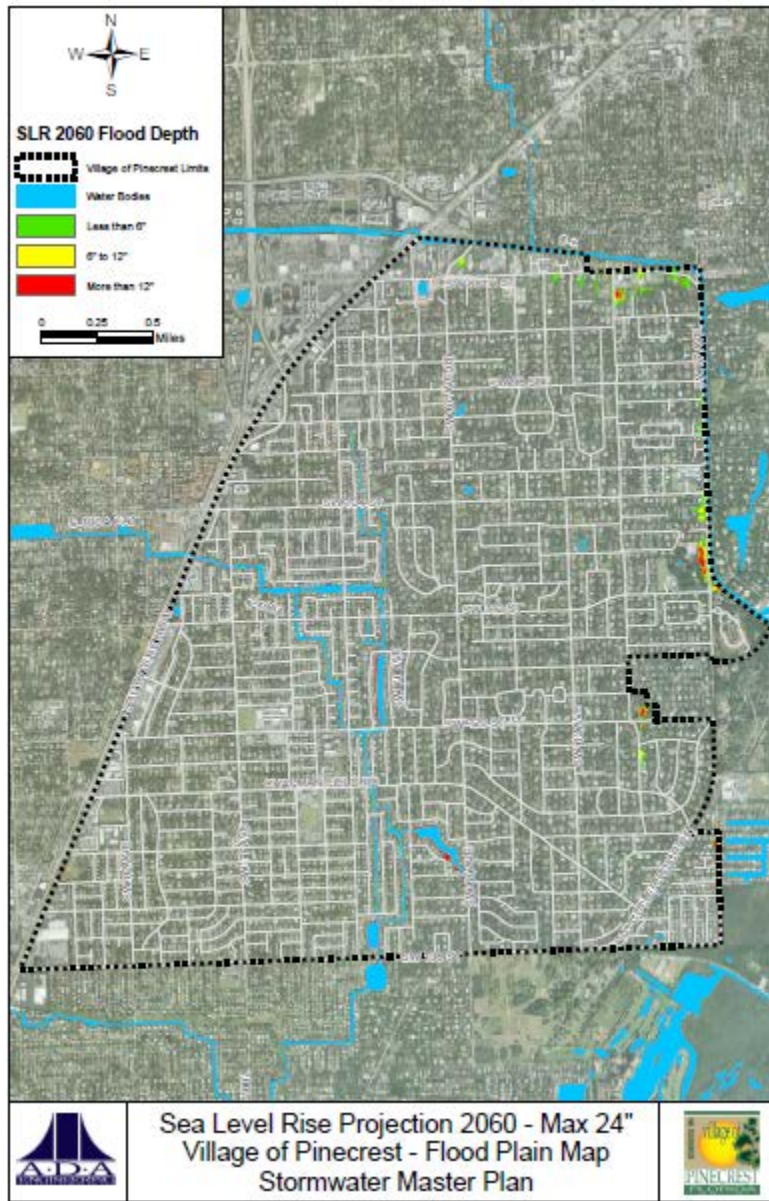


Figure 7: Sea Level Rise Projection– Maximum 24 inches (2060) – Dry Conditions

Areas subject to flooding in the Year 2060, assuming a rise in sea level of 24 inches, are shown in Figures 8 (5-Year Storm) and 9 (100 Year Storm) below.

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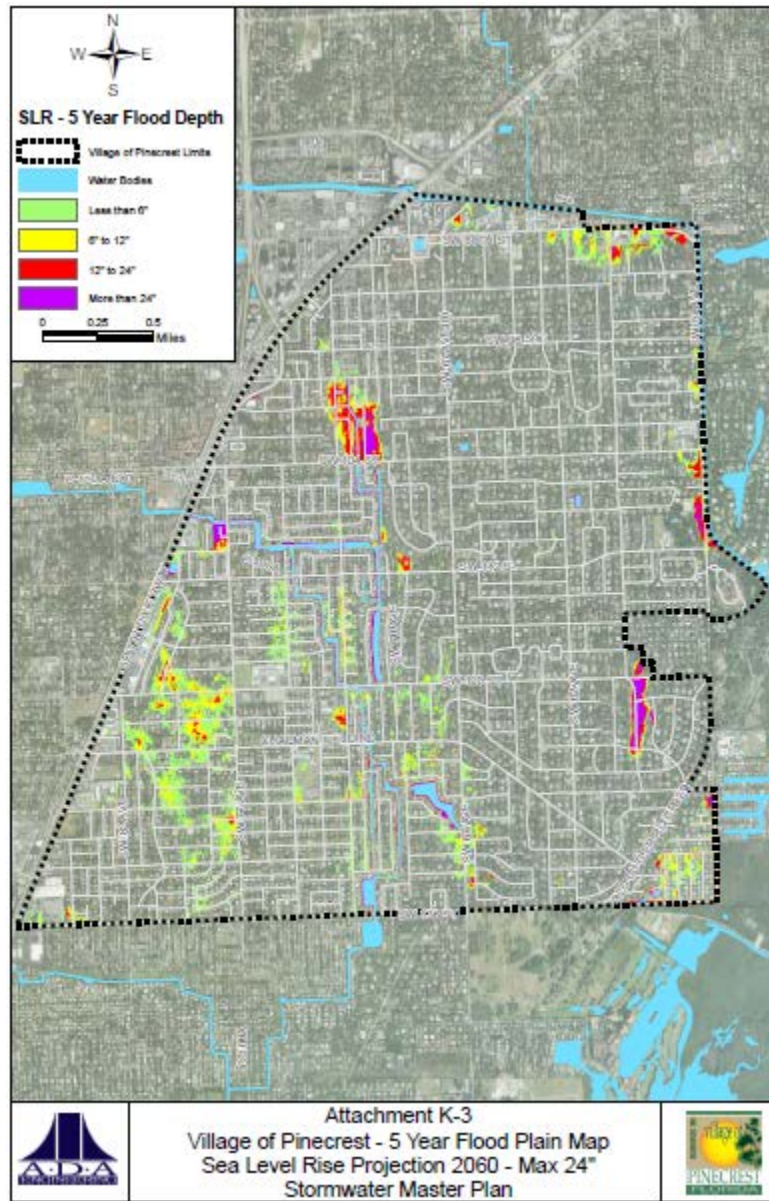


Figure 8 – Sea Level Rise Projection – Maximum 24 inches (2060) – 5 Year Flood

During a 5-year rain event, flooding of 6 to 12 inches is again indicated west of SW 77 Avenue; adjacent to the Village’s canals; and throughout Pinecrest by-the-Sea. Flooding of more than 24 inches is projected to occur north of SW 104 Street, east of SW 72 Avenue; in the areas

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adjacent to Pine Needle Lane; and in the area on the west side of SW 57 Avenue/Red Road, north of SW 111 Street.

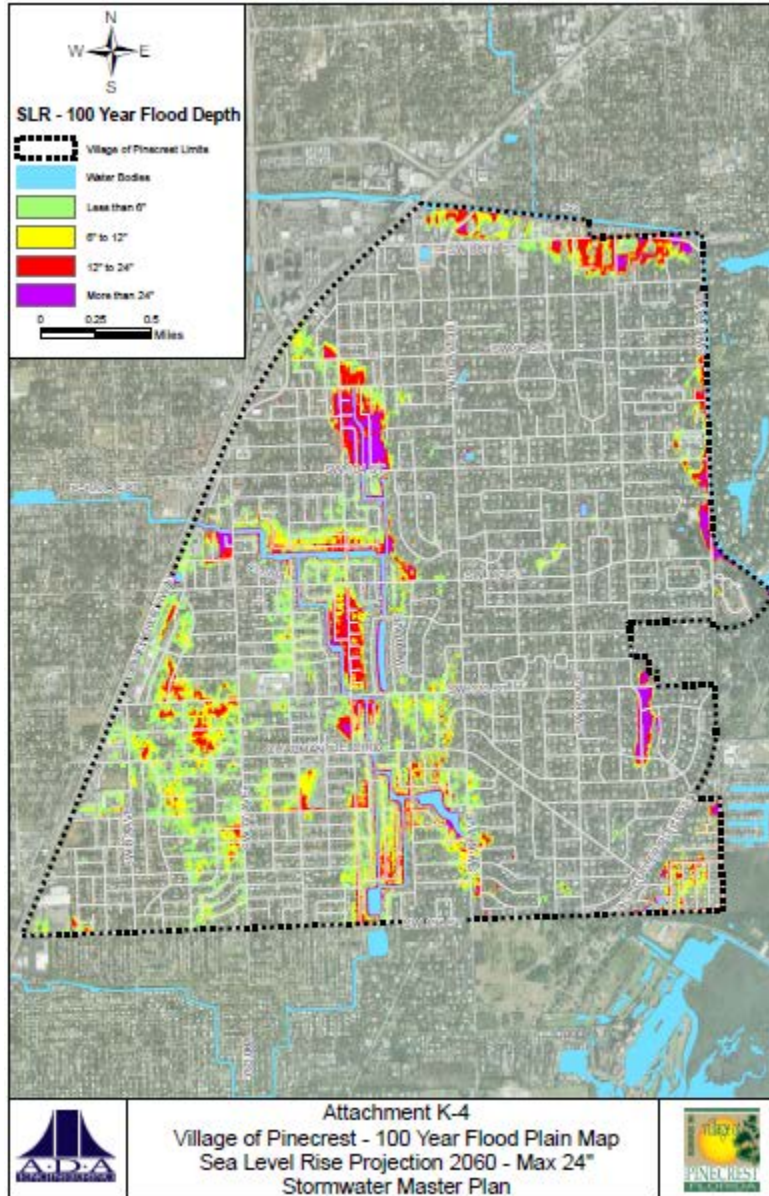


Figure 9 - Sea Level Rise Projection – Maximum 24 inches (2060) – 100 Year Flood

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The impacts of rising sea levels and climate change will be the most widespread during a 100 year storm event. In the year 2060, when sea level is projected to have risen by a maximum of 24 inches, the most extensive flooding during a 100 year storm event will occur in those areas shown Figure 9. A comparison between the current extent of flooding with a 100 year storm event with the depth of flooding produced by the same storm event and 24 inches of projected sea level rise is shown in Figure 10.

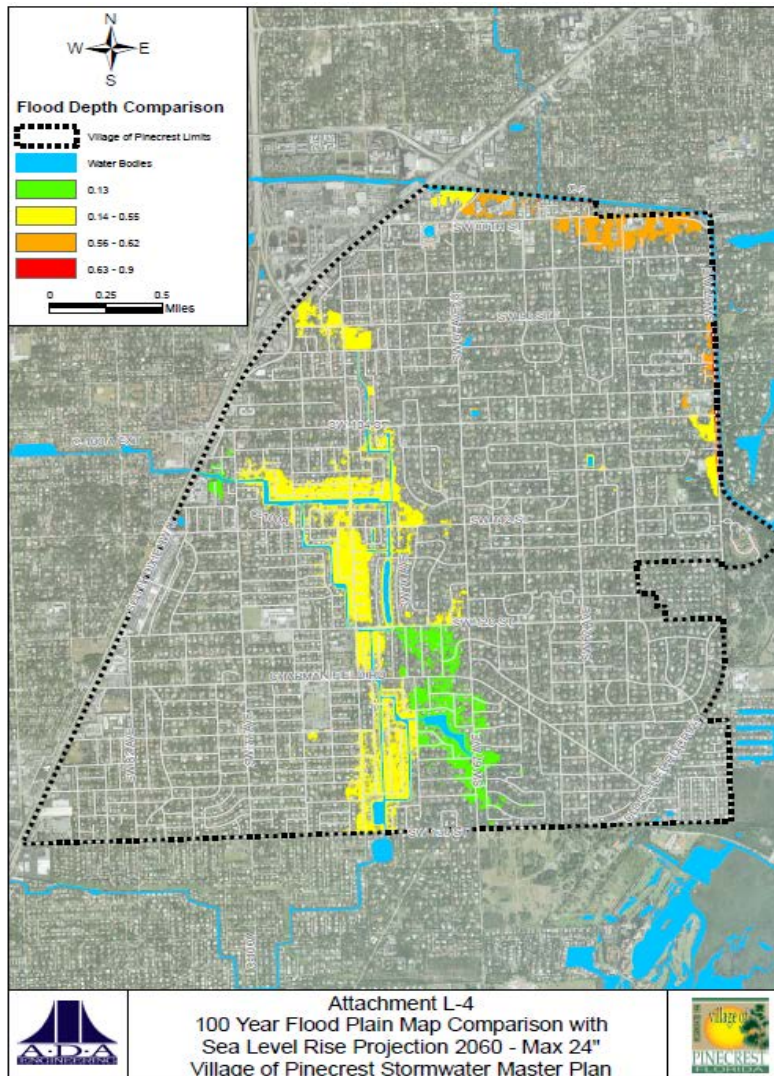


Figure 10 - Sea Level Rise Projection – 100 Year Flood Event - Net Additional Flood Depth 2014-2060

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The majority of the Village will be impacted except that area between SW 60 Avenue and SW 67 Avenue. Areas most heavily impacted include:

- West of SW 67 Avenue, south of SW 104 Street
- SW 88 Street
- SW 57 Avenue/Red Road
- Pine Needle Lane
- Pinecrest by-the Sea
- Area east and west of SW 72 Avenue, between SW 94 Street and SW 104 Street

MITIGATION

Changes in climate and associated rises in sea level are based on the model provided in Figure 2, *A Unified Sea Level Rise Projection for Southeast Florida (2011)* which was derived based on historic tidal information from Key West and calculations of the United States Army Corps of Engineers using USACE Guidance (USACE 2009). It is important that the projections be monitored on an annual basis and adjusted accordingly using the most recent actual data available.

Continued monitoring of projected rises in sea level should be carried out throughout the planning period and updated periodically throughout the planning period. Completion of periodic vulnerability assessment analyses will allow for monitoring of changing conditions and adjust strategies as warranted. Strategies that are available to mitigate the projected impacts of sea level rise include the following:

- Work in collaboration with the South Florida Water Management District to review and adjust policies related to the operation of the flood and salinity control structures at the S22 and S23 outfalls.
- Consider the installation of backflow preventers on drainage systems that discharge to Biscayne Bay or drainage canals.
- Consider increasing the minimum required base floor elevation of all new structures within designated Adaptation Action Areas by one additional foot (freeboard).
- Construct additional stormwater drainage infrastructure necessary to accommodate projected increases in stormwater including drainage wells, injection wells, swales, French drains, and other related structures as recommended in the Village's Stormwater Master Plan.

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ADAPTATION ACTION AREAS

Florida Statutes. Chapter 163, Section 163.3164 (1) of the Florida Statutes defines an "Adaptation Action Area" as an area or areas that "*experience coastal flooding due to extreme high tides and storm surge and that are vulnerable to the related impacts of rising sea levels for the purpose of prioritizing funding for infrastructure needs and adaptation planning*".

Consideration for Adaptation Action Areas may include, but not be limited to:

- a. Areas which experience tidal flooding
- b. Areas which have a hydrological connection to coastal waters
- c. Locations which are within areas designated as evacuation zones for storm surge
- d. Other areas impacted by stormwater/flood control issues.

Adaptation Action Areas strategy options may include, but not be limited to Protection; Accommodation; Managed Retreat; Avoidance; and Other Options.

Based on the analysis of projected flooding and other associated impacts of sea level rise in the Village of Pinecrest, strategies encompassing protection and accommodation have the potential for being most beneficial.

Village of Pinecrest. Within the Village of Pinecrest, the areas most vulnerable to sea level rise are indicated in Figure 9. An additional map and analysis, Figure 11, has been prepared to show the location of water lines and sewer lines in comparison to the areas of the Village that are expected to experience the most intensive levels of flooding.

Water and Sewer Service

As of June 2014, there were 1,472 homes in the Village of Pinecrest receiving potable water from individual on-site wells, not connected to the Miami-Dade County Water System. Additionally, as shown in Figure 11, below, the majority of the Village of Pinecrest is served by on-site septic tanks. As water levels continue to increase as projected, it is expected that septic tanks will become inundated which could potentially cause contamination of nearby on-site water wells. Extension of central water lines into those areas projected to experience the greatest levels of flooding will be critical to the supply of clean and sanitary potable water to the residents within them. Additionally, as water levels continue to rise in those areas indicated in Figure 11, it is expected that the ability to continue to use individual on-site septic tanks will become

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compromised. Accordingly, extension of sewer lines into those areas prone to future flooding and inundation will need to be considered evermore critically as sea level continues to rise.

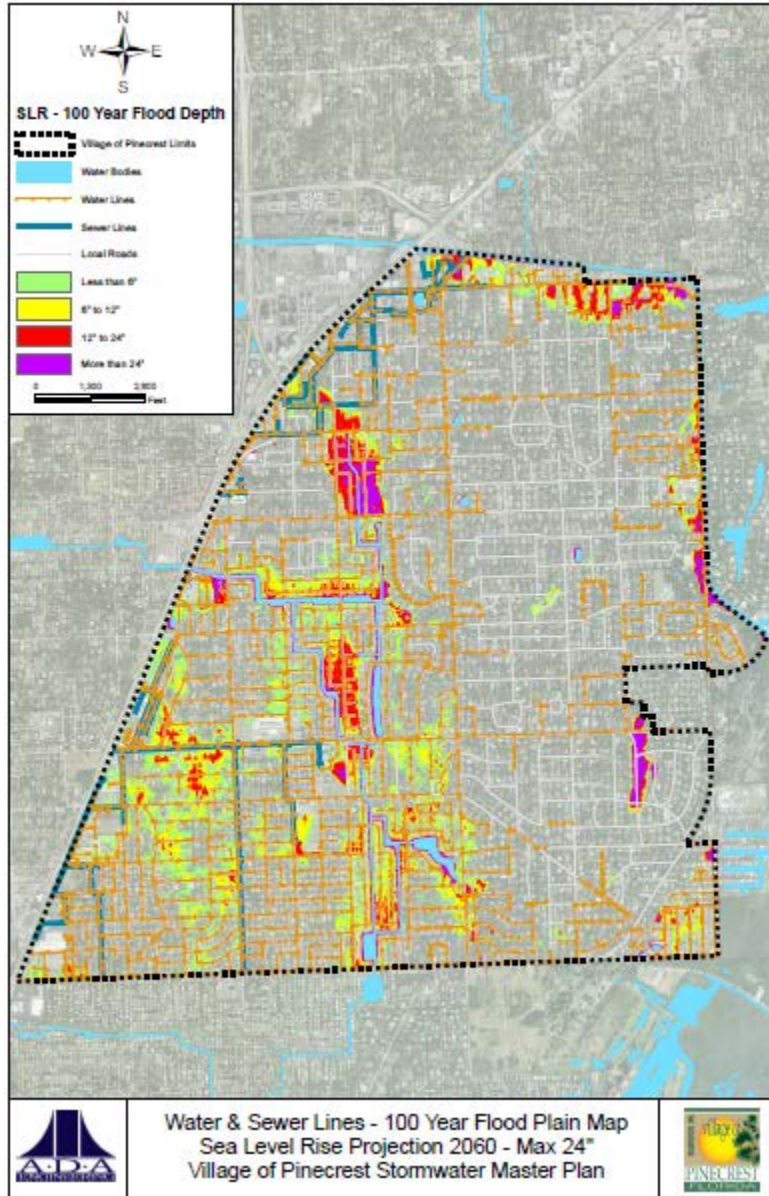
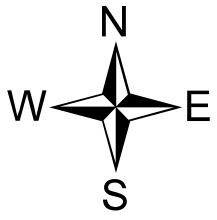
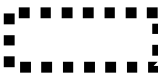
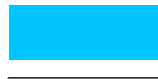



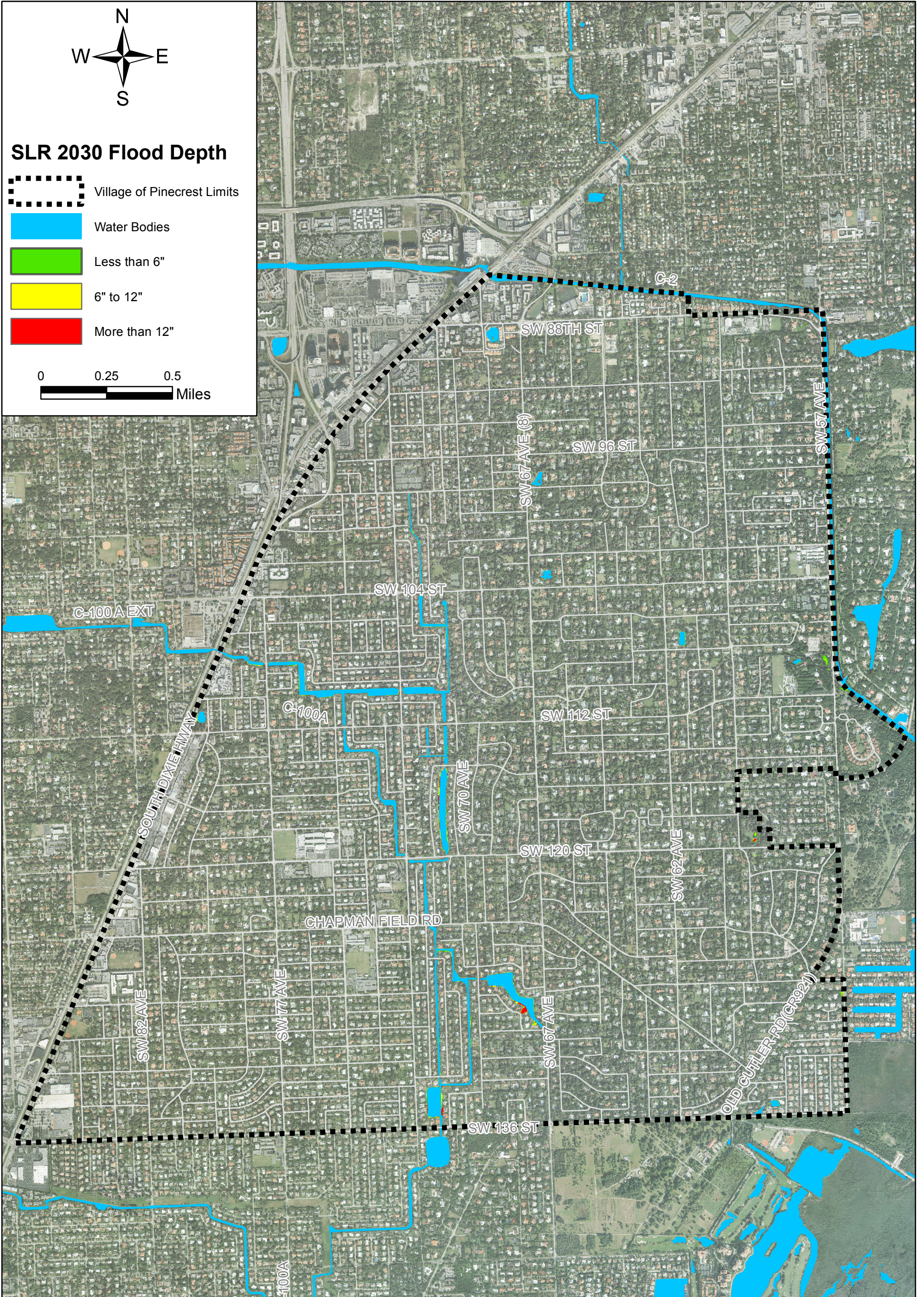
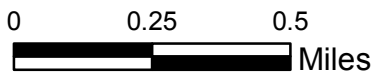


Figure 11 – Adaptation Action Areas – Areas With 6 or more Inches of Flooding



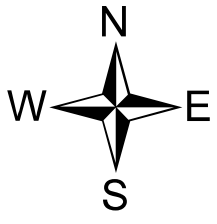
SLR 2030 Flood Depth

-  Village of Pinecrest Limits
-  Water Bodies
-  Less than 6"
-  6" to 12"
-  More than 12"

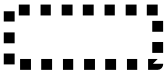







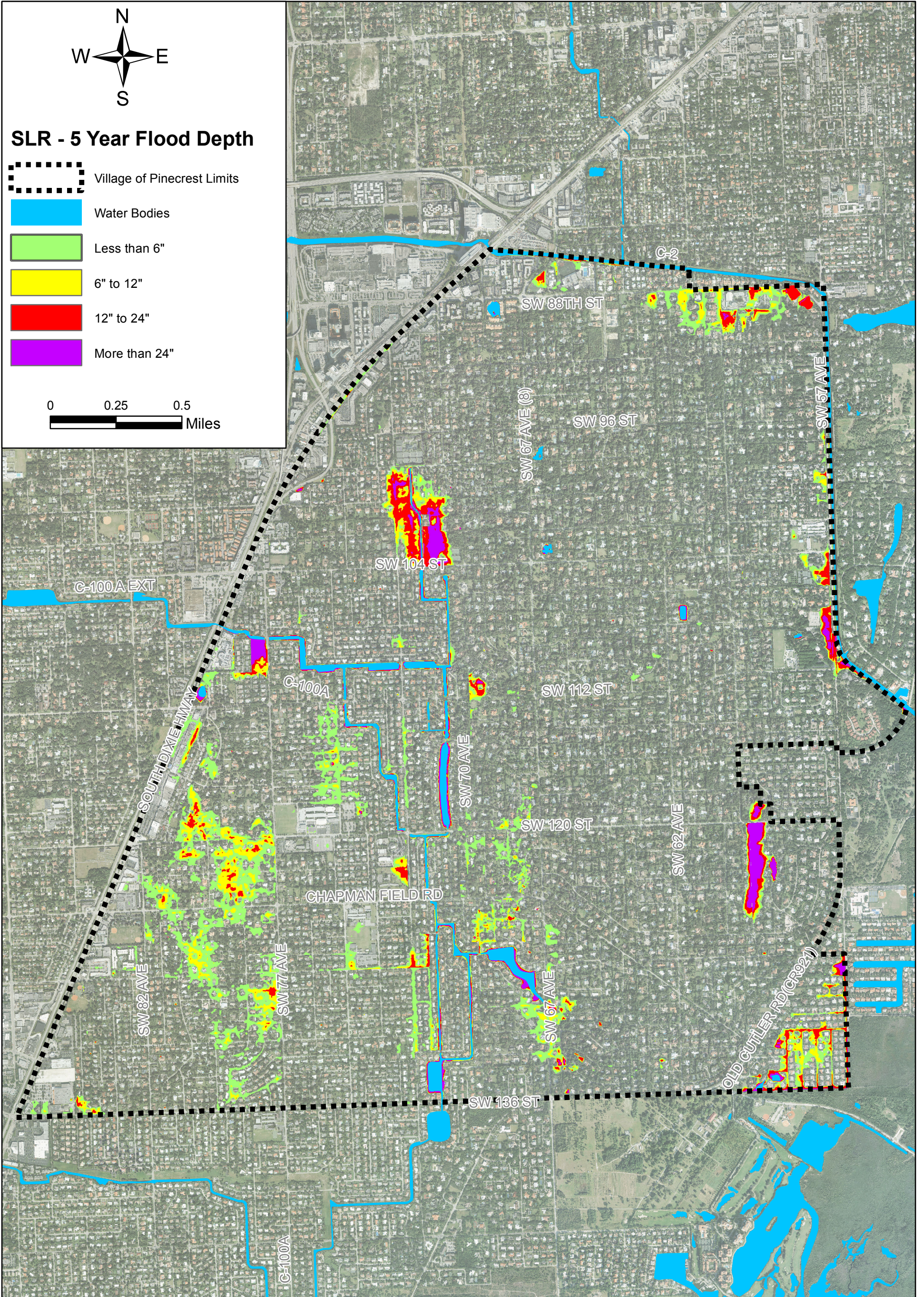
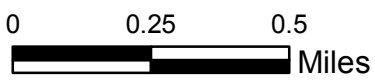
Sea Level Rise Projection 2030 - Max 7" Village of Pinecrest - Flood Plain Map Stormwater Master Plan





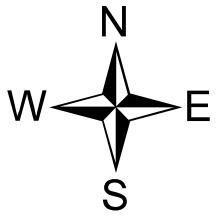
SLR - 5 Year Flood Depth

-  Village of Pinecrest Limits
-  Water Bodies
-  Less than 6"
-  6" to 12"
-  12" to 24"
-  More than 24"



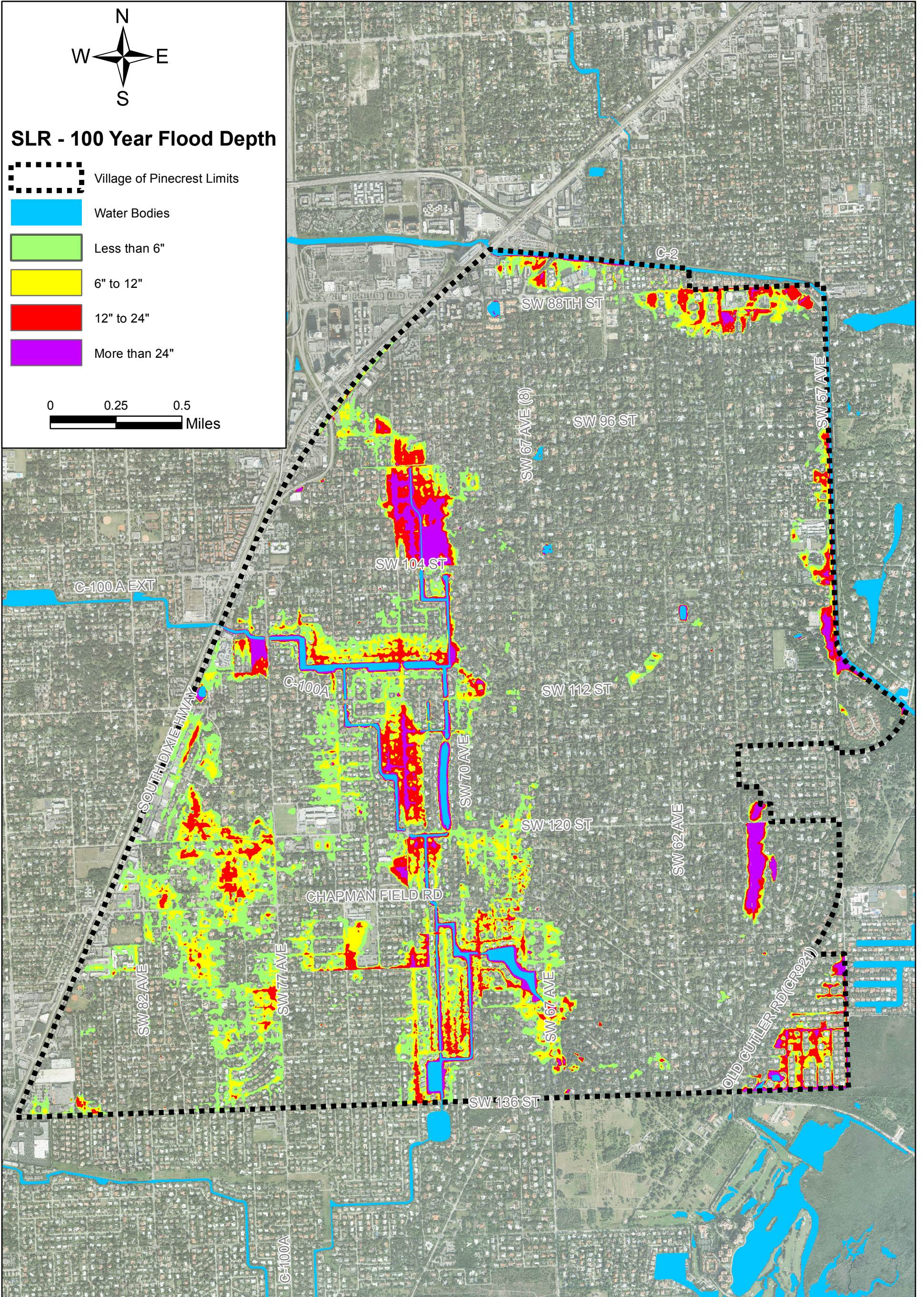
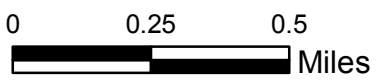
Attachment K-1
Village of Pinecrest - 5 Year Flood Plain Map
Sea Level Rise Projection 2030 - Max 7"
Stormwater Master Plan





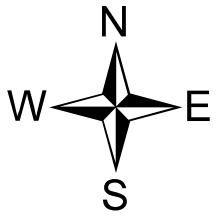
SLR - 100 Year Flood Depth

- Village of Pinecrest Limits
- Water Bodies
- Less than 6"
- 6" to 12"
- 12" to 24"
- More than 24"



Attachment K-2
Village of Pinecrest - 100 Year Flood Plain Map
Sea Level Rise Projection 2030 - Max 7"
Stormwater Master Plan





SLR - 5 Year Flood Depth

Village of Pinecrest Limits

Water Bodies

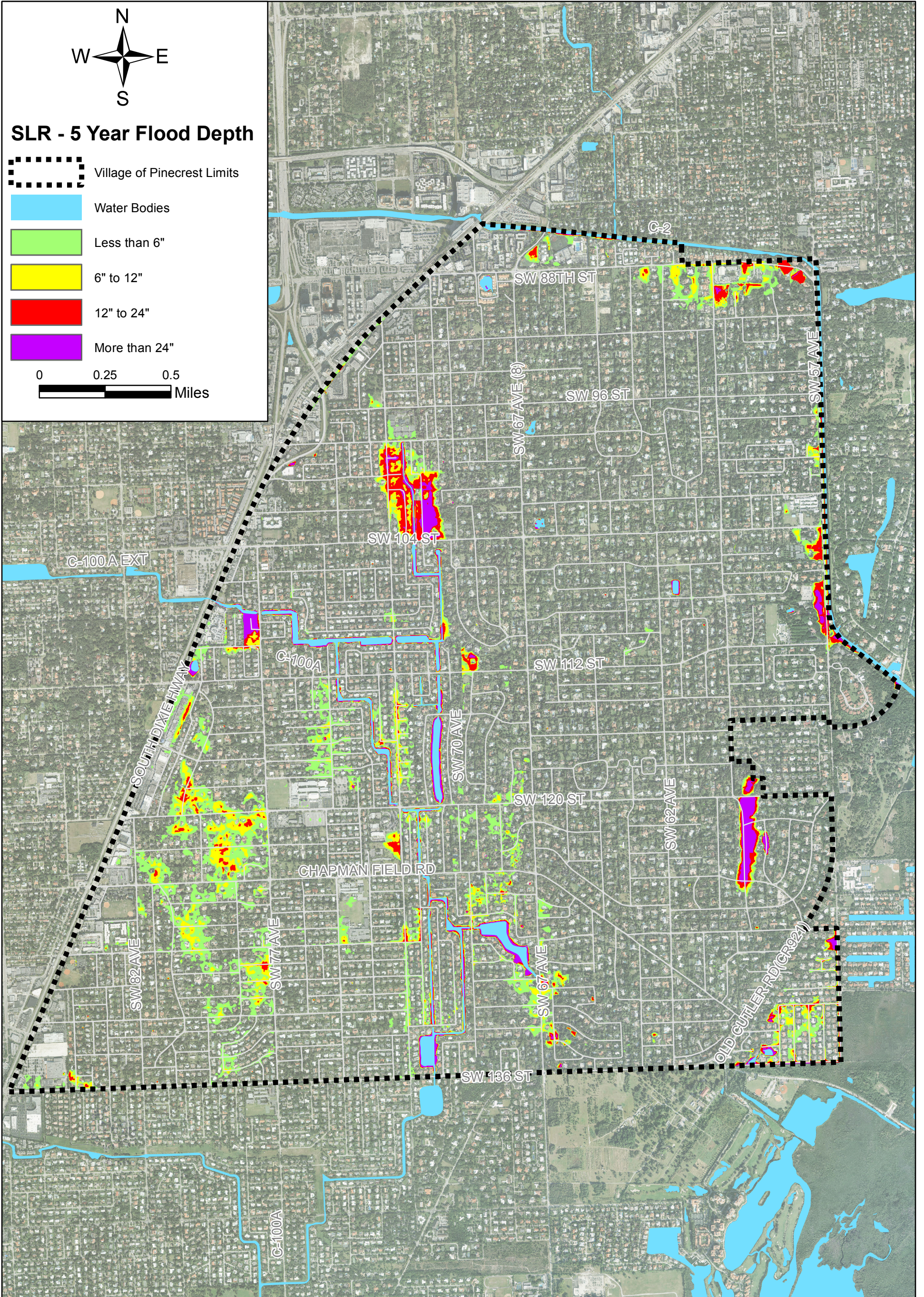
Less than 6"

6" to 12"

12" to 24"

More than 24"

0 0.25 0.5
 Miles

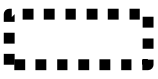


Attachment K-3 Village of Pinecrest - 5 Year Flood Plain Map Sea Level Rise Projection 2060 - Max 24" Stormwater Master Plan





SLR - 100 Year Flood Depth

 Village of Pinecrest Limits

 Water Bodies

 Water Lines

 Sewer Lines


 Local Roads

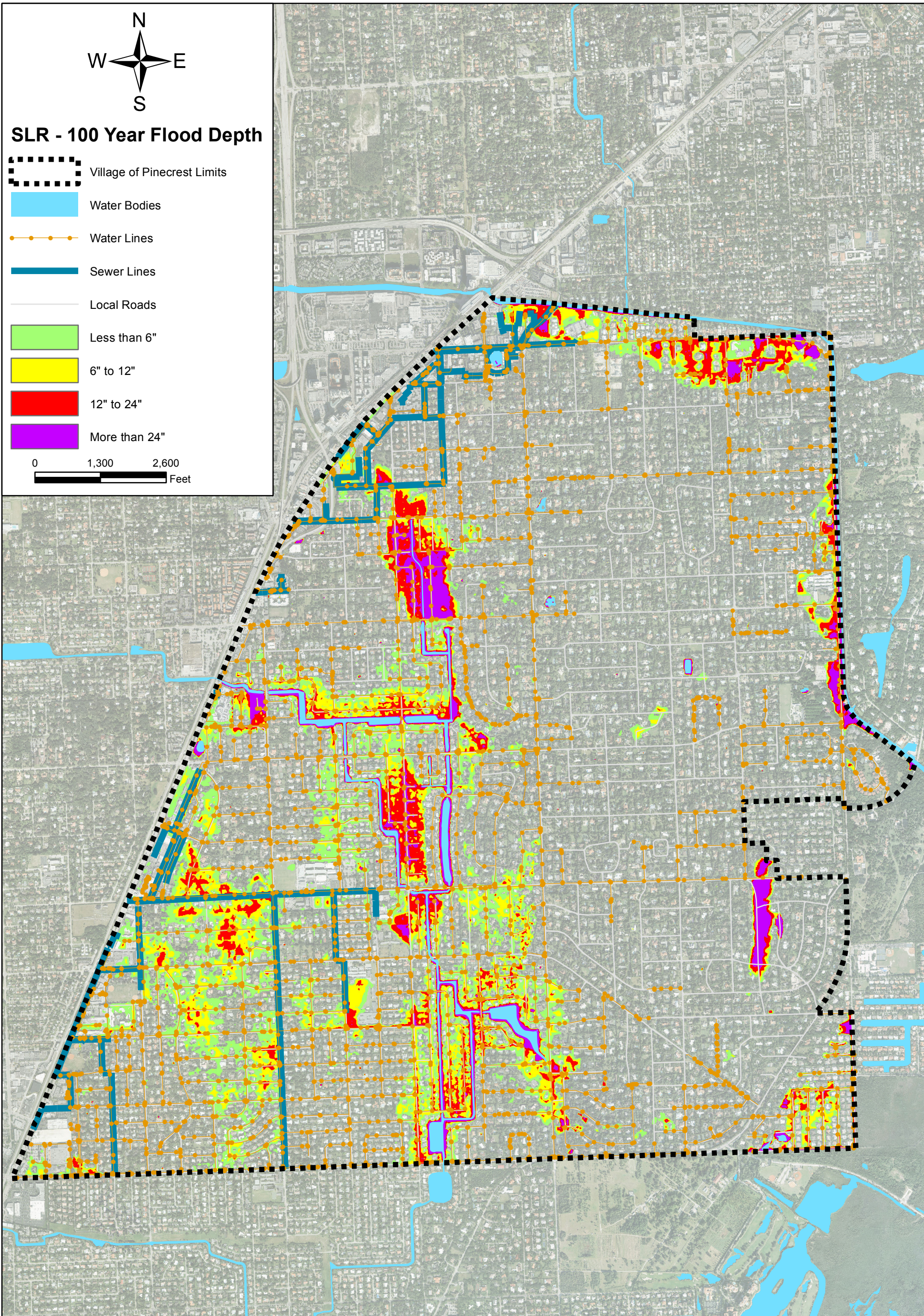
 Less than 6"

 6" to 12"

 12" to 24"

 More than 24"

0 1,300 2,600
 Feet



Water & Sewer Lines - 100 Year Flood Plain Map
Sea Level Rise Projection 2060 - Max 24"
Village of Pinecrest Stormwater Master Plan

