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CLERK OF THE BOARD
OF COUNTY COMMISSIONERS
MIAMI-DADE COUNTY, FLORIDA

MEMORANDUM

Agenda Item No. 8(E)(1)

TO:	Honorable Chairwoman Audrey M. Edmonson and Members, Board of County Commissioners	**DATE**:	October 6, 2020
FROM:	Abigail Price-Williams County Attorney	**SUBJECT:**	Resolution approving the Local Mitigation Strategy regarding mitigation of the effects of natural disasters and authorizing the County Mayor to: (1) implement the Local Mitigation Strategy for the next five years (2020 – 2025); (2) prioritize hazard mitigation grant projects; (3) revise and amend the Local Mitigation Strategy; (4) apply for, receive and expend funds from the State of Florida and the Federal Government; and (5) award sub-grants for various mitigation projects pursuant to the Local Mitigation Strategy

Resolution No. R-945-20

The accompanying resolution was prepared by the Fire Rescue Department and placed on the agenda at the request of Prime Sponsor Commissioner Joe A. Martinez.

Abigail Price-Williams
County Attorney

APW/smm

Memorandum

Date: October 6, 2020

To: Honorable Chairwoman Audrey M. Edmonson
and Members, Board of County Commissioners

From: Carlos A. Gimenez
Mayor

Subject: Resolution Adopting the Miami-Dade Local Mitigation Strategy for Years 2020 through 2025

RECOMMENDATION

It is recommended that the Board of County Commissioners approve the attached resolution approving the Local Mitigation Strategy and authorizing the County Mayor or the County Mayor's designee to (1) implement the Local Mitigation Strategy for the next five years (2020 – 2025) (2) prioritize hazard mitigation grant projects; (3) revise and amend the Local Mitigation Strategy; (4) apply for, receive and expend funds from the State of Florida and the Federal Emergency Management Agency (FEMA) and (5) award sub-grants for various mitigation projects pursuant to the Local Mitigation Strategy.

SCOPE

The Local Mitigation Strategy is countywide.

FISCAL IMPACT/FUNDING SOURCE

Funds related to the Local Mitigation Strategy come from both Federal and State Mitigation Grant Programs and may be provided to the County, its municipalities, and various eligible private entities.

TRACK RECORD/MONITOR

Miami-Dade Fire Rescue Department's Office of Emergency Management (OEM) Division Director Charles Cyrille will review, revise, and monitor the Local Mitigation Strategy.

BACKGROUND

In 1998, the State of Florida funded an initiative to help communities develop local mitigation strategies to mitigate effects of natural disasters and to identify sources of funds to address those needs. The Board adopted Resolution No. R-362-98 which approved the execution of a Hazardous Mitigation Strategy Agreement with the State. This action allowed the County, through the OEM, to establish a working group to oversee the development of the Local Mitigation Strategy (LMS). The LMS working group includes County departments, municipalities, state and federal agencies, and various private entities. Federal and State regulations require that the LMS be approved and adopted every five years. Since 2000, the Board has adopted the LMS as required in the regulations.

Federal Emergency Management Agency, which provides the majority of mitigation funding, and the State, require that projects be listed in the County's LMS in order to be eligible and considered for funding under a variety of mitigation grant programs.

Since the inception of the LMS, over $400 million of hazard mitigation funds has been awarded for over 200 projects within Miami-Dade County. In the past two years, over 80 mitigation projects, totaling in excess of $250 million have been completed.

Maurice L. Kemp
Deputy Mayor

STATE OF FLORIDA

DIVISION OF EMERGENCY MANAGEMENT

Ron DeSantis
Governor

Jared Moskowitz
Director

August 26, 2020

Frank Rollason, Director
Miami-Dade County Emergency Management
9300 Northwest 41st Street
Doral, Florida 33178

Re: Miami-Dade County Local Hazard Mitigation Plan Approved Pending Adoption

Dear Director Rollason,

This is to confirm that we have completed a State review of the Miami-Dade County Local Mitigation Strategy (LMS) update for compliance with the federal hazard mitigation planning standards contained in 44 CFR 201.6(b)-(d). Based on our review and comments, Miami-Dade County developed and submitted all the necessary plan revisions and our staff has reviewed and approved these revisions. We have determined that the Miami-Dade County LMS plan is compliant with federal standards, subject to formal community adoption, for the jurisdictions below:

Miami-Dade County, Unincorporated
City of Aventura
City of Coral Gables
City of Doral
City of Florida City
City of Hialeah Gardens
City of Hialeah
City of Homestead
City of Miami
City of Miami Beach
City of Miami Gardens
City of Miami Springs
City of North Miami
City of North Bay Village
City of North Miami Beach
City Opa Locka
City of South Miami
City of Sunny Isles Beach
City of Sweetwater
City of West Miami
Town of Bay Harbor Islands
Town of Cutler Bay
Town of Golden Beach
Town of Key Biscayne
Town of Medley
Town of Miami Lakes
Town of Surfside
Village of Bal Harbour
Village of Biscayne Park
Village of El Portal
Village of Indian Creek
Village of Miami Shores
Village of Palmetto Bay
Village of Pinecrest
Village of Virginia Gardens

Upon submittal of a copy of all participating jurisdictions' documentation of their adoption resolutions to our office, we will send all necessary documentation to the Federal Emergency Management Agency (FEMA) who will issue formal approval of the Miami-Dade County LMS.

If you have any questions regarding this matter, please contact your LMS Liaison Laura Waterman at Laura.Waterman@em.myflorida.com or 850-815-4512.

Respectfully,

Miles E. Anderson,
Bureau Chief, Mitigation
State Hazard Mitigation Officer

MEA/lw

Attachments: MEMORADUM: State approval of LMS plans under Program Administration by States (PAS)

cc: FEMA Region IV, Mitigation Division – Risk Analysis Branch

MIAMI-DADE COUNTY

LMS

LOCAL MITIGATION STRATEGY

Whole Community Hazard Mitigation

Part 1: The Strategy

July 2020

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INTRODUCTION

The Local Mitigation Strategy (LMS) is a whole community initiative designed to reduce or eliminate the long-term risk to human life and property from hazards. The LMS Plan is a multi-volume Plan that documents the planning process and addresses mitigation measures in relation to the hazard risk and vulnerability assessment of Miami-Dade County. This is a living document which is revised in order to integrate and reflect current and projected issues, as identified and to track mitigation measures and actions that have occurred, are presently occurring, are planned for and/or are desired. This Plan is a compendium of efforts of the whole community, integrating governmental and non-governmental agencies such as non-profits, private sector, educational and faith-based organizations, as well as communities, families and individuals. As of 2019, the National Institute of Building Sciences estimates that their national benefit of $11 saved for every $1 invested.[1]

This version of the Plan is the five-year update that was last approved in 2015. The 2015 version included initiatives that integrate climate change, sea level rise, and additional measures to address floodplain management through the Community Rating System (CRS). This Plan was open for public review and the comments received were integrated in the Plan prior to submission to the Florida Division of Emergency Management (FDEM) and Federal Emergency Management Agency (FEMA) for review and approval. Upon receiving Federal approval, the LMS Plan will be presented to the Miami-Dade Board of County Commissioners (BCC) for adoption in 2020.

A review of the changes that have been made to the LMS since its last adoption in 2015 is provided in LMS-Part 1 under Section “LMS Revisions since Last Adoption” and LMS-Part 4: Appendix A.

Purpose

The purpose of the LMS is to develop a comprehensive approach to effectively reduce the impact of current and future hazards and risk faced by local communities within Miami-Dade County. [2]

The LMS accomplishes this through the following measures:

- A planning process that encourages whole community participation and input;
- Review and incorporation of community plans, local, state and federal regulations and guidance, studies, reports and technical information;
- Overview of past and present occurrences and projected future hazard events;
- Linkage of mitigation measures and actions to the Threat and Hazard Identification and Risk Assessment (THIRA);

[1] National Institute of Building Sciences Natural Hazard Mitigation Saves Study: https://www.nibs.org/page/mitigationsaves
[2] EMAP 2016 Standard 4.2.1

- Identification of measures and actions as LMS Projects are accomplished, are planned for implementation, or identified as potential or future initiatives;
- Identification of potential or actual funding sources;
- Integration of GIS to provide maps to illustrate hazard and risk areas, consequence analysis and mitigation measures;
- Semi-annual reviews and updates of all strategy components;
- Regular meetings, informational bulletins, trainings and workshops to engage the mitigation participants;
- An identified process for monitoring the overall progress of mitigation strategies and documentation of completed initiatives.

This strategy will continuously evolve to address current and future risk and vulnerability.

How to use this Plan

The LMS is divided into seven (7) parts:

Part 1 – The Strategy (LMS-Part 1) – Provides an overview of the LMS and identifies how the program is implemented, the integration and update of plans, identifies authorities and references that guide the program, and sets forth the goals and objectives for specific measures and actions to address the threats and hazards faced by our communities.

Part 2 – The Projects (LMS-Part 2) – Contains the list of projects identified by the LMS Working Group members for mitigation measures/actions they have completed, are pursuing or one-day hope to implement, and the methodology for how projects are initially prioritized.[3]

Part 3 – Funding (LMS-Part 3) – Identifies potential funding sources for mitigation projects.

Part 4 – Appendices (LMS-Part 4) – This section contains a number of supportive documents including:

- List of Updates made to the plan since the last adoption
- List of LMS members including Steering Committee, Working Group and Sub-Committees
- Miami-Dade Resolution Adopting the LMS
- State Letter approving the LMS
- FEMA Letter approving the LMS
- Local Charter information for Metropolitan form of Government
- Integration Document
- THIRA – Demographic

[3] EMAP 2016 Standard 4.2.3

- Economic Assessment
- Maps

Part 5 – Meeting Notes (LMS-Part 5) – Contains meeting notes and attendance since the beginning of the program.

Part 6 – Completed Projects (LMS-Part 6) – Contains a description of some of the completed projects.

Part 7 – Flooding: The National Flood Insurance Program and CRS (LMS-Part 7) – Contains information specific to flood management plans and identifies activities in support of the CRS program.

All parts of the LMS are published separately to allow for intermittent updates.

All of these sections are published on the LMS website and are open for public comment at any time, the plan is at: http://www.miamidade.gov/fire/mitigation.asp and comments can be sent to: mdlms@miamidade.gov.

LMS ORGANIZATIONAL STRUCTURE

The LMS is a compilation of initiatives that are identified and supported by the LMS Coordinator, LMS Co-Chair, the LMS Steering Committee, the LMS Working Group (LMSWG) and LMS Sub-Committees (LMSSC) and ultimately adopted by local elected officials. A complete list of the participants of the LMS are listed in LMS-Part 4 Appendices B and C.

LMS Coordinator/Chair

The Whole Community Mitigation Planner of the Miami-Dade Office of Emergency Management (OEM), serves as the LMS Coordinator. The LMS Coordinator is responsible for the monitoring, updating and maintenance of the LMS Plan, as well as the coordination of meetings, trainings, review and archiving of LMS Projects, and dissemination of information pertinent to the mitigation goals and objectives set forth in the LMS.

The LMS Coordinator serves as the Steering Committee Chair. This involves scheduling the LMS meetings and presiding over the meetings. The LMS Coordinator participates in workshops, trainings and conferences throughout the year to benefit the LMS. Additionally, the LMS Coordinator maintains a distribution list of individuals interested in mitigation and is responsible for the website updates.

LMS Co-Chair

The LMS Co-Chair is an appointed position by the LMS Steering Committee and assists the Chair with review and development of documents, provides consultation to the Chair and is responsible to stand in for the Chair in case of any unforeseen absences.

LMS Steering Committee

The LMS Steering Committee acts as a "Board-of-Directors" and is responsible for the development of policy guidance. Members of the Steering Committee are representative of the organizations found within the larger Working Group (i.e. municipal, county, educational, not-for-profits, private sectors and individuals). The Steering Committee acts as a review committee for the establishment of this LMS and the prioritization of the projects therein when a limited funding source is available. Membership on any committee shall be voluntary and subject to the review and approval of the LMSWG. A committee member who fails to attend a reasonable number of committee meetings may be dropped from participation in the committee by a majority vote of the other members of that committee.

Currently, any planning and program development issues are addressed through as-needed Steering Committee meetings and in an open forum through the quarterly meetings.

LMS Working Group

The LMSWG is composed of representatives from eight main groups:

- Municipalities
- County Departments
- Colleges and Universities
- Hospitals and Health Care
- Private Non-Profit
- Private Sector/Businesses
- Regional, State and Federal Partners
- Other Stakeholders, including private citizens

The makeup of the LMSWG is not limited to any particular organization or jurisdiction. Numerous others have expressed the desire to participate in the LMS and are welcome to do so. Each organization is encouraged to solicit participation and commentary from its citizens, employees and members.[4]

To be considered a participant of the LMS and receive the benefits thereof, a municipality, County Department or any other organization must attend at least two (2) of the four (4) quarterly meetings held each year. The LMSWG endorsed this policy unanimously on September 20, 2001. However, any organization may substitute regular participation and attendance on an active LMS committee or subcommittee in lieu of attendance at the quarterly meetings. The agencies that are participating in the LMSWG are identified in LMS-Part 4 Appendix B.

[4] EMAP 2016 Standard 4.4.1(2)

Municipal Participation
Within Miami-Dade County the following municipalities are active participants of the LMS.

City of Aventura	City of Homestead	City of Opa-locka
Bal Harbour Village	Village of Key Biscayne	Village of Palmetto Bay
Town of Bay Harbor Islands	Town of Medley	Village of Pinecrest
Village of Biscayne Park	City of Miami	City of South Miami
City of Coral Gables	City of Miami Beach	City of Sunny Isles Beach
Town of Cutler Bay	City of Miami Gardens	Town of Surfside
City of Doral	Town of Miami Lakes	City of Sweetwater
Village of El Portal	Miami Shores Village	Village of Virginia Gardens
Florida City	City of Miami Springs	City of West Miami
Town of Golden Beach	City of North Miami	Indian Creek Village
City of Hialeah Gardens	North Bay Village	Miami-Dade County (unincorporated areas)
City of Hialeah	City of North Miami Beach	

For the sake of this document, municipalities will be referred to by only the name and not the full title (e.g. City of Coral Gables will be referred to as Coral Gables).

LMS Sub-Committees

In order to streamline the LMSWG's activities, various sub-committees may be formed, each addressing an area of concern, as needed. Initially, committees were formed to deal with flooding, evacuations, funding, community education, external policy, agriculture and wildfires. The formation and disbandment of sub-committees is done in correlation with the trending issues that should be addressed by the LMSWG members. A current list of sub-committees can be found in LMS-Part 4 Appendix C.

Meetings

The Steering Committee and LMS Sub Committee meet as needed and the LMSWG meets once each calendar quarter. Meeting announcements are posted on the LMS webpage, announced in the LMS Information Bulletins (quarterly) and emails are sent to the LMS Distribution List which is maintained by the LMS Coordinator.

The representatives are encouraged to post meeting notifications prominently, on community bulletin boards or in some other way, to notify the public or other interested parties at least 30-days prior to each meeting. Meeting times, dates and locations will also be posted on the LMS website: https://www.miamidade.gov/global/emergency/projects-that-protect.page.

A listing of meeting notes and attendance records are kept in LMS-Part 5.

PLANNING PROCESS[5]

In the spring of 1998, the State of Florida contracted with and provided funding to each of the counties within the State to develop an LMS. Community members embraced the LMS as the devastation of Hurricane Andrew was still fresh in their memories. The first meetings were set and development of the original LMS began. The Plan has evolved over the years to encompass the changes in our communities and the progression of hazards and risks.

The LMS Coordinator with the assistance of the LMS Steering Committee, and input from the LMSWG, LMSSC, and the general public incorporates updates and maintains the Plan. Updates will be based on factors such as recent disaster events, changes in Local, State, and Federal policies and legislation, changes in development and comments and input provided on the Plan. The LMS takes into consideration emerging issues such as aging infrastructure and new development (residences and businesses) projects impact Miami-Dade County communities.

The LMS Coordinator includes a listing of the revisions made to the Plan in relation to these factors, which is documented in the section titled “LMS Revisions since Last Adoption”.

Annual Updates

The LMS is updated on an annual basis. Any proposed changes will be reviewed and compared against LMS and Comprehensive Emergency Management Plan (CEMP) crosswalks provided by FDEM, the Emergency Management Accreditation Program (EMAP) Standards, the Community Rating System (CRS) Coordinator’s Manual, and the Threat Hazard Identification and Risk Assessment (THIRA). An annual update to the LMS is provided to the State by January 31st, every year and the documents are subsequently posted on the Miami-Dade County website.

As of March 2015, the LMSWG voted to have the LMS Projects updated annually by October 31st through the WebEOC LMS Board. LMS Members that have not updated their Projects will be notified that their Projects will be made “Inactive”. See LMS-Part 2 for more information on Project updates and maintenance.

Monthly Updates

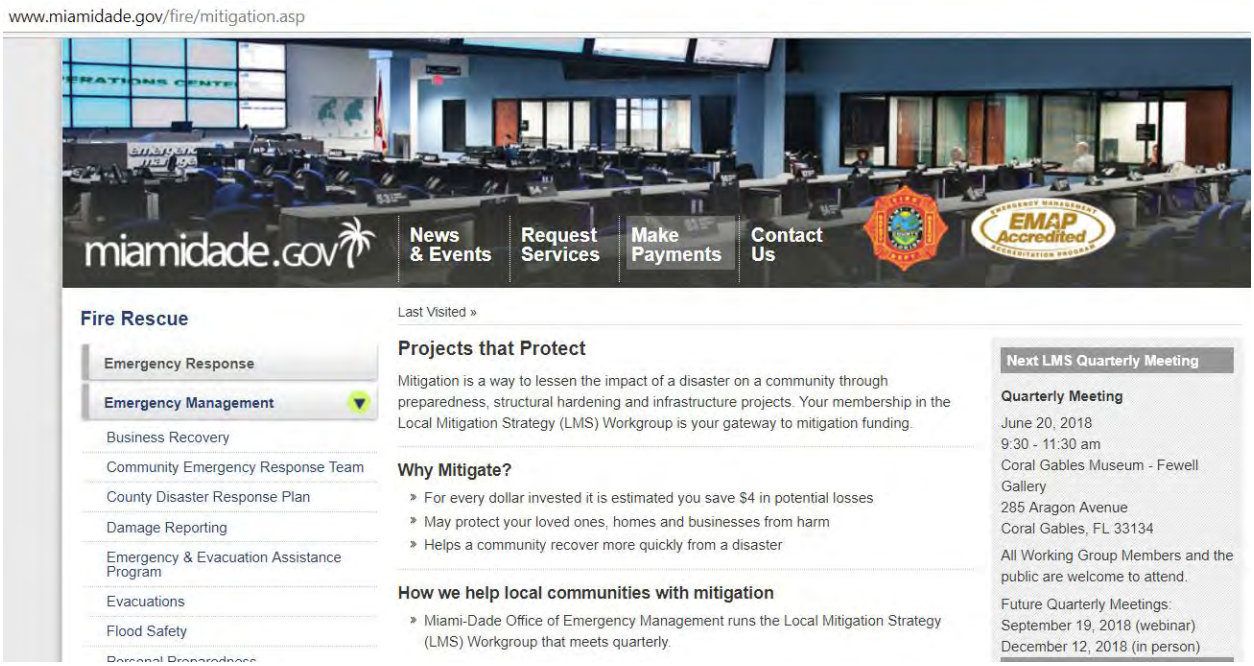
LMS-Part 7 may be utilized by CRS Communities to post their Annual Activity 510 Progress Reports. CRS Communities are responsible for sending this information to the LMS Coordinator for inclusion, as needed. An update to LMS-Part 7 will be posted online by the last calendar day of any month during which time a 510 report was received. It is the responsibility of the CRS community to provide their reports to the LMS Coordinator at

[5] EMAP 2016 Standard 4.2.1.(2)

least 10 working days, in advance of the end of the month, to allow for incorporation and posting on the website.

Public Review and Comment

The latest published version of the LMS is posted on the Miami-Dade County website: https://www.miamidade.gov/global/emergency/projects-that-protect.page– for public review and commentary. Any comments received through this medium will be incorporated through the revision process identified above. Comments can be sent to the following email address mdlms@miamidade.gov.



OEM will post messages via the different social media platforms and the Miami-Dade County website to encourage Miami-Dade community members to review and comment on the LMS draft.

Five-Year Update

A complete State and Federal review and approval of this Plan is conducted on a five-year cycle. The Plan has undergone review and approval from FDEM and FEMA every five (5) years since the year 2000. The five-year review process incorporates the annual updates and a review of the FDEM LMS Crosswalk. FDEM notifies the LMS Coordinator 12-months in advance of the Plan expiration date. The LMS is updated and prepared for the third quarterly meeting of the fourth year for public review and comments on the Plan. Once all comments are reviewed and incorporated, the updated LMS will be submitted to FDEM, by the LMS Coordinator for review approximately six (6) months prior to its expiration date.

FDEM will review the LMS Plan and provide comments, and if needed, the LMS Coordinator will make revisions to satisfy any State LMS Crosswalk deficiencies. Once the Plan has been approved by the State, it is then sent to FEMA for their review and approval.

LMS Implementation

The LMS Coordinator will be responsible for the annual monitoring of how the LMS plan is implemented. This effort is a coordinated effort led by the LMS coordinator with the LMS partners. This includes evaluation of LMS projects (completed, started, etc.) and the review of the LMS goals and objectives to ensure they are addressing the present and future needs of the LMS.

LMS Effectiveness Review

On an annual basis the LMS Coordinator will review how effective the plan has been in reducing the County's vulnerability to the hazards listed in the plan. This review will include reviewing new and existing projects and when they were completed. It will also evaluate how many projects were completed and what funding sources were utilized. Finally this review will involve discussions with the LMS partners on their opinions of whether or not the LMS purpose and goals were achieved or not.

Partner Participation in Planning Process

Updating the LMS annually and for the five-year update includes the LMS working group members and partner agencies. Multiple efforts are made to involve a diverse groups of partners in updating the LMS. Below are some of the annual efforts that are used:

2020 LMS Kick-Off

The planning process for the 5-year update for the LMS began at the March 14, 2019 Quarterly Meeting. At this meeting the LMS Coordinator discussed with the LMS partners the schedule of updating the LMS and the information that would likely be requested from them. Appendix 5 includes the March 14th meeting minutes.

2020 LMS Update Discussion

Miami-Dade County Local Mitigation Strategy
Working Group Quarterly Meeting
Thursday, March 14th, 2019 10:00am – 11:30am

AGENDA

1. Welcome and Announcements
2. Steering Committee Updates
   - HMGP Updates for Hurricane Irma and Michael
3. Vizcaya Museum and Gardens HMGP Project Updates – *Ana Rico*
4. Sea Level Rise Project Update – *Katherine Hagemann*
5. 2020 Update of the LMS – *Steve Detwiler*
6. Discussion and Questions

Quarterly LMS Working Group Meetings

These meetings are held once a quarter and during the annual and five-year update planning cycles the LMS Coordinator frequently provides updates on the planning process. LMS members are also requested to provide comments on portions of the Plan that pertain to their agency and/or organization.

One of the sections of the Plan that is regularly updated by the LMS Municipal partners is the Part 1 Analysis of Existing Policies, Ordinances and Programs. This section includes the Municipal policies and plans that are integrated in the LMS.

Whole Community Quarterly Meetings
This meeting is also held once a quarter by the Miami-Dade County Office of Emergency Management. This meeting includes partners from OEMs diverse programmatic areas and offer an opportunity to share information and collaborate with one another across disciplines and jurisdictions. The LMS Coordinator is regularly asked to provide an update at these meetings on the planning process, new funding opportunities or new programs this position is leading.

Incorporation of Existing Plans and Strategies
The LMS was not created and maintained in a vacuum. The LMS Coordinator reviewed and incorporated numerous plans, ordinances and studies into the annual and 5-year update of the LMS. Below are examples of the plans and strategies incorporated into the LMS:

Miami-Dade Comprehensive Development Master Plan (CDMP), Evaluation and Appraisal Report
This report evaluates the progress in implementing the goals, objectives, policies, maps and text of the CDMP and recommends changes through plan amendments. When preparing the 2020 LMS this report was reviewed and certain aspects of it including sea level rise, coastal high hazard areas and evacuation clearance times were incorporated in the appropriate parts of the LMS.

The LMS Coordinator also regularly participates in reviewing and providing amendments to the Miami-Dade County CDMP. This includes participating in regular meetings with other County Departments facilitated by the RER CDMP Planning Unit. The LMS Coordinator also provides comments to amendments to the Municipal CDMPs, when requested. Any significant changes to the municipal CDMP are also incorporated and added to the LMS.

Miami-Dade County Recovery Plan
In 2018-19 the Recovery Plan was revised based on lessons learned from Hurricane Irma and other disasters around the country. The Recovery Plan is composed of several parts. Part 2 contains 12 Recovery Support Function (RSF) annexes, which include RSF Mitigation Annex.

RSF Mitigation's purpose is to initiate and encourage meaningful actions to incorporate mitigation measures to reduce or eliminate the long-term risk to human life and property from natural hazards throughout the post-disaster recovery and reconstruction process. During Hurricane Irma there was several lessons learned regarding the interaction between recovery and mitigation. These lessons learned were incorporated into RSF Mitigation Annex and the LMS.

Resilient 305 Strategy
This climate strategy has been adopted and implemented by Miami-Dade County, the City of Miami and the City of Miami Beach. This strategy was created to address resilience challenges prioritized through intergovernmental and community collaboration. This strategy contains several projects that have been completed, are in process or are planned. The projects in process or planned have been added into the LMS as potential projects.

Southeast Florida Regional Climate Action Plan (RCAP)
This plan is the guiding document for the Southeast Florida Regional Climate Compact. Its purpose is to coordinate climate action, reduce greenhouse gas emissions and strengthen climate resilience in Broward, Miami-Dade, Monroe, and Palm Beach counties.

The RCAP is regularly reviewed and changes are incorporated into the Miami-Dade LMS. The LMS Coordinator also provides feedback to the Compact on the incorporation of any lessons learned or new projects that should be included in future updates to the RCAP.

State of Florida Hazard Mitigation Plan
This plan was also reviewed to incorporate statewide hazard and risk assessment data into the Miami-Dade LMS.

Plan Adoption

Once the Plan has been approved by FEMA, the Plan will be submitted to the Miami-Dade County Board of County Commissioners (BCC) for adoption. Miami-Dade County has a metropolitan form of government with its own Home Rule Charter (LMS-Part 4 – Appendix G). Once the BCC passes a Resolution, that action automatically includes all the Municipalities within the County. In the event a Municipality does not wish to participate in the action, that Municipality must, through their own Resolution, opt out.

Miami-Dade County communities that wish to utilize the LMS as their Floodplain Management Plan for credit under the CRS Program, must also adopt the LMS. Copies of the local adoption should be sent to the LMS Coordinator to be incorporated into LMS-Part 4.

Review and Revision Criteria

The LMS will be updated by the LMS Coordinator with the assistance of the Steering Committee and input from the LMSWG. The majority of revisions made to each section of this document are based upon LMSWG meetings where comments are sought from participants. The public is also given an opportunity to review this document and provide comments through the Miami-Dade County website. Revisions will be incorporated based on recent significant events such as hurricanes, tornadoes or any other occurrence where mitigation could benefit the community. Changes in Federal, State, and Local laws will also be reflected in the updated version of the LMS. The revisions will then be documented and posted online and/or sent out via LMS Information Bulletins by the LMS Coordinator to all relevant partners.

The evaluation criteria includes:

1. Have there been any new mandates from Federal, State or Local agencies that require changes to the LMS? Any new or changing laws, policies or regulations?
2. Are there any societal developments or significant changes in the community that must be added to the current LMS? Does the LMS still reflect the concerns of the community? Are the demographics the same? Has there been any growth or development in hazard areas?
3. Have there been any changes in funding sources or requirements?
4. Are there any recent technological developments that should be reviewed for inclusion in the LMS document?
5. Should the LMS be updated to include any new forms of hazards or areas of vulnerability within Miami-Dade County communities?
6. Have there been any changes in the Comprehensive Development Master Plan (CDMP) or any other form of Standard Operating Procedures (SOPs)?
7. Have any of the mitigation opportunities been implemented? Are the priorities for implementation the same?
8. What are the recommendations or lessons learned from any major incidents that have occurred during the past year?

During the revision process, each criteria is addressed to determine if they are still valid and adjustments are made, as necessary. When satisfied that the criteria are appropriate, each of the outstanding mitigation opportunities is then compared against the criteria. All existing mitigation opportunities that are determined to still be viable projects will remain on the project list. All those that are determined to be no longer workable, will be set aside for further revision or dropped as no longer feasible.

Changes in Program Priorities

Over the last five years there has been numerous hazards that have had an impact on Miami-Dade County. These hazards have challenged the County and required a specialized response and the use of new approaches and technology. However, these hazards have not required any changes in the LMS goals, objectives and priorities.

PROGRAM BENCHMARKS

This section provides an overview of the highlights of the Plan as well as recent updates to the Plan in relation to risk analysis and changes in development. A complete listing of all the meeting minutes from over the past five (5) years can be found in the LMS-Part 5.

1998 – Miami-Dade County began developing a LMS program through funding from the State of Florida.

September 1999 – The Miami-Dade County LMSWG voted to continue the LMS program with or without State funding.

March 2000 – The LMSWG determined that the LMS should be updated two (2) to three (3) times each year and the updates, including the project list for new, updated, completed and deferred projects would be updated twice a year.

June 6, 2000 – The BCC passed Resolution R-572-00 formally adopting the LMS as the official County policy thus further promoting program continuity.

September 13, 2000 – Miami-Dade County, along with its Municipalities and other organizations, were designated by FEMA and the Florida Department of Community Affairs to be a "Project Impact Community."

December 6, 2000 – The LMSWG agreed that they would become the Project Impact Working Group and that the LMS would continue under the auspices of Project Impact. Henceforth, Project Impact and the LMS became synonymous.

December 2000 – The LMSWG determined that the LMS Project List would be updated by June 30th and December 31st of each year.

May 30, 2001 – A formal "signing ceremony" took place at Vizcaya Museum and Gardens for LMSWG members to sign a proclamation to become a "Project Impact Partner." Although FEMA no longer endorses Project Impact, the LMSWG agreed that the Project Impact concept would continue in Miami-Dade County regardless of what it is called.

June 7, 2005 – The BCC passed Resolution R-710-05, which states that grant applications filed under the auspices of the LMS no longer have to be approved by the BCC but, instead authorizes the County Manager to "*Apply for, receive, expend and amend applications for grant funds for projects listed in the LMS."*

June 2008 – The LMSWG celebrated its 10th anniversary with over 300 completed mitigation projects at a value exceeding $250 Million. A listing of completed mitigation projects that have been tracked may be found in LMS-Part 6.

November 2009 – The County Mayor delegated signature authority to the Director of Emergency Management for contract and grant-related documents under the purview of the LMS Program. This was renewed in 2012.

April 10, 2010 – Adoption of the five (5) year update of the LMS by the BCC.

May 5, 2010 – FEMA approved the five (5) year update of the LMS.

September 1, 2015 – Adoption of the five (5) year update of the LMS by the BCC.

September 15, 2015 – FEMA approved the five (5) year update of the LMS.

LMS Revisions since Last Adoption

This section provides an overview of the achievements of the LMSWG to continue to promote and incorporate mitigation measures across the whole community concept and address changes to our risk profile and development as well as re-development.

September 2015

- September 15: Received FEMA and State Approval of the LMS.
- September 16: Quarterly meeting open to the public.

October 2015

- Annual update of LMS Projects due by October 31st.

December 2015

- December 9: Quarterly LMS Meeting open to the public.

January 2016

- January 6: Annual Update submitted to the State.
- Updates to hazards to include events that occurred in 2015.

March 2016

- March 16: Quarterly LMS Meeting open to the public.

May 2016

- Activity 510 and 610 submitted to ISO to obtain CRS credits for communities under the LMS.
- May 18: Statewide Hurricane Exercise with flood component for CRS communities.

June 2016

- June 15: Quarterly Meeting open to the public.

August 2016

- August 8: Mosquito Abatement Training.

September 2016

- September 21: Quarterly meeting open to the public.
- September 27: Mosquito Abatement Training.

October 2016

- Annual update of LMS Projects due by October 31st.

December 2016

- December 14: Quarterly LMS Meeting open to the public
- Part 4 Meeting Notes updated.

- Mapped completed projects in WebEOC.

January 2017
- January 31: Annual Update submitted to the State.
- Updates to hazards to include events that occurred in 2016.
- Part 2 Project lists updated.

March 2017
- March 7: Adaptation Measures C-7 basin meeting.
- March 15: Quarterly LMS Meeting open to the public.
- March 28: FEMA Coastal Flood Study Update.

April 2017
- April 3: Mosquito Abatement Training.
- Miami-Dade Cyber Security Plan created.

May 2017
- May 3: Statewide Hurricane Exercise with flood component for CRS communities.
- May 5: Discussion with RER regarding the update of the Miami-Dade Comprehensive Development Master Plan.

June 2017
- June 13: State Hazard Mitigation Assistance Team meeting.
- June 20: CRS Manual Changes meeting.
- June 21: Quarterly Meeting open to the public.
- June 27: FEMA Mitigation Webinar – Yellow Jackets

July 2017
- Mapped LMS Projects.

August 2017
- August 1: Meeting with County Departments and Regulatory and Economic Resource (RER) Office of Resilience regarding vulnerabilities to flooding, storm surge and sea level rise.
- August 31: Adaptation Action Area for C-7 Basin.

September 2017
- Hurricane Irma impacts Miami-Dade County - EOC activation September 5-17.
- September 27: Mosquito Abatement Training.

October 2017
- Annual update of LMS Projects due by October 31st.

November 2017

- November 15: LMS Quarterly meeting (make up for September) discussion on Public Assistance and Hazard Mitigation Grant Program (HMGP).
- November 30: deadline for update of projects for Hurricane Irma HMGP.

December 2017

- December 7: Meeting with FEMA, U.S. Army Corps of Engineers (USACE), U.S. Department of Homeland Security (DHS) and the State to discuss infrastructure recovery and identified needs from Hurricane Irma.
- December 14: LMS Quarterly Meeting
- LMS-Part 2 and Part 4 updated

January 2018

- January 12: Intent to Apply forms for Hurricane Irma HMGP due.
- January 31: Annual Update submitted to the State.

March 2018

- LMS Quarterly Meeting

May 2018

- Submitted the Miami-Dade LMS projects for HMGP for Hurricane Irma to the State.

June 2018

- LMS Quarterly Meeting

August 2018

- Submitted updated ranking of projects for HMGP for Hurricane Irma to the State.

September 2018

- LMS Quarterly Meeting
- Announcement of Flood Mitigation Assistance (FMA) and Pre-Disaster Mitigation (PDM) grant programs.
- September 14: Request for Infrastructure projects for consideration for CDBG-DR for Hurricane Irma.
- Submitted updated ranking of projects for HMGP for Hurricane Irma to the State.

October 2018

- Annual update of LMS Projects due by October 31st.

December 2018

- LMS Quarterly Meeting

January 2019
- Updates to hazards to include events that occurred in 2017.

February 2019
- Steering Committee meeting that discussed Hurricane Michael HMGP.

March 2019
- LMS Quarterly Meeting

June 2019
- LMS Quarterly Meeting

August 2019
- The new Whole Community Mitigation Planner started on August 26.

October 2019
- LMS Quarterly Meeting
- Steering Committee meeting that discussed Hurricane Michael HMGP.
- Annual update of LMS Projects due by October 31st.

December 2019
- LMS Quarterly Meeting
- LMS Steering Committee meeting

February 2020
- LMS Steering Committee Meeting

March 2020
- LMS Quarterly Meeting

Recent Development/Redevelopment

Miami-Dade County Regulatory and Environmental Resources Department (RER) maintains the CDMP to guide future development in unincorporated Miami-Dade County. A copy of the elements of the CDMP may be found in LMS-Part 4, Appendix H with a review of how these elements support mitigation measures and areas for consideration. In 2017, RER implemented the Evaluation and Appraisal Report for the CDMP, which occurs every seven (7) years to ensure that the County is in compliance with State law and it provides a comprehensive review and assessment of major issues and reviews the progress towards meeting goals, objectives and policies and identified needed changes. It is estimated that by 2040, Miami-Dade's population will grow from 2.7 million to 3.4 million people.[6]

As identified in Land Use (LU) Element, Miami-Dade is looking to emphasize development around centers of activities, development of well-designed communities containing variety of uses, renewal and rehabilitation of blighted areas and contiguous urban expansion when warranted, rather than sprawl.

- LU-3D identified that the County shall coordinate with Municipalities in Coastal High Hazard Areas and areas with repetitive losses to minimize demand for facilities and services in areas that result in redevelopment and increases in residential densities.
- LU-3E addresses an analysis on climate change and the impacts on the built environment addressing development standards and regulations related to investments of infrastructure, development/redevelopment and public facilities in hazard prone areas.
- LU-3K identifies an initiative to determine the feasibility of designating Adaptation Action Areas, areas that may be vulnerable to storm surge and sea level rise impacts.
- LU-3L identifies that the County will work with the local municipalities to do the same.

Per Resolution R-451-14 and Ordinance No. 14-79 all County infrastructure projects must consider sea level rise in the planning, design, and construction of those projects. All agenda items before the BCC that relate to planning, design, or construction of County infrastructure must include information on how the impact of sea level rise has been considered in the project. As of November 2019, there are 322 projects identified in *Part 2* of the LMS that specifically address sea level rise.

[6] State of Florida Office of Economic and Demographic Research: http://edr.state.fl.us/Content/population-demographics/data/Medium_Projections.pdf

Recent years have also shown increased vulnerabilities as the modeling and mapping capabilities improve and as more information is gathered on the potential impacts of climate change and sea level rise. This version of the Plan integrates updated information on storm surge, sea level rise, and climate change into our hazards, mitigation measures, mapping, and project list. LMSWG members continue to identify LMS Projects to address aging infrastructure to deal with current and emerging threats. There are currently 2,081 projects identified for infrastructure improvements identified in *Part 2*. As an example, Miami Beach has been very proactive in installing new drainage infrastructure and pump systems to mitigate seasonal king tides, which are perhaps a preview of what sea level rise may bring to some of our coastal communities. In October 2014, the elements of the mitigation projects that had been installed were tested by the seasonal high tides and were very successful in limiting sea water from coming up through the storm drains. Our communities continue to include mitigation in their development and redevelopment projects through inclusion in their Master Plans and Capital Improvement Plans. Agencies are proactively including mitigation projects into their internal funding and capital improvement budgets, over 535 projects have been identified with these funding sources identified.

A 2014 analysis of our housing stock shows that 48% of our housing stock was built before the first Flood Insurance Rate (FIRM) maps were developed and 22% of our housing stock was built before there were any special elevation requirements implemented by Miami-Dade County. The continued efforts to identify flood mitigation projects is reflected by the 2,074 identified flood and storm surge projects in *Part 2* of the LMS as of July 2020. The LMS Project Board allows us to track mitigation measures by flood basins with the intent that we can coordinate efforts in areas of Repetitive Loss (RL) and Severe Repetitive Loss (SRL). As the FEMA FIRM maps were updated in September 2009 and new Coastal Flood maps are currently being studied and developed, and with the proposals of changes to flood policy rates, the LMS has embraced additional measures to help integrate CRS initiatives to assist communities with maintaining or improving their rating.

As many of the areas of our County are already developed, new development and redevelopment provide opportunities for structures to be built to or retrofitted to higher building code standards which includes wind and flood mitigation considerations. In 2018, the Beacon Council reported that the business sector invested $402.6 million in new capital investment and added 2,000 direct jobs.[7] According to the U.S. Bureau of Labor Statistics the Education and Health Services industry has grown the most in 2019, adding 17,200 jobs with a 4.2% rate of job growth.[8]

[7] Miami-Dade Beacon Council Highlights Miami's Business Accomplishments at the 2018 Annual Meeting & Key Ceremony https://www.beaconcouncil.com/miami-dade-beacon-council-highlights-miamis-business-accomplishments-at-the-2018-annual-meeting-key-ceremony/
[8] U.S. Bureau of Labor Statistics, Miami Area Employment November 2019: https://www.bls.gov/regions/southeast/news-release/areaemployment_miami.htm

Miami-Dade County launched the Strategic Miami Area Rapid Transit (SMART) plan in 2019[9]. This project's goal is to improve transportation mobility by leveraging and expanding existing transit systems to promote economic growth and job creation

The SMART Plan will expand transit options in Miami-Dade County along six critical corridors that are linked to regional, State, National, and global economic markets. These corridors are:

- Beach Corridor: Highest tourist demand in region with major employment centers
- East-West Corridor: Heaviest commuter travel for international, state and local businesses
- Kendall Corridor: One of the most congested arterial roadways with the highest demand
- North Corridor: Key regional mobility linkage for access to jobs, stadium and educational facilities
- Northeast Corridor: High transit demand and part of a critical regional corridor stretching to Palm Beach County
- South Corridor: Experiencing the fastest population growth in Miami-Dade County

Another critical component of the SMART Plan is a network of Express Buses, known as Bus Express Rapid Transit (BERT), which will connect the SMART rapid transit corridors on limited access facilities, promoting the active expansion of South Florida's Express Lanes network.

An estimated 1.7 million people live within a 2 mile radius of the SMART Plan alignments, representing approximately 63% of the most populous county in Florida.

Development Vulnerability

As the County continues to grow both economically and in population the vulnerability against numerous hazards also increases. However, to mitigate the growth in development the County has taken measures to lessen the impact of hazards on the infrastructure. In developing the SMART plan the Office of Emergency Management (OEM) provided comments on the likely impact on issues involving evacuation clearance times and emergency shelter capacity. OEM and the Office of Resilience provided comments on methods and projects to enhance the County resilience to certain hazards.

While the vulnerability of the County has increased the efforts taken by the County and its LMS partners has sought to balance this growth to lessen the impact of future disasters.

[9] Miami-Dade Transportation Planning Organization, SMART Plan Brochure: http://www.miamidadetpo.org/library/smartplan-brochure-2019.pdf

Measuring the Overall Effectiveness of the LMS Program

The Miami-Dade LMS strives to continue to evolve and address the issues, concerns and challenges identified and encountered by our participants. Changes in personnel, shifting and diminishing funding sources, emerging and increasing threats and risk, aging infrastructure and housing stock and an increasing, diverse and transient population base necessitate the LMS to continuously take stock, re-evaluate and update the strategy.

Table 1 shows an overview of how we have increased our effectiveness.

TABLE 1. LMS PROGRAM EFFECTIVENESS

Hazard Assessment	• Incorporation of the Miami-Dade Threat Hazard Identification and Risk Assessment (THIRA) provides one source for hazard assessment for the Miami-Dade CEMP, LMS and stakeholder agencies to utilize in planning and coordination efforts. [10] • Research and incorporation of climate change and sea level rise identifies potential future risk into THIRA. • Incorporation of new and updated maps. • Added an Economic Analysis (*Part 4 Appendix J)* to better understand the employment sectors and potential impacts. • Analysis of housing stock to look at structures built before flood plain mapping and regulations. • Identification of tools and software to help stakeholders assess and understand risk. Precipitation Frequency estimates from the U.S. National Oceanic and Atmospheric Administration (NOAA) (*Part 7*). • New impact assessment tool, ARM360, provided through OEM to local stakeholders to assist with damage assessment after an event to better track and document at risk hazard areas and impacts (*Part 7*).
Collaboration	• Collaboration with the Miami-Dade Department of Transportation and Public Works (DTPW) to access rain gauges and linkage with local National Weather Service to be able to better tie forecasting with real time monitoring for flooding. • Collaboration with the Office of Sustainability and participation in the Southeast Florida Regional Climate Change Compact has increased the number of planning agencies we are working with. • Collaboration with Miami-Dade Water and Sewer Department (WASD) to utilize the ground and surface water model, developed

[10] EMAP 2016 Standard 4.2.1 (1)

	with the U.S. Geological Survey (USGS). Stakeholders were offered training on the software so, they can run analyses to better identify the potential impacts of sea level rise at a local level. • Engagement of Alliance for Response (cultural community) including workshops and exercise. • Statewide Hurricane Exercise with flood components for CRS communities on May 18, 2016. • FEMA Coastal Flood Study Update on March 28, 2017. • Statewide Hurricane Exercise with flood components for CRS communities on May 3, 2017. • Discussion with RER regarding the update of the Miami-Dade Comprehensive Development Master Plan on May 5, 2017. • Collaboration with County Departments and Miami-Dade Office of Resilience regarding vulnerabilities to flooding, storm surge and sea level rise.
Integration	• Identification of the LMS as a Whole Community initiative. • Review of community planning documents and identifying areas to better integrate mitigation into comprehensive planning and capital improvement (*Part 4 Appendix H* and added Municipal Integration to *Part 1*). • The State of Florida hired a contractor who provided suggested language for the incorporation of climate change and sea level rise into the State Enhanced Mitigation Plan. Miami-Dade used this as a guide in updating the THIRA. • A review of the action items in the Regional Climate Action Plan Implementation Guide was performed and supported. *(Part 4 Appendix H)*. • Hosted L-278 class to assist local communities with the changes in the CRS manual and to identify opportunities to include elements into the LMS, included ISO personnel and newly appointed state CRS Coordinator. • LMS Coordinator active in 2015 update of THIRA including new maps and identification of vulnerable areas in alignment with Comprehensive Preparedness Guide 201. • Activity 510 (Developing a floodplain management plan for your community) and Activity 610 (Flood warning and response planning) were submitted to ISO to obtain CRS credits for communities under the LMS in May 2016. • Community Rating System (CRS) Manual Changes meeting on June 20, 2017. • Hosted Local Mitigation Strategy (LMS) Workshop on November 13, 2019 to assist in helping local communities gain a better understand of how the LMS “works” as hosted by the State of Florida.

Project Identification and Tracking[11]	• Improved project tracking system through creation of internet-based board and encouraged participants to also track any projects that they are doing mitigation on to illustrate all of the mitigation work being done locally (*Part 2*). • Updated the project prioritization process, Benefit Cost Review, and built it into the project submittal process to help identify benefit of projects based on Suitability, Risk Reduction and Cost and Time. (*Part 2).* • Began adding previously completed projects to the archive list to build history of mitigation measures. (*Part 5*). • Added Appendix 2 to *Part 2* to track Deleted/Deferred Projects.
Public Awareness	• 2017 City of North Miami Hurricane Preparedness Fair • 2017 CLEO Institute Preparedness Event • 2018 Miami-Dade Public Schools Youth Fair • 2019 Florida International University (FIU) Weather Day • 2020 FIU, Science, Technology, Engineering & Math Weather Day

[11] EMAP 2016 Standard 4.2.2

POLICIES, ORDINANCES AND PROGRAMS AFFECTING MITIGATION [12]

There are many federal, state and county laws and policies that affect hazard mitigation and all the members of the LMSWG. Some of those are:

Federal

1. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288 as amended (The Stafford Act) is interpreted by Title 44 of the Code of Federal Regulation (44 CFR) and governs FEMA and emergency management and sets forth the federal concepts for hazard mitigation. It also defines the Coastal Barriers Resources Act (44 CFR 206 subpart J) and describes floodplain and environmental management (Parts 9 and 10).

2. The Disaster Mitigation Act of 2000 (DMA-2K) has also redefined parts of The Stafford Act and those changes have been incorporated into this document. Much of FEMA has been further redefined by the "Post-Katrina Emergency Management Reform Act of 2006," which was enacted by Congress and signed into law by the President in the fall of 2006.

3. The National Flood Insurance Program (NFIP) and the Community Rating System (CRS) FLA-15, July 1996, sets up a community rating system for flood insurance offering incentives for communities and credits for identified floodplain management activities.

4. National Fire Code, 1993 and NFPA 101 Life Safety Code define uniform fire safety standards adopted by rule by the State Fire Marshal.

5. Title 15 of the Code of Federal Regulations, which defines the Coastal Zone Management Act (15 CFR Parts 923 and 930).

6. Title 40 of the Code of Federal Regulation which defines the National Environmental Policy Act including such mitigation measures as included in the National Emission Standards for Hazardous Air Pollutants (Part 61), Toxic Substances Control Act (Part 763), the Resource Conservation and Recovery Act and CERCLA (the Superfund).

7. Title 29 of the Code of Federal Regulations that defines the Occupational Safety and Health Act containing many hazard mitigation measures.

[12] EMAP 2016 Standard 4.2.4 (1)

8. Presidential Decision Directives 39 and 62 are the authorities directing the development of terrorism response.

9. Presidential Policy Directive (PPD) 8: National Preparedness was released in March 2011. The goal of PPD 8 is to strengthen the security and resilience of the U.S. through five (5) preparedness mission areas – Prevention, Protection, Mitigation, Response and Recovery.

    a. National Protection Framework follows the guiding principles of resilience and scalability, a risk informed culture and shared responsibility.

    b. National Mitigation Framework establishes a common platform for coordinating and addressing how the Nation manages risk through mitigation capabilities.

    c. National Response Framework includes establishing a safe and secure environment moving towards recovery.

    d. National Disaster Recovery Framework focuses on how to best restore, redevelop and revitalize the community and build a more resilient Nation.

10. National Infrastructure Protection Plan (NIPP): provides a framework for programs and initiatives for the protection of Critical Infrastructure and Key Resources (CI/KR) and ensures that resources are applied where they offer the most benefit for mitigating risk.

11. PPD – 21 Critical Infrastructure and Resilience establishes a national policy on critical infrastructure security and resilience

State

1. State of Florida Statutes which are pertinent to hazard mitigation include:

    a. Chapter 161 – Beach and Shore Preservation

    b. Chapter 163 – Conservation, Aquifer Recharge and Drainage Element

    c. Chapter 255 – Public Property and Public Buildings

    d. Chapter 373 – Water Resources

    e. Chapter 403 – Environment Controls

2. The South Florida Water Management District is a regional government agency that oversees the water resources in the southern half of the state through managing and

protecting water resources including balancing and improving water quality, flood control, natural systems and water supply.

3. South Florida Fire Prevention Code 1992-93 (adopted by the County Commission) defines standards for fire prevention and allows controlled burns as mitigation.

Federal, State and Regional Governmental Entities

The Federal, State and Local entities that perform hazard mitigation functions are almost too numerous to name. However, some of the more prominent ones are: FEMA, the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), U.S. Army Corps of Engineers (USACE), Natural Resources Conservation Service (NRCS), FDEM, Florida Department Economic Opportunities, Florida Department of Transportation (FDOT), South Florida Water Management District (SFWMD) and many more.

The government entities that are located within Miami-Dade County and its Municipalities that perform hazard mitigation functions are varied and represent all levels of government: Federal, State, County and Local. FEMA has funded hundreds of hazard mitigation projects following Hurricane Andrew and to a lesser extent following the 1993 March windstorm or "Storm of the Century," the February 1998 "Groundhog Day" storm, and more projects have been implemented following Hurricane Irene in 1999 and the October 3, 2000 floods (pre-Tropical Storm Leslie), the tornadoes of March 27, 2003, the hurricanes of 2004 (Charley, Frances, Ivan and Jeanne), the hurricanes of 2005 (Katrina, Rita and Wilma), Tropical Storm Fay in 2008; Hurricane Irma in 2017 and Hurricane Michael in 2018 . FEMA acts as the administrative agency of the National Flood Insurance Program (NFIP), currently all Miami-Dade municipalities participate in this program.

The USACE is responsible for restoration and re-nourishment of most of the County's beaches, maintenance of the Intracoastal Waterway, maintenance of Government Cut and the Miami Harbor entrance, and some shared responsibility with the South Florida Water Management District (SFWMD) for the canal and levee systems throughout the county. Mitigation functions in these areas by the Corps are multiple and varied.

The SFWMD is responsible for the operations and maintenance of the primary canals system, on behalf of the USACE, performing flood control operations, throughout the County, based on a schedule of operations, which determined when control structures are opened and closed. Flood control mitigation opportunities exist to benefit all of South Florida through the placement of new and maintenance of existing structures. These structures, located throughout the County, mitigate against saltwater intrusion into the Biscayne Aquifer from which Miami-Dade County's drinking water is supplied.

The United States National Park Service (NPS) controls Everglades National Park that covers one third of the land area of Miami-Dade County and Biscayne National Park that covers over half of Biscayne Bay.

The United States Department of Agriculture's Farm Service Agency provides assistance to the farming community similar to that which FEMA provides to counties and municipalities. Additionally, the Natural Resources Conservation Service (formerly Soil Conservation Service) helps with mitigation measures such as, canal bank restoration and stabilization.

The United States Forestry Service and the Florida Division of Forestry both keep fire trails and fire breaks open, conduct controlled or prescribed burns and assist with debris clearance, all of which mitigate and facilitate fire control by keeping fuel levels low.

The Florida Department of Transportation (FDOT) must be a major participant in any mitigation endeavors undertaken throughout the county. They, along with the Miami-Dade Expressway Authority, maintain and control our major thoroughfares including the expressway system. They also control, along with Miami-Dade County DTPW, Florida East Coast and CSX railroads and the Town of Bay Harbor Islands, the twenty-three movable bridges that cross the Miami River and the Intracoastal Waterway.

County

1. Board of County Commission Resolutions

    a. R-572-00, which establishes the Miami-Dade Local Mitigation Strategy as official county policy.

    b. R-710-05, which authorizes the County Manager to apply for, receive, expend and amend applications for projects listed in the Miami-Dade Local Mitigation Strategy.

    c. R-451-14, which requires all County infrastructure projects to consider potential impacts of sea level rise during all project phases.

2. Pertinent Miami-Dade County laws include codes and ordinances that govern the unincorporated and municipal activities, as follows:

    a. Chapter 8(b) of the county code, which deals with emergency management.

    b. Chapter 11(c), covering Development within Flood Hazard Districts.

    c. Chapter 17, i.e. the Housing Code, focused on maintaining the housing stock in decent safe and sanitary conditions.

    d. Chapter 18b covering right-of-way landscaping.

    e. Chapter 24 covering the activities of the Miami-Dade Division Environmental Resources Management (DERM) for permitting hazardous materials.

f. Chapter 28 of the county code which deals with subdivision regulations.

g. Chapter 33, covering zoning activities for approval of a development of regional impact.

h. Floodplain Management Program sets the criteria for elevations and assesses the risks for flooding for different areas of the County.

i. Miami-Dade County Comprehensive Emergency Management Plan (CEMP) mandates that municipalities have emergency management plans, as well as recommends the performance of hazard mitigation activities.

j. Miami-Dade County Comprehensive Land Use Plan dictates current land use and controls future land use and growth throughout the county.

k. The Public Works Manual, especially Section D5, concerning coastal construction.

l. Dade County Environmental Protection Ordinance, Coastal and Freshwater Wetlands Regulations, Sections 24-58 and 24-59.

3. Miami-Dade County Landscape Maintenance Special Taxing Districts provide tree-trimming programs that prevent more severe damage during windstorms.

4. On March 1, 2002, the Florida Building Code (FBC), was adopted by Miami-Dade County and all the Municipalities, consequently replacing the South Florida Building Code. The High Velocity Hurricane Zone (HVHZ) portions of the code are applicable to Miami-Dade and Broward Counties only, the HVHZ sections of the FBC in addition to the most current ASCE- 7 standard contains a stricter design and construction measures, especially to protect windows, walls, and roof from wind-born debris. In 2012, the FBC was amended to include flood protection measures and use of ASCE-24.

5. The Local Law Enforcement Mutual Aid Agreement with Miami-Dade County designed to coordinate and supplement local resources.

6. The Statewide Mutual Aid Agreement for Catastrophic Disaster Response and Recovery establishes a local resource for all Working Group members that are presently signatories.

7. The Southeast Florida Regional Climate Change Compact set forth an agreement between Miami-Dade, Broward, Palm Beach and Monroe Counties to work in collaboration to address the impacts of climate change on Southeast Florida. The Climate Change Action Plan was subsequently developed to identify and pursue reduction and resiliency measures in the region.

County Programs

Stormwater Management Masterplan
This program has the responsibility of the evaluation of flood protection levels of service. The Stormwater Management (Drainage) Level of Service (LOS) Standards for Miami-Dade County contains both a Flood Protection (FPLOS) and Water Quality (WQLOS) component. The minimum acceptable Flood Protection Level of Service (FPLOS) standards for Miami-Dade County shall be protection from the degree of flooding that would result for a duration of one day from a ten-year storm, with exceptions in previously developed canal basins, where additional development to this base standard would pose a risk to existing development. All structures shall be constructed at, or above, the minimum floor elevation following the latest version of the Florida Building Code or as specified in Chapter 11-C of the Miami-Dade County Code, whichever is higher. The incorporated areas of the county (municipalities) may have adopted stricter elevation standards.

Subdivision and Other Regulations.
Miami-Dade County Code imposes certain developmental requirements before land is platted. These relate to the provision of water and sewer facilities, local streets, sidewalks, drainage, and open space. Before use permits or certificates of occupancy can be issued, Section 33-275 of the Miami-Dade County Code requires that adequate water, sewage and waste disposal facilities be provided.

Shoreline Review.
The Shoreline Development Review Ordinance was adopted in 1985 and prescribes minimum standards for setbacks, visual corridors and, with its' accompanying resolutions, sets out a flexible review process through which architectural interest, building orientation, landscaping, shoreline use compatibility, access, and other design related elements can be negotiated with the developers and enforced by the local governing jurisdiction.

Area Plan Report
Since 1998, Area Plan Reports have emerged as a preferred planning technique for community visioning and helping to find answers to fundamental planning questions. An Area Plan Report is a practical planning technique, which blends public participation, detailed planning, and the development of implementation tools. Its principal focus is the creation of planning products (instead of processes. Public participation is indispensable for a successful Area Plan Report. The overriding objective is the creation of a detailed plan, which resolves areas of concern identified in the Area Plan Report study area; often these concerns involve capital improvements such as roads, sewers, sidewalks, parks and other community improvements. The Planning and Zoning Divisions of the Department of Regulatory and Economic Resources implements the Area Plan Report process as a collective planning effort that develops a small area plan which incorporates the priorities of a community.

Coastal Management

The Beach Restoration and Preservation Program is Miami-Dade County's mechanism for initiating and coordinating federal and/or State projects essential to the protection and recreational viability of Miami-Dade's ocean shoreline. Local participation in the determination of activities pertaining to beach restoration and preservation is included in the program. The County has benefited from large federal and State funding contributions and the expertise obtained as a result of the program. Most notably, the Miami-Dade County Beach Restoration Project now provides hurricane and erosion control protection for upland property and a vast recreational resource for public use. This project replaced a seriously eroded shoreline sustained only by bulkheads and seawalls, which offered little protective or recreational value. Implementation of erosion control projects is based on the following criteria:

1. Need for protection of public safety and property in areas threatened by coastal erosion.

2. To provide enhanced beach-related recreational opportunities for both visitors and Miami-Dade County residents.

3. To provide more effective and efficient long-term management of our natural and restored beach systems.

The Biscayne Bay Restoration and Enhancement Program objectives are to maintain or improve ecological, recreational, and aesthetic values of Biscayne Bay, its shoreline, and coastal wetlands. Projects include shoreline stabilization, mangrove and wetland habitat restoration, and bay bottom community enhancement at parks and other public lands. These contribute to erosion control, water quality, and fisheries and wildlife resources.

Future capital expenditures will be directed primarily towards maintaining and enhancing durability of restored beaches and to environmental improvement of the Biscayne Bay ecosystem. All of these projects are developed and carried out based on the best scientific and technical information available to the agencies involved.

Municipalities

Each of the municipal partners has a designated point of contact which is updated annually utilizing LMS Working Group Contact Update Form. These individuals have the responsibility to coordinate mitigation activities with the relevant municipal agencies.

The municipal partners either through their designated point of contact or agencies have the responsibility for integrating mitigation data into their respective plans and procedures. Common examples include of these plans and procedures are:

- Municipal Flood Warning and Response Plans and Procedures
- Municipal Comprehensive Development Master Plans
- Protective Actions Plans and Procedures

Municipal Agencies and Their Mitigation Functions

The municipalities of Miami-Dade County each have within their structure certain departments and agencies which affect and promote mitigation. While these agencies may have slightly different names from city to city, the role they perform in the mitigation function remains the same (e.g. public works or public services or community services, etc.).

Municipal Floodplain Manager: Some of the municipalities have a designated floodplain manager. They are responsible for coordinating and directing compliance with the Community Rating System (CRS) and maintaining their municipality's flood warning and response plan.

Miami-Dade DTPW operates and maintains and operates drainage systems and the secondary canals throughout the County, working with the SFWMD to implement flood control operations, when required.

Police and fire rescue departments: Each of the municipalities except Miami Lakes, Palmetto Bay and Cutler Bay maintains its own Police Department while the cities of Coral Gables, Hialeah, Key Biscayne, Miami and Miami Beach maintain their own fire departments, with the balance of the cities using Miami-Dade Fire Rescue for this service. Emergency responders are essential for alert and notification, lifesaving response, prevention and protection activities that all contribute to lessening the impact of disasters. The police and fire departments also conduct educational seminars to residents to spread awareness on emergency preparedness.

The Miami-Dade County RER, Permitting and Inspections Center: The functions of this department relate extensively to a wide range of mitigation projects and on-going mitigation activities. In most of our cities, the Building Official is responsible for interpreting and enforcing all laws, codes, ordinances, regulations and municipal policies related to the construction, improvement, expansion, repair or rehabilitation of buildings within the city. This department ensures that all new construction complies with the Florida Building Code which in itself is a major contribution to hazard mitigation. The department usually is responsible for the management of development in Special Hazard Areas; preservation

of open space; general control of land use intensities; and coordination between the capacity of public infrastructure in relation to proposals of private development. The Building Department also ensures all proposed development in the City conforms to the City's comprehensive plan as it relates to urban design of public areas and buildings, infrastructure planning and maintenance of flood data and other statistical information.

Planning and Development Department: Often is a part of the building department and even, at times, a part of public works. However, a number of our municipalities maintain planning and development as a separate entity which interacts within the mitigation strategy in many ways and must be part of the overall strategy especially in the area of urban land use.

Public Works Department: In most of our cities this department is responsible for construction and maintenance of roads, bridges and waterways and storm water management including drainage system development, inspection and maintenance, all functions that relate in various ways to hazard mitigation. Public works activities are a major component of any mitigation strategy.

Analysis of Existing Policies, Ordinances and Programs

The LMS Coordinator performed a review of a number of local policies and plans to create an Integration Document (*Part 4 Appendix H*). Additional LMSWG members were invited to participate and assist by reviewing the Integration Document and identifying and reviewing other local policies, ordinance and programs so we may better identify areas where we are in alignment or areas for consideration where mitigation may be better aligned.

As can be imagined, in a county as large and diverse as Miami-Dade, there are numerous planning agencies and documents that are developed. Each many times addresses the needs of their focus (e.g. transportation, emergency management) and each seems to have a different threshold for how often the plan is to be updated and the planning horizon to which it assesses the consideration of hazards and risks.

The Integration Document included in this version should be viewed as a starting point for the LMSWG to discuss, review and identify areas were we as a whole community can be more effective in our approach to mitigation and resiliency.

The Integration Document includes reviews of the following:

- Resilient 305 Strategy
- Southeast Florida Regional Climate Action Plan
- Miami-Dade Comprehensive Development Master Plan (CDMP)
- Miami-Dade Emergency Management Recovery Plan
- Miami-Dade 2035 Long Range Transportation Plan
- Florida Administrative Code 9J-2.0256

As the population grows in Miami-Dade County, hazard mitigation laws must address new structures being built in areas susceptible to unusual occurrences either through prohibition, limitation or tougher code to reduce potential losses. For example, new building construction in low lying flood areas must be limited or built in such a manner to minimize impacts from flooding. Similarly, future construction sites of natural gas, electrical and nuclear power plants must have mechanisms in place that will self-contain, or significantly limit, effects of potential catastrophic incidents. As identified in the Integration Document the Miami-Dade CDMP addresses a number of planning and zoning issues and the prevention or limitation of development in risk areas. Adaptation Action Areas are being incorporated into the CDMP and they should also be considered in relation to recovery and post-disaster redevelopment.

Local government and the private sector must provide ongoing training and information sessions for the public. Clear, unbiased knowledge is a key ingredient for safety enhancement for the public. Ongoing training could include public information notices and continuous training sessions at local libraries, hospitals and schools. Part of the cost for this training should be borne by those private parties who ask or have businesses that may contribute to an unusual occurrence. For example, construction of a new electrical substation, a natural gas company building a new facility, a professional dry cleaner establishment, a new gas station, etc. would have impact fees assessed to offset the mitigation training costs.

Training and equipment to prepare for and subsequently resolve hazard situations are necessary and vital. Alternative financial resources must be assessed and located in addition to including these costs in all respective governmental budgets.

Periodic review and revision of the local government ordinances, policies and programs must occur no less than once every other year.

Each municipality that has not yet done so should adopt a floodplain management ordinance and participate in the community rating system program. At the present time, the Miami-Dade Local Mitigation Strategy will serve as a floodplain management plan if adopted by a municipality.

Municipal Integration of Mitigation Measures

The following section identifies how the participating municipalities have incorporated mitigation into their planning processes, policies and/or ordinances. The municipalities continuously strive to expand and improve upon their mitigation measures as is illustrated below and with the extensive listing of mitigation projects identified in Part 2.

Aventura

The City of Aventura reported the last update on Municipal Integration occurred on July 7, 2015, when Resolution No. 2015-40 was approved as the city's Floodplain Management Plan.

City of Aventura Comprehensive Plan[13]
Transportation Element
Policy 1.9: The City of Aventura, in consultation with the Florida Department of Transportation, shall evaluate the impacts of proposed development and redevelopment on its transportation system, Strategic Intermodal System facilities, and the adopted level of service standards of transportation facilities, and identify strategies to alleviate or mitigate such impacts in coordination with the developer and other agencies as appropriate. The City shall coordinate with FDOT, Miami- Dade County, and 28 other jurisdictions in the county in the development of common methodologies for measuring such impacts.
Infrastructure Element
Objective 4: Aventura shall protect and preserve the biological and hydrological functions of the wetlands identified in the Land Use Element. Future impacts to the biological functions of publicly and privately-owned wetlands shall be mitigated. Publicly acquired wetlands shall be restored and managed for their natural resource, habitat and hydrologic values.
Capital Improvements Element
Objective 3: Future development will be permitted only when the adopted level of service standards for those services listed in the CIE will be upgraded or maintained at adopted levels of service, or when demonstrated negative impacts on hurricane evacuation clearance times will be mitigated, by ensuring that adequate fiscal resources are made available including, the proportionate cost of improvements necessitated by the development.
Conservation & Coastal Management Element
Policy 10.2: Structures which suffer recurring damage to pilings, foundations or load-bearing walls shall be required to rebuild landward of their current location to modify the structure to structurally enhance the structure, institute or mitigation measures or delete the area's most prone to damage.

[13] https://www.cityofaventura.com/DocumentCenter/View/184/Comprehensive-Plan-PDF?bidId=

City of Aventura Comprehensive Plan[13]
Policy 10.14: The City shall implement its local mitigation strategy in accordance with the guidelines provided in the Local Mitigation Strategy: A Guidebook for Florida Cities and Counties in order to fulfill the State requirements relating to post-disaster planning, repair, and reconstruction.

Bal Harbour

Below is the section of this Village's Comprehensive Plan that integrates with the Miami-Dade County LMS.

Comprehensive Plan for Village of Bal Harbour	June 1988
Future Land Use Element	
Objective 9J-5.006(3)(b)4: Protect natural and historical resources. Policy: Developments and construction that adversely impact on the quality of the natural environment shall not be allowed.	
Coastal Management Element	
Objective 2.2 Hazard Mitigation and Coastal High-Hazard Areas: the Village of Bal Harbour shall ensure that building, development and redevelopment activities are carried out in a manner which minimizes the danger to life and property from hurricanes. Development within coastal high-hazard areas shall be restricted and public funding for facilities with coast high-hazard areas shall be curtailed. • Policy 2.2.01: The hazard mitigation section of the Dade County Hurricane Procedure Plan shall be reviewed and updated on a 5-year basis. In the rewrites, the Emergency Management Director shall identify specific actions that could be implemented to reduce exposure to natural hazards. • Policy 2.3.06: The Recovery Task Force shall propose comprehensive plan amendments which reflect the recommendations in any interagency hazard mitigation reports or other reports prepared pursuant to Section 406 of the Disaster Relief Act of 1974 (PL 93-288). • Policy 2.3.07: If rebuilt, structures which suffer damage in excess of fifty (50) percent of their appraised value shall be rebuilt to meet all current requirements, including those enacted since construction of the structure. • Policy 2.3.08: Structures which suffer recurring damage to pilings, foundations, or ·loadbearing walls shall be required to rebuild landward of their current location, to modify the structure to structurally enhance the structure, institute other mitigation measures or delete the areas most prone to damage.	

Bay Harbor Islands
Below is the section of this Village's Comprehensive Plan that integrates with the Miami-Dade County LMS.

The most recent actions taken by the town were:

- On June 10, 2015 the Town of Bay Harbor Islands passed Resolution No. 2054 for adoption of the 2015 Miami-Dade County Local Mitigation Strategy as the city's Floodplain Management Plan.
- On August 8, 2016 the Town of Bay Harbor Islands passed Ordinance No. 991 amending Chapter 23 of the Town's adopted Code of Ordinances entitled Zoning and Planning relating to the allowable height of docks.
- On May 13, 2019 the Town of Bay Harbor Islands passed Ordinance No. 1032 amending the Code of Ordinance that repeals the town's existing Chapter 7 ½ entitled Flood Damage Prevention. This updated ordinance updated the flood plain maps, designated a flood plain administrator, and adopted procedures and criteria for development in flood hazard areas, etc.

Town of Bay Harbor Islands Code of Ordinances	**December 2013**
Article 1 General Provisions	
Sec. 11-5. - Seasonal and periodic flooding; protection of lives. (a)The regulation of areas subject to seasonal and periodic flooding as provided in the comprehensive plan, policies 1.1(4) (page 35), 3.2 (page 36), 5.2 (page 37), and objectives 3 (page 36) and 5 (page 37) shall be implemented by the Code of Ordinances, including sections 5-17, 5-23.1(A)(3), (4) and sections 23-11(A)(5) and 23-12(12). (b)While it is hereby declared that Dade County has retained the primary responsibility for seasonal and periodic flooding throughout the county as provided in county Ordinance Nos. 57-22 and 57-30, as amended, the town's Code of Ordinances shall further implement the goals and objectives of the county ordinances by requiring compliance with all minimum federal flood insurance elevations for all new construction and for which land use densities and intensities have been adopted in further support thereof. (c)The protection of lives as provided in the comprehensive plan, policy 5.2 (page 37), shall be implemented by the Code of Ordinances, including section 5-1, and by virtue of the Miami-Dade County retention of primary responsibility for hurricane evacuation, including responses to lifesaving and other types of emergency evacuation. The town shall continue to coordinate and assist the county by providing minibus mass transportation to designated areas, information dissemination, and such other acts as shall complement the overall mass transit/public notice and evacuation procedures implemented by Miami-Dade County, Florida. While the county has retained the right to regulate land subdividing through the subdivision regulations, nevertheless the town shall continue to coordinate its efforts with the appropriate county agencies. (d)The town has adopted and shall maintain in full force and effect written hurricane procedures, as amended from time to time.	

Town of Bay Harbor Islands Code of Ordinances	December 2013

(e)Drainage facilities for flooding and a nonpoint pollution, as provided in the town's comprehensive plan, policies 1.1.1, 1.1.2 (page 58); 1.3.1 (page 59); 2.1.1 and objective 2 (page 60); capital improvements policies 1.2, 1.3, 1.4 (page 19); and land use policy 1.3 (page 37) shall be implemented by the Code of Ordinances, including sections 5-1 and 5-17, in that the town collects and discharges storm water runoff through inlets for the residential districts and into two drainage wells for the commercial districts. The town shall continue to coordinate its efforts with Dade County, particularly with reference to protecting and preserving Biscayne Bay. The town shall continue to review its land development regulations to ensure the standards as indicated in the town's comprehensive plan.

(Ord. No. 488, § 5, 5-29-90; Ord. No. 733, § 4, 12-8-03)

Article III Provisions for Flood Hazard Reduction

Sec. 7½-26. - General standards.

In all areas of special flood hazard, all development sites including new construction and substantial improvements shall be reasonably safe from flooding, and meet the following provisions:

(1) New construction and substantial improvements shall be designed or modified and adequately anchored to prevent flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

(2) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

(3) New construction and substantial improvements shall be constructed by methods and practices that minimize flood damage.

(4) Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

(5) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems.

(6) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into floodwaters.

(7) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.

(8) Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this chapter shall meet the requirements of "new construction" as contained in this chapter.

(9) Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this chapter, shall be undertaken only if said nonconformity is not furthered, extended, or replaced.

Town of Bay Harbor Islands Code of Ordinances	December 2013

(10) All applicable additional federal, state, and local permits shall be obtained and submitted to the floodplain administrator along with the application for development permit. Copies of such permits shall be maintained on file with the development permit. State permits may include, but not be limited to, the following:

(a) *South Florida Water Management District:* in accordance with F.S. § 373.036(2)(a)—Flood protection and floodplain management.

(b) *Department of Community Affairs:* in accordance with F.S. § 380.05— Areas of critical state concern, and F.S. Chapter 553, part IV—Florida Building Code.

(c) D*epartment of Health:* in accordance with F.S. § 381.0065—On-Site Sewage Treatment and Disposal Systems.

(d) *Department of Environmental Protection, Coastal Construction Control Line:* in accordance with F.S. § 161.053—Coastal Construction and Excavation.

(11) Standards for subdivision proposals and other new proposed development (including manufactured homes):

(a) Such proposals shall be consistent with the need to minimize flood damage.

(b) Such shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.

(c) Such proposals shall have adequate drainage provided to reduce exposure to flood hazards.

(12) When proposed new construction and substantial improvements are partially located in an area of special flood hazard, the entire structure shall meet the standards for new construction.

(13) When proposed new construction and substantial improvements are located in multiple flood hazard risk zones or in a flood hazard risk zone with multiple base flood elevations, the entire structure shall meet the standards for the most hazardous flood hazard risk zone and the highest base flood elevation.

Biscayne Park
Below is the section of this Village's Comprehensive Plan that integrates with the Miami-Dade County LMS.

2025 Comprehensive Plan Adopted Component	October 2010
Conservation Element	
Policy 4.2 The Village shall encourage the implementation of low impact development techniques and green building standards that reduce the negative environmental impacts of development and redevelopment by: reducing building footprints to the maximum extent feasible, and locating building sites away from environmentally sensitive areas; promoting the preservation of natural resources; providing for on-site mitigation of impacts (i.e. retention and treatment of stormwater runoff, water reuse, Master Stormwater Management Systems); promoting energy conservation through design, landscaping and building techniques (i.e. solar power, increased tree canopies); promoting water conservation through landscaping and building design; ensuring environmentally friendly building practices (i.e. use of environmentally friendly building materials, recycled materials), and; considering the development of a and implementation of a green building certification program, with associated regulations, incentives and standards.	
Public Facilities Element	
GOAL- DRAINAGE: The goal for the drainage is for the Village of Biscayne Park to continue maintenance of the local drainage system to afford reasonable protection from predictable flooding. The drainage objectives to achieve the goals and which address the requirements of paragraphs 163.3177 (6) (c), F.S., and 9J-5.011 (2) F.A.C. are as follows: **OBJECTIVES AND POLICIES** **Objective 1** To review on an annual basis information on the performance of stormwater drainage facilities. **Policy 1.1** The Village will continue to comply with the 1 0 year design storm level of 10 year design storm level of service standard for stormwater drainage. **Policy 1.2** The Village will continue to maintain and monitor local drainage.	

Coral Gables
Below is the section of this City's Comprehensive Plan that integrates with the Miami-Dade County LMS.

City of Coral Gables Comprehensive Emergency Management Plan, Annex I, Mitigation	October 2009
Annex I, Mitigation	
Section B: Coral Gables Mitigation Programs and Department Responsibilities Note: Details and further information is contained in the Miami-Dade County Local Mitigation Strategy. (Page 3.) **Section B:** Coral Gables Mitigation Programs and Department Responsibilities **Mitigation Projects Completed.** • The City's Local Mitigation Strategy identifies mitigation projects that have been completed and provides a list of future projects to be implemented as funding becomes available. (Page 6.)	
Public Safety Element	
Objective SAF-2.2: Assure that future development or redevelopment maintains or reduces hurricane evacuation times. The City establishes an out-of-county hurricane evacuation time for a category 5 hurricane of 16 hours. Mitigation is permitted to achieve and maintain these standards. **Policy SAF-2.3.2**: Annually incorporate recommendations of interagency hazard mitigation into the Comprehensive Plan and Post-Disaster Redevelopment Plan. The redevelopment plan shall identify areas which may warrant post-disaster redevelopment, including elimination of unsafe conditions and inappropriate land uses, and limitation of redevelopment in areas of likely repeated damage.	

Cutler Bay

On June 17, 2015 the Town of Cutler Bay passed Resolution No. 15-40 for adoption of the 2015 Miami-Dade County Local Mitigation Strategy; authorizing the Town Manager to identify and prioritize hazard mitigation grant program projects to become a part of the Local and Statewide hazard mitigation strategy. The Town also adopted a Climate Change Element in June 2016.

Town of Cutler Bay Growth Management Plan
Future Land Use Element
Policy FLU-8C: New schools will minimize negative impacts on surrounding areas through site location, configuration, access and development. Conversely, new development and redevelopment shall minimize and/or mitigate negative impacts on existing school facilities. **Policy FLU-9M:** The Town shall require developers to identify and mitigate constraints based on soils, topography, and floodplains. **Policy FLU-11E:** as appropriate and feasible, shall encourage the elimination or reduction of uses that are incompatible with hazard mitigation goals and interagency hazard mitigation report recommendations.
Housing Element
Monitoring Measures H2-1: 1. Land Development Regulations that mitigate regulatory barriers or provide incentives for the provision of a variety of housing types. 2. Number of cost burdened households by income, age, and special needs group and tenure 3. Housing costs
Coastal Management Element
Policy CM-3C: The Town will establish development standards in the Land Development Regulations for siting future water-related uses that address land use compatibility, availability of upland support services, existing protective status of ownership, hurricane contingency planning, protection of water quality, water depth, environmental disruptions, mitigation actions, availability for public use, economic need, and feasibility **Objective CM-4:** Through compliance with Federal Emergency Management Agency (FEMA) regulations and by targeting repetitive flood loss and vulnerable properties for mitigation, the Town will reduce natural hazard impacts. **Objective CM-7:** The Town will coordinate with the Miami-Dade County Office of Emergency Management (OEM) to develop and implement post-disaster redevelopment and hazard mitigation plans that reduce or eliminate exposure of life and property to natural hazards towards the protection of health, safety, and welfare. **Policy CM-7A:** Inconsistencies are found with the policies under this objective and the post disaster redevelopment and hazard mitigation plans of the Miami-Dade County Office of Emergency Management (OEM), the Town will notify and coordinate with OEM.

Town of Cutler Bay Growth Management Plan
Policy CM-7D: Recovery Task Force shall review and decide upon emergency building permits; coordinate with Miami-Dade County, state and federal officials to prepare disaster assistance applications; analyze and recommend to the Town Council hazard mitigation options including reconstruction or relocation of damaged public facilities; develop a redevelopment plan; and recommend amendments to the Growth Management Plan and other appropriate policies and procedures. **Objective CM-8:** The Town will reduce the exposure of life and property to hurricanes through the planning and implementation of pre-disaster hazard mitigation measures. Pre-disaster planning for post-disaster redevelopment shall direct population concentrations away from the undeveloped identified high-risk areas during post-disaster redevelopment. **Policy CM-8C:** During pre-disaster planning, hazard mitigation proposals shall be developed by the Town in conjunction with other agencies and, where appropriate, included in the Town's Emergency Response Plan or the Growth Management Plan. **Policy CM-8D:** Town locates facilities, the Town shall determine the feasibility and necessity of relocating public buildings away from high-risk areas. The Town shall develop a formal process and guidelines for evaluation alternative to the replacement or repair of public facilities damaged by hurricanes such as abandonment, relocation, or repair and reconstruction with structural modifications. The costs; environmental impacts; mitigation activities; community impacts; economic development issues; employment effects; legal issues; consistency with local, regional and state plans; time period for implementation; and availability of funds should be evaluated for each alternative. **Objective CM-9:** During post-disaster recovery and redevelopment, the Town shall implement its Emergency Response Plan (ERP) and applicable Growth Management Plan policies and assist hurricane damaged areas with recovery and hazard mitigation measures that reduce the potential for future loss of life and property. **Policy CM-9D:** The Town will Policy CM-9D: enforce applicable recommendations of post-disaster hazard mitigation plans required under Section 406 of the Disaster Relief Act of 1974.
Conservation Element
Policy C-6A: Wetlands that are to be Policy C-6A: protected will be identified based on the type of wetland, function, size, conditions, location, and overall resource value. The wetlands shall be used for purpose that are compatible with their natural values and functions, and Land Development Regulations shall be adopted to provide these areas with the maximum feasible protection, by using such tools as compensatory wetland mitigation and dedication of conservation easements for preserving open space. All development with the potential to impact wetland areas shall be consistent with South Florida Water Management District (SFWMD) regulations. Activities in wetland areas may be permitted provided all applicable local, regional, state and federal external environmental agency permits have been obtained and one of the following standards is satisfied:

Town of Cutler Bay Growth Management Plan
1. Such an activity is necessary to prevent or eliminate a public hazard. 2. Such an activity would provide direct public benefit, which would exceed those lost as a result of the modification. 3. Such an activity is proposed for habitats in which the functions and values currently provided are significantly less than those typically associated with such habitats and cannot be reasonably restored. 4. Because of the unique geometry of the site, it is the unavoidable consequence of development for uses that are appropriate given site characteristics.

Town of Cutler Bay Climate Change Element	June 2016
The Town of Cutler Bay has already taken a number of steps to reduce greenhouse gas emissions and encourage environmental responsibility at the local level. The Town, along with neighboring communities, participates in the Property Assessed Clean Energy (PACE) Program, which provides loans to property owners for solar panels, wind generators, insulation and shutters. The Town also recently gained the legislative authority to allow residents of certain areas to receive loans, which can be paid off over time, to finance the initial costs of installing an alternate energy producing device (Financing Initiative for Renewable and Solar Energy). In addition, the Town is the only municipality in the County to have achieved the Florida Green Building Council's Silver Certification, and has adopted green building and development standards as part of its Land Development Regulations. "Climate change resilience" means the ability of the built and natural environment (including infrastructure) to adjust to and absorb climate change impacts to the maximum extent feasible. Examples of management and development practices that can increase climate change resilience include: requiring increased minimum floor elevations for new development and redevelopment; retrofitting buildings for increased flood risk; designing infrastructure that can withstand higher water levels such as raising seawalls and installing tidal valves; implementing natural drainage features such as bios wales and stormwater buffers; reducing the heat island effect through increased landscaping, shading, and green building practices, and; adopting building practices that reduce vulnerability to increased storm events.	

Doral

On January 13, 2015, the City of Doral adopted Resolution 15-06 which adopts the current Miami-Dade County Local Mitigation Strategy in accordance with the National Flood Insurance Program Community Rating System Requirements as the city's Floodplain Management Plan.

City of Doral Comprehensive Master Plan[14]
Future Land Use Element
Policy 2.6.1: Coordinate with Miami-Dade County in implementing the approved Local Mitigation Strategy, by assessing the vulnerability of governmental, medical and public safety sites and structures in the City to storm damage, and in developing an action plan, if necessary, to address wind stability and flood protection for key buildings. **Policy 2.6.4:** Following the National Response Framework principles, respond to all types of disasters and emergencies with the primary mission of saving lives, and protecting property and the environment. Activate procedures under mutual aid agreements with Miami-Dade County and other area cities when necessary based on event severity. In the case of hurricanes, the City will also immediately implement the recovery policies contained in its adopted Hurricane Preparedness and Recovery Plan. **Policy 2.6.5:** All proposed large-scale amendments to this Comprehensive Plan and/or zoning applications shall be evaluated for their impact on hurricane evacuation routes and times, and effect on currently available off-site shelter capacities. Roadway improvements and shelter improvements shall be required, if deemed necessary, to mitigate negative impacts and phased with new residential development.
Infrastructure Element
Policy 5E.2.5: Appropriate local planning, development design standards, and special construction practices shall be required to ensure both short and long-term mitigation of impacts on groundwater created by activities occurring in stream-to-sink basins and in areas where the Floridan Aquifer is unconfined or semi confined. The following provisions shall apply: a) All new development or modifications to existing development shall provide stormwater treatment. b) Corrective action to retrofit or upgrade existing hazardous material facilities consistent with standards applicable to new facilities shall be required by the City. The Hazardous Materials Management Code and development regulations establish guidelines and minimum compliance standards for existing facilities. c) New development activities that involve handling or storing of hazardous materials may be prohibited in areas and shall be subject to the general requirements, siting prohibitions, storage facility standards, secondary containment requirements, and monitoring provisions of the Hazardous Materials Management Code. Where such facilities

[14] https://www.cityofdoral.com/all-departments/planning-and-zoning/2016-city-of-doral-comprehensive-plan.pdf

City of Doral Comprehensive Master Plan[14]
exist and are proposed to be modified, development review and permitting activities shall include careful evaluation and implementation of engineering and management controls, setbacks and buffers, and monitoring. Existing facilities shall meet the requirements of the Hazardous Materials Management Code pertaining to such facilities.
Conservation Element
Policy 6.4.12: Provide for regular updates to the City's adopted Stormwater Master Plan. **Policy 6.4.13:** Protect and enhance the stormwater management systems that recharge the Northwest Wellfield Area. **Policy 6.5.2:** Identify future wetlands to be protected based on the type of wetland, function, size, conditions/location, and overall resource value. These wetlands shall be used for purposes that are compatible with their natural values and functions, and land development regulations shall be adopted to provide these areas with the maximum feasible protection, by using such tools as upland buffers, exotic vegetation removal, hydro period restoration, compensatory wetland mitigation and dedication of conservation easements. Activities in wetland areas may be permitted provided all applicable federal, state, regional and local external environmental agency permits have been obtained.
Intergovernmental Coordination Element
Policy 9.1.19: Coordinate all disaster preparedness programs with the Miami-Dade County OEM to ensure consistency with the County's Comprehensive Emergency Management Plan and the Miami-Dade Local Mitigation Strategy (LMS) and in updating hurricane evacuation shelter assignments.
City's Land Development Code
Section 71-112 – "Required to withstand extreme wind conditions": No more than 15 percent of the required tree planting requirement pursuant to Chapter 71 "Landscaping and Buffers" of the City's Land Development Code, can be trees and palm trees which do not fare well in extreme wind conditions such as hurricanes and tropical storms. Examples are, avocado, black olive, carrot-wood, citrus tree, among other trees specified in Section 71-112.
Low Impact Development Master Plan
City of Doral Low Impact Development (LID) Master Plan: Provides the City with guidelines, recommendations and Best Management Practices (BMPs) to promote the implementation of green infrastructure in new development and re-development projects to maintain natural infiltration of Stormwater, reduce the discharge of specific pollutants into local waterways, provide more aesthetically pleasing developments and reduce the flood impacts in the City Stormwater system. The Planning Department is currently working on an update to the LID Master Plan which will add new LID techniques.
Low Impact Development
Section 74-881 - "Low Impact Development (LID) Practices": The City's Planning and Zoning Department is responsible for implementing the LID Master Plan

City of Doral Comprehensive Master Plan[14]
through the incorporation of the LID BMPs in Section 74-881 of the Land Development Code. The LID's BMPs apply to all new development and re-development projects within the City of Doral. Concurrent with the update to the City's LID Master Plan, the Planning Department is revising Section 74-881 of the LDC which will clarify the goals, provide a list of non-structural and structural LID practices (derived from the Master Plan) and provide for maintenance of LID practices.

El Portal
Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

Village of El Portal Comprehensive Plan	May 2002
Coastal Management Element	
Policy 1.1.1. In conjunction with any redevelopment of the mobile home park Little Farm Trailer Park site, preserve (and mitigate where possible) the natural canal banks to further marine and wildlife habitat. **Policy 9.1.20** Work with Miami-Dade County in implementing the approved Local Mitigation Strategy for hazard mitigation, and by January 2007, the City shall develop a City Emergency Plan to increase public safety and reduce damages and public expenditures.	

Florida City
Below is the section of this town's comprehensive plan that integrates with the Miami-Dade County LMS.

Florida City Community Redevelopment Plan	February 2009
Policy 1.1: Acquire and demolish dilapidated and unsafe structures while providing relocation programs for displaced families if necessary. **Policy 7.1:** Work with appropriate government agencies and utility companies to ensure provision of adequate services including potable water, stormwater, sewer, gas, solid waste, television, and electricity.	

Golden Beach
Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

Town of Golden Beach Hurricane and Severe Weather Response Plan	2007
Severe Weather Response Element	
Policy: The Town will have an organized response to hurricanes and other severe weather related emergencies in order to mitigate the effects of severe weather and to return Town services and normal living conditions as soon as possible. Wherever practical; the Town's plan will use the same terminology and references as Miami-Dade County's (MDC) plan. The Town Mayor and Manager or their designees are responsible for determining when this plan will be implemented. The determination to mobilize will be based upon information provided by the National Hurricane Center (NHC) and the Miami-Dade Emergency Operations Center (MDEOC). Additionally, it is the policy of the Town of Golden Beach Police Department is to protect life, property, and maintain order within the community during a weather related emergency. Appropriate levels of police services will be maintained before, during and after a hurricane or severe weather incident.	

Hialeah
Below is the section of this city's Comprehensive Plan that integrates with the Miami-Dade County LMS.

City of Hialeah Comprehensive Plan	2015
Future Land Use Element	
Policy 1.2.14: Wetland impacts on the Annexation area: The city will develop a wetland mitigation projection based on the on-site wetlands analysis and consistent with environmental requirements and development projections	
Conservation Element	
The 100-year floodplain needs to be protected to help mitigate the damaging effects of flooding. Protection of these areas is assisted through the National Flood Insurance Program and local Code of Ordinances. Flood criteria must be met before the City will issue any building permits.	
Capital Improvements Element	
Policy 1.4.2: The City shall continue to maintain an inventory of any existing hazards within the City by using the hazards analysis and hazards mitigation criteria established within the Miami-Dade County Comprehensive Emergency Management Plan and shall also identify any grant sources available to mitigate the hazards listed on the hazard inventory.	

Hialeah Gardens
The City of Hialeah Gardens incorporates mitigation into its planning process as follows:

City of Hialeah Gardens 2025 Comprehensive Plan	October 2012
Intergovernmental Coordination Element	
• **Policy 1.1.10** The City shall implement the provisions of the Local Mitigation Strategy (LMS) Guidelines in accordance with the Interlocal Agreement with Miami-Dade County. • **Objective 1.3** Coordinate the impact of development with other jurisdictions to define and implement mutually beneficial goals, ensure consistency among adjacent land uses, and mitigate negative development impacts. This objective shall be made measurable by implementation of its policies.	

The City of Hialeah Gardens has a Division of Emergency Management which is responsible for coordinating disaster preparedness, response, recovery, and mitigation concerns for all City departments.

Homestead
Below is the section of this city's comprehensive plan that integrates with the Miami-Dade County LMS.

City of Homestead Comprehensive Plan	June 2011
Future Land Use Element	
Objective 10: Hurricane Evacuation and Mitigation Ensure that development and redevelopment are consistent with hurricane evacuation plans. Measure 2: Maintain hurricane mitigation measures that are consistent with the Miami-Dade County Local Mitigation Strategy (LMS) and facilitate the approved evacuation plans. **Policy 10.1:** Development orders for new development and redevelopment shall be consistent with local and regional hurricane evacuation plans where applicable. **Policy 10.2**: Mitigate any identified deficiencies in storm damage resistance of critical public facilities and construct new facilities, if needed, to assist in the City's evacuation plans.	
Objective 11: Hazard Mitigation and Post-Disaster Redevelopment To the extent financially feasible, incorporate all prudent hazard mitigation needs and post-disaster redevelopment procedures into the City's capital improvement planning and Land Development Code. Measure: Number of capital improvement projects and/or amendments to the land development code successfully implemented to address hazardous mitigation needs and post disaster redevelopment procedures.	
Hazard Mitigation/ Post-Disaster Redevelopment Element	
Policy 4.3: Participate in the preparation/modification of the 409 Hazard Mitigation Plan.	
Objective 6: Implementation of the Local Mitigation Strategy (LMS) The City continues to work with the Miami-Dade EOC and other government agencies to implement the policies, ordinances and programs outlined in the LMS. Measure: Coordinate efforts with state and county agencies to bring the community together as a single mitigating entity. **Policy 6.1:** Participate in the improvements in the City's standing and classification in the Community Rating System (CRS), with the related consequences of making flood insurance under the National Flood Insurance Program (NFIP) more affordable and reachable, while improving the effectiveness in coping with flood hazards, problems and emergencies. P**olicy 6.2:** Disseminate information on a repetitive basis with respect to the existence of flood hazards and the availability of measures to mitigate the problems presented by such hazards. **Policy 6.3:** Increase the level of coordination of mitigation management concerns, plans and activities at all levels of government. **Policy 6.4:** Improve and maintain cutting edge, state-of-the-art, and effectiveness of the City's emergency preparedness and disaster response capacity. Policy 6.5: Continue	

City of Homestead Comprehensive Plan	June 2011
our commitment to the review, update and implementation of the local hazard mitigation strategy.	

Key Biscayne
On August 25, 2015, the Village of Key Biscayne passed Resolution No. 2015-38 for adoption of the 2015 Miami-Dade County Local Mitigation Strategy; authorizing the Village Manager to identify and prioritize hazard mitigation grant program projects to become a part of the Local and Statewide hazard mitigation strategy.

The Village has a full time Certified Flood Plain Manager who is responsible for the implementation of the Community Rating System (CRS) and NFIP compliance with assistance from a CRS Coordinator and a Consultant. The Village of Key Biscayne has incorporated mitigation into their planning processes to include the following plans:

Village of Key Biscayne Code of Ordinances Plan	December 2010
Resolution No. 2010-53: Resolution of the Village Council Adopting the Miami-Dade County Local Mitigation Strategy	
Village of Key Biscayne Code of Ordinances Plan	**February 2014**
Section 30-73-Site Plan Review Procedures Item (f)(6)g: Description of methods to be implemented during construction to mitigate adverse quantity or quality impacts off-site.	
Village of Key Biscayne Comprehensive Emergency Management Plan	**September 2006**
Annex-IV: Recovery H. Hazard Mitigation Plan/Program	
The Village of Key Biscayne has adopted the Miami-Dade County Comprehensive Emergency Management Plan by reference.	
Village of Key Biscayne FMP Annual Progress Report for CRS Annual Recertification	**October 2014**
Progress on FMP implementation, as required in Section X of the FMP, falls within the context of CRS compliance Action Plans followed by the Village. The Action Plan Items are included and tracked through the Miami-Dade County Local Mitigation Strategy (LMS)	
Village of Key Biscayne Stormwater Master Plan Update	**June 2011**
2.3.3: Repetitive Loss Properties One of the activities involved with the Annual NFIP CRS Re-Certification process is the analysis of Repetitive Loss Areas (RLAs). The purpose of the analysis is to determine possible mitigation solutions to minimize the flood claims.	
Village of Key Biscayne Master Plan	**December 2008**
Future Land Use Element	
Objective 2.4 Hurricane Evacuation 9J-5.006 (3) (b) 5	

Village of Key Biscayne Code of Ordinances Plan	December 2010
Eliminate or reduce land uses which are inconsistent with applicable interagency hazard mitigation report recommendations and enhance the efforts of the Metro-Dade Office of Emergency Management by providing it with all relevant information. **Policy 2.4.1:** The Village shall regulate all future development within its jurisdiction in accordance with the Future Land Use Map which is consistent with the Interagency Hazard Mitigation Team Report, FEMA 955-DR-FL, August 1992. The Village shall periodically review and revise the Future Land Use Map in light of future interagency hazard mitigation reports in order to reduce or eliminate uses which are inconsistent therewith.	
Infrastructure Element	
Policy 1.1.2 9J-5.011 (2) (c) 1: During the first phase of drainage master plan implementation (to be initiated in 1994), the Village shall begin to mitigate to the extent technically and economically feasible direct stormwater outfalls into the canals and Biscayne Bay. Anticipated improvements include a series of catch basins, manholes and pipes for the collection of the stormwater and routing to pollution control structures and drainage wells with emergency overflows. The pollution control devises (grease and oil separator) are to be provided before each drainage well to prevent contamination from entering. Emergency overflow structures are to be constructed at the existing outfalls and would discharge only when the storm events generate more than one inch of runoff. These improvements shall be designed to fully meet the specific standards set forth in Objective 1.1 above.	
Conservation and Coastal Management Element	
Policy 1.3.1: By the date required by state statute or sooner, the Village shall enact and enforce estuarine waterfront protection provisions in the land development code. The provisions will be drafted to assure that all applicable development permit applications are reviewed in the context of the mangrove protection policies of the State DEP and the waterfront policies of DERM. In particular, DERM Class 1 Permits pursuant to Section 24-58 of the Dade County Code shall be required for all construction seaward of the mean high water line. Such construction shall be designed to minimize environmental impacts and mitigate unavoidable impacts. This provision shall be interpreted to protect sensitive lands from sea wall and other related construction, but it shall not be interpreted as permitting construction seaward of the State Coastal Construction Control Line in violation of other policies of this Comprehensive Plan. **Policy 1.7.14:** The Village hereby designates DERM mangrove jurisdictional areas in the Village as environmentally sensitive lands which shall be protected from development unless their ecological value is replaced via mitigation. These DERM areas are mapped in Figure V-1 of the Data and Analysis of this Plan. **Policy 3.3.3:** During post-disaster recovery periods, after damaged areas and infrastructure requiring rehabilitation or redevelopment have been identified, appropriate Village departments shall use the post-disaster redevelopment plan to reduce or eliminate the future exposure of life and property to hurricanes; incorporate recommendations of interagency hazard mitigation reports; analyze and recommended to the Village Council hazard mitigation options for damaged public facilities; and recommend amendments, if required, to the Village Master Plan.	

Medley
Below is the section of this town's comprehensive plan that integrates with the Miami-Dade County LMS.

Town of Medley Municipal Code of Ordinances	May 2014
Article V. Provisions for Flood Hazard Reduction	
Sec. 30-71. - General standards. In all areas of special flood hazard, all development sites including new construction and substantial improvements shall be reasonably safe from flooding, and meet the following provisions: (1) New construction and substantial improvements shall be designed or modified and adequately anchored to prevent flotation, collapse, and lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy. (2) Manufactured homes shall be anchored to prevent flotation, collapse, and lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This standard shall be in addition to and consistent with applicable State of Florida requirements for resisting wind forces. (3) New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage. (4) New construction and substantial improvements shall be constructed by methods and practices that minimize flood damage. (5) Electrical, heating, ventilation, plumbing, air conditioning equipment and other service facilities, including duct work, shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding. (6) New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the systems. (7) New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters. (8) On-site waste disposal systems shall be located and constructed to avoid impairment to them or contamination from them during flooding.	

Town of Medley Municipal Code of Ordinances	May 2014

(9) Any alteration, repair, reconstruction or improvements to a building that is in compliance with the provisions of this chapter shall meet the requirements of "new construction" as contained in this chapter.

(10) Any alteration, repair, reconstruction or improvements to a building that is not in compliance with the provisions of this chapter, shall be undertaken only if said non-conformity is not furthered, extended, or replaced.

(11) All applicable additional federal, State of Florida, and local permits shall be obtained and submitted to the Floodplain Administrator along with the application for development permit. Copies of such permits shall be maintained on file with the development permit. State of Florida permits may include, but not be limited to, the following:

a. South Florida Water Management District: in accordance with Chapter 373.036 Florida Statutes, Section (2)(a)—Flood Protection and Floodplain Management.
b. Department of Community Affairs: in accordance with Chapter 380.05 F.S. Areas of Critical State Concern, and Chapter 553, Part IV F.S., Florida Building Code.

c. Department of Health: in accordance with Chapter 381.0065 F.S. Onsite Sewage Treatment and Disposal Systems.

(12) Standards for subdivision proposals and other new proposed development (including manufactured homes):

a. Such proposals shall be consistent with the need to minimize flood damage.
b. Such shall have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize or eliminate flood damage.
c. Such proposals shall have adequate drainage provided to reduce exposure to flood hazards.

(13) When proposed new construction and substantial improvements are partially located in an area of special flood hazard, the entire structure shall meet the standards for new construction.

(14) When proposed new construction and substantial improvements are located in multiple flood hazard risk zones or in a flood hazard risk zone with multiple base flood elevations, the entire structure shall meet the standards for the most hazardous flood hazard risk zone and the highest base flood elevation.

Miami

The City has a full time Flood Plain Manager who is responsible for the implementation of the Community Rating System compliance and NFIP compliance. The City also has an Office of Resilience and Sustainability that is responsible for environmentally-focused projects, including but not limited to the creation of the City's Climate Action Plan, energy efficiency partnerships, and the adoption of green building initiatives.

The City of Miami has incorporated mitigation into their planning processes to include the following plans:

City of Miami Comprehensive Emergency Management Plan	November 2019
Policy III.B.1: City departments will enforce all public safety mandates of the Miami City Code to include land use management and building codes; and recommend to the Mayor and City Commission, legislation required to improve the "disaster resistance" of the community. **Policy III.M.2:** When an emergency/disaster has occurred or is imminent, the Mayor may declare a state of emergency, activating the emergency response, recovery, and mitigation aspects of the Miami CEMP that apply to the affected area. **Policy III.P.2:** Immediately after an incident, local jurisdictions respond using available resources and notify State response elements. As information emerges, they also assess the situation and the need for State assistance...At this point, an initial assessment is also conducted of losses avoided based on previous mitigation efforts. **Policy III.P.9:** As immediate response priorities are met, recovery activities begin. Federal and State agencies assisting with recovery and mitigation activities convene to discuss State needs. **Policy III.P.11:** Throughout response and recovery, mitigation staff at the JFO will examine ways to maximize mitigation measures in accordance with State hazard mitigation administrative plans.	
City of Miami Hurricane Plan	**November 2019**
Policy I.G.7: The responsibilities of the [Recovery Action Team (RAT)] are: • Oversee the recovery and reconstruction process and to serve as an advisory body to the City Manager. • Identify mitigation opportunities and identify recovery resources. • Ensure coordination of the recovery process. **Attachment E.G.1**: Receive and review damage reports and other analyses of post-disaster circumstances and to com-pare these circumstances with mitigation opportunities identified prior to the disaster in order to identify areas for post-disaster change and innovation. Where needed, the RAT may review alternative mechanisms for achieving these changes and recommend the coordination of internal and external resources for achieving these ends. **Attachment E.G.3:** Review damage reports and other analyses of post disaster circumstances and to compare these circumstances with mitigation opportunities and identify areas for post disaster development changes.	

City of Miami Comprehensive Emergency Management Plan	November 2019
Attachment E.I.2: Identify funding sources for mitigation and recovery projects including state and federal assistance programs, private-sector funding and public donations. **Attachment E.J.RF [Recovery Function] #19 Mitigation:** To prepare a post-disaster hazard mitigation plan that will define actions during the recovery period that help prevent repeated future losses and reduce the City's vulnerability to natural hazards.	
Miami-Fort Lauderdale UASI THIRA	**November 2019**
The Miami-Fort Lauderdale UASI THIRA addresses mitigation needs through the recovery and protection core capabilities.	
Miami-Fort Lauderdale Urban Area Security Strategy	**November 2019**
1. **Mission:** Increase preparedness, prevention, protection, mitigation, response, and recovery capabilities within the Urban Areas and the Southeast Florida Region for all hazards, including terrorism. **1. Effort:** Based on the capability assessment and strategy review, implementation steps are included and updated under each core capability and linked to regional initiatives and activities intended to enhance the preparedness, prevention, protection, mitigation, response, and recovery capabilities of the South Florida metropolitan areas either by: • Current, proposed, or future funding to enhance or sustain a capability or capacity needed within the jurisdictions or the region; or, • By reference to existing capabilities where no enhancement is required or currently planned, but access to those capabilities is needed to fulfill the full range of preparedness, prevention, protection, mitigation, response and recovery actions for incidents of all types.	
Goal: Protect Critical Infrastructure & Key Resources, Objective: Physical Protective Measures, Step: Establish a joint CIP workgroup to include the private sector to set security goals, identify assets, systems and networks; assess risks and threats annually; implement protective programs; and measure the effectiveness of risk-mitigation efforts.	
Goal: Protect Critical Infrastructure & Key Resources, Objective: Risk Management for Protection Programs & Activities- State, regional, local, tribal and private sector entities, in coordination with Federal participation, identify and assess risks, prioritize and select appropriate protection, prevention, and mitigation solutions based on reduction of risk, monitor the outcomes of allocation decisions, and undertake corrective actions. Step: Implement and assess the risk management model within the region and develop a plan to implement appropriate risk mitigation strategies using UASI funds.	
Goal: Respond to Disasters- CBRNE, Objective: Infrastructure Systems, Step: Encourage and assist jurisdictions in developing or enhancing recovery and mitigation efforts and plans. Step: Maintain liaison with county Local Mitigation Strategy (LMS) coordinators. Step: Ensure that lifeline facilities are incorporated into mitigation and recovery planning.	
Goal: Recover from Terrorism & Other Disasters, Objective: Natural and Cultural Resources- Protect natural and cultural resources and historic properties through appropriate planning, mitigation, response, and recovery actions to preserve, conserve,	

City of Miami Comprehensive Emergency Management Plan	November 2019
rehabilitate, and restore them consistent with post-disaster community priorities and best practices and in compliance with appropriate environmental and historical preservation laws and executive orders.	

Miami Beach

Below is the section of this city's comprehensive plan that integrates with the Miami-Dade County LMS.

City of Miami Beach Stormwater Management Master Plan – Executive Summary	June 2010
ES.2 Program Goals and Objectives	
Objective No. 8: Provide recommendations for seawalls to mitigate the effects of sea level increases over the next 50 years. As a complement to the engineering evaluation, CDM Smith utilized the FEMA's Hazards United States (HAZUS) tool designed to estimate hazard-induced losses for use by federal, state, regional and local governments, and private enterprises in planning for risk mitigation, emergency preparedness, response and recovery. By using a standard FEMA tool, the City will benefit in the coordination of future activities related to flood proofing, grant assistance, and management of repetitive loss properties. The analysis, which was performed for South Beach, incorporated existing elevations, structure and land use data along with information from the detailed flood model (SWMM). The HAZUS model generates an output that consists of a damage amount in dollars that is based on the percentage of total value loss a structure incurs during a flood event, like the statistically calculated once-in-5-year storm (5.9 inches of rainfall in 24 hours).	
Objective Number 8: Provide recommendations for seawalls to mitigate the effects of sea level increases over the 50 years; SWMMP Solution: Preliminary inspection and elevation standards for seawalls have been made with consideration of SLC, based on USACE guidance documents. A recommendation of a minimum seawall height of 3.2 ft NAVD provides a means to protect against projected spring tidal conditions over the next 50 years, based on intermediate SLC projections.	

Miami Gardens

The City of Miami Gardens incorporates mitigation actively through Drainage Improvement Projects. The City of Miami Gardens budgets $2,000,000+ per year for drainage improvement projects. This is shown in the Comprehensive Development Master Plan. The projects funded through this appropriation are tracked continually during the year. The City also continually seeks grant funds to assist in constructing drainage improvements, and leverages budgeted money as matches to increase the number of projects funded.

Drainage improvement projects are also tracked through the City's Stormwater Management Master Plan. This FY 2020, the City will be updating the Stormwater Master Plan. This plan prioritizes projects based on need in the City, and their degree of flood protection and water quality improvement. In addition, the plan will address the FEMA repetitive loss properties to mitigate flooding issues. The City tracks the projects by coordinating the yearly budget, the Stormwater Management Master Plan, and projects listed in the Local Mitigation Strategy working group.

A future goal of the City is to address the flooding issues through the Stormwater Management Master Plan to update the priority projects, delete those projects completed, add projects as needed, and model the City again with the completed projects to determine future flood protection and stormwater quality needs. Another item in the City budget is drainage maintenance. This includes street sweeping, canal bank maintenance, litter control on land and in the surface waters, and mechanical and biological controls in the canals. These activities are considered mitigation in that they reduce potential obstructions in the event of a storm, and ensure capacity is present if a storm occurs.

City of Miami Gardens' Comprehensive Development Master Plan	**November 2019**
Future Land Use Element	
Objective 2.6: Land Use Compatibility The City shall ensure that the land development regulations contain criteria to mitigate negative impacts that incompatible land uses may have on the neighboring areas.	
Objective 2.12: Hazard Mitigation and Disaster-Preparedness Coordinate the City's Emergency Response Plan with Miami-Dade County and State of Florida to address hazard mitigation and disaster-preparedness for the safety of residents and property in Miami Gardens. **Policy 2.12.1:** The City Public Works Department and City Manager's office shall coordinate with the Miami-Dade County Emergency Management Operations Center for the safety of its citizens. **Policy 2.12.2:** The Public Works Department shall prepare a City Emergency Response Plan to appropriately address emergency/hazard/disaster mitigation program for the safety of Miami Gardens' residents.	

City of Miami Gardens' Comprehensive Development Master Plan	November 2019
Policy 2.12.3: Coordinate with Miami-Dade County in developing and implementing an Action Plan if necessary, to address flood protection, storm damage precautions. **Policy 2.12.4:** The City's Emergency Response Plan shall include but not be limited to an incident command system structure, delegation of responsibilities for incidents, a medical procedure and materials plan, outreach to the community through identified forums and public information systems, and post disaster mitigation plans that includes designated debris sites and personnel needs.	

Miami Lakes

Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

Town of Miami Lakes Comprehensive Plan	November 2019
Land Development Element	
Policy 1.2.4: Develop a code enforcement system in the new Code that is proactive in ensuring that the high standards, which are the hallmark of Miami Lakes, are maintained, and the personnel are very responsive to resident and business owner inquiries. In addition, ensure that the system allows for the mitigation and/or correction of adverse nuisance impacts, such as noise, odor and/or dust, on residential neighborhoods caused by any existing commercial and industrial operations.	
Future Land Use Element	
Objective 1.6: Hazard Mitigation and Disaster Preparedness Coordinate with Miami-Dade County and the State of Florida in addressing the hazard mitigation and disaster-preparedness needs of Miami Lakes, and encouraging the elimination and/or reduction of land uses inconsistent with the recommendations of any public agencies charged with managing hazard mitigation and disaster-preparedness. **Policy 1.6.1:** Coordinate with Miami-Dade County in implementing the approved Local Mitigation Strategy, in assessing the vulnerability of governmental, medical and public safety sites and structures in the Town to storm damage, and develop an action plan, if necessary, to address wind stability and flood protection for key buildings.	
Conservation Element	
Policy 6.7.1: Wetlands that are to be protected will be identified based on the type of wetland, function, size, conditions/location, and overall resource value. These wetlands shall be used for purposes that are compatible with their natural values and functions, and land development regulations shall be adopted to provide these areas with the maximum feasible protection, by using such tools as compensatory wetland mitigation and dedication of conservation easements for preserving open space. All development with the potential to impact wetland areas shall be consistent with South Florida Water Management District regulations.	

Miami Shores

Hazard mitigation and disaster recovery is incorporated throughout the Miami Shores Coastal Management Element. The Miami Shores Village Hurricane Plan, 2014 outlines in detail the city and employee activities, duties and responsibilities to be conducted prior and after a hurricane event. The focus is on preparedness prior to a hurricane event and detailed recovery plan post hurricane event.

Miami Shores Coastal Management Element	November 2013
Objective 4: Direct population concentrations away from the coastal high hazard areas, hurricane vulnerability zone and limit coastal high hazard area, hurricane vulnerability zone infrastructure expenditures. Direct population concentrations away from the coastal high hazard areas, hurricane vulnerability zone and limit the expenditure of Village funds on infrastructure within the Coastal High Hazard Area, hurricane vulnerability zone if such infrastructure would have the effect of directly subsidizing development which is significantly more intensive than authorized by this Plan. [9J-5.012 (3) (b) 5 and 6] The Coastal High Hazard Area is defined as the area below the elevation of the category 1 storm surge line as established by a Sea, Lake, and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. Monitoring and Evaluation: Annual record of Village actions to direct away or reduce the population of the hurricane vulnerability zone.	
Policy 4.1: The Village shall restrict development in accordance with the Future Land Use Map of the plan. It is the legislative judgment of the Village that the Future Land Use Map provides the most appropriate way to limit development in the coastal high hazard areas, hurricane vulnerability zone consistent with reasonable property rights and long-established land use patterns. [9J-5.012 (3) (c) 9]	
Policy 7.2: The Village shall monitor the need for drainage system improvements.	
Policy 7.3: The Village shall design infrastructure with consideration to the potential rise in sea level.	
Policy 7.4: The Village shall deny any Future Land Use Map density increases in the hurricane vulnerability zone.	
Objective 8: Hazard mitigation. In general, the Village shall regulate development so as to minimize and mitigate hazards resulting from hurricanes. In particular, the Village shall ensure that all construction and reconstruction complies with applicable regulations designed to minimize hurricane impact on buildings and their occupants. Monitoring and Evaluation: Record of participation in Miami-Dade County Emergency Preparedness meetings, activities and programs. Annual record of development permits issued in the hurricane vulnerability zone, demonstrating the application of specific standards that result in a reduction in the exposure of human life and property to natural disasters	

Coastal Management Element	November 2013
Policy 11.2: The Land Development Code shall be amended to require Special Approval for the repair or replacement of hurricane damaged buildings in the FEMA VE Velocity Zone. The criteria for granting such approval shall be as follows: 1) repair or replacement shall be authorized for principal buildings and their associated accessory buildings and structures when the principal building suffers minor or major damage; and 2) repair or replacement shall be authorized for principal buildings and their associated accessory buildings and structures when the principal building is destroyed provided that the setback from the FEMA VE Zone is the maximum possible consistent with the authorized floor area, other setback requirements and reasonable design standards, but in no case less than 15 feet from the seawall, and provided further that the applicable requirements of Policy 11.3 are also met.	
Policy 11.3: The Land Development Code shall be amended to require Special Approval for the repair or replacement of hurricane damaged buildings in the Hurricane Vulnerability Zone (east of Biscayne Boulevard). The criteria for granting such approval shall be as follows: 1) repair shall be authorized for principal buildings and their associated accessory buildings and structures when the principal building suffers only minor damage; 2) repair or replacement shall be authorized for principal buildings and their associated accessory buildings and structures when the principal building suffers major damage or is destroyed, provided that the resulting buildings fully meet the Florida Building Code and all requirements of the Miami Shores Village land development code and provided further than ground floor elevations conform with the FEMA map. Historic buildings shall be exempt from this policy.	

Miami Springs
Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

City of Miami Springs Comprehensive Plan	March 2012
Future Land Use Element	
Objective 1.6: Hurricane Evacuation Coordinate future land uses by encouraging the elimination or reduction of land uses which are inconsistent with applicable interagency hazard mitigation report recommendations and enhance the efforts of the Miami-Dade Office of Emergency Management by providing it with all relevant information. This objective shall be measured by implementation of its supporting policies. **Policy 1.6.1:** The City shall regulate all future development within its jurisdiction in accordance with the Future Land Use Map. It shall also consider the most current Interagency Hazard Mitigation Team Report as part of the development regulations. The	

City of Miami Springs Comprehensive Plan	March 2012
City shall periodically review and revise the Future Land Use Map in light of future interagency hazard mitigation reports in order to reduce or eliminate uses which are inconsistent therewith.	

North Bay Village
Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

City of North Bay Village Comprehensive Plan	March 2009
Future Land Use Element	
Policy 2.2.9: Require property owners who lease berths to houseboat owners to provide a storm emergency plan to mitigate damage to public waterways during and after storm events and require such owners to demonstrate the financial capability to remove sunken or damaged houseboats and houseboat debris from the public waterways subsequent to storm events in which such damage may occur.	
Transportation Element	
Policy 3.2.5: Require that new development and redevelopment plans identify, by means of a traffic-way impact study, and mitigate any negative impacts the plans may have upon streets and walkways to ensure the maintenance of levels of service and safety within the City. Mitigation shall be mandatory to the extent that a development or redevelopment contributes to the identified impact. No development or redevelopment plan shall be permitted without an approved traffic-way impact study and mitigation plan. **Policy 3.3.2:** The City shall require all potential development on the Kennedy Causeway to demonstrate that the anticipated traffic impact will not cause the Causeway to fall below the required Level of Service, or to mitigate any impacts to maintain or improve the required Level of Service.	
Coastal Management Element	
GOAL: Protect human life and the environment and limit destruction in areas subject to natural disaster through implementation of hazard mitigation strategies. **Policy 8.5.2:** The City shall inventory and identify all reimbursable improvements in the coastal area eligible for funding under provisions of the Federal Disaster Assistance Plan and include this information in the City's local mitigation strategy plan. **Policy 8.8.3:** The Recovery Task Force shall review and decide upon emergency building permits; coordinate with Miami-Dade County, State and Federal Officials to prepare disaster assistance applications; analyze and recommend to the City Commission hazard mitigation options including reconstruction or relocation of damaged public facilities; develop are development plan; and recommend amendments to the City's Comprehensive Plan, Miami-Dade County Hurricane Procedure Plan, and other appropriate policies and procedures.	

City of North Bay Village Comprehensive Plan	March 2009
Policy 8.8.5: The Recovery Task Force shall propose Comprehensive Plan amendments which reflect the recommendations in any interagency hazard mitigation reports or other reports prepared pursuant to Section 406 of the Disaster Relief Act of 1974 (PL93-288). **Policy 8.8.7:** Structures which suffer recurring damage to pilings, foundations, or load-bearing walls shall be required to rebuild landward of their current location to modify the structure to structurally enhance the structure, institute other mitigation measures, or delete the areas most prone to damage.	

North Miami

Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

City of North Miami 2036 Comprehensive Plan	November 2019
Future Land Use Element	
Objective 1.11: The City shall coordinate with Miami-Dade County, the South Florida Regional Planning Council and the State of Florida in addressing the evacuation, structural integrity and disaster-preparedness needs of North Miami. **Objective Policy 1.11:** The City shall coordinate with the Miami-Dade County and the South Florida Regional Planning Council in implementing the approved Local Mitigation Strategy, by assessing the vulnerability of governmental, medical and public safety sites and structures in the City to storm damage, and in developing an action plan, if necessary, to address wind stability and flood protection for key buildings. **Policy 1.11.1:** The City shall continue to coordinate with the State of Florida, Miami-Dade County and the South Florida Regional Planning Council in implementing the approved Local Mitigation Strategy, by assessing the vulnerability of governmental, medical and public safety sites and structures in the City to storm damage, and in developing an action plan, if necessary, to address wind stability and flood protection for key buildings. **Policy 1.11.2:** The City shall continue to work with the South Florida Regional Planning Council's Local Emergency Planning Committee and Miami-Dade County's Emergency Management Department to ensure that City employees are well-trained in the programs, procedures and policies required during a disaster emergency and the longer-term post-disaster redevelopment process. **Policy 1.11.5:** All proposed large-scale amendments to this Comprehensive Plan and/or zoning applications shall be evaluated for their impact on hurricane evacuation routes and times, and effect on currently available off-site shelter capacities. Roadway improvements and shelter improvements shall be required, if deemed necessary, to mitigate negative impacts and phased with new residential development.	

Housing Element
Policy 3A.4.5: The City shall continue to pursue and maintain funding for the Disaster Mitigation/Recovery Strategy Program to assist with post-disaster repairs and encourage the timely repair of homes damaged as a result of disaster activity. **Policy 3B.3.7:** The City shall continue to coordinate with Miami-Dade County Emergency Management to provide short-term emergency shelter opportunities to meet expected demands.
Transportation Element
Objective 2B.3: Coordinate with Miami-Dade Transit and the Miami-Dade Emergency Management Department to help ensure development of an emergency transit plan that provides timely evacuation of the Coastal High Hazard Area during tropical storms and hurricanes. **Policy 2B.3.1:** The City Manager shall appoint a City employee to meet with the Miami-Dade Emergency Management Department to coordinate evacuation plans and related issues and report back to the City Manager. **Policy 2B.3.2:** Timely evacuation operations shall be established to commence four hours after an evacuation order is issued by the County Administrator.
Coastal Management Element
Objective 5A.2: The City shall implement programs and policies in conjunction with Miami-Dade County to protect residents and business from disasters and mitigate hazards. **Policy 5A.2.2:** As part of on-going monitoring and updating procedures, the City shall ensure that all applicable provisions of the hazard mitigation annex of the Miami-Dade County Emergency Operations Plan, and the Miami-Dade County Local Mitigation Strategy (LMS) are incorporated and/or addressed in local hazard mitigation procedures. **Policy 5A.2.4:** The City shall implement the provisions included in the Local Mitigation Strategy to provide for debris clearance as well as immediate repair and replacement of public infrastructure required to protect public health and safety. **Policy 5A.2.5:** The City shall make every effort to support and implement the initiatives and projects listed in the Local Mitigation Strategy, including both countywide initiatives and the following proposed hazard mitigation projects located in North Miami: 1. Flood Prevention and Mitigation: Basin 13 2. Non-critical Facilities Hazard Mitigation 3. Surge Resistance and Flood Mitigation at Keystone Point and Sans Souci 4. Sanitary Sewer Backup 5. Safeguarding Availability of Potable Water 6. Emergency Portable Stormwater Pumps 7. Gravity Sewer Systems Improvements: Groundwater Infiltration Reduction 8. Emergency Power: Water and Sewer Utility Operations Center 9. Utility Operation Center 10. Replacement Generator for Police Station

11. Correct Water Infiltration at City Hall (EOC) Basement
12. Replacement of U.P.S. for Police Station

Policy 5A.2.10: The City shall promote and educate the public on strengthening their structures against natural disasters by promoting the hardening of structures in accordance with the Florida Comprehensive Hurricane Damage Mitigation Program (My Safe Florida Home).
Policy 5A.3.3: The City shall relieve deficiencies identified in the hurricane evacuation analysis and endeavor to integrate regional and local preparation and evacuation procedures into the City's hazard mitigation measures.
Policy 5A.4.2: Incorporate recommendations found in interagency hazard mitigation reports into the comprehensive plan and post-disaster redevelopment plan.
Policy 5B.2.4: Institute marina siting criteria that address existing protective status of ownership, hurricane contingency planning, protection of water quality, water depth, availability of upland support services, land use compatibility, environmental disruptions and mitigation actions, availability for public use, and economic need and feasibility.

Conservation Element

Objective 6B.1: Through the permitting process continue to preserve and maintain identified wetlands and water quality from the impacts of new development or redevelopment.
Policy 6B.1.1: The City shall deny permit applications for new development or redevelopment projects which may adversely impact existing wetlands and water quality or quantity until satisfactory mitigation and protection measures are performance bonded by the developer.
Policy 6.B.2.4: The City shall continue to provide education programs to educate residents about the polluting effect on the Bay and other natural bodies of water in the City, of run-off containing grass clippings, lawn fertilizers, and other similar type material, and present techniques that can be implemented by residents to mitigate this problem. In addition, the City shall continue to coordinate with the SFRPC's Strategic Regional Policy Plan (Policy 14.14 and 14.17) to educate the public.

Climate Change Element

Objective 12.7: Ensure adequate planning and coordinated response for emergency preparedness and post-disaster management in the context of climate change.
Policy 12.7.1: The City of North Miami shall ensure adequate planning and response for emergency management in the context of climate change by maximizing the resilience and self-sufficiency of, and providing access to, public structures, schools, hospitals and other shelters and critical facilities.
Policy 12.7.2: The City of North Miami shall develop plans and monitoring programs to address the impacts of climate change on households and individuals especially vulnerable to health risks attributable to or exacerbated by rising temperatures, to include low income households and the elderly.
Policy 12.7.3: The City of North Miami shall continue to communicate and collaboratively plan with other local, regional, state and federal agencies on emergency preparedness and disaster management strategies. This includes incorporating climate change impacts into updates of local mitigation plans, water management plans, shelter

placement and capacity, review of major traffic-ways and evacuation routes, and cost analysis of post disaster redevelopment strategies.
Policy 12.7.4: The City of North Miami shall work to encourage dialogue between residents, businesses, insurance companies and other stakeholders, through public education campaigns and workshops, in order to increase understanding regarding the potential impacts of climate change on our coastal communities and evaluate the shared costs of action or inaction in human, ecological and financial terms.
Policy 12.7.5: The City of North Miami shall work with the Florida Division of Emergency Management and other agencies to incorporate sea level rise and increasing storm surge impacts into the remapping of potential hazard areas in coastal zones by 2018. Revised hazard area designations should better reflect the risks to communities associated with climate change and allow reevaluation of suitability for development or redevelopment in these areas, policies and programs.

North Miami Beach
On August 4, 2015, the City of North Miami Beach passed Resolution No. R2015-68 for adoption of the 2015 Miami-Dade County Local Mitigation Strategy; authorizing the Town Manager to identify and prioritize hazard mitigation grant program projects to become a part of the Local and Statewide hazard mitigation strategy.

The City of North Miami Beach is responsible for natural disaster preparedness and emergency management that is addressed in the Comprehensive Plan. This includes response, recovery, and mitigation procedures that are acknowledge throughout all City departments. The City has a Certified Floodplain Manager that administers the Community Rating System (CRS) to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

The primary duties of the Building Official shall be to intake and process permit applications and associated fees; ensure permits are routed for flood elevation review; conduct the review of building permit applications for compliance with structural and technical code requirements for flood-proofing and resistance of combined dynamic, hydrostatic and wind loads; and provide backup certified personnel as needed to assist in the flood elevation review. These duties may be clarified, and other duties may be assigned in memoranda of understanding or in interdepartmental procedures for the administration of the National Flood Insurance Program and Article X of the City North Miami Beach Ordinance (Subdivision and Floodplain Standards). The Building Official ensures that of record of the actual elevation, in relation to mean sea level, of the lowest floor, including basement, of all new or substantially improved structures, flood proof from a registered professional engineer or architect, helps maintain all records pertaining to the provisions of this section and keep them open for public inspection and keeps a file of as-built drawings.

Interagency Coordination: The City Building Official and Director of Public Works are hereby appointed to assist and cooperate with the Director of Community Development Department or designee in carrying out the requirements of the National Flood Insurance Program, and in the administration of this article. The Director of Community Development Department shall develop interagency memoranda of understanding and procedures which shall describe the duties and responsibilities of each agency involved in the administration of this article. The Director of Public Works, the Building Official, and the Chief Code Enforcement Officer of the City shall cooperate with the Director of Community Development Department in the creation of memoranda of understanding and interdepartmental procedures which shall be approved by the City Manager. Each agency shall properly execute its duties and responsibilities as set forth in this article and in the memoranda of understanding and published procedures. In the absence of any interdepartmental guidance regarding any particular incident or program action, the Director of Community Development Department shall direct immediate or interim action to be taken when time is of the essence, which direction may be reviewed and amended by the City Manager.

The Police Department's Crime Prevention Division has a Community Emergency Response Team (CERT) that receives special training for the purpose of enhancing their ability to recognize, respond to, and recover from a major emergency or disaster situation. The CERT basic training that is offered at the City of North Miami Beach's Police Department, issues a training course that helps residents identify hazards that affects the home, workplace, and neighborhood. The program helps to understand the function of CERTs and their roles in immediate disaster response. For example, the course utilizes prevention techniques such as basic fire suppression strategies and fire safety measures in order to eliminate natural and man-made disasters.

The City of North Miami Beach has incorporated mitigation into their planning processes to include the following plans:

City of North Miami Beach's Comprehensive Plan	**April 26, 2010**
Future Land Use Element	
Objective 1.2: Detail a redevelopment strategy for potential redevelopment areas, including those cited in this plan (see Map 1.16, Volume Four). Redevelopment could include Future Land Use Map designation changes as necessary to facilitate enhancement of these areas. **Policy 1.2.18:** The City should encourage the use of Crime Prevention Through Environmental Design (CPTED) standards in the redevelopment of the City and formalize these standards within the Zoning and Land Development Code, enhancing the safety of the City by limiting design factors which abet crime.	
Objective 1.3: Encourage elimination of uses incompatible with this land use plan. **Policy 1.3.4**: Continue to regulate the use of land in the flood zones in accordance with FEMA requirements and the Land Development Regulations, including not permitting variances from required finished floor elevations. Continue to implement programs and procedures which improve FEMA's Community Rating System score for	

City of North Miami Beach's Comprehensive Plan	April 26, 2010
the City in order to reduce the cost of homeowner's insurance by 5% annually. Continue to annually reduce the number of existing structures which do not comply with these requirements and regulations.	
Objective 1.4: Ensure reasonable protection of natural resources and environmentally sensitive land as new development occurs. **Policy 1.4.1**: Continue to enforce the Oleta River overlay zoning district to achieve maximum reasonable protection of the natural waterfront habitat as development applications are reviewed. **Policy 1.4.2**: The City shall protect and maintain natural resources and environmentally sensitive lands through the implementation of this comprehensive plan and the land development regulations. **Policy 1.4.3:** Coordinate the City's land uses, development, and redevelopment activities with the South Florida Water Management District's Biscayne Bay Surface Water Improvement Plan.	
Objective 1.5: The City shall coordinate with Miami-Dade County, the South Florida Regional Planning Council and the State of Florida in evaluating the impacts of development and redevelopment on hurricane evacuation clearance times, structural integrity, and disaster-preparedness needs. **Policy 1.5.3:** The City shall coordinate with the Miami-Dade County and the South Florida Regional Planning Council in implementing the approved Local Mitigation Strategy by: assessing the vulnerability of governmental, medical and public safety sites and structures in the City to storm damage, and; developing an action plan, if necessary, to address wind stability and flood protection for key buildings. **Policy 1.5.4**: The City shall continue to work with Miami-Dade County to ensure that City employees are well-trained in the programs, procedures and policies required during a disaster emergency and the longer-term post-disaster redevelopment process. **Policy 1.5.5:** The City shall evaluate all proposed large-scale amendments to the Comprehensive Plan and/or zoning applications to determine their impact on hurricane evacuation routes and times, and effect on currently available off-site shelter capacities. Roadway improvements and shelter improvements shall be required to mitigate negative impacts, if deemed necessary, and phased with new residential development.	
Infrastructure Element	
Objective 1.1: Continue to provide new or improved sewer collection, drainage and/or potable water systems in accordance with the Capital Improvements Schedule, as it is annually updated. **Policy 1.1.2:** The City shall continue its drainage improvement program and continue the supporting catch basin cleaning program so that adequate street drainage can be achieved and maintained.	
Objective 1.4: Protect the City's natural drainage and recharge areas by retaining all existing lakes and prohibiting any new development with 100 percent impervious coverage.	

City of North Miami Beach's Comprehensive Plan	April 26, 2010
Policy 1.4.1: Through land development code techniques, protect the existing lakes and assure adequate pervious areas in conjunction with new development.	
Coastal Management Element	
Objective 1.1: Continue to achieve zero (0) net loss of the 2,000 linear feet of natural areas bordering the estuarine areas in the City. **Policy 1.1.2**: As developers apply for permits on the few remaining waterfront sites, the City, in coordination with Miami-Dade County's Shoreline Review Committee when necessary, shall carefully review site plans in order to minimize impacts upon the natural waterfront (and thus the estuary and wildlife), particularly their drainage and tree protection plans; a waterfront zoning overlay district may, in some cases, require mitigation of disturbed natural features through the planting, rip-rap replacement of seawalls, etc. For aesthetic and consistency reasons, seawalls shall continue to be the required shoreline stabilization method for residential areas in Eastern Shores.	
Objective 1.3: Achieve a net increase in the environmental quality of the estuary; see policies for measurability. **Policy 1.3.1:** City officials shall coordinate with appropriate local, regional and state agencies to monitor the commercial marinas and assure avoidance of pollution sources by reporting any violations to those agencies. The City shall also assure review of any proposed marina, coastal drainage project, or waterfront development by the County Shoreline Development Review Committee and Florida DEP to assure conformance with the Biscayne Bay Surface Water Improvement and Management (SWIM) Plan (South Florida Water Management District, 1994). **Policy 1.3.2:** Continue the City's street drainage improvement projects in order to minimize pollution from stormwater run-off; take special care in reviewing drainage plans for private development projects located near waterways to assure that adequate on-site retention is provided **Policy 1.3.3:** Annually review the development code to assure adequate protection is provided against negative impacts that may result from potential new uses in the coastal area and in any flood hazard areas. **Policy 1.3.5:** The City, through its regulatory processes and coordination with appropriate agencies, shall limit specific and cumulative impacts of development or redevelopment upon wetlands water quality, water quantity, surface water runoff, and exposure to natural hazards, wildlife habitat, and living marine resources.	
Objective 1.4: The amount of shoreline devoted to water dependent and water related uses shall be maintained at 3,500 linear feet along the Oleta River system and Snake Creek Canal or increased in conformance with the criteria in the following policies. Note that North Miami Beach has very limited vacant privately owned frontage on the estuary. **Policy 1.4.1:** Existing water dependent uses and new water dependent uses (i.e., uses which cannot exist or occur without estuarine association) should be maintained and should be regulated through zoning policies which insure environmental compatibility. New uses which increase access or preserve and protect shoreline resources should be encouraged.	

City of North Miami Beach's Comprehensive Plan	April 26, 2010
Policy 1.4.7: Acquire natural areas and natural habitat for conservation through County, State, or Federal Grants if possible.	
Objective 1.6: The City shall enforce the minimum floodplain management regulations of the Federal Emergency Management Agency (FEMA) and the City's Floodplain Standards Ordinance for new and substantially improved buildings. **Policy 1.6.4:** The City shall continue to participate in the Community Rating System (CRS) and the National Flood Insurance Programs (NFIP), and distribute information relative to its provisions. **Policy 1.6.5:** In an effort to minimize flood insurance premium rates for North Miami Beach residents, the City shall endeavor to maintain or improve its Class 8 rating to a Class 7 or better by performing floodplain management activities that exceed the minimum NFIP requirements of the Community Rating System. **Policy 1.6.6:** To prevent further additions to the list of Repetitive Loss (RL) properties published by FEMA, the City shall remain committed to working on eliminating RL properties within the City to a point that qualifies as a category A or B Community. **Policy 1.6.7:** The City shall continue to enforce Chapter XXIV Zoning and Land Development Code, in an effort to eliminate an increase in the number of RL properties. **Policy 1.6.8:** The City should attempt to promote the acquisition, or retrofit of RL properties. **Policy 1.6.9:** The Coastal High Hazard Area is defined as the area below the elevation of the Category 1 storm surge line as established by a Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model. The Coastal High Hazard Area is identified on the Future Land Use Map.	
Objective 2.1: The City shall maintain or mitigate the impacts of development on the prescribed hurricane evacuation clearance times identified in the South Florida Regional Planning hurricane evacuation model update. **Policy 2.1.2**: Continue to cooperate with Miami-Dade Police and the County Fire Department's Office of Emergency Management, the Red Cross and FEMA through evacuation planning meetings and policies, and in other ways conform to the Metro-Dade Emergency Operations Plan for a Hurricane. **Policy 2.1.3:** In order to reduce the potential for loss of life and severe property damage, encourage the reduction of densities and intensities in areas likely to be inundated by flooding resulting from hurricane surge as shown by Map 5.3, Volume Four, implement a building code consistent with FEMA requirements, and when possible through grant funding eliminate the potential for increased residential and urban densities in those areas by purchasing such lands for use as public open space and shoreline access. **Policy 2.1.4:** The City shall participate in regional solutions that aim to reduce overall evacuation clearance times. **Policy 2.1.5**: The City shall address deficiencies identified in the hurricane evacuation analysis and endeavor to integrate regional and local preparation and evacuation procedures into the City's hazard mitigation measures.	

Coastal Management Element continued

Objective 2.2: The City of North Miami Beach shall provide immediate response to post-hurricane situations in concert with a post-disaster redevelopment plan, which will reduce or eliminate the exposure of human life and public and private property to natural hazards. Measure: This objective shall be measured by progress in implementing its policies.

Policy 2.2.3: The Recovery Task Force shall include the City Manager, Police Chief, Emergency Management Director, Community Development Director, Building Official, Public Works Director, Parks & Recreation Director and other City staff members as directed by the City Council. Staff shall be provided by the departments whose directors sit on the Task Force. The Task Force shall be terminated after implementing its responsibility under Policy 2.2.6.

Policy 2.2.4: The Recovery Task Force shall review and decide upon emergency building permits; coordinate with Miami-Dade County, State and Federal Officials to prepare disaster assistance applications; analyze and recommend to the City Council hazard mitigation options including reconstruction or relocation of damaged public facilities; develop a redevelopment plan; and recommend amendments to the comprehensive plan, Miami-Dade County Hurricane Procedure Plan and other appropriate policies and procedures.

Policy 2.2.5: Immediate repair and clean-up actions needed to protect the public health and safety include repairs to potable water, wastewater and power facilities; removal of building and/or vegetable debris; stabilization or removal of structures about to collapse; and minimal repairs to make dwellings habitable such as minor roof repairs and other weatherproofing/security measures. These actions shall receive first priority in permitting decisions. Long-term development activities shall be postponed until the Recovery Task Force has completed its tasks.

Policy 2.2.6: The Recovery Task Force shall propose comprehensive plan amendments which reflect the recommendations in any interagency hazard mitigation reports or other reports prepared pursuant to Section 406 of the Disaster Relief Act of 1974 (PL93-288).

Policy 2.2.7: If rebuilt, structures which suffer damages in excess of fifty (50) percent of their appraised value shall be rebuilt to meet all current requirements, including those enacted since construction of the structure.

Policy 2.2.8: Repair or reconstruction of the existing seawalls within the City shall be done using only pre-fabricated concrete or cement, which may be augmented at the base only by decorative material (rip-rap), shall be similar in height and appearance to adjoining lots, pursuant to the Land Development Regulations.

Policy 2.2.9: Following a natural disaster and prior to the implementation of long-term redevelopment, the City shall do the following: Based upon the damage assessment report prepared by the Miami-Dade Public Works Department, the City shall consult with its Public Works officials and consultant engineer to evaluate options for damaged public facilities including abandonment, repair in place, relocation and repair with structural modification, to determine the most strategic approach to long-term development. The evaluation shall include, but not be limited to, issues pertaining to

damage caused by natural disaster, cost to construct repairs, cost to relocate, cost to structurally modify, limitations of right-of-way, and maintenance costs.
Objective 2.4: The City's Emergency Preparedness Committee shall review its hurricane preparation plans and post-disaster redevelopment plans annually to ensure that risks are mitigated to the furthest extent possible and that its plans are in conformance with the most recent Objectives and Procedures developed by the Miami-Dade County Evacuation Planning Task Force. The City shall annually review its Hurricane Procedures in March of each year **Policy 2.4.1:** Continue to enforce building codes, floodplain regulations, design criteria, and zoning regulations established to protect new structures, reduce redevelopment costs, and mitigate hurricane hazards. **Policy 2.4.2**: Zoning district boundaries and land development regulations shall be maintained or revised as necessary to ensure that no new hospitals or mobile homes that do not meet the criteria for manufactured housing are constructed in the coastal area.
Objective 2.6: The City shall take measures towards hurricane preparation, hazard mitigation and plan for post-disaster redevelopment. **Policy 2.6.2:** Encourage public awareness and education regarding appropriate responses to a variety of emergencies as feasible and appropriate utilizing such mechanisms as websites, public access television stations, and newsletters. **Policy 2.6.3**: Coordinate with the County to ensure the availability of emergency shelter for residents required to evacuate areas adversely affected by natural disasters. **Policy 2.6.4**: Work with the South Florida Regional Planning Council in its role as the region's Economic Development District Coordinator to seek hazard mitigation funding from the U.S. Department of Commerce, Economic Development Administration to fund the organizational and training activities of the Business Disaster Mitigation and Recovery Assistance Program. **Policy 2.6.5**: Consider reducing building permit application fees for disaster resistant shutters, doors, windows, and roof clips for businesses participating in the Business Disaster Mitigation and Recovery Assistance Program **Policy 2.6.6**: The City shall ensure that all applicable provisions of the hazard mitigation annex of the Miami-Dade County Emergency Operations Plan, and the Miami-Dade County Local Mitigation Strategy (LMS), are incorporated and/or addressed in local hazard mitigation procedures. **Policy 2.6.7**: The City shall monitor problems and life-threatening situations resulting from natural disaster events and take the necessary steps to ensure that the potential for such problems and situations are minimized in the future. **Policy 2.6.8:** The City shall implement the Local Mitigation Strategy and Post-Disaster Redevelopment Plan to provide for debris clearance as well as immediate repair and replacement of public infrastructure required to protect public health and safety. **Policy 2.6.9:** The City shall make every effort to support and implement the initiatives and projects listed in the Local Mitigation Strategy, including both countywide initiatives and the proposed hazard mitigation projects located in the City.

Policy 2.6.10: The City will promote the hardening of structures to increase resistance against natural disasters pursuant to the Florida Comprehensive Hurricane Damage Mitigation Program (My Safe Florida Home).
Conservation Element
Objective 1.2: Continue to pursue drainage practices and programs that minimize ground and surface water pollution, including pollution to the Biscayne Aquifer; experience no increase in the amount of properties, developments, or facilities polluting ground water or surface water as the result of non-implementation of such practices and programs. Measure: Number of properties developed or redeveloped without technical review insuring that proposed drainage at the site minimizes ground and surface water pollution. **Policy 1.2.1:** Continue to make street drainage improvements City-wide.
Objective 1.3: Protect existing rare or threatened vegetative communities, natural ecosystems, listed animal species and their habitat, sensitive soils, and estuarine communities against any further degradation. Achieve 0 net loss of the 2,000 lineal feet of natural shoreline bordering the estuary. **Policy 1.3.4:** Further landscape and extend the linear park along the Snake Creek Canal in an effort to assist wildlife and riverine habitat conservation, including the removal of invasive, nuisance vegetation. **Policy 1.5.6:** Continue to restrict activities known to adversely affect endangered and threatened wild life, and require mitigation measures for activities impacting native vegetative communities.
Objective 1.6: The City shall seek to reduce greenhouse gas emissions to the maximum extent feasible and conserve energy resources. In developing the 2012 Evaluation and Appraisal Report and associated amendments, the City shall establish and adopt a percentage goal for greenhouse gas reduction consistent with Miami-Dade County's greenhouse gas reduction goal. Measure: The number of specific programs initiated to reduce greenhouse gas emissions, percentage reduction of greenhouse gas emissions, acres of mixed use development as a percentage of total development, and the estimated reduction of vehicle miles travelled as a result of these efforts. **Policy 1.6.2**: The City shall require low impact development techniques and green building standards that reduce the negative environmental impacts of development and redevelopment by: reducing building footprints to the maximum extent feasible, and locating building sites away from environmentally sensitive areas; promoting the preservation of natural resources; providing for on-site mitigation of impacts (i.e. retention and treatment of stormwater runoff, water reuse, Master Stormwater Management Systems); promoting energy conservation through design, landscaping and building techniques (i.e. solar power, increased tree canopies); promoting water conservation through landscaping and building design; ensuring environmentally friendly building practices (i.e. use of environmentally friendly building materials, recycled materials), and; considering the development and implementation of a green building certification program, with associated regulations, incentives and standards**.**

Opa-locka
Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

Opa-locka Code of Ordinances	October 2014
Article VI Flood Damage Protection	

Sec. 7-75. - Purpose.

This article is to insure the continued availability of flood insurance through the National Flood Insurance Program; to comply with federally imposed requirements; and to protect the public health, safety and general welfare, by minimizing flood losses in the flood hazard areas of the City of Opa-locka, and to require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction and substantial improvement; control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of flood waters; control filling, grading, dredging and other development which may increase erosion or flood damage, and; to insure that potential home buyers are notified that property is in a flood area.

Sec. 7-78. - Standards for development within special flood hazard (SFH) areas.
(a) No new construction and substantial improvement of any residential structure or manufactured home shall be permitted in SFH Areas, and no development permit referred to in section 7-77 of this chapter shall be issued therefore, unless said new construction and substantial improvement has the lowest floor (including basement) elevated to or above the regulatory flood (100-year flood) elevation.

Electrical, plumbing, air conditioning and other attendant utilities must be constructed, designed, and/or located so as to prevent water from entering or accumulating within their components during conditions of flooding.

(b) No new construction and substantial improvement of any nonresidential structure shall be permitted in SFH Areas, and no development permit referred to in section 7-77 of this chapter shall be issued therefore, unless said development has the lowest floor (including basement) elevated to or above the level of the base flood (100-year flood). If the lowest permitted floor level of such nonresidential structure (including basement) is below the regulatory flood level then such nonresidential structure together with attendant utility and sanitary facilities shall be flood-proofed to one (1) foot above the level of the base flood; provided that the lowest floor level of such nonresidential structure (including basement) shall be not more than ten (10) feet below the base flood level. Where flood proofing is utilized for a particular structure, a registered professional engineer or architect shall certify that the flood proofing methods are adequate to withstand the flood depth, pressures, velocities, impact and uplift forces associated with the base flood, and a record of such certificates indicating the specific elevation (in relation to mean sea

Opa-locka Code of Ordinances	October 2014

level) to which such structure is flood proofed shall be maintained with the designated official.

(c) All manufactured homes placed, or substantially improved, on individual lots or parcels, in expansions to existing manufactured home parks or subdivisions, in new manufactured home parks, in substantially improved manufactured home parks, shall meet all of the requirements for "new construction", including elevation in accordance with section 7-78(a) and anchoring requirement of section 7-77(c)(2).

(d) All manufactured homes placed, or substantially improved in an existing manufactured home park or sub division shall be elevated so that:

(1) The lowest floor of the manufactured home is elevated no lower than the base flood elevation; or

(2) The manufactured home chassis is supported by reinforced piers or other foundation elements of at least an equivalent strength, of no less than thirty-six (36) inches in height above grade.

(3) The manufactured home shall be securely anchored to the adequately anchored foundation system to resist flotation, collapse and lateral movement.

(4) In an existing manufactured home park or subdivision in which a manufactured home has incurred "substantial damage as the result of a flood, any manufactured home placed or substantially improved shall meet the standards of section 7-78(a) and 7-77(3).

(e) All recreational vehicles placed within this area shall either:

(1) Be on site for fewer than one hundred eighty (180) consecutive days;

(2) Be fully licensed and ready for highway use; or

(3) The recreational vehicle shall meet all the requirements for new construction, including anchoring and elevation requirements of section 7-78(c).

(4) Be on the site for fewer than one hundred eighty (180) consecutive days. A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices and has no permanently attached structures.

(f) Elevated buildings. New construction and substantial improvements of elevated buildings that include fully enclosed areas formed by foundations and other exterior walls below the lowest floor shall be designed to preclude finished living space except allowable uses (i.e. parking, limited storage and building access) and shall be designed to allow for the entry and exit of floodwaters to automatically equalize hydrostatic flood forces on exterior walls. Designs for complying with this requirement must either meet or exceed the following minimum criteria or be certified by a professional engineer or architect:

(1) Provide a minimum of two (2) openings having a total net area of not less than one (1) square inch for every square foot of enclosed area subject to flooding;

Opa-locka Code of Ordinances	October 2014

(2) The bottom of all openings shall be no higher than one (1) foot above grade; and

(3) Openings may be equipped with screens, louvers, valves or other coverings or devices provided they permit the automatic flow of floodwaters in both directions;

Electrical, plumbing, air conditioning and other utility connections must be constructed, designed, and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

Access to the enclosed area shall be the minimum necessary to allow for parking of vehicles (garage door), (standard exterior door), or entry to the living area (stairway or elevator); the interior portion of such enclosed area shall not be finished or partitioned into separate rooms or air conditioned.

(g) Notify, in river line situations, adjacent communities and the Florida NFIP Coordinating Office to any alteration or relocation of a watercourse, and submit copies of such notifications to FEMA;

(h) The flood carrying capacity within the altered or relocated portion of any watercourse shall be maintained.

(Ord. No. 12-09, § 2, 4-11-12)

Palmetto Bay

On September 19, 2016, the Village of Palmetto Bay passed Resolution No. 2016-73 adopting Miami-Dade County's Local Mitigation Strategy. This allowed the Village to apply for inclusion into the National Flood Insurance's Community Rating System (CRS) Program.

In addition, the Village of Palmetto Bay has integrated mitigation locally through the following plans:

Village of Palmetto Bay Comprehensive Plan	**2019**
Future Land Use Element	
Objective 1.6 <u>Coastal High Hazard and Disaster Preparedness</u> Coordinate with Miami-Dade County and the State of Florida in addressing the land use planning, evacuation, structural integrity, and disaster-preparedness needs of Palmetto Bay. **Policy 1.6.2** Coordinate with Miami-Dade County in implementing the approved Local Mitigation Strategy, by assessing the vulnerability of governmental, medical, and public safety sites and structures in the Village to storm damage, and in developing an action plan, if necessary, to address wind stability and flood protection for key buildings.	
Transportation Element	
Objective 2B.3 <u>Emergency Transit Plan</u> Coordinate with Miami-Dade Transit and Miami-Dade Office of Emergency Management (OEM) to help ensure development of an emergency transit plan that will provide a timely evacuation of the Coastal High Hazard Area during tropical storms and hurricanes. **Policy 2B.3.1** The Village Manager shall direct the transportation liaison, established under Policy 2A.2.6 of this Element, to meet with the Miami-Dade Office of Emergency Management at least every twelve months to coordinate evacuation plans and related issues and report back to the Manager. **Policy 2B.3.2** Timely evacuation operations shall be established to commence four (4) hours after an evacuation order is issued by the County Administrator.	

Coastal Management Element
Objective 5.3 Flood Protection The Village will reduce natural hazard impacts through compliance with federal Emergency Management Agency (FEMA) regulations and by targeting repetitive flood loss and vulnerable properties for mitigation. **Objective 5.8 Post Disaster Redevelopment and Hazard Mitigation** Coordinate with the Miami-Dade County Office of Emergency Management (OEM) to develop and implement post-disaster redevelopment and hazard mitigation plans that reduce or eliminate exposure of life and property to natural hazards towards the protection of health, safety, and welfare within the Village. **Policy 5.8.2** The Village shall enforce applicable recommendations of post disaster hazard mitigation plans required under Section 405 of the Disaster Relief Act of 1974.

Pinecrest

The Village of Pinecrest is currently working on a Stormwater Basin Master Plan to evaluate the existing stormwater infrastructure and look at the current Level of Service and identify and prioritize any problem areas. The Plan will model and look at current and future conditions for 24-hour, 2-year, 10-year, 25-year, 50-year and 100-year storm events including consideration for sea level rise. Pinecrest is also going through the process to become a Community Rating System Community.

Resolution 2011-63	2011
Resolution of the Village of Pinecrest, Florida Authorizing the Village Manager to execute an Interlocal Agreement with Other Municipalities Relating to the Green Corridor Property Assessment Clean Energy (PACE) District.	
WHEREAS, pursuant to section 163.08, Florida Statutes, the improved property that has been retrofitted with energy-related qualifying improvements receive special benefit of alleviating the property's burden from energy consumption and assists in the fulfillment of the state's energy and hurricane mitigation policies; and … WHEREAS, the Village Council wishes to enter into an interlocal agreement with the Town of Cutler Bay and other municipalities to participate in the District in order to provide financing for qualifying improvements as provided for in F.S. 163.08;	

South Miami
Below is the section of this city's comprehensive plan that integrates with the Miami-Dade County LMS.

City of South Miami Comprehensive Plan	2010
Intergovernmental Coordination Element	
Policy 1.3.7 The City will coordinate with the emergency management program of Miami-Dade County y notifying the County of any current or future land use policies or population changes which would affect hurricane shelters or emergency evacuation routes. **Policy 1.3.11** The City will participate with Miami-Dade County in the planning and implementation of the County's Hazard Mitigation Plan, as it impacts the City of South Miami.	
Future Land Use Element	
OBJECTIVE 4.4 **P***reserve floodplain areas via floodplain management and limiting development within the Special Flood Hazard Area.* **Policy 4.4.1** in coordination with the Transit-Oriented Development District, permit more intense development only in those areas which are located outside of the Special Flood Hazard Area. **Policy 4.4.2** Building density and intensity may be transferred from areas within the Special Flood Hazard Area, in order to permit development within the Transit-Oriented Development District, while reducing the permitted intensities within the Special Flood Hazard Areas.	

Sunny Isles Beach
Below is the section of this city's comprehensive plan that integrates with the Miami-Dade County LMS.

City of Sunny Isles Beach Comprehensive Plan	October 2000
Future Land Use Element	
Policy 3P: Applications for rezoning, zoning variances or subdivision approvals for all new development in areas subject to coastal flooding shall be reviewed for emergency evacuation, sheltering, hazard mitigation, and post-disaster recovery and redevelopment.	
Transportation Element	
Objective 3: Transportation Network Safety & Efficiency The City shall improve the safety, and efficiency of the City's roadway system through transportation system management (TSM) techniques, including: access management (Policies 3A-D), improved intersection operations (Policy 3E), traffic calming along residential streets (Policy 3F), mitigation by developers (Policy 3G), accident analysis (Policy 3H, 31), and maintaining visibility for pedestrians, vehicles, and cyclists (Policy 3J).	

Surfside
Below is the section of this town's comprehensive plan that integrates with the Miami-Dade County LMS.

Town of Surfside Comprehensive Plan	January 2010
Future Land Use Element	
Objective 7: Coordination of population with hurricane evacuation plans: Coordinate population densities with the applicable local or regional coastal evacuation plan [9J-5.006 (3) (b) 5] and coordinate future land uses by encouraging the elimination or reduction of land uses which are inconsistent with applicable interagency hazard mitigation report recommendations [9J-5.006 (3) (b) 6]. This objective shall be measured by implementation of its supporting policies. [9J5.006 (3) (b) 5 and 6]. **Policy 7.2:** The Town shall regulate all future development within its jurisdiction in accordance with the goals and objectives of the "The Local Mitigation Strategy for Miami-Dade County and its Municipalities, Departments and Private Sector Partners" (June 2008). The Town shall periodically review and revise the Future Land Use Map in light of future interagency hazard mitigation reports in order to reduce or eliminate uses which are inconsistent therewith. **Policy 5.5**: Consideration for the relocation, mitigation or replacement of any of the existing infrastructure in the Coastal High Hazard Area, as may be deemed appropriate by the Town, shall be coordinate with the state when state funding is anticipated to be needed for implementation of the project. al Management Element **Policy 6.5:** The Town shall adopt a Comprehensive Emergency Management Plan in order to prepare for, respond to, recover from and mitigate potential hazard by December 2011.	
Objective 11: Hazard mitigation In general, the Town shall regulate development so as to minimize and mitigate hazard resulting from hurricanes. In particular, the Town shall ensure that all construction and reconstruction complies with applicable regulations designed to minimize hurricane impact on buildings and their occupants. **Policy 11.5:** The Town shall continue to enforce regulations and codes which provide for hazard mitigation, including but not limited to, land use, building construction, placement of fill, flood elevation, sewer, water and power infrastructure, and stormwater facilities. These regulations shall be applied to eliminate unsafe conditions, inappropriate uses and reduce hazard potentials. **Policy 11.6:** The Town shall increase public awareness of hazards and their impacts by providing hazard mitigation information to the public. Information shall address evacuation, sheltering, building techniques to reduce hazards as well as other hazard mitigation issues that could help prevent loss of life and property. **Policy 11.9:** The Town shall, as deemed appropriate, incorporate the recommendation of the hazard mitigation annex of the local emergency management plan and shall analyze and consider the recommendations from interagency hazard mitigation reports.	

Town of Surfside Comprehensive Plan	January 2010
Policy 11.10: The Town shall include criteria in the five (5) year schedule of Capital Improvement projects to include consideration for and prioritization for projects that are hazard mitigation initiatives.	

Sweetwater

On October 2016, the City adopted a Floodplain Management Ordinance (Ordinance 4230) to meet the requirements of the NFIP and coordination with the Florida Building Code. The model ordinance specifically repealed and replaced the City Chapter 35 named "Floodplain Management Regulations" (Ordinance 3427 September 28, 2009) to satisfy the NFIP, to coordinate with the FBC, and to meet the requirements of section 553.73 (5), F.S. This ordinance applies to all flood hazard areas within the City of Sweetwater.

City of Sweetwater Code of Ordinances	2016
Sec. 35-102.3. - Basis For Establishing The Areas of Special Flood Hazard	
The Flood Insurance Study for Miami-Dade County, Florida and Incorporated Areas dated September 11, 2009, and all subsequent amendments and revisions, and the accompanying FIRM map, and all subsequent amendments and revisions to such maps, are adopted by reference as a part of this ordinance and shall serve as the minimum basis for establishing flood hazard areas. Studies and maps that establish flood hazard areas are on file at the City of Sweetwater Building Department.	
Sec. 35-102.4 Submission of additional data to establish flood hazard areas	
To establish flood hazard areas and base flood elevations, pursuant to Section 35.105 of this ordinance the Floodplain Administrator may require submission of additional data. Where field surveyed topography prepared by a Florida licensed professional surveyor or digital topography accepted by the community indicates that ground elevations: (1) Are below the closest applicable base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as flood hazard area and subject to the requirements of this ordinance and, as applicable, the requirements of the Florida Building Code. (2) Are above the closest applicable base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a Letter of Map Change that removes the area from the special flood hazard area. Require lowest floor above base flood elevation	

Sec. 35-301.2 Specific methods of construction and requirements.
Pursuant to Chapter 8 Article III of the Miami Dade County Code, the following specific methods of construction and requirements apply: (1) Additional Elevation (Freeboard) for Buildings. For buildings in special flood hazard areas, the minimum elevation requirements in the Florida Building Code shall be to or above the base flood elevation plus one (1) foot. (2) Limitations on Enclosures Under Elevated Buildings. For buildings located in the special flood hazard area, enclosures shall: a. Have the minimum necessary access to allow for parking of vehicles (garage door), limited storage of maintenance equipment used in connection with the premises (standard exterior door), or entry to the elevated building (stairway or elevator). b. Not have the interior portion partitioned or finished into separate rooms other than separation of parking from storage and building access. (3) Flood Damage and Substantial Damage. In the Florida Building Code, Building, and Florida Building Code, Existing Building, definitions for the term "Substantial Damage" shall be as follows: Substantial damage. Damage of any origin sustained by a building or structure whereby the cost of restoring the building or structure to its before-damaged condition would equal or exceed 50 percent of the market value of the building or structure before the damage occurred. The term also includes flood-related damage sustained by a structure on two separate occasions during a 10-year period for which the cost of repairs at the time of each such flood event, on average, equals or exceeds 25 percent of structure before the damage occurred.
35.102.7 Interpretation
In the interpretation and application of this ordinance, all provisions shall be: (1) Considered as minimum requirements; (2) Liberally construed in favor of the governing body; and (3) Deemed neither to limit nor repeal any other powers granted under state statutes

Virginia Gardens
Below is the section of this village's comprehensive plan that integrates with the Miami-Dade County LMS.

Village of Virginia Gardens Provisions for Flood Hazard Reduction Code of Ordinances	August 2013
Article X. Floodplain Management	
10.1 Administration: Duties of the Administrator shall include, but are not be limited to: Verify and record the actual elevation (in relation to mean sea level) of the lowest floor (A-Zones) or bottom of the lowest horizontal structural member of the lowest floor (V-Zones) of all new and substantially improved buildings, in accordance with Article 5, Section B (1) and (2) and Section E (2), respectively; Verify and record the actual elevation (in relation to mean sea level) to which the new and substantially improved buildings have been flood-proofed, in accordance with Article 5, Section B (2);	
6.11 Stormwater Management Code of Ordinances	
6.11.3 Design Standards To comply with the foregoing performance standards, the proposed storm water management system shall conform to the following standards: A. To the maximum extent practicable, natural systems shall be used to accommodate stormwater. B. The proposed stormwater management system shall be designed to accommodate the stormwater that originates within the development and stormwater that flows onto or across the development from adjacent lands. The proposed stormwater management system shall be designed to function properly for a minimum twenty (20) year life. C. The design and construction of the proposed stormwater management system shall be certified as meeting the requirements of this Code by a professional engineer registered, in the State of Florida. D. No surface water may be channeled or directed into a sanitary sewer.	

West Miami
Below is the section of this city's comprehensive plan that integrates with the Miami-Dade County LMS.

City of West Miami Comprehensive Plan	2000
Costs and Funding For Proposed Program	
Objective 7: As per 9J-5 .016 (2) (c), this section of the Capital Improvements Element provides a cost analysis of the capital improvements identified for mitigation of existing deficiencies, replacement and new growth needs pursuant to the Future Land Use Element.	

MITIGATION GOALS AND OBJECTIVES[15]

Mitigation goals and objectives must be consistent with the goals and objectives of the county and the individual municipalities' master plans, their codes and ordinances, as well as other endeavors that reflect the aspirations for the welfare, safety and quality of life of their citizens.

Goals

1. **Reduce Miami-Dade County's vulnerability to natural and man-made hazards**

   Objectives:

   1.1. Incorporate new and more accurate data, studies and maps that demonstrate the evolution of risk in the county
   1.2. Identify new and emerging mitigation methods and products for new and retro-fitting construction
   1.3. Identify projects that mitigate expected impacts from hazards identified in the THIRA
   1.4. Promote mitigation measures to the Whole Community through outreach and education
   1.5. Harden building envelope protection – including all openings – and inclusion of a continuous load path from roof to foundation on all structures within the county
   1.6. Reduce flooding from rainfall events
   1.7. Reduce storm surge hazards and effects by encouraging greater setbacks from shorelines for new developments of waterfront properties, encouraging retrofit-ting and elevation of structures with high priority consideration for those built on waterfront properties, seeking opportunities to acquire, exchange or otherwise secure limited control of waterfront real estate

2. **Minimize future losses from all hazard impacts by reducing the risk to people and property**

   Objectives:

   2.1. Adopt land use policies that limit, prohibit or mandate development and con-struction standards to promote resiliency and reduce risk
   2.2. Adopt building codes leading to building design criteria based on site-specific evolving and future risk
   2.3. Identify mitigation projects that reduce risk to vulnerable populations that are at greater risk from hazards

[15] EMAP 2016 Standard 4.2.1.(3)

2.4. Integrate mitigation into existing structures during regular maintenance and replacement cycles

3. Implement mitigation projects that meet or exceed current codes

Objectives:

3.1 Design and develop projects that address both current and future risk
3.2 Identify projects to address potential threats from climate change such as sea level rise and the impacts of storm surge and breaking waves exacerbated by sea level rise

4. Prevent flood related repetitive losses from natural disaster through education and regulation

Objectives:

4.1. Map repetitive and severe repetitive loss (RL) areas
4.2. Identify projects that will mitigate flood risk in these the RL areas
4.3. Track mitigation projects by flood basin to see past, current and future projects and compare to flooding data

5. Promote and support the Community Rating System (CRS) for all communities in Miami-Dade.

Objectives:

5.1. Incorporate measures into the LMS to help obtain uniform credit for all CRS communities
5.2. Identify and track projects in the LMS to demonstrate the role of mitigation measures in reducing flood risk
5.3. Provide outreach and educational opportunities
5.4. Develop and implement a Program for Public Information (PPI)

6. Promote mitigation measures for critical facilities

Objectives:

6.1. Continue to invite and work with critical facility stakeholders
6.2. Identify and track mitigation measures for existing critical facilities
6.3. Assess alternate facilities as identified in continuity of operations plans to determine if the sites are appropriately mitigated
6.4. Identify additional sites for emergency sheltering
6.5. Integrate sea level rise modeling to project and characterize expected impacts during the expected service-life of critical facilities Protect expressways, major

highways and other thoroughfares and, bridges and causeways to provide for continuous, free flowing traffic and circulation as needed for the effective and unencumbered provision of emergency services and evacuation operations

7. Provide whole community planning

Objectives:

7.1. Continue to engage additional local community stakeholders to participate in the LMSWG meetings
7.2. Host mitigation workshops to educate stakeholders and community members
7.3. Initiate organizational, managerial and administrative goals to make mitigation a mainstream function of government affairs; spread the responsibilities throughout many departments and agencies to ensure continuity and a full integration of mitigation management functions in the operations of government
7.4. Enhance public information and engagement to increase awareness of hazards and problems and to educate through a widespread program of general information, media coverage and participatory involvement

Mitigation Opportunities

Though some may link mitigation with post-disaster initiatives, opportunities to integrate and promote mitigation are available before, during, and after development and construction occurs. The following tables list some opportunities both for pre and post disaster.

FIGURE 1. PRE-DISASTER MITIGATION OPPORTUNITIES/PROMOTING MITIGATION

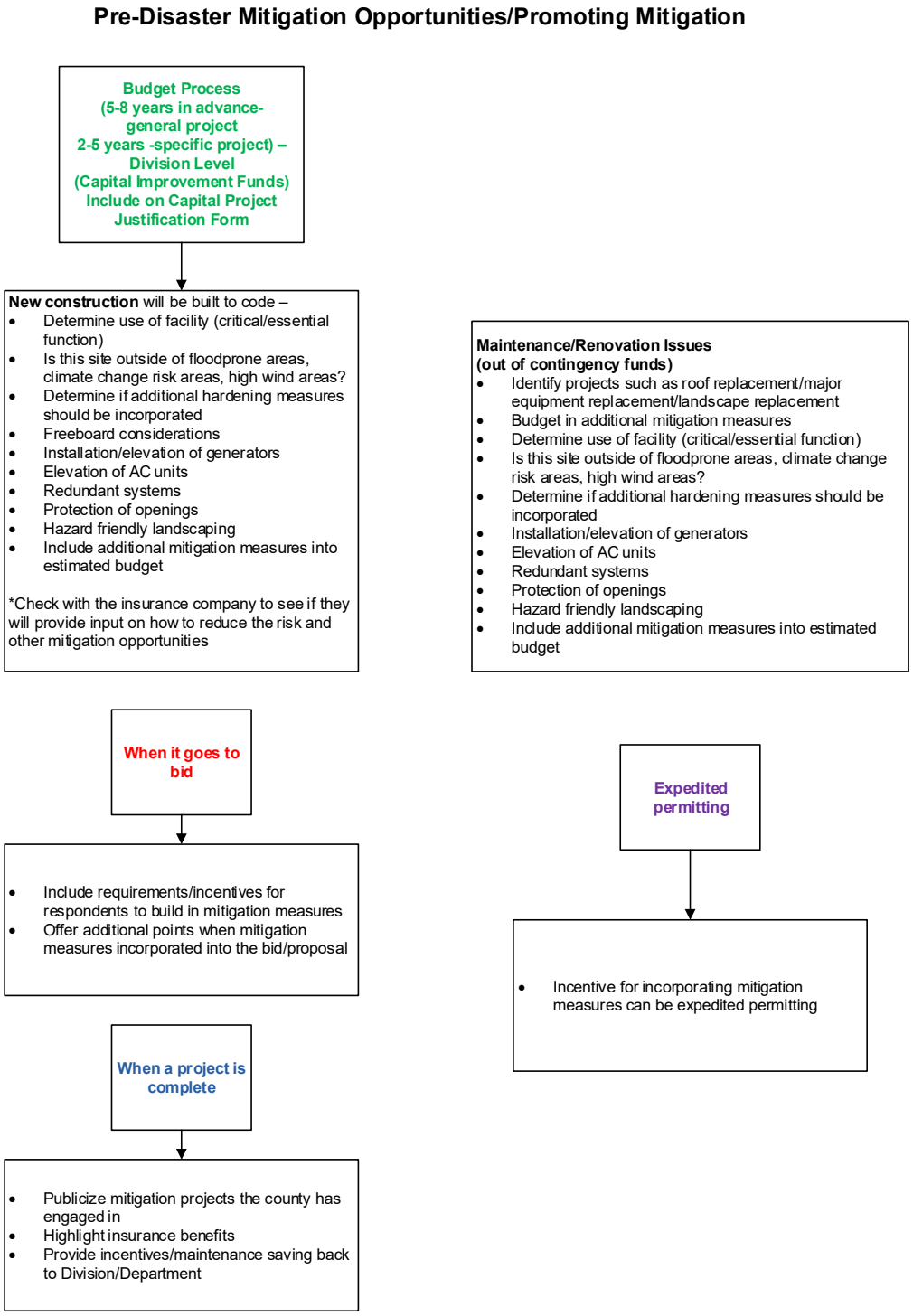
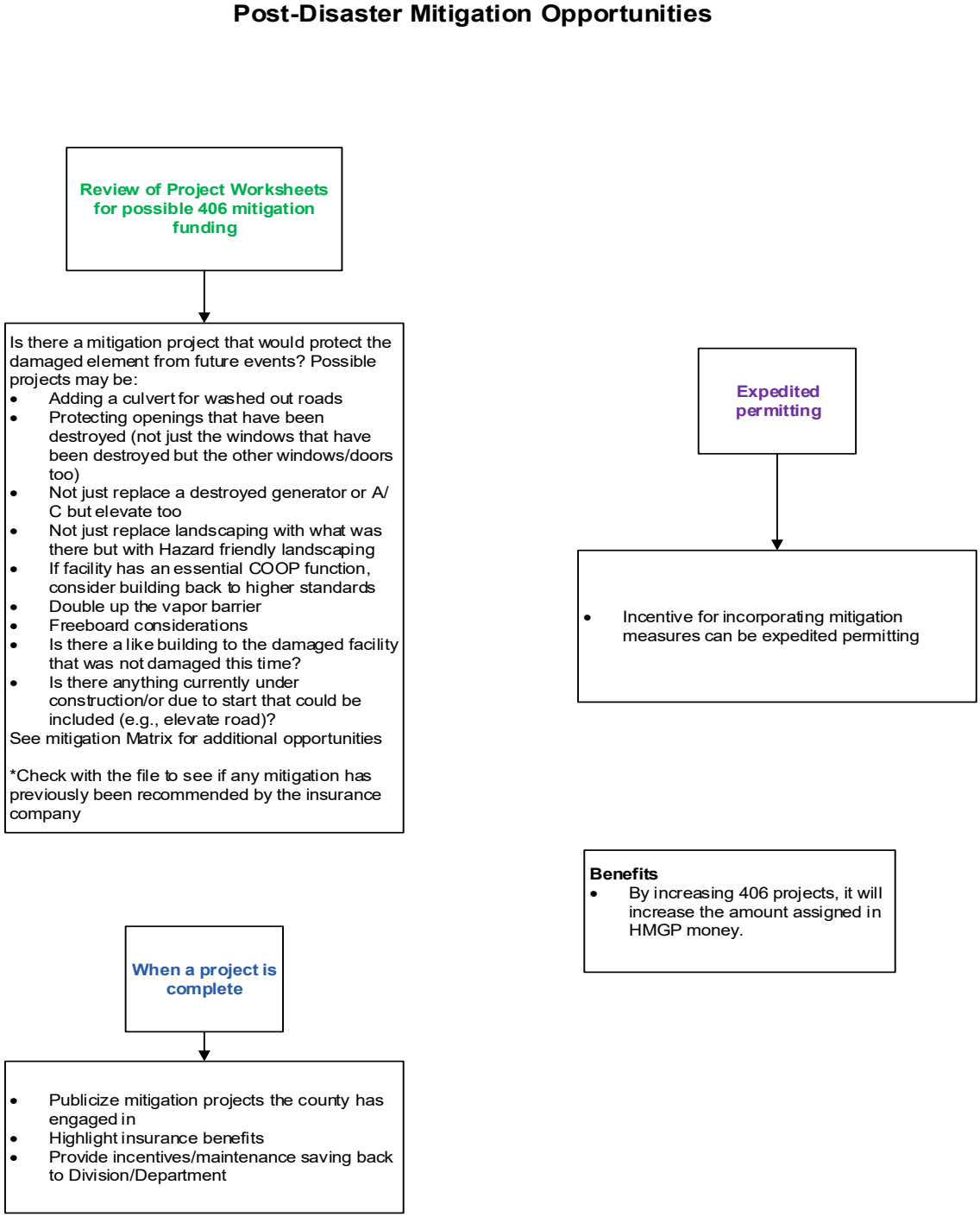


FIGURE 2. POST-DISASTER MITIGATION OPPORTUNITIES



HAZARD IDENTIFICATION & VULNERABILITY ASSESSMENT[16]

As was mentioned in the introduction to the LMS, metropolitan Miami-Dade County is a large and diverse place and therefore vulnerable to many hazards. Each of these types of hazard is unique and produces distinct impacts to a community. Miami-Dade County developed a Threat and Hazard Identification and Risk Assessment (THIRA) that includes numerous natural, technological, crime/terrorism and public health hazards that Miami-Dade County could experience. The THIRA was under development during the time of the writing of the 5-year LMS update and the information contained in here is based on the current draft of the THIRA. Each hazard was looked at in terms of a general description, location, extent, previous occurrence and vulnerability in the THIRA. Table 2 provides a listing of all of the hazards profiled in the THIRA, including ones that are not further analyzed for purposes of the LMS. Persons interested in seeing a complete review of all of the hazards listed in Table 2 may request to see the complete THIRA.

To determine which natural hazards would be included in the LMS, a review of the analyses from the THIRA was conducted. For purposes of this analysis, risk is defined as a relative measure of the probability that a hazard event will occur in comparison to the consequences or impacts of that event. That is, if a hazard event occurs frequently, and has very high consequences, then that hazard is considered to pose a very high risk to the affected communities. In comparison, if a hazard event is not expected to occur frequently, and even if it did, the consequences would be minimal, then that hazard is considered to pose a very low risk. The determination to further consider hazards is also based on current available information including modeling that may indicate future risk. Some hazards such as windstorms, in and of themselves have not occurred very often nor had a high impact on the physical environment and mitigation measures that would cover these events include mitigation that is being done for hurricanes and tropical storms. Though we may not currently be considering a hazard for future consideration at this time, with new information, technology or modeling we may include it at a later time.

We have identified potential mitigation measures, as able for all of the hazards. The Miami-Dade LMS welcomes our participating agencies to identify mitigation measures for all hazards and not just those that the LMS focuses on. The Community Profile (demographics) as developed for the 2015 THIRA is located in Part 4 Appendix I.

Though we are vulnerable to many different natural hazards, one of the reasons we spend a lot of time talking about hurricanes and tropical storms and mitigation measures in relation to them, is that though they account for only 8% of the actual number of hazard events, they account for 81% of the losses, as illustrated in Figure 1.

[16] EMAP 2016 Standard 4.2.1 (1)

FEMA also maintains a website entitled Mitigation Best Practices that can be utilized to search for mitigation projects that other communities have embarked upon by hazard type, state and FEMA Regions. These projects also identify the funding source that may assist local communities in finding funding for like projects. FEMA's Mitigation Best Practices webpage is: https://www.fema.gov/mitigation-best-practices

TABLE 2. ANALYSIS OF ALL HAZARDS FROM THIRA[17]

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Animal and Plant Disease		X	Historically, there have not been any occurrences of major animal disease in Miami-Dade County. There have been three new plant disease outbreaks in the last 20 years (15% probability in any one year) that have impacted the agricultural communities but have not had any impact on the physical environment. In 2015, an outbreak of the Oriental Fruit Fly, one of the world's most serious exotic fruit flies that threatens agricultural commodities, was detected in Miami-Dade County farmlands. As a result, 97-square miles of farmland was quarantined in the Redland area and an eradication program was triggered. A state of agricultural emergency was declared in the county by the Florida Commissioner of Agriculture, Adam H. Putman on September 15th, 2015. Due to the low occurrence and limited impact, this hazard will not be further evaluated for the LMS at this time.	• For plant diseases pesticides, separation/distancing, eradication of infected plants • For animal diseases, vaccinations, vector control, mosquito control, eradication of breeding grounds (e.g. standing water), public health education • Drain and Cover campaign materials to address mosquito abatement http://www.miamidade.gov/mosquito/index.html
Dam / Dike / Levee Failure		X	Miami-Dade County does not have any dams or levees on the NFIP maps. There are several water conservation areas that have a berm of about 4 feet around them that are dry most of the year. Historically, there have been no occurrences of dam, dike or levee failures in Miami-Dade County. Modeling performed by Miami-Dade Department of	• Maintenance of structures • Reduce/minimize construction close to structures, where possible • Fortify structures where risks are identified

[17] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
			Transportation and Public Works shows that there are no populated areas near these locations that could be negatively impacted if the levees were breached. Due to the low occurrence and limited impact, this hazard will not be further evaluated for the LMS at this time.	
Drought	X		Historically, there has been 54 drought events recorded between 1950 and 2019 (78% probability of having a drought in any one year). There have been no reported dollar losses to either physical structures or crops. Although, on July 15, 2015, USDA designated Miami-Dade County as a primary natural disaster area due to the persistent drought conditions between January and July. No definitive dollar amounts of damages has been reported for this incident. This hazard is considered further for the LMS due to the high probability.	• Water conservation • Public education and outreach • Regulatory fines • National Drought Mitigation Center http://drought.unl.edu/ • Drought Resources for Miami-Dade http://miami-dade.ifas.ufl.edu/weather_issues/DroughtPrepardness.shtml
Earthquake		X	There have been no earthquakes in Miami-Dade County. South Florida does not have any documented fault lines. The USGS shows there is a 0.279% chance of a major earthquake within 50 kilometers of Miami-Dade in the next 50 years. Therefore, this plan will not include a further evaluation of this hazard at this time.	• No Current Recommendations
Epidemic / Pandemic		X	There have been no instances of an epidemic only affecting Miami-Dade County. In 2017, Miami-Dade had 113 confirmed cases of the Zika Virus. Out of the total cases, 1 was locally acquired and	• Public education and outreach • Vaccinations • Fortify pharmaceutical supplies • Surveillance, monitoring and reporting mechanisms

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
			112 were travel related. The Zika virus is a disease spread primarily through the bite of an infected *Aedes* species mosquito, the same type of mosquito that spreads other viruses like dengue and chikungunya. A coordinated effort between Miami-Dade County Department of Solid Waste Management and the Florida Department of Health in Miami-Dade County is established to set out a strategic plan in response to the Zika Virus. This would help create a unified message for public education and outreach throughout all County agencies and municipalities. There were no recorded deaths and no impact to the physical environment. In February 2020 OEM began providing regular reports on the Coronavirus Disease (COVID-19) Pandemic. As of July 13th this pandemic has resulted in 67,713 positive cases and 1,037 deaths in the County.	• Quarantine/Isolation as needed

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Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Erosion	X		Coastal Erosion is a continuous problem for the Miami-Dade County coastline. They are the county's natural barrier that can help protect us from the impacts of storm surge and sea level rise. The most severe erosion occurs in relation to hurricanes and tropical storm, from June to November. There are 20.8 miles of beaches in Miami-Dade County at risk for erosion and 500 parcels that sit adjacent to the shoreline that could be at risk, if erosion became severe. In 2017, Hurricane Irma caused some beach erosion throughout Miami-Dade County with the preliminary assessment estimating a loss of about 170,000 cubic yards of sand. This hazard is considered further for the LMS.	• Fortify beaches through re-nourishment • Fortify dunes with vegetation or structural components • Natural barriers such as mangroves and coral reefs • Limit construction close to coastal areas prone to erosion • Limit re-development after disasters in coastal areas prone to erosion • Implement/enforce building code to fortify structures in coastal areas
Extreme Heat		X	There have been one extreme heat event reported, between 1950 and 2019 (2% chance of occurrence per year). On July 25, 2017, NWS issued a heat advisory for Miami-Dade County due to very warm and humid weather conditions potentially resulting in heat index values between 105 and 110 degrees Fahrenheit. The heat advisory was extended until July 26th. During this event, there were 15 injuries on July 25th in Miami Beach, but no reported damages to property or crops. Due to the efficient air conditioning systems of homes in South Florida, Florida Power and Light said that even with high usage of A/C there is not a surge of demand for power that would cause a concern for power outages. The threshold for the National Weather Service to issue an Excessive Heat	• Public Education and Outreach • Identification, designation and opening of cooling centers for vulnerable populations, as needed.

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
			Warning is when heat index values are expected to reach 113 degrees Fahrenheit or higher for at least 2 hours, with an 80% chance, or greater, of occurrence. Due to the low impact this hazard will not be further considered for the LMS at this time.	
Flooding	X		Much of Miami-Dade County is susceptible to localized flooding, particularly during the rainy season that runs from mid-May through mid-October. The mean elevation of Miami-Dade County is relatively flat at 11 feet. The County's flat terrain causes extensive "ponding" due to the lack of elevation gradients to facilitate "run-off". Of Miami-Dade's 1,250,287 acres, 44.62% of that is within the flood plain (557,871 acres). There have been 13 flood events and 31 flash flood events recorded since 1950 (50% chance of flooding occurrence every year). Localized flooding and "ponding" occurs frequently during the rainy season. Property damages of over $542M and crop damages of over $714M have been recorded from flooding for incidents between 1950 and 2019. This hazard is considered further for the LMS.	• Public education and outreach on FEMA Flood Zones, storm surge planning zones and general flood risks. • Education on Flood Insurance • Participation in NFIP and CRS • Drainage projects to address RL and SRL areas • Freeboard requirements for elevation of structures above BFE • Monitoring and coordination for maintenance and mitigation projects along canal areas • Monitoring and maintenance of storm drains • Design for larger storm drains • Swale and open space protection • Participation in the development of FEMA FIRM maps to help identify at risk areas and areas that have been mitigated
Hail		X	218 hail events have been reported, between 1950 and 2019 in Miami-Dade County. The only reported damage associated with hail was for about $3K in 2012, but this was more likely due to a tree limb that had fallen on a car during the same event. Due to the low impacts of this hazard it will not be considered further for the LMS at this time.	• Alert and notification of public to seek safety inside • No other current recommendations

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Hurricane / Tropical Storm	X		In 2017, Miami-Dade County was impacted by major Hurricane Irma and Tropical Storm Philippe. Due to the high impacts, this hazard is further considered for the LMS.	• Public education and outreach • Designation of storm surge risk areas • Supportive services (evacuation and sheltering) for at risk populations • Hardened facilities for use as evacuation centers • See also recommendations under winds and floods.
Landslides		X	Due to Miami-Dade's low average elevation, landslides are not likely to occur. There have been no reported landslides in Miami-Dade. Due to the low probability and low risk this hazard is not further considered for the LMS.	• No current recommendations
Lightning		X	There were 69 reported lightning events in Miami-Dade County between 1950 and 2019 (100% chance of a lighting event occurring every year). Though the probability is high the recorded impacts of these events is low with the highest single impact being about $80K for an incident in Hialeah Gardens when a lightning struck an apartment building. The lightning strike caused a fire and four apartments suffered significant damage leaving a total of 20 residents displaced. Due to the low impact of this hazard it will not be considered further for the LMS at this time.	• Surge protection for electrical, computer and phone systems • Lightning detection and warning devices • Public education and outreach
Saltwater Intrusion	X		Saltwater intrusion is a continuous problem that has been occurring ever since the Everglades	• Continue practices of monitoring levels, gauging pumping levels and determining future impacts and need for deeper wells

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
			were drained to provide dry land for urban development and agriculture. Long periods of drought and storm surge inundation are hazards that have been attributed to increases in saltwater intrusion. It poses a threat to the drinking water supply and requires close coordination of local agencies to continuously monitor intrusion, determine appropriate pumping rates and the coordination with South Florida Water Management District for maintenance of ground water levels. This hazard is included in the LMS for further consideration.	

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Sea Level Rise	X		Sea level rise is likely to increase coastal flooding during astronomical high tides and storm surge events. Sea level rise will likely impact the ability of the canals and low-lying areas to drain standing water after rainfall events and impact the ground water elevation. Gravity based outfalls that lie below sea level have already seen impacts when salt water flows up through the outfall system into the streets of several communities. This Unified Sea Level Rise Projection for Southeast Florida highlights three planning horizons. The first is the short term projection, that by 2040, sea level is projected to rise 10 to 17 inches above 2000 mean sea level. The second is by 2070, sea level is projected to rise 21 to 54 inches above 2000 mean sea level. The third is that by 2120, sea level is projected to rise 40 to 136 inches above 2000 mean sea level.[18]	• Designation of Adaptation Action Areas • Additional modeling/mapping to determine areas at risk • Build with sea level rise considerations to increase future resiliency as determined by the useful lifespan of a project • Minimize development in future risk areas

[18] 2019 Unified Sea Level Rise Projection for Southeast Florida: https://southeastfloridaclimatecompact.org/wp-content/uploads/2020/04/Sea-Level-Rise-Projection-Guidance-Report_FINAL_02212020.pdf

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Severe Storm	X		A storm is considered severe if it produces a tornado, winds of 50 knots (58 mph) or greater, and/or hail of an inch in diameter or greater. From 1950 through 2019, there have been 511 severe storm related events reported in Miami-Dade (averaging about five occurrences per year). Over $209M in damages have been recorded during that time. Due to the high probability and impact, this hazard is further considered in the LMS.	• Practices to mitigate against hurricanes are also applicable to severe storms. • Also see recommendations under floods • Review Model Storm analyses and identify mitigation initiatives for the hardest impacted areas • Track heavy rain and subsequent flooding to identify areas for potential mitigation measures

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Sinkholes		X	There is no official record of all sinkholes in Miami-Dade. The Florida Geological Survey maintains a database of all "subsidence incidents," however this only includes events that have been officially reported and includes many events that are not sinkholes. Between 1948 and 2019, only one subsidence incident was reported in Miami-Dade to the Florida Geological Survey. In 1972, a sinkhole measuring three feet by three feet, was recorded in Miami-Dade County by the Florida Geological Survey.[19] Most of the instances reported are small in extent and have not significantly impacted the built environment. Within the State of Florida for insurance claims, Miami-Dade County represented 2% of the total claims in 2010. Additional instances of sinkholes claims have been reported through insurance claim reporting data but the magnitude of each respective claim was not made available. Due to the low impact of this hazard it is not considered further for the LMS at this time.	• Assessment, hardening and replacement of aging infrastructure.
Space		X	There have been no space weather events specific to Miami-Dade County that have caused interference with technological components of communication or electrical systems. Due to the low probability of this hazard it is not considered further for the LMS at this time.	• Identifying redundant or alternate systems in case of outages. • Hardening of CI/KR

[19] Florida Department of Environmental Protection, Florida Geological Survey Division Subsidence Incident Reports Map: https://ca.dep.state.fl.us/mapdirect/?focus=fgssinkholes

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
Tornado	X		There have been 140 occurrences of tornadoes in Miami-Dade County between 1950 and 2019 (averaging about 2 times a year). Recorded damages from tornadoes for property exceeds $203M. Due to the high probability and high impact, this hazard is included in the LMS for further consideration.	• Hardening of structures. • Identification of safe rooms and structures. Follow FEMA Safe Room Guidance • Increased public awareness • Signing up for existing alert and notification systems.
Tsunami		X	There have been no tsunamis occurring in Miami-Dade County. The risk of a tsunami striking Florida is considered to be relatively low by the National Oceanographic and Atmospheric Administration. Due to the low probability of this hazard it will not be considered further at this time.	• Education for risk can be also tied to coastal communities currently at risk for Storm Surge.
Volcano (Ash/Dust)		X	There are no volcanoes in Miami-Dade County and no recorded impacts to the physical environment from volcanoes. Due to our distance to any volcanoes there is no projected impact. The biggest concern in relation to an active volcano outside of our area would be volcanic ash that may be carried by trade winds that could limit aviation operations or possible compromise the air quality. There are no expected impacts to physical infrastructure. Due to the low probability and low impacts, this hazard will not be considered further for the LMS at this time.	• Implementation of Sheltering in Place as identified in the Miami-Dade All Hazards Protective Measures Plan.
Wildfires	X		There have been 14 wildfires recorded between 1950 and 2019 in Miami-Dade County (20% chance of a wildfire occurring every year). Recorded property damages for wildfires is about $255K. Though historically there has not been a high impact on property, it is estimated that about	• Prescribed burning programs. • Cutting brush or other fuel away from structures. • Follow National Fire Protection Association (NFPA) Firewise Communities Program

Hazard	Further Consideration for LMS		Inclusion/Exclusion Criteria	Mitigation Measures
Natural	**Yes**	**No**		
			613,453 people, or 25% of our area population, live within the Wildland Urban Interface and could be at risk. This hazard is included for further consideration in the LMS.	• Roles in Fire-Adapted Communities http://www.usfa.fema.gov/downloads/pdf/publications/fire_adapted_communities.pdf
Windstorms		X	There were 10 high wind and 2 strong wind events on record from 1950 to 2019 (17% chance of an event occurring every year). Recorded property damages total about $18K. Mitigation strategies that address tropical storms and hurricanes would also help protect the built environment from high wind events. Due to the low impact of these events, this hazard will not be considered further for the LMS at this time.	• Building opening and glazing protection. • Hardening of roof structures. • Securing roof top equipment.
Winter Storm	X		There have been 27 occurrences of winter storm related events (cold/wind chill, extreme cold, frost/freeze) between 1950 and 2019 (39% chance of an event occurring every year in Miami-Dade County). Though there has not been any recorded property damages, there has been over $300M in crop damages during these events. During these events, a demand for electricity will increase and many homes in South Florida do not have efficient heating systems, unlike their air conditioning systems, and therefore the demand on electricity can be much higher. This hazard is included in the LMS for further consideration.	• Identification, designation, construction of cold weather shelters for homeless and other vulnerable populations, and opening of the same during cold weather events. • Public education and outreach • Agriculture Extension works with local growers for educational material for mitigation of crop losses. http://miami-dade.ifas.ufl.edu/weather_issues/cold%20preparedness.shtml

The following non-natural hazards are included in the THIRA and we have included suggested mitigation measures, but they are not currently further considered in the LMS.

Technological	
Coastal Oil Spill	• Vessel inspections • Compliance with safety regulations
Electric Utility Failure	• Emergency Generators • Alternate energy sources • Hardened utility lines and structures • Emergency Evacuation and Assistance Program run by the OEM to assist vulnerable populations • Public Outreach and Education
Hazardous Materials Release	• Regular onsite inspections of hazardous materials facilities • Hardening of facilities with hazardous materials • Emergency shut off valves • Public Outreach and Education • Implementation of All Hazards Protective Measures Plan
Nuclear Power Plant Release	• Hardened facilities • Public Education, Outreach and Alert and Notification process • Protective Actions to shut down facility • Turkey Point Response Plan and annual exercises
Structural Fire	• Fire suppression safety systems • Alert and notification systems • Regular Fire Drills and Inspections
Transportation Incident (i.e. Highway and/or Rail Incident)	• Inspection and maintenance of transportation corridors • Building infrastructure to future risk and capacity needs • Inspection and maintenance of trains, planes, automobiles and vessels
Water/Wastewater Incident	• Inspection and maintenance of infrastructure • Building infrastructure to future risk and capacity needs
Human Caused Hazards	
Active Shooter	• See Something, Say Something campaign • Security screening procedures
Civil Disturbance/ Civil Unrest	• Intel gathering and sharing • Community gathering points to allow for peaceful demonstrations

	• Public Outreach and Education • Increased law enforcement presence as a deterrence
Electromagnetic Pulse	• Shielding • Backup systems for communications and power • Surge protection
Food Borne Illness Incident	• Follow Public Health guidelines • Reporting systems
Mass Migration	• Intel gathering and sharing
Terrorism – Biological (Category A, B and C Agents)	• Surveillance and reporting • Follow Public Health guidance • Personal Protective Equipment • All Hazards Protective Measures Plan – implementation of Isolation/Quarantine • Public Education and Outreach
Terrorism – Chemical	• Intel gathering and sharing • See Something, Say Something campaign • Surveillance/monitoring of CI/KR sites
Terrorism – Cyber	• Intel gathering and sharing • Security procedures and passwords • Firewalls • Tamper proof infrastructure • Surveillance/monitoring of CI/KR sites • Miami-Dade created a Cyber Security Plan (April 2017)
Terrorism – Explosive	• Protective barriers (bollards, cement barriers, bullet proof glass, metal/chemical detection)
Terrorism – Radiological	• Surveillance/monitoring of CI/KR sites • Intel gathering and sharing • See Something, Say Something campaign
Terrorism – Small Arms	• Intel gathering and sharing • See Something, Say Something campaign • Surveillance/monitoring of CI/KR sites • Security screening procedures

Drought

Description

A drought is characterized as an extended period of time with persistent dry weather conditions in a geographic area that typically has none to minimal precipitation. A drought can however be defined in several different ways depending on the geographical region and situation:

- Meteorological drought: When the normal level of precipitation has a significant measurable drop.
- Agricultural drought: When the level of soil moisture drops below the suitable range for agricultural growth.
- Hydrological drought: When the surface water and underground water supply falls below normal.
- Socioeconomic drought: When water shortages seriously interferes with human activity.

The Palmer Index, developed by Wayne Palmer in the 1960s, uses temperature and rainfall information to formulate dryness. It has become the semi-official drought index. The index is effective in determining long term drought conditions of several months. The index sets normal conditions at 0 with drought conditions in negative values. The index can also be reversed showing the excess of precipitation where the normal conditions at 0 and positive values for amount of rainfall. The advantage of the Palmer Index is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or rainfall conditions.

TABLE 3. NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM ALERTS FOR DROUGHTS

Alert	Criteria	Palmer Drought Index
D0 Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 to -1.9
D1 Moderate Drought	Some damage to crops, pastures, streams, reservoirs, or wells low, some water shortages developing or imminent, and voluntary water-use restrictions requested.	-2.0 to -2.9
D2 Severe Drought	Crop or pasture losses are likely, water shortages common and water restrictions imposed.	-3.0 to -3.9
D3 Extreme Drought	Major crop and pasture losses with widespread water shortages or restrictions.	-4.0 to -4.9
D4 Exceptional Drought	Exceptional and widespread crop and pasture loss, shortages of water in reservoirs, streams, and wells creating water emergencies.	-5.0 or less

Source: U.S. Drought Monitor Classification Scheme, from the United States Drought Monitor

Location
The entire County is vulnerable to drought conditions.

Extent
D4 on the Palmer Drought Scale.

Impact
The Drought Center reports that the direct impacts of a drought can include reduced crop productivity; increased fire hazards; reduced water levels; increased wildlife mortality rates; damage to wildlife and fish habitat; increased problems with insects and diseases to plants and trees; and reduced growth. Indirect results can lead to financial hardships for farmers and "increased prices for food and timber, unemployment, reduced tax revenues because of reduced expenditures, increased crime, foreclosures on bank loans to farmers and businesses, migration, and disaster relief programs." During times of drought, crop irrigation can lower the water table, exposing it to salt water (please see the Salt Water Intrusion section for more information). Water restrictions were put in place for Miami-Dade County that impacted both residential and agricultural communities. No definitive dollar amounts of damages were found during a review of the literature.

Previous Occurrences

April – early May, 2018 – A prolonged dry spell from February through the middle of May caused very dry conditions over all of Miami-Dade County. There were no reported damages. Ground water levels led to the continuation of severe drought conditions.[20]

January – September 2015 – A combination of decreased rainfall and higher than normal temperatures through Miami-Dade County resulted in drought conditions throughout the county between January and September. A persistent high-pressure system in the upper levels of the troposphere restricted cold fronts to move southward through South Florida and delivered warm subtropical air to the region during the spring months (March-May). During the summer months (June-August), this high-pressure system brought warm and dry easterly winds steering most of the typical South Florida afternoon thunderstorms to the west of the peninsula. A three-month deficit of 10-15 inches of rainfall across the County and temperatures between 0.5 and 1.5 degrees Fahrenheit above normal resulted in drought conditions throughout this period. Miami-Dade County had its peak drought condition in late July 2015 when the Palmer Drought Index peaked to extreme drought (D3) in the eastern part of the County. As a result of this event, USDA designated Miami-Dade County as a primary natural disaster area due to the damages and losses caused to the agriculture community.[21]

[20] NOAA National Centers for Environmental Information: https://www.ncdc.noaa.gov/data-access/severe-weather
[21] USDA Designates 2 Counties in Florida as Primary Natural Disaster Areas, 2015: https://www.fsa.usda.gov/news-room/emergency-designations/2015/ed_20150715_rel_0089

March – early April, 2012 – Very dry conditions continued into early April over all of Florida. There were no reported damages. Ground water levels led to the continuation of severe drought conditions.

January – August 2011 – Rainfall totals in January were near to below normal over most of southeast Florida. This resulted in the expansion of severe drought (D2) conditions over inland sections of Miami-Dade County. Rainfall deficits since October over these areas ranged anywhere from 8 to 11 inches. Most wells across the area were running at around 10 percent of normal water levels. The level of Lake Okeechobee remained steady at about 12.5 feet, which is 2.2 feet below normal. The Keetch-Byram Drought Index (KBDI) was in the 500 to 600 range, which reflects a high fire danger and low soil moisture values.

February was a very dry month over South Florida as a high pressure dominated the region's weather pattern. Over most of Miami-Dade, February rainfall totals were less than a tenth of an inch. As a result, February 2011 was among the top 10 driest Februaries on record at Miami and Miami Beach. This led to severe drought conditions over most of South Florida, with extreme drought conditions over portions of the southeast coast. The level of Lake Okeechobee fell about a half-foot during February, from around 12.5 feet to near 12 feet. Forestry officials reported double the number of wildfires during the winter months of 2010-2011 compared to the previous year. The period of October 2010 to February 2011 was the driest on record in the 80-year history of the South Florida Water Management District's records.

Conditions remained dry and by the end of May, most of southern Florida was in an extreme (D3) drought status, except for an area of exceptional (D4) drought over eastern Palm Beach and Broward counties. This is the first time in well over a decade that any part of south Florida has been designated as being under exceptional drought conditions.

June continued the streak of below normal rainfall over most of South Florida. Little rain fell during the first 10 days of the month, with the rainy season not starting until around June 8th. Almost all the rain across the area fell in the last 2 weeks of the months. Total rainfall were only in the 2 to 4 inch range over the east coast metro areas as well as the Gulf coast areas. Miami Beach recorded its driest June on record with only 1.15 inches of rain. Inland areas of South Florida received about 6 to 8 inches, with isolated 9 to 11 inch amounts south and west of Lake Okeechobee.

The level of Lake Okeechobee dropped from around 10 feet at the beginning of June to a minimum of around 9.6 feet in late June before recovering by the end of the month. Wells and underground reservoirs remained at the lowest 10 percent of normal levels. Exceptional (D4) drought conditions extended over most of Palm Beach and Broward counties as well as far northern Miami-Dade County. Extreme (D3) drought conditions extended all the way to the southwest Florida Coast of Collier County, with severe (D2) drought conditions elsewhere over South Florida. Several wildfires broke out over South Florida in June, including a large wildfire in the Everglades of Miami-Dade County near

the Miccosukee Resort and several wildfires in north-central Palm Beach County and eastern Collier County. July and August brought much needed rains. Overall, rainfall averaged near to above average over most areas, leading to gradually improving drought conditions. Lake Okeechobee remained over 3 feet below the normal level for this time of year. Underground water levels remained below normal over much of South Florida, especially over the metro east coast sections.[22] No data was available to determine the economic impacts of this event.

November 2008 – May 2009 – The driest winter on record over many locations in Southeast Florida led to the onset of severe drought (D2) conditions. At Miami International Airport, winter season rainfall was only 0.74 inches, making it the driest winter on record. The drought continued into the spring as most of South Florida was still under severe drought (D2) conditions. April rainfall was less than an inch at most locations. Then a very dry start to the month of May prompted the issuance of extreme drought (D3) conditions over virtually all of South Florida. The drought ended in Mid-May.[23]

Vulnerability

Physical Vulnerabilities

Drought is not anticipated to have any impact on the built environment (Critical Infrastructure, Key Resources, and Building Stock). It may cause economic losses to agriculture and aquaculture due to loss of crops or water restrictions that inhibit normal operations. Crops most vulnerable to drought are the ones that are grown during the winter months, our dry season, and harvested in the spring months including cantaloupe, carambola, celery, cucumbers, dragon fruit, eggplant, fennel, guava, green beans, herbs, jackfruit, longyan, lychee, mushrooms, onions, papaya, passion fruit, plantains, radishes, sapodilla, spinach, squash, strawberries, sweetcorn, thyme, tomatoes and zucchini. Drought conditions can also impact the Miami-Dade County Water and Wastewater Treatment system.

Social Vulnerabilities

This hazard may impact persons employed by the agricultural community including migrant farm workers. In terms of the general population, it does not tend to affect one population over another, however the social vulnerability section should be reviewed for more information on how these types of circumstances may affect populations in Miami-Dade County differently.

[22]National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[23] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

Erosion

Description

Erosion is the wearing-away of land or the removal of beach or dune sediments by wave action, tidal currents, wave currents, or drainage; the wearing-away of land by the action of natural forces; on a beach, the carrying away of beach material by wave action, tidal currents, littoral currents or by deflation. Waves generated by storms cause coastal erosion, which may take the form of long-term losses of sediment and rocks, or merely in the temporary redistribution of coastal sediments. Riverine and canal erosion are minimal within Miami-Dade County and will not be further analyzed. Coastal erosion is of greater concern and is expanded upon below. Long-shore currents move water in a direction parallel to the shoreline. Sand is moved parallel to most beaches in Florida by long-shore drift and currents. Ideally the movement of sand functions like a balanced budget. Sand is continually removed by long-shore currents in some areas but it is also continually replaced by sand carried in by the same type of currents. Structures such as piers or sea walls, jetties, and navigational inlets may interrupt the movement of sand. Sand can become “trapped” in one place by these types of structures. The currents will, of course, continue to flow, though depleted of sand trapped elsewhere. With significant amounts of sand trapped in the system, the continuing motion of currents (now deficient in sand) results in erosion. In this way, human construction activities that result in the unnatural trapping of sand have the potential to result in significant coastal erosion.

Beach Erosion – Beach erosion occurs when waves and currents remove sand from the beach system. The narrowing of the beach threatens coastal properties and tourism revenue in coastal counties throughout the United States.
Dune Erosion – Dune erosion occurs when waves attack the front face of the sand dune, reducing the volume and elevation of the dune. Erosion of the sand dune leaves coastal properties more vulnerable to future storms.

Overwash – When waves exceed the elevation of the dune, sand is transported across the island in a process known as overwash. When overwash occurs, it often results in significant damage to coastal property.

Inundation and Island Breaching – Inundation occurs when the beach system, or the sandy profile located between the most seaward (primary) dune and the shoreline, is completely submerged under the rising storm surge. Strong currents may carve a channel in the island in a process known as island breaching.

Location
The coastal areas indicated in the map are at highest risk for coastal erosion. This includes the municipalities of Key Biscayne, Miami, Miami Beach, Biscayne Park, Bay Harbor Islands, Bal Harbour, Sunny Isles Beach and Golden Beach.

Extent
25,000 cubic yards of sand.

Impact
Miami-Dade beaches provide storm surge protection and coastal erosion can diminish this natural buffer. Sea turtles can also be impacted as their nesting grounds may be impacted and the beaches are a big draw for tourism. Miami-Dade's shoreline is highly developed with an estimated beachfront value in excess of $13.5 billion, not including infrastructure.

Previous Occurrences
Coastal erosion has been occurring for years, the first study was done in 1930 and a restudy was done in 1961. As a result, from 1975-1982 the USACE implemented the

Miami-Dade County Beach Erosion control and Hurricane Surge Protection project that cost about $48 million. It is estimated for every $1 that is invested in beach nourishment that there is a return of about $700 foreign, primarily tourism impacts. USACE completed a $11.5 million project to widen 3,000 feet stretch of Miami Beach's shore, that was washing away. The shore between 46th and 54th street was expanded by 230 feet to protect the island from storm surge. In August 2017, USACE awarded $8.6 million for Sunny Isles Beach re-nourishment project that began in October 2017 and is set to be completed by May 2018.[24]

September 2017 – Hurricane Irma caused some beach erosion throughout Miami-Dade County. The preliminary damage assessments estimated a loss of 170,000 cubic yards of sand. The money amount in damages has not been determined.

October 2016 – Hurricane Matthew caused minor beach erosion, as it travelled northward parallel to Florida's east coast. Miami-Dade County agencies and municipalities estimated close to $1M in damages due to coastal erosion.

October 2012 – Hurricane Sandy, never made landfall, but paralleled the coast causing coastal erosion with reports of waves up to 10 feet in Miami-Dade. There was no Presidential Declaration for damages within Miami-Dade.[25] Hurricane Sandy, was estimated to cause over $2M in damages to beaches including the following:

- Miami Beach 26th – 29th Street – approximately 10,000 cubic yards
- Miami Beach 44th – 46th Street – approximately 2,500 cubic yards
- Miami Beach 53rd – 56th Street – approximately 3,000 cubic yards
- Miami Beach 63rd – 66th Street – approximately 5,000 cubic yards
- Bal Harbour 99th – 103rd Street – approximately 2,600cubic yards
- Key Biscayne – unknown cubic yards estimated at $1.2M [26]

[24] U.S. Army Corps of Engineers (Jacksonville District) Miami-Dade County Projects: http://www.saj.usace.army.mil/Missions/Civil-Works/Shore-Protection/Dade-County/
[25] Miami-Dade County EOC Activation Archive
[26] Miami-Dade Emergency Operations Center Damages Report

October 2005 – Hurricane Wilma, caused in general only minor beach (Condition I) erosion to the majority of beaches in Miami-Dade but dune erosion (Condition II) occurred at the Bill Baggs Cape Florida State Park.[27] Picture at right shows damage to Bill Baggs. No major structural damage was observed seaward of the Coastal Construction Control Line (CCCL) or within the Coastal Building Zone (CBZ). The majority of the damage near the coast occurred north of Bakers Haulover Inlet. At Cape Florida, a concrete sea-wall and rock revetment sustained level three damage.

September 2005 – Hurricane Rita, caused only minor beach erosion (Condition I) north of Government Cut from Miami Beach to Broward County. Virginia Key also had minor beach erosion (Condition I) but also experienced overtopping, resulting in a wash over deposit of sand. Portions of Key Biscayne experience moderate beach and dune erosion (Condition III) and south of Sonesta Beach Resort had minor dune erosion (Condition II). No structural damages were sustained along the Miami-Dade County coast seaward of the CCCL or within the CBZ during the passage of Hurricane Rita.

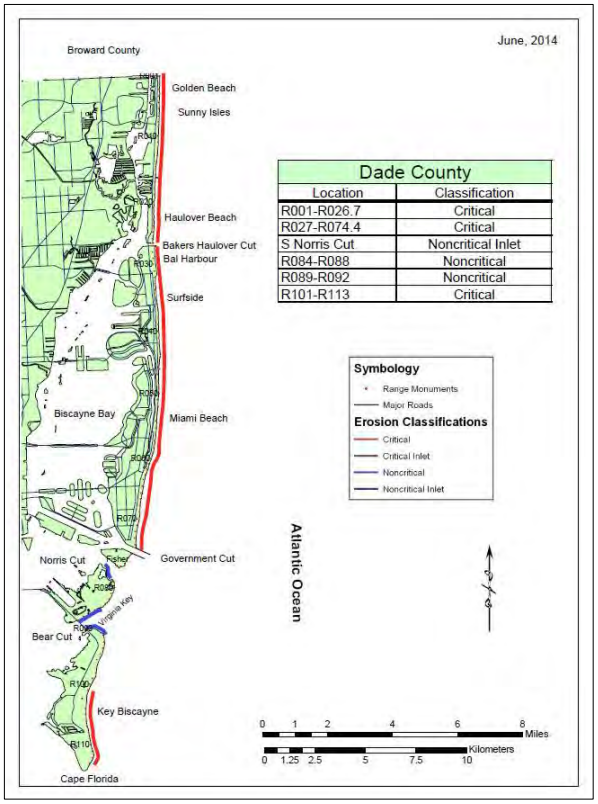
August 2005 – Hurricane Katrina caused minor beach erosion (Condition I) to the north-ern beaches in Miami-Dade. No structural damages were sustained along the Dade County coast seaward of the CCCL or within the CBZ; however, a number of single-family dwellings were flooded on Key Biscayne forcing their evacuation.

Vulnerability

Physical Vulnerabilities

[27] Florida Department of Environmental Protection Post-Storm Reports

The entire built environment (Critical Infrastructure, Key Resources, Building Stock) and natural environment (beaches) are vulnerable to erosion primarily along coastal areas. According to a GIS analysis there are approximately 500 parcels in the property appraiser database that intersect with the CCCL. Though the beaches have been fortified over the years and are much wider than they used to be (see pictures), constant erosion could put structures in these areas at risk. The map to the right shows the status of erosion classifications for Miami-Dade County's coastal areas. Severe erosion can exacerbate storm surge inundation by minimizing the protection offered by beaches and seawalls as they are compromised. Structures such as boardwalks or piers that are have pilings in coastal areas may suffer collapse or complete destruction. Beaches in Miami-Dade, such as South Beach and Biscayne National Park, are cited as the number one reason tourists come to Miami-Dade.



There are two piers in Miami-Dade County that extends into the Atlantic Ocean and Government Cut, the Newport Beach Fishing Pier in Sunny Isles Beach and the South Pointe Pier in Miami Beach. The Newport Beach Pier was rebuilt and reopened in 2013 after being destroyed by Hurricane Wilma in 2005 and the South Point Pier was rebuilt and reopened in 2014 after being closed in 2004 due to deterioration.

Social Vulnerabilities

This hazard does not tend to affect one population over another.

Flooding

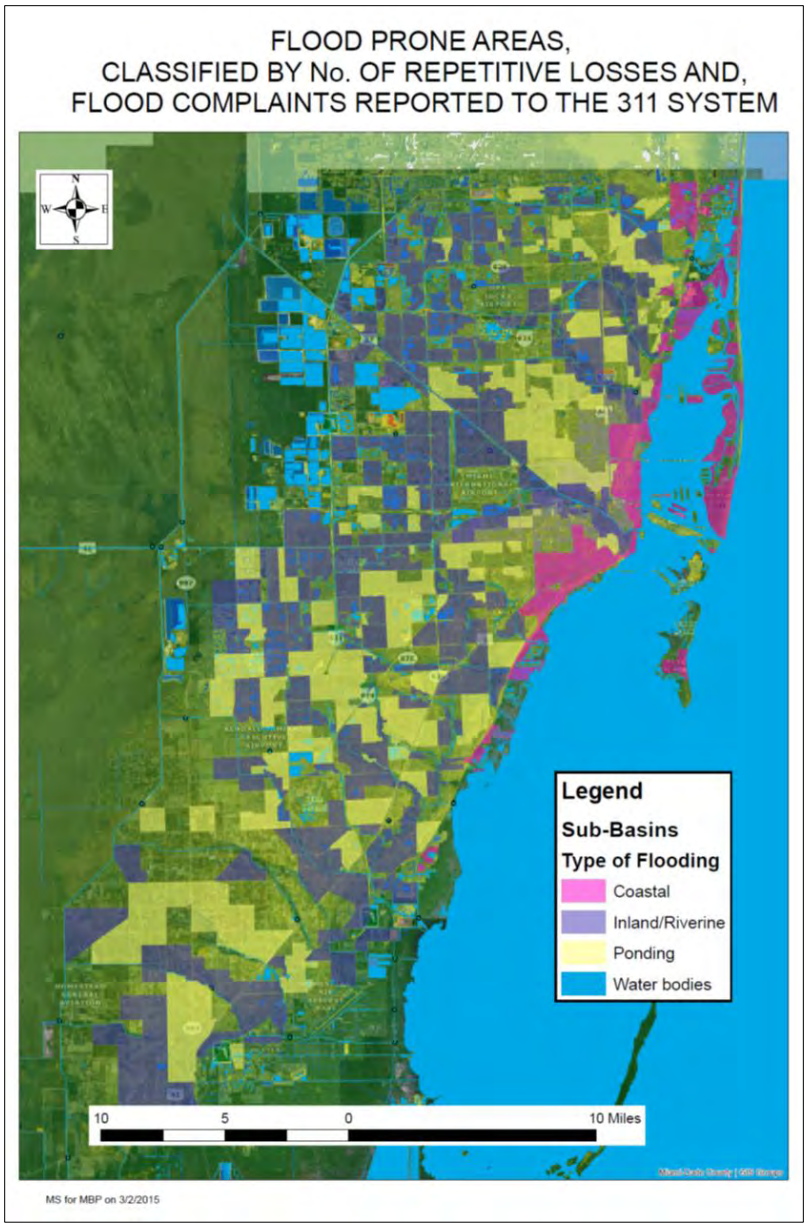
Description

Flooding is an overflowing of water onto land that is normally dry. It can happen during heavy rains, when ocean waves come onshore, and when regular drainage capabilities are compromised. Flooding may happen with only a few inches of water, or it may happen with several feet of water. Flooding can affect many different communities covering several states during a single flooding event. Sunny day flooding and tidal flooding are discussed in the Sea Level Rise section.

TABLE 4. COMMON FLOOD TYPES

Category	Criteria
River or Canal Overbank Flooding	When water levels rise in a river due to excessive rain from tropical systems making landfall, persistent thunderstorms over the same area for extended periods of time
Ponding	When water levels rise in a land locked area, lake or detention basin due to excessive rain from tropical systems making landfall, persistent thunderstorms over the same area for extended periods of time. In South Florida, some of the severe localized thunderstorms frequently exceed 3 inches/hour, exhausting the storage and infiltration capacity of the drainage system.
Coastal Flooding	When a hurricane, tropical storm, or tropical depression produces a deadly storm surge that overwhelms coastal areas as it makes landfall. Storm surge is water pushed on shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the average water level 15 feet or more. The greatest natural disaster in the United States, in terms of loss of life, was caused by a storm surge and associated coastal flooding from the great Galveston, Texas, hurricane of 1900. At least 8,000 people lost their lives.
Inland or Riverine Flooding	When tropical cyclones move inland, they are typically accompanied by torrential rain. If the decaying storm moves slowly over land, it can produce rainfall amounts of 20 to 40 inches over several days. Widespread flash flooding and river flooding can result. In the 1970s, '80s, and '90s, inland flooding was responsible for more than half of the deaths associated with tropical cyclones in the United States. The state of Florida has nearly 121,000 census blocks potentially threatened by riverine flooding, translating to nearly $880 billion in property.
Flash Flooding	A rapid rise of water along a stream or low-lying urban area. Flash flooding occurs within six hours of a significant rain event and is usually caused by intense storms that produce heavy rainfall in a short amount of time. Excessive rainfall that causes rivers and streams to swell rapidly and overflow their banks is frequently associated with hurricanes and tropical storms, large clusters of thunderstorms, supercells, or squall lines. Other types of flash floods can occur from dam or levee failures.

Much of Miami-Dade County is susceptible to localized flooding, particularly during the rainy season of June through October, see the map on next page. One area in particular experiences flooding on a regular basis. Known as the 8½ square mile area, it is located west of the L-31N Levee, between SW 104th Street on the north and SW 168th Street on the south. The mean elevation of Miami-Dade County is relatively flat at 11 feet. The county's flat terrain causes extensive "ponding" due to the lack of elevation gradients to facilitate "run-off". Of Miami-Dade's 1,250,287 acres, 44.62% of that is within the flood plain (557,871 acres). Our community is interlaced with an intricate system of canals that play an integral role in our groundwater saturation levels. When the levels are too high or the canal structures cannot be opened, this can lead to localized flooding during rain events. Agricultural interests can be impacted by levels that are too high or too low. If the control structures release the fresh water at a rapid rate this can also lead to environmental concerns where the fresh water is released. When the control structures fail or are damaged and cannot be operated, alleviation of any localized flooding may require pumping until the canal structures can be re-opened or fixed. Inability to be able to close the salinity structures within the canals could also increase the risk of salt water intrusion during high tide and storm surge. Part 7 of the LMS provide greater detail as to the canal system within the county and the relation to drainage basins.



Extent
Two feet of flooding.

Impact
In 1999 and 2000 Miami-Dade experienced two major flooding incidents, Hurricane Irene and the "No Name Storm", later known as Tropical Storm Leslie once it entered the Atlantic. The damages from the 1999 storm were reported as $100 million in property and $200 million in

crop damages and the 2000 storm caused $440 million in property damage and $500 million in crop damages.[28] Though the flooding in this area was not directly attributed to a failure of the canal system, it was acknowledged that the original drainage system for the Tamiami Canal Basin was not designed to accommodate the population that resided in that area and the water managers recognized a need for major system improvements. A $42 million multi-phase project that included a 900-acre emergency detention basin, and the S-25B Forward Pump Station and S-26 Pump Station and dredging project. This project improved flood protection for 500,000 residents and to 5,000 homes and businesses.[29]

After Hurricane Irene in 1999, areas of Miami-Dade had standing water for long periods of time as is reflected in the following chart.[30]

Area	Estimation of the deepest water	Problems	Estimated time it took for the water to dissipate
East Everglades	2 feet	Impassable roads and minimal home intrusion	1 month
Sweetwater	2 feet	Impassable roads and extensive home intrusion	1 week
West Miami	18 inches	Impassable roads and extensive home intrusion	2 weeks
Homestead (near Harris Field)	2 feet	Impassable roads and some home intrusion	1 week
NW 127 Avenue between Tamiami canal and NW 8th Street	1 foot	Impassable roads	2 weeks
NW 97 Avenue between 25th Street and 30th Street (Vanderbilt Park)	1-2 feet	Severe home intrusion	1 week
NW 41 Street west of the Turnpike	2 feet	Impassable roads	2 weeks

[28] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[29] South Florida Water Management District Tamiami Canal (C-4) Flood Protection Project, July 2008. June 15, 2012
[30] Miami-Dade Emergency Operations Center Activation Archives, After Action Report Hurricane Irene

Previous Occurrences

August 15, 2019 – Thunderstorms produced very heavy rainfall that measured over 7 inches in about 3 hours across portions of Kendall. This heavy rainfall resulted in flash flooding which resulted in water intrusions in numerous structures and impassable roadways.[31]
October 3-7, 2017 – A combination of high tide and heavy rainfall led to flooding across portions of Miami-Dade County. There were reports of coastal and street flooding in the vicinity of Biscayne Blvd from I-395 to NE 30th Street.

August 24-27, 2017 – A tropical wave (Invest 97L) was located near the central Bahamas on August 21st, 2017 and forecast to move northwestward over Florida. Wind shear and dry air hindered further development of this system, but the National Weather Service forecast an excessive rainfall threat for the remainder of the week. Rainfall amounts of 2 to 4 inches, with locally higher amounts possible, were forecast for the region. As a result, a Flood Watch was in effect for Miami-Dade County from August 24th through the 27th.

Between August 24th and 26th, rainfall amounts ranged between 1 and 4 inches through the county. Rainfall amounts of up to 4.5 inches were recorded in the northeast portion of the county between August 26th and 28th. The only significant report received by the National Weather Service was of Okeechobee Road flooded in Hialeah and a spotter in the area recorded 6.62 inches of rain in a single afternoon on August 27th.

[31] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

August 1, 2017 – Tropical Storm Emily formed west of Tampa Bay on July 31st, and moved across central Florida, just north of Lake Okeechobee. On August 1st, Tropical Storm Emily was located over the Atlantic and moving away from Florida. Although no direct impacts were reported for Miami-Dade County, a trough extending from the tropical system was over southeastern Florida. A combination of the frontal boundary and day-time heating, a band of thunderstorms developed off the coast and moved west. At around 2 pm, the band became nearly stationary over Miami Beach, Key Biscayne and Downtown Miami. A Flash Flood Warning was issued at 3:47pm until 9:45pm. Later in the afternoon, the same band of thunderstorms redeveloped over The Redland, Kendall, Palmetto Bay and Pinecrest area. Rainfall amounts in these areas ranged between 4 and 6 inches with isolated amounts between 7 and 8 inches. The rainfall rates of 2 to 4 inches an hour lasted 2 to 3 hours, and around the same time as high tide.

Significant flooding was reported in Miami Beach and the Brickell area in the City of Miami. Vehicles were stalled in streets with up to 2 feet of water and some streets had to be closed due to deep standing water. In Miami Beach, 1 to 2 feet of water was reported on streets in South Beach including Purdy Avenue, West Avenue, Alton Road, Pennsylvania Avenue, Meridian Avenue, Collins Avenue, Washington Avenue and Indian Creek Drive. Water entered business, homes, apartment lobbies and parking garages. In Mary Brickell Village, more than 10 businesses and buildings had 1 to 4 inches of water inside the structures. The picture to the right, shows the 24-hour rainfall estimates between August 1st and 2nd.

June 7, 2017 – An area of low pressure over the Gulf of Mexico, brought tropical moisture across South Florida during the week of June 5th. Widespread showers and thunderstorms, with the potential of heavy rainfall was forecast for the rest of the week. On June 7th, a Flood Watch was issued for Miami-Dade County until 8 pm. Aside from minor flooding on roadways, no significant issued were reported.

December 2015 – A cold front moved into South Florida during on December 3rd, and stalled across the far southern end of the peninsula and upper Florida Keys on December 4th and 5th. Several rounds of heavy rainfall fell across Southern Miami-Dade County. Rainfall amounts near 15 inches fell across Homestead, the Redlands, and western Kendall, with four (4) to eight (8) inches reported across the remainder of Miami-Dade County, most of which occurred on December 5th. This rainfall led to significant flooding in Miami-Dade County with numerous road closures and cars stalling in flood waters. An estimated $1 Million in damage impacted the County's fall and winter crops and also resulted in multiple day closures at Zoo Miami.[32]

[32] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

October 20, 2014 – localized flooding and rainfall amounts of 4 to 7 inches were measured in the south Miami-Dade County communities of Cutler Bay and Palmetto Bay. No additional data was available on this event.

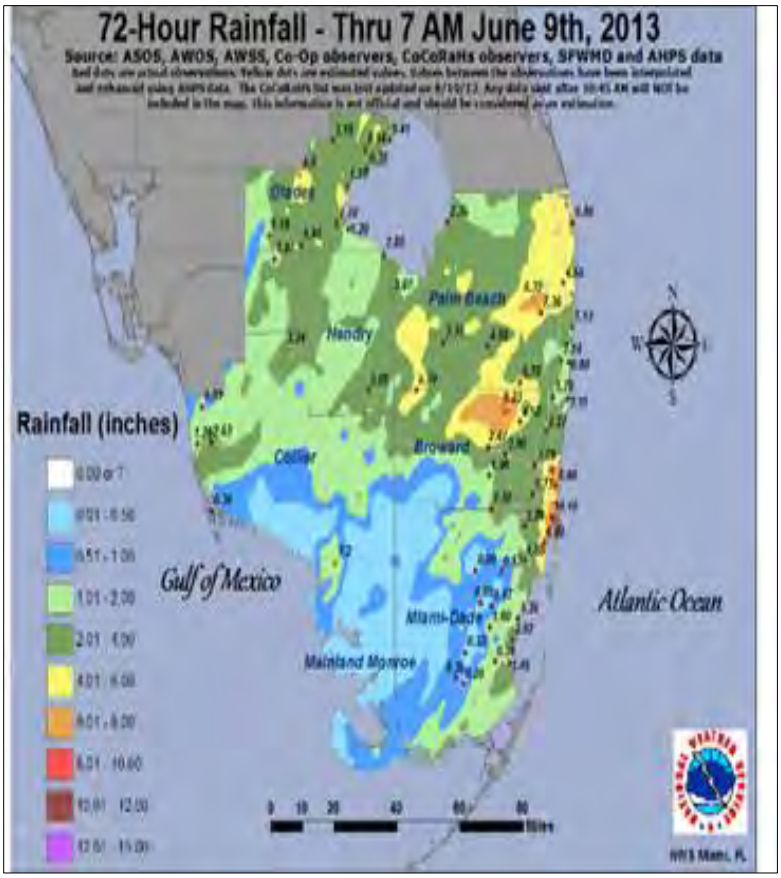
October 2, 2013 – Persistent heavy rains from slow moving showers and thunderstorms produced an isolated area of flash flooding near the Falls Shopping Mall in Miami-Dade County. Measured rainfall amounts were in the range of 7 to 10 inches in the matter of just a few hours, resulting in streets being nearly impassible and the Falls parking lot almost completely under water. Several cars were also reported to have been flooded. The heaviest rainfall total was in Kendall with 10 inches.[33]

July 18, 2013 – An intense thunderstorm moved across the southern portion of Miami Beach with up to four inches of rain falling in a very short time. A second storm moved across the same area later in the afternoon brining the rainfall total for the day at Miami Beach to 6.78 inches. This was not only the daily record but was a daily record for the month of July and this total made it the wettest July on record.[34]

June 18, 2013 – Persistent heavy rains from slow moving showers and thunderstorms produced an isolated area of flash flooding near the Falls Shopping Mall in Miami-Dade County during the late afternoon and early evening. Measured rainfall amounts were in the range of 7 to 10 inches in the matter of just a few hours. The first report of flooding was received at 5:10 PM EDT with streets nearly impassable and the Falls Shopping Mall parking lot almost completely under water. Several cars were also reported to have been flooded. Water entered structures in the Village at the Falls Condo development with the Oak Ridge Residential Community also reporting water intrusion into a vehicle which caused a total loss of the car. Estimated damages for this event totaled $5K.

[33] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[34] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

June 7-8, 2013 – On June 6th, Tropical Storm Andrea made landfall in northern Florida, but southern Florida received torrential rain from the tail of the storm. A South Florida Water Management District rain gauge recorded 13.15 inches of rain in North Miami Beach at 5:53 PM EDT with storm total at the same gauge by 9 PM EDT recording 13.94 inches. Other rainfall reports received were 11.71 inches at the FIU Biscayne Campus in North Miami Beach and 9.89 inches at North Miami/Keystone Point. Over 50 vehicles were reported as being stranded in impassable roads in Aventura and additional roads had similar problems in North Miami and Golden Beach. The picture to the right, shows 72-hour rainfall amounts ending on the morning of June 9th, 2013.

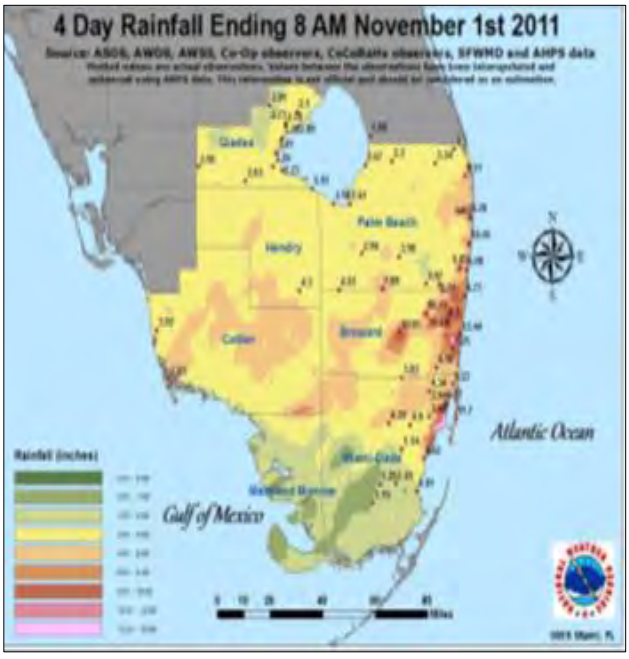


April 30, 2013 – A nearly stationary thunderstorm over Coral Gables produced torrential rainfall over a period of about two hours with rainfall estimates in excess of six inches and an unofficial, measured report just west of Coral Gables of 7.56 inches. Law enforcement reported water was entering garages along Anderson Rd. between Palermo Ave. and Camilo Ave. Water was also reported to be entering businesses along Miracle Mile near Galiano St. A parking lot was flooded along Biltmore Way with water reported to be up to the bottom of car doors.

May 22, 2012 - A band of showers and a few thunderstorms produced torrential rainfall over the far western portions of the Miami-Dade County metropolitan area and moved east through the area from Kendall to Doral and Miami Springs. Miami International Airport recorded 4.40 inches of rainfall between 12:45 and 2 PM EDT. Standing water was reported on numerous streets and several vehicles stalled out in the waters. Other rainfall reports received for this event were 3.64 inches at the National Weather Service Forecast Office on the FIU South Campus and 4.03 inches at Ruben Dario Middle School in Sweetwater. Damage totals for this event are including the event which occurred later in the evening over the same area, estimated at $75K.

A second band of numerous showers and a few thunderstorms accompanied with intense rainfall moved through the same area of Miami-Dade County that received very heavy rainfall earlier in the day. The first significant report of flooding with this event was received at 8:10 PM EDT in Doral by the media stating that the canal running along NW 25th Street near NW 107th Avenue had overflowed its banks and flooded a nearby police department parking lot. Many roads in Doral were under several feet of water, resulting in stalled cars and water entering businesses in warehouse districts. Miami International Airport received an additional three plus inches of rainfall making the total for the calendar day to 9.7 inches which was a record daily amount. This also made it the second wettest day recorded in Miami for the month of May with continuous records back to 1895. Storm total rainfall amounts in the Sweetwater and Doral areas ranged from 8 to 10 inches, with an area of 4 to 7 inches extending from the FIU area to near the Dolphin Mall.

October 28-31, 2011 – The greatest impacts of this rain event were felt in Miami Beach. The areas of heaviest showers and thunderstorms were over Pinecrest, Coral Gables and Coconut Grove and remained over that area for another few hours. This area of rainfall produced anywhere from 6 to 10 inches of rain in only a few hours from Cutler Bay to Coconut Grove, leading to severe street flooding and intrusion of water into dozens of homes across this area. Estimates from the South Florida Water Management District indicate that isolated areas in Coconut Grove may have received in excess of 12 inches during this time span. Portions of Miami-Dade County experienced 3-7 inches of rain in a few hours causing significant street flooding.



October 9, 2011 – Over 10 inches of rainfall was recorded at the West Kendall/Tamiami Airport. The graphic illustrates the rainfall amounts for a 48- hour period.

June 5, 2009 – Severe flooding affected the Mid and South Beach sections of Miami Beach as well as downtown Miami from a nearly stationary thunderstorm. A total of nine (9) inches fell at Miami Beach, most of this occurred in less than three (3) hours. This caused as much as three feet of standing water on streets and garages on South Beach, resulting in many vehicles becoming stalled on streets and road closures across the area. Cars were also seen floating down Michigan Avenue at 11th Street. A number of condominium buildings along West Avenue had up to five (5) feet of water in the parking garages, resulting in dozens of cars being towed. Significant flooded was also reported in downtown Miami in the Omni area. Also at the Fountainbleau Hotel in Miami Beach, heavy rains caused an eight-foot hole to open up in the lobby's ceiling, causing ankle deep water to spread from the lobby into a nightclub.[35]

October 5, 2008 – Heavy rainfall of two to three inches per hour occurred at Miami Beach and Key Biscayne. Several roads were closed in these areas with two to three feet of standing water for several hours.[36]

September 28, 2004 – Extensive street flooding occurred in Kendall with depths of up to 18 inches. There was minor flooding of homes with an estimated property damage of $50,000.[37]

December 10, 2000 – A stalled front contributed to producing up to nearly 14 inches of rain in five hours over portions of southern Miami-Dade County. Rainfall amounts in Southern Miami-Dade ranged from three inches at Homestead General Airport to 13.9 inches at Homestead Air Reserve Base. Other locations in the county received up to 10 inches of rain. Potato and corn crops were 80% destroyed, resulting in about $13 million in crop damages.[38]

[35] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[36] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[37] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[38] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

October 3, 2000 – A low-pressure system known as the "No Name Storm", later to become Tropical Storm Leslie, developed off the west coast of Cuba, and headed toward South Florida (DR-1345). Water managers and weather officials closely tracked the storm, and preemptive measures were taken to start moving water out of the canals. Weather forecasts called for 4-8 inches of rainfall from this storm. During that afternoon and evening, as the system moved northeastward over central Florida, a stationary band of thunderstorms extended through southwest Miami-Dade. This resulted in the accumulation of 14 to18 inches of rainfall over a linear area in the center of the county.[39] Equally as unfortunate were residents and businesses that experienced a similar result as in Irene.

October 1999 – Hurricane Irene (DR-1306) developed and started a path towards South Florida. Initial projections were correct in stating the hurricane would impact the west coast of Florida, and Irene traveled through the state and, on October 15, passed just to the west of Miami-Dade County. Although the hurricane did not pass directly through the county and no exceptionally high winds were experienced, the heavy rainfall associated with this storm did hit Miami-Dade County, and the impacts were severe. Some roads were impassible for weeks, electricity was out in certain areas, and residents and businesses suffered heavy losses.

Vulnerability

Physical Vulnerabilities

The entire built environment (Critical Infrastructure, Key Resources, Building Stock) may be vulnerable to flooding especially in low lying, storm surge planning zones, areas close to canals and structures that were built prior to flood plain regulations. Structures in areas where there has been repetitive losses and no mitigation may also be at a higher risk but past flooding events do not necessarily indicate future flooding problems. Part 7 provides additional analysis of residential structures by date of flood regulations within Miami-Dade County.

[39] National Hurricane Center, Tropical Storm Leslie (Subtropical Depression One) (AL162000)

Below is a chart showing how many structures within each jurisdiction are within FEMA Flood Zones.

TABLE 5. NUMBER OF BUILDINGS BY JURISDICTION IN FEMA FLOOD ZONES

Jurisdiction	A	AE	AH	D	VE	X	XE
Aventura		24,149				52	31
Bal Harbour		738				955	2250
Bay Harbor		2576					
Biscayne Park		991				42	42
Coral Gables		2770	1209		58	13209	1466
Cutler Bay		8840	1871			3886	
Doral		93	3768			16746	
El Portal		6	97			566	92
Florida City	3	2	1097			396	817
Golden Beach		262				98	
Hialeah Gardens		133	271			5802	
Hialeah		1304	18513			36496	
Homestead		222	8824			9098	746
Indian Creek Village		33				4	1
Key Biscayne		7056					
Medley		19	251			578	
Miami Beach		51049				4381	123
Miami Gardens		12103				9083	8638
Miami Lakes	0	8317				1263	
Miami Shores		843	3		19	2470	552
Miami Springs		11	2029			2125	21
Miami		43094	6441		3897	68535	2215
North Bay Village		3872					
North Miami Beach		5650				7212	653
North Miami		8190			261	5637	1995
Opa-locka		714	543			1319	1275
Palmetto Bay		4701			41	3590	80
Pinecrest		2168	268			3563	260
South Miami		2	784			3660	
Sunny Isles Beach		11351			1	7647	0
Surfside		1560				1878	
Sweetwater		1	582			367	
Virginia Gardens			122			445	86
West Miami						960	768
Unincorporated	582	44750	105,976	2	28	169059	20053
Total:	585	247,570	152,649	2	4305	381122	42164

Heavy rainfall events tend to be measured by the amount of rain during a certain duration to give you what would equate to the chances of this type of storm which is typically categorized by terminology such as a 100 year or 500-year storm.

To help local communities determine if a rain event is considered significant the following site and chart from the National Oceanic and Atmospheric Administration (NOAA) Hydro meteorological Design Studies Center maintains the Precipitation Frequency Data Server (PFDS) which is a point-and-click interface developed to deliver NOAA Atlas 14 precipitation frequency estimates and associated information. To determine the amounts and rates of rain that could create a various internal rain event (e.g. 100 year or 500 year) this website provides local information.
http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=fl

Using a location in Miami-Dade County with a 7-foot elevation, the following chart depicts the rainfall amounts per an interval of time that could determine if a significant rain event has occurred.

Social Vulnerabilities

People who live in areas prone to flooding and whom may be uninsured or underinsured are at greatest risk. The cost of insurance may be prohibitive and people who live outside of a flood zone may believe they are not at risk. People who rent properties may not be aware of their flood risk as it may not be disclosed by the owner or they may not know the history of the area.

NOAA Atlas 14, Volume 9, Version 2
Location name: Miami, Florida, US*
Latitude: 25.8204°, Longitude: -80.2930°
Elevation: 7 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.578 (0.471–0.713)	0.661 (0.538–0.816)	0.797 (0.647–0.988)	0.911 (0.735–1.13)	1.07 (0.833–1.38)	1.19 (0.907–1.56)	1.32 (0.967–1.77)	1.44 (1.02–1.99)	1.61 (1.09–2.29)	1.74 (1.15–2.52)
10-min	0.846 (0.690–1.04)	0.967 (0.788–1.20)	1.17 (0.948–1.45)	1.33 (1.08–1.66)	1.57 (1.22–2.01)	1.75 (1.33–2.28)	1.93 (1.42–2.58)	2.11 (1.49–2.92)	2.36 (1.60–3.36)	2.54 (1.68–3.69)
15-min	1.03 (0.841–1.27)	1.18 (0.961–1.46)	1.42 (1.16–1.76)	1.63 (1.31–2.03)	1.91 (1.49–2.46)	2.13 (1.62–2.78)	2.35 (1.73–3.15)	2.57 (1.81–3.56)	2.87 (1.95–4.09)	3.10 (2.05–4.50)
30-min	1.58 (1.29–1.95)	1.81 (1.48–2.24)	2.20 (1.79–2.73)	2.52 (2.04–3.14)	2.97 (2.32–3.82)	3.32 (2.53–4.33)	3.67 (2.70–4.92)	4.02 (2.83–5.56)	4.49 (3.04–6.40)	4.85 (3.20–7.04)
60-min	2.09 (1.71–2.58)	2.39 (1.95–2.96)	2.92 (2.37–3.62)	3.39 (2.73–4.22)	4.07 (3.20–5.30)	4.64 (3.55–6.11)	5.24 (3.87–7.08)	5.87 (4.15–8.18)	6.76 (4.60–9.69)	7.47 (4.93–10.8)
2-hr	2.60 (2.13–3.19)	2.97 (2.43–3.65)	3.64 (2.97–4.48)	4.25 (3.45–5.26)	5.18 (4.10–6.73)	5.96 (4.60–7.84)	6.81 (5.06–9.18)	7.72 (5.51–10.7)	9.03 (6.19–12.9)	10.1 (6.70–14.5)
3-hr	2.89 (2.37–3.53)	3.29 (2.70–4.03)	4.05 (3.32–4.97)	4.78 (3.89–5.89)	5.92 (4.73–7.72)	6.91 (5.36–9.10)	8.00 (5.98–10.8)	9.20 (6.60–12.8)	10.9 (7.53–15.6)	12.4 (8.24–17.8)
6-hr	3.39 (2.80–4.12)	3.90 (3.22–4.74)	4.88 (4.01–5.95)	5.84 (4.77–7.15)	7.36 (5.93–9.59)	8.71 (6.80–11.4)	10.2 (7.69–13.7)	11.9 (8.57–16.4)	14.3 (9.91–20.3)	16.3 (10.9–23.2)
12-hr	3.96 (3.29–4.77)	4.63 (3.84–5.59)	5.91 (4.88–7.15)	7.13 (5.86–8.67)	9.04 (7.30–11.7)	10.7 (8.40–13.9)	12.5 (9.49–16.7)	14.6 (10.6–20.0)	17.5 (12.2–24.6)	19.9 (13.4–28.2)
24-hr	4.62 (3.85–5.53)	5.47 (4.56–6.56)	7.04 (5.85–8.47)	8.51 (7.03–10.3)	10.8 (8.73–13.8)	12.7 (10.0–16.4)	14.8 (11.3–19.6)	17.1 (12.5–23.3)	20.4 (14.4–28.6)	23.2 (15.8–32.6)
2-day	5.42 (4.54–6.45)	6.40 (5.36–7.63)	8.19 (6.84–9.79)	9.85 (8.17–11.8)	12.4 (10.1–15.7)	14.5 (11.5–18.6)	16.8 (12.9–22.1)	19.4 (14.2–26.2)	23.0 (16.2–31.9)	25.9 (17.8–36.3)
3-day	6.03 (5.07–7.15)	7.06 (5.93–8.37)	8.91 (7.48–10.6)	10.6 (8.83–12.7)	13.2 (10.8–16.6)	15.4 (12.2–19.6)	17.8 (13.6–23.2)	20.3 (15.0–27.3)	24.0 (17.0–33.2)	27.0 (18.5–37.6)
4-day	6.59 (5.55–7.79)	7.60 (6.40–8.99)	9.43 (7.91–11.2)	11.1 (9.28–13.3)	13.7 (11.2–17.2)	15.9 (12.6–20.2)	18.2 (14.0–23.8)	20.8 (15.4–27.9)	24.5 (17.4–33.7)	27.5 (18.9–38.2)
7-day	8.08 (6.83–9.50)	8.97 (7.58–10.6)	10.6 (8.96–12.6)	12.2 (10.2–14.5)	14.7 (12.1–18.3)	16.8 (13.4–21.2)	19.1 (14.8–24.8)	21.7 (16.1–28.9)	25.4 (18.2–34.8)	28.4 (19.7–39.3)
10-day	9.34 (7.92–10.9)	10.2 (8.67–12.0)	11.9 (10.1–14.0)	13.5 (11.3–15.9)	16.0 (13.1–19.8)	18.1 (14.5–22.7)	20.4 (15.8–26.3)	23.0 (17.1–30.5)	26.7 (19.1–36.4)	29.7 (20.7–40.9)
20-day	12.7 (10.8–14.7)	14.1 (12.0–16.4)	16.4 (13.9–19.2)	18.5 (15.6–21.7)	21.4 (17.6–26.0)	23.7 (19.1–29.3)	26.2 (20.3–33.2)	28.7 (21.4–37.5)	32.2 (23.2–43.4)	35.0 (24.5–47.8)
30-day	15.4 (13.2–17.9)	17.3 (14.8–20.1)	20.4 (17.3–23.7)	22.9 (19.4–26.7)	26.2 (21.5–31.6)	28.8 (23.1–35.3)	31.4 (24.4–39.4)	33.9 (25.3–43.9)	37.2 (26.8–49.7)	39.7 (27.9–54.1)
45-day	19.1 (16.4–22.0)	21.5 (18.4–24.8)	25.3 (21.6–29.3)	28.3 (24.0–32.9)	32.2 (26.3–38.3)	35.0 (28.1–42.4)	37.6 (29.3–46.9)	40.2 (30.1–51.6)	43.3 (31.3–57.4)	45.5 (32.2–61.8)
60-day	22.3 (19.2–25.7)	25.1 (21.5–28.9)	29.3 (25.1–33.9)	32.7 (27.8–37.9)	36.9 (30.2–43.8)	39.9 (32.1–48.2)	42.6 (33.2–52.9)	45.2 (33.9–57.8)	48.2 (34.8–63.6)	50.2 (35.6–68.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Hurricanes and Tropical Storms

Description

A tropical cyclone is a rotating, organized system of clouds and thunderstorms that develop over subtropical or tropical waters with lowered pressure and a closed low-level circulation. These cyclones have a counterclockwise rotation and depending on their maximum sustained winds they are classified as a tropical depression, tropical storm or hurricane. Tropical cyclones that contain all the characteristic previously mentioned and maximum sustained surface winds between 23-38 mph are classified as a tropical depression, when it reaches winds between 39-73mph, it is called a tropical storm. Once the maximum sustained winds reach 74 mph, it is then a hurricane. Tropical cyclones that pose a threat to Miami-Dade County usually form during the Atlantic hurricane season that starts on June 1st and goes through November 30th.

The term hurricane is used for tropical cyclones in the Northern Hemisphere and east of the International Dateline. Hurricanes are considered one of the most damaging and deadly weather events that occur in the United States, with violent winds, waves reaching heights of 40 feet, torrential rains, flooding and tornadoes. According to the National Oceanic and Atmospheric Administration (NOAA), there are an average of 11 tropical storms that form over the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico regions each year, and on average 6 of the tropical storms develop into hurricanes. The United States experiences a hurricane strike on land about once every year and a half. The strike zone can potentially extend anywhere from Maine and south to Texas. Hurricanes are further classified according to their wind speeds.

Winds

The Saffir-Simpson Hurricane Wind Scale was first developed in the early 1970s to categorize hurricanes by intensity. The scale used to include storm surge projections and central pressure by category of storm, but it was determined that there was not a direct correlation between wind speed, storm surge heights and central pressure. For example, hurricanes with wind fields which are very large in size can produce storm surge heights that are much higher than is average for a given category. Conversely, very compact hurricanes, with strong maximum sustained winds and a significant low central pressure can produce surges substantially lower than what was included in the original Saffir-Simpson Scale.

Today, the Saffir-Simpson Hurricane Wind Scale is a 1 to 5 categorization based on the hurricane's intensity at the indicated time. The scale provides examples of the type of damage and impacts in the United States associated with winds of the indicated intensity. In general, damage rises by about a factor of four for every category increase. Miami-Dade has experience sustained winds of up 150 mph and storm surge of 16.9 feet at the Burger King International Headquarters during Hurricane Andrew in 1992.

Storm Surge

From a hurricane, storm surge is often the greatest threat to life and property along the coast. Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tide. Storm surge is produced when the force of the winds moving around the storm push water towards the shore and this surge can travel several miles inland.[40] Predictions for storm surge are made through a variety of means, including the Sea, Lake and Overland Surges from Hurricanes (SLOSH) models.

Storm surge inundation is modeled in two zones: the high-velocity zone where wave action and debris can severely damage structures, and farther inland, where the primary concern is flooding as opposed to structural damage. Storm surge can create flooding that can destroy buildings and carry debris miles inland, into canals and rivers, the intercostal waterways and out to sea. The water can also pool in low-lying areas impeding response and recovery activities.

Damages associated with storm surge include but are not limited to:

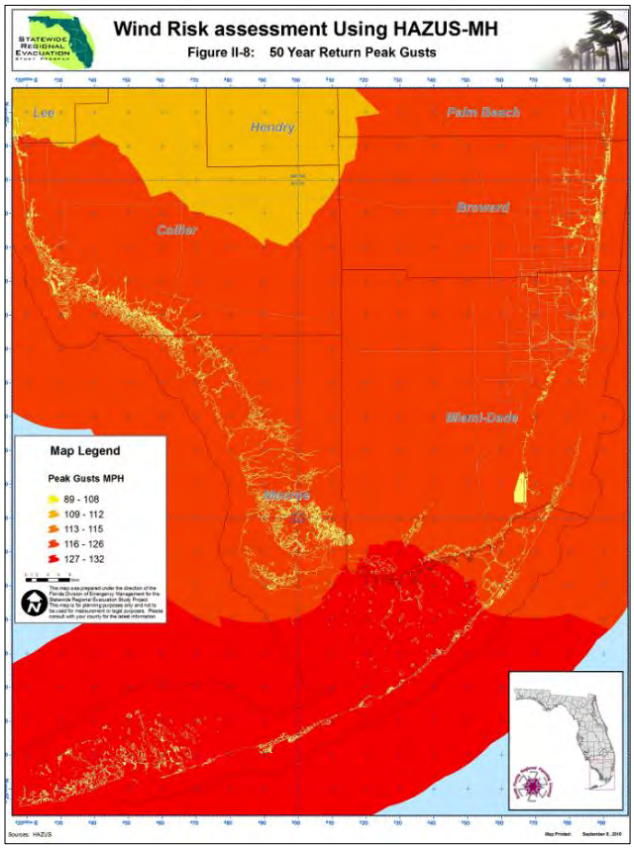
- Extreme flooding in coastal areas
- Inundation along rivers and canals
- Beach erosion
- Undermining of foundations of structures or roadways along the coastline (erosion or scour)
- In confined harbors and rivers, severely damaged marinas and boats
- Sunken vessels or underwater hazards in navigable waterways

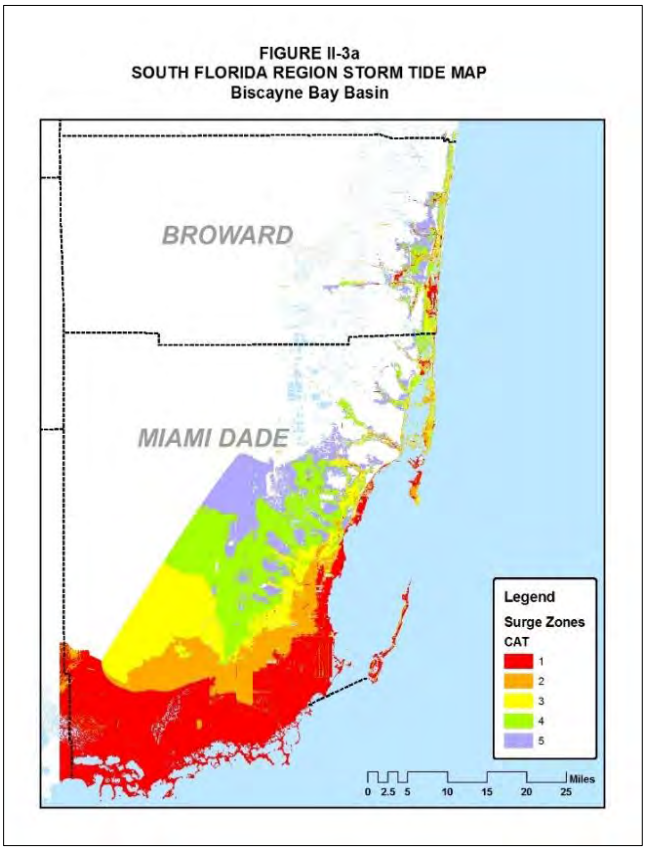
Location

Hurricanes and tropical storms can impact the entire county. The following two maps show the location for winds and storm surge based model runs by HAZUS and SLOSH.

[40] Source: National Hurricane Center, Storm Surge Overview

FIGURE 5. 50 YEAR RETURN FOR MAXIMUM SUSTAINED WINDS (LEFT) & POTENTIAL STORM SURGE FOR STORMS MODELED WITHIN THE BISCAYNE BAY BASIN (RIGHT)





Extent

Category 5 Hurricane with storm surge of 16.9 feet.

Impact

Historical observations from types of impacts and damages associated with the winds of hurricanes are included in Table 6. All of these have been experienced in Miami-Dade.

TABLE 6. POTENTIAL IMPACTS OF HURRICANES BY CATEGORY OF STORM

Potential Impacts by Category of Storm	
Category 1 Very Dangerous Winds	• People, livestock, and pets struck by flying or falling debris could be injured or killed. • Extensive damage to power lines and poles will likely result in power outages that could last a few to several days. • Pre-1994 mobile homes may be damaged or destroyed, especially if they are not anchored properly • Damage to newer mobile homes anchored properly involving the removal of shingle or metal roof coverings, loss of vinyl siding and damage to carports, sunrooms or lanais • Poorly constructed frame homes may have major damage – loss of roof covering, damage to gable ends and removal of porch coverings and awnings • Unprotected windows may be broken by flying debris • Masonry chimneys can be toppled • Well-constructed frame homes could have damage to roof shingles, vinyl siding, soffit panels and gutters. • Failure of aluminum, screened-in, swimming pool enclosures can occur. • Some apartment building and shopping center roof coverings could be partially removed. • Industrial buildings can lose roofing and siding especially from windward corners, rakes, and eaves. • Failures to overhead doors and unprotected windows will be common. • Windows in high-rise buildings can be broken by flying debris. • Occasional damage to commercial signage, fences, and canopies. • Large branches of trees will snap and shallow rooted trees can be toppled.

Potential Impacts by Category of Storm	
Category 2 Extremely Dangerous Winds	• There is a substantial risk of injury or death to people, livestock, and pets due to flying and falling debris. • Near-total power loss is expected with outages that could last from several days to weeks. • Potable water could become scarce as filtration systems begin to fail. • Older (mainly pre-1994 construction) mobile homes have a very high chance of being destroyed and the flying debris generated can shred nearby mobile homes. • Newer mobile homes can also be destroyed. • Poorly constructed frame homes have a high chance of having their roof structures removed especially if they are not anchored properly. • Unprotected windows will have a high probability of being broken by flying debris. • Well-constructed frame homes could sustain major roof and siding damage. • Failure of aluminum, screened-in, swimming pool enclosures will be common. • There will be a substantial percentage of roof and siding damage to apartment buildings and industrial buildings. • Unreinforced masonry walls can collapse. • Windows in high-rise buildings can be broken by flying debris. • Commercial signage, fences, and canopies will be damaged and often destroyed. • Many shallowly rooted trees will be snapped or uprooted and block numerous roads.
Category 3 Devastating Damage	• There is a high risk of injury or death to people, livestock, and pets due to flying and falling debris • Electricity and water will be unavailable for several days to a few weeks after the storm passes. • Nearly all older (pre-1994) mobile homes will be destroyed. • Most mobile homes will sustain severe damage with potential for complete roof failure and wall collapse. • Poorly constructed frame homes can be destroyed by the removal of the roof and exterior walls. Unprotected windows will be broken by flying debris. • Well-built frame homes can experience major damage involving the removal of roof decking and gable ends. • There will be a high percentage of roof covering and siding damage to apartment buildings and industrial buildings. • Isolated structural damage to wood or steel framing can occur. • Complete failure of older metal buildings is possible, and older unreinforced masonry buildings can collapse. • Most commercial signage, fences, and canopies will be destroyed. • Many trees will be snapped or uprooted.

Potential Impacts by Category of Storm	
Category 4 Catastrophic Damage	• There is a very high risk of injury or death to people, livestock, and pets due to flying and falling debris. • Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. • Most of the area will be uninhabitable for weeks or months. • Nearly all older (pre-1994) mobile homes will be destroyed. • A high percentage of newer mobile homes also will be destroyed. • Poorly constructed homes can sustain complete collapse of all walls as well as the loss of the roof structure. • Well-built homes also can sustain severe damage with loss of most of the roof structure and/or some exterior walls. • Extensive damage to roof coverings, windows, and doors will occur. • Large amounts of windborne debris will be lofted into the air. Windborne debris damage will break most unprotected windows and penetrate some protected windows. • There will be a high percentage of structural damage to the top floors of apartment buildings. • Steel frames in older industrial buildings can collapse. • There will be a high percentage of collapse to older unreinforced masonry buildings. • Most windows will be blown out of high-rise buildings. • Nearly all commercial signage, fences, and canopies will be destroyed. • Most trees will be snapped or uprooted and power poles downed.

Potential Impacts by Category of Storm	
Category 5 Catastrophic Damage	• People, livestock, and pets are at very high risk of injury or death from flying or falling debris, even if indoors in mobile homes or framed homes • Power outages will last for weeks to possibly months. • Long-term water shortages will increase human suffering. • Most of the area will be uninhabitable for weeks or months. • Almost complete destruction of all mobile homes will occur, regardless of age or construction. • A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. • Extensive damage to roof covers, windows, and doors will occur. • Large amounts of windborne debris will be lofted into the air. • Windborne debris damage will occur to nearly all unprotected windows and many protected windows. • Significant damage to wood roof commercial buildings will occur due to loss of roof sheathing. • Complete collapse of many older metal buildings can occur. • Most unreinforced masonry walls will fail which can lead to the collapse of the buildings. • A high percentage of industrial buildings and low-rise apartment buildings will be destroyed. • Nearly all windows will be blown out of high-rise buildings resulting in falling glass. • Nearly all commercial signage, fences, and canopies will be destroyed. • Nearly all trees will be snapped or uprooted and power poles downed.

Source: National Hurricane Center

Previous Occurrences

October 2017 – Tropical Storm Philippe was a disorganized storm as it moved across the Florida Straits on October 28th, making landfall in extreme South Florida along the Florida Bay on October 29th as a minimal tropical storm.

The storm brought widespread rainfall across all of South Florida, with average amounts of 2 to 4 inches across the region. The wind impacts of Philippe were limited to the east coast of South Florida. This storm produced maximum sustained winds generally between 25 and 35 mph across Miami-Dade County on October 28th. A peak gust of 41 mph was measured at Miami International Airport. Minor tree damage was reported across the area, with no significant property damage reported.[41]

[41] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

September 2017 – On August 30th, Tropical Storm Irma formed over the eastern Atlantic Ocean with maximum sustained winds of 50 mph. As the day progressed, Tropical Storm Irma continued strengthening and was expected to become a hurricane the following day. Irma's rapid intensification began in the early morning of August 31st, when the maximum sustained winds increased from 70 mph to 115 mph in less than 12 hours. Hurricane Irma, now a category 3 storm, continued its track across the Atlantic Ocean, as it headed towards the Leeward Islands. In the afternoon of September 4th, Miami-Dade County was within the 5-day forecast cone of a major hurricane. Due to the potentially catastrophic hurricane heading to Miami-Dade County, Miami-Dade OEM initiated preparations and activated the Emergency Operations Center (EOC) on September 5th. By the evening, Miami-Dade County was within the 3-day forecast cone.

In the morning of September 5th, less than 300 miles east of the Leeward Islands, Irma became a category 5 hurricane with maximum sustained winds of 175 mph. Catastrophic Hurricane Irma reached its peak strength later that day, with maximum sustained winds of 185 mph. For the next couple of days, Hurricane Irma wreaked havoc in Barbuda, Saint Barthélemy, Saint Martin, Anguilla and the Virgin Islands at its peak intensity causing catastrophic damage. Hurricane Irma continued its course through the Caribbean causing widespread damage in Puerto Rico, Hispaniola, Turks and Caicos, the Bahamas and Cuba. At 11pm on September 7th, Miami-Dade County was under a Hurricane Warning and Storm Surge Warning.

On Sunday, September 10th, category 4 Hurricane Irma made its first Florida landfall at Cudjoe Key in the lower Florida Keys at 9:10am. Hurricane Irma continued its northward track and made its second Florida landfall at Marco Island at 3:35pm as a category 3 hurricane. Widespread wind damage, heavy rainfall and storm surge was reported throughout Miami-Dade County. Hurricane and tropical storm force sustained winds were measured throughout the county and resulted in mostly tree damage. Rainfall amounts from September 9th through September 11th were between 5 and 10 inches. Recorded storm surge on Biscayne Bay (from south of Miami to Homestead) was between 4 and 6 feet, and on the east coast was between 2 and 4 feet. Also, an estimated $255 M in agricultural damage was reported in the county. Hurricane Irma was the first hurricane to make landfall in South Florida since Hurricane Wilma in 2005.

October 2016 – In the morning of September 28th, 2016, Tropical Storm Matthew formed over the Windward Islands with a high potential of strengthening. Matthew continued a westward track through the Caribbean and strengthening into a hurricane the next day on September 29th. On the forecast track, Hurricane Matthew would move west followed by a northwest turn and a then continue a northward track through western Haiti and eastern Cuba. On the evening of September 30th, Miami-Dade County was within the 5-day forecast cone of Category 5 Hurricane Matthew. Two days later, Miami-Dade County was not within the cone, but Miami-Dade OEM continued to be vigilant due to the storm's track potential to shift west. On Monday, October 3rd, the forecast track took a drastic westward shift putting Miami-Dade County within the 3-day forecast cone of a major hurricane. The following day, Miami-Dade County was under a Tropical Storm Warning.

Ultimately, the county was affected by the outside bands of Hurricane Matthew, as it continued its paralleled track along the Florida east coast. Rainfall amounts of up to 1.5 inches were recorded throughout the County. Although, no significant damage was reported, Miami-Dade agencies and municipalities estimated $10M for public assistance eligible categories.

August 2016 – On August 18th, 2016 a tropical disturbance off the coast of Africa was designated as Invest 99L. Invest 99L continued its track across the Atlantic Ocean and on August 23rd, the system was located east of the Lesser Antilles. At this time, the system was posing a threat for South Florida with a high percent chance of development within the following 5 days. The disturbance was forecasted to mature into a stronger tropical cyclone, but as the system continued its west northwest track through a hostile atmospheric environment which hindered its development. Ultimately, the disturbance continued its trajectory south of the lower Florida Keys, evading Miami-Dade County.
No significant impacts were recorded for Miami-Dade County. Invest 99L eventually developed into Hurricane Hermine and made landfall in the Florida Panhandle on September 2nd, 2016.

August 2015 – On the evening of August 24th, 2015, an area of low pressure located over the Atlantic Ocean developed into Tropical Storm Erika. The evening of August 25th, the tropical system was forecasted to make landfall in the county as a Category 1 hurricane on the Saffir-Simpson Hurricane Wind Scale. Miami-Dade County was inside the storm's track until the morning of August 29th, when the storm was downgraded to a trough of low pressure after its interaction with Hispaniola. Due to the trailing moisture, local heavy rains and gusty winds were forecasted to spread across portions of South Florida for the following days.[42] A Flood Watch was in effect and tidal flooding along the Atlantic coast was possible until Monday, August 31st.[43] FPL reported about 3,300 customers without power. Ultimately, no public protective actions were taken and no significant impacts were reported throughout the county.

August 2012 – Tropical Storm Isaac moved across the Florida Keys and Miami-Dade experienced a storm surge measured at 1.3 feet and sustained winds measuring 29 mph at the Miami International Airport. In a 72-hour period portions of the county received between 2-10 inches of rain. Wind damage in southern Florida was minor and mostly limited to downed trees and power lines.[44] Approximately 26,000 customers lost power in Miami-Dade. There was no Presidential Declaration for damages within Miami-Dade. Miami-Dade agencies and municipalities estimated $5.5 M for public assistance eligible categories.[45]

[42] National Hurricane Center, Tropical Storm Erika Advisory Archive (AL052015)
[43] Miami-Dade County EOC Activation Archive, Situation Report #1
[44] National Hurricane Center, Tropical Cyclone Report Hurricane Isaac (AL092012)
[45] Miami-Dade County EOC Activation Archive

October 2012 – Hurricane Sandy, never made landfall locally, but paralleled the coast causing coastal erosion with reports of waves up to 10 feet in Miami-Dade. There was no Presidential Declaration for damages within Miami-Dade. It was estimated by the Miami-Dade Regulatory and Economic Resources Department that there was approximately $2M in damages from coastal erosion.[46]

October 2005 – Hurricane Wilma, made landfall in southwestern Florida on October 24th as a Category 3, crossing Florida in less than 5 hours.[47] Wilma caused structural damage from hurricane force winds out to the west and southwest. Widespread light to moderate wind damage was sustained throughout the county. In downtown Miami, numerous high-rise office buildings were severely impacted by hurricane force winds. The Miami Metromover was closed due to falling debris from a neighboring high rise building. Power outages occurred county-wide for three weeks due to damaged power lines and utility poles. Power losses to service station fuel pumps caused a major but temporary impact on recovery operations. Wind damage to trees and shrubs (native and ornamental) was extensive throughout the county. Ficus trees and Australian Pines sustained the majority of the tree damage, while palms appeared to fare well. Throughout the Biscayne Bay area there was significant marine damage. Many boats were blown up into bulkheads, docks, and overpasses. Some vessels were freed from their moorings and deposited hundreds of feet from where they were originally docked. The Port of Miami sustained damage to roughly 2,000 feet of bulkheads and a cruise terminal lost a section of its roof. The Sunny Isles Marina dry storage facility collapsed, damaging close to 300 vessels. Numerous docks and pilings throughout the county were severely damaged by the battering of vessels that were moored to them. On the barrier islands, there was sporadic minor to moderate wind damage to ocean front high-rise condominiums, low-rise motels, commercial buildings, and single-family dwellings. The typical wind damages were broken windows, damaged hurricane shutters, and minor roofing losses.

August 2005 – Hurricane Katrina, made landfall in Miami-Dade County on August 25th. Katrina caused flooding to about 50 single-family dwellings from a measured 12.25 inches of rain, but no major structural damage was reported in south Miami-Dade. Adjacent Homestead to the south, storm water flooding was also sustained in Florida City. In addition, an overpass under construction in Miami collapsed onto the Dolphin Expressway between 87th and 97th Avenues. Katrina did cause significant tree damage at Cape Florida State Park.

October 1999 – Hurricane Irene, made landfall in Miami-Dade County on October 15th. The category one intensity hurricane moved northeast across central Miami-Dade County before exiting to the Atlantic in Palm Beach County. Heavy rains and sustained winds of

[46] Miami-Dade County EOC Activation Archive
[47] National Hurricane Center, Tropical Cyclone Report Hurricane Wilma

tropical storm force caused widespread flooding and power outages in the Miami metropolitan area. Rainfall totals in southeast Florida ranged from 6 to 17 inches. The highest recorded wind gust was 85mph at the Homestead Air Reserve Base.[48]

August 1992 – Hurricane Andrew, which was reclassified as a Category 5 in 2002, made landfall in Miami-Dade County on August 24th, 1992. Damage was estimated at $25 billion, with 25,524 homes destroyed and 101,241 damaged. 90% of all mobile homes in the southern portion of the county were totally destroyed. The Miami Herald reported $.5 billion losses for boats. The powerful seas extensively damaged offshore structures, including the artificial reef system.[49]

The last Presidential Disaster Declarations for Hurricanes in Miami-Dade occurred after Hurricane Wilma in 2005. Wilma impacted Miami-Dade in October 2005 and caused

TABLE 7. SOUTH FLORIDA HURRICANES & STORMS 1906-2018

Date	Name	Category	Wind	Surge	Deaths	Damage $
6/17/1906	Hurricane #2	1	80	Unk	0	Unk
10/18/1906	Hurricane #8	3	120	Unk	164	160,000
10/11/1909	Hurricane #9	2	100	Unk	0	Unk
10/21/1924	Hurricane #7	TS	70	Unk	0	Unk
9/18/1926	Hurricane #6	4	138	13.2’	243	1.4 Billion
10/21/1926	Hurricane #10	2	110	Unk	0	Unk
9/17/1928	Hurricane #4	4	132	10-15’	2,500*	26,000,000
9/28/1929	Hurricane #2	2	100	Unk	0	Unk
9/3/1935	Hurricane #2	5	160	20+	408	6,000,000
11/4/1935	Hurricane #6	1	75	6’	19	5,500,000
10/6/1941	Hurricane #5	3	120	8’	5	700,000
9//16/1945	Hurricane #9	4	138	13.7’	4	540,000,000
9/22/1948	Hurricane #7	2	98	8’	0	Unk
10/6/1948	Hurricane #8	2	105	6.2’	0	5,500,000
8/27/1949	Hurricane #2	4	130	Unk	2	52,000,000
10/18/1950	King	2	105	14’	3	28,000,000
9/10/1960	Donna	4	136	13’	50	1.8 Billion
8/27/1964	Cleo	2	105	6’	3	28,000,000
9/8/1965	Betsy	3	125	9’	75	6.4 Billion
10/4/1966	Inez	1	85	15.5’	48	5,000,000
9/3/1979	David	2	98	3-5’	5	10,000,000
8/24/1992	Andrew	5†	155	16.9’	48	30 Billion
11/16/1994	Gordon	TS	52	3-5’	0	90,000,000
9/25/1998	Georges	2	98	5-6’	0	12,500,000
11/5/1998	Mitch	TS	65	3-4’	0	100,000
10/15/1999	Irene	1	75	3-5’	4	800,000,000

[48] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[49] National Hurricane Center, Preliminary Report Hurricane Andrew

Date	Name	Category	Wind	Surge	Deaths	Damage $
10/3/2000	To become Leslie	TD	35	2-4’	0	500,000,000
9/3/2004	Frances	1	75	2-4’	0	33,000,000
9/25/2004	Jeanne	TS	50	2-4’	0	10,400,000
8/25/2005	Katrina	1	80	2-4’	0	800,000,000
9/18/2005	Rita	TS	50	2-3’	0	12,000,000
10/24/2005	Wilma	2	110	5-6’	0	1.5 billion
08/27/2012	Isaac	TS	29	1-2’	0	Unk
10/26/2012	Sandy	1	60	1-2’	0	Unk
6/6/2013	Andrea	TS	65	2-4’	0	Unk
10/6/2016	Matthew	TS	50	1-2’	2	1,200,000
9/9/2017	Irma	1	99	4-6’	5	800,000,000
10/28/17	Philippe	TS	35	N/A	0	N/A

Note: The date listed is the date of landfall in South Florida and the category of storm shown is the highest category that existed when the storm passed over or near Miami-Dade County.

† Hurricane Andrew was reclassified from a Cat 4 storm to Cat 5 in 2002 by the National Hurricane Center.
Sources: *National Weather Service, Miami Forecast Office*
NOAA National Hurricane Center/Tropical Prediction Center
Florida State University Meteorology Department
Florida Hurricanes and Tropical Storms (Williams & Duedall)

Vulnerability

Physical Vulnerabilities

The entire built environment (Critical Infrastructure, Key Resources, and Building Stock) may be vulnerable to hurricanes and tropical storms due to wind, rain and/or storm surge damages. Structures that do not have impact resistant features or protection that can be installed may be more vulnerable to winds. Homes that were built under older building codes and standards may be more vulnerable to wind damages. Per the HAZUS conducted by the State of Florida in 2018, Miami-Dade has the following physical vulnerabilities.

HAZUS estimates that in 2019 there are 575,844 buildings in the region which have an aggregate total replacement value of $213,289,402. Table 1 presents the relative distribution of the value with respect to the general occupancies.

Coastal areas and areas along canals and rivers, as depicted in the storm surge map, may be more vulnerable to surge. Coastal areas are at greater risk for high velocity surge and erosion. Low lying areas are more vulnerable to flooding if a storm brings significant rainfall. Uprooted trees can cause damages to underground and overhead utilities. Hurricanes and tropical storms may also cause flying debris that cause additional damages. These storms can also impact the natural and agricultural resources as well, causing severe coastal erosion and flooding or wind damage to agricultural assets. The extent of debris and infrastructure outages and restoration times can complicate and increase

response and recovery timelines. Part 7 provides tables that show how many Commercial, Industrial, Residential and Other types of structures are within Storm Surge Planning Zones.

TABLE 8. BUILDING EXPOSURE BY OCCUPANCY TYPE

Occupancy	Exposure ($1,000)	Percent of Total
Residential	140,918,020	66.1%
Commercial	36,916,484	17.3%
Industrial	2,273,279	1.1%
Agricultural	905,243	0.4%
Religious	2,731,747	1.3%
Government	20,608,864	9.7%
Education	8,935,765	4.2%
Total	**213,289,402**	**100.0%**

Essential Facility Inventory

For essential facilities, there are 38 hospitals in the region with a total bed capacity of 10,829 beds. There are 512 schools, 109 fire stations, 67 police stations and 6 emergency operation facilities.[50]

Mobile/Manufactured Homes

There are currently 59 mobile home parks within Miami-Dade County. On an annual basis the Miami-Dade County Office of Emergency Management conducts an assessment of these sites. This assessment verifies their location and the total number of mobile homes are on-site.

[50] 2018 HAZUS Report for Miami-Dade County

TABLE 9. MOBILE HOME PARKS IN MIAMI-DADE COUNTY[51]

NAME	ADDRESS	CITY	ZIP CODE	PHONE	TOTAL UNITS	TYPE
ALL STAR 36 STREET	3010 NW 36 Street	MIAMI-DADE	33142	305-557-1122	53	MHP
AMERICANA VILLAGE CONDO ASSOC. MHP	19800 SW 180 Avenue	MIAMI-DADE	33187	305-253-6025	525	MHP
AQUARIUS MOBILE HOME PARK	451 SE 8 Street	HOMESTEAD	33030	305-248-9383	190	MHP
BISCAYNE BREEZE PARK	11380 Biscayne Blvd.	MIAMI-DADE	33181	786-220-7482	61	MHP
BLUE BELLE TRAILER PARK	3586 NW 41 Street	MIAMI-DADE	33142	305-635-1755	150	MHP
BOARDWALK MHP	100 NE 6 Avenue	HOMESTEAD	33030	305-248-2487	158	MHP
CARLEY'S MHP	4111 NW 37 Avenue	MIAMI-DADE	33142	305-635-5134	70	MHP
COCOWALK ESTATES	220 NE 12 Avenue	HOMESTEAD	33030	305-246-5867	218	MHP
COLONIAL ACRES MOBILE HOME PARK	9674 NW 10 Avenue	MIAMI-DADE	33150	305-696-6231	296	MHP
COURTLY MANOR MOBILE HOME PARK	12401 West Okeechobee Road	HIALEAH GARDENS	33018	305-821-1400	525	MHP
FLAGAMI PARADISE TRAILER PARK	2750 NW South River Drive	MIAMI	33125	305-634-1002	100	MHP
FLORIDA CITY CAMP SITE & RV PARK	601 NW 3 Avenue	FLORIDA CITY	33034	305-248-7889	280	MHP
GABLES TRAILER PARK	825, 935 & 955 SW 44 Avenue	MIAMI-DADE	33134	305-903-2000	95	MHP
GATEWAY ESTATES MHP	35250 SW 177Court	MIAMI-DADE	33034	305-247-8500	222	MHP
GATEWAY WEST MHP	35303 SW 180 Avenue	MIAMI-DADE	33034	305-246-5867	120	MHP
GATOR PARK RV Park	24050 SW 8 Street	MIAMI-DADE	33194	305-559-2255	30	RV
GOLD COASTER TRAILER PARK	34850 SW 187 Avenue	Homestead	33034	305-248-5462	547	MHP
HIALEAH TRAILER PARK	425 E 33 Street	HIALEAH	33013		32	MHP
HIBISCUS MOBILE HOME PARK INC	3131 West 16 Avenue	HIALEAH	33012		34	MHP

[51] Miami-Dade OEM 2019 Mobile Home List

NAME	ADDRESS	CITY	ZIP CODE	PHONE	TOTAL UNITS	TYPE
HIGHLAND VILLAGE MOBILE HOME PARK	13565 NE 21 Avenue	NORTH MIAMI BEACH	33181	305-948-2928	500	MHP
HOLIDAY ACRES MOBILE HOME PARK INC	1401 W 29 Street	HIALEAH	33012	305-822-4611	84	MHP
HOMESTEAD TRAILER PARK	31 SE 2 Road	HOMESTEAD	33030	305-247-4021	50	MHP
HOMETOWN UNIVERSITY LAKES	12850 SW 14 Street	MIAMI-DADE	33184	305-226-4251	1154	MHP
HONEY HILL MOBILE HOME PARK	4955 NW 199 Street	MIAMI-DADE	33055	305-625-9255	438	MHP
J. BAR J.	2980 NW 79 Street	MIAMI-DADE	33147	305-691-2432	99	MHP
JONES FISHING CAMP TRAILER	14601 NW 185 Street	MIAMI-DADE	33018	954-536-7400	52	MHP
LARRY/PENNY THOMPSON	12451 SW 184 Street	MIAMI-DADE	33177	305-232-1049	240	RV
LEISURE EAST (PALM GARDENS RV PARK)	28300 SW 147 Avenue	MIAMI-DADE	33033	305-247-8915	39	MHP
LIL ABNER MOBILE HOME PARK	11239 NW 4 Terrace	MIAMI-DADE	33172	305-221-7411	908	MHP
MEDLEY LAKESIDE RETIREMENT PARK	10601 NW 105 Way	MEDLEY	33178	305-888-3322	86	MHP
MEDLEY MOBILE HOME PARK	8181 NW South River Drive	MEDLEY	33166	305-885-7070	206	MHP
MIAMI HEIGHTS TRAILER PARK	3520 NW 79 Street	MIAMI-DADE	33147	305-691-2969	127	MHP
LION MIAMI TERRACE MOBILE HOME PARK	1040 SW 70 Avenue	MIAMI-DADE	33144	305-261-0551	92	MHP
MIAMI-EVERGLADES KAMPGROUND	20675 SW 162 Avenue	MIAMI-DADE	33187	305-233-5300 & 786-293-2208	254	RV
PALM GARDENS MOBILE HOME PARK	28501 SW 152 Avenue	MIAMI-DADE	33033	305-247-8915	275	MHP
PALM LAKE MOBILE HOME PARK	7600 NW 27 Avenue	MIAMI-DADE	33147	786-787-6003	118	MHP
PALMETTO TRAILER ESTATES	3205 West 16 Avenue	HIALEAH	33012		95	RV
PINE ISLE MOBILE HOME PARK	28600 SW 132 Avenue	MIAMI-DADE	33033	305-248-0783	282	MHP

NAME	ADDRESS	CITY	ZIP CODE	PHONE	TOTAL UNITS	TYPE
PRINCETONIAN MOBILE HOME PARK	12900 SW 253 Terrace	MIAMI-DADE	33032	(305) 257-3251	191	MHP
REDLAND MO-BILE HOME PARK	17360 SW 232 Street	MIAMI-DADE	33170	305-247-7707	80	MHP
RIVER PARK TRAILER	2260 NW 27 Avenue	MIAMI-DADE	33142	305-635-4803	109	MHP
RIVIERA MOBILE HOME PARK	19900 NW 37 Avenue	MIAMI GAR-DENS	33055	305-624-5888	162	MHP
ROVELL TRAILER PARK	939 NW 81 Street	MIAMI-DADE	33150	305-586-7045	138	MHP
ROYAL COUN-TRY MOBILE HOME PARK	5555 NW 202 Terrace	MIAMI-DADE	33055	305-621-2270	864	MHP
ROYAL DUKE	3620 NW 30 Avenue	MIAMI-DADE	33142	(786) 499-5551	99	MHP
SHADY OAK TRAILER PARK	14701 NE 6 Avenue	MIAMI-DADE	33161		25	MHP
SILVER COURT TRAILER PARK	3170 SW 8 Street	MIAMI	33135	305-266-1727	236	MHP
SILVER PALM MOBILE HOME PARK	17350 SW 232 Street	MIAMI-DADE	33170	954-665-9050	110	MHP
SIX AVENUE TRAILER PARK	14752 NE 6 Avenue	MIAMI-DADE	33161	305-582-0867	22	MHP
SOUTHERN COMFORT R V RESORT LLC	345 East Palm Drive	FLORIDA CITY	33034	305-248-6909	300	RV
STRAWBERRY VILLAGE TRAILER PARK	1451 W 29 Street	HIALEAH	33012		39	MHP
SUNNY GAR-DENS TRAILER PARK	2901 West 16 Avenue	HIALEAH	33012	305-822-5921	93	MHP
SUNNYLAND TRAILER PARK	129 NW 79 Street	MIAMI-DADE	33150	786-505-5239	105	MHP
SUNNYSIDE MO-TEL & TRAILER PK INC	6024 SW 8 Street	WEST MIAMI	33144	305-266-1727	105	MHP
TRINIDAD COURT	7930 NW Miami Court	MIAMI-DADE	33150	786-505-5239	173	MHP
TROPICAL VIL-LAGE	1398 NW 79 Street	MIAMI-DADE	33147	305-696-0059	108	MHP
HOMETOWN UNI-VERSITY LAKES	12850 SW 14 Street	MIAMI-DADE	33184	305-226-4251	1153	MHP
WESTHAVEN TRAILER PARK	6020 SW 8 Street	WEST MIAMI	33144	305-266-0488	21	MHP
WESTLAND MO-BILE HOME PARK	1175 NW 79 Street	MIAMI-DADE	33150		114	MHP

NAME	ADDRESS	CITY	ZIP CODE	PHONE	TOTAL UNITS	TYPE
WYNKEN BLYNKEN & NOD MOBILE HOME PARK	2775 West Okeechobee Road	HIALEAH	33010	305-887-6570	180	MHP

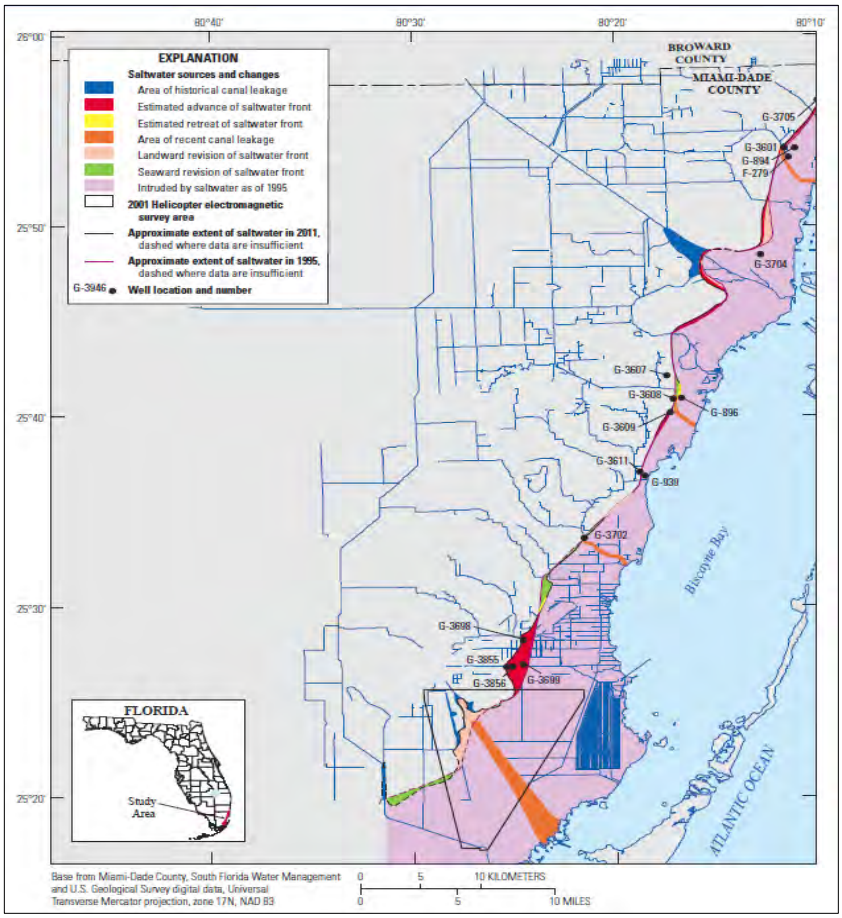
Social Vulnerabilities

Mobile/manufactured home residents, electric dependent, functional needs and persons who may not have adequate resources to protect their homes or access to evacuation resources are at greatest risk for this hazard. Visitors and persons who are new to this area may also be more vulnerable as they may not be familiar with what to do in case an evacuation order is given. Prolonged power outages and gas shortages cause additional challenges to businesses and service providers and can disproportionately impact persons whom rely upon regular home services such as medical services or food delivery.

Saltwater Intrusion

Description

According to the United States Geological Survey (USGS), saltwater intrusion is a generic term referring to an influx of saltwater through various pathways into an aquifer. The South Florida Water Management District defines it as chloride concentrations exceeding drinking water standards of 250 mg/1.[52] Saltwater Intrusion is a major threat to the freshwater resources of the coastal areas in southeastern Florida.



[52] Miami-Dade Water and Sewer Department, *20-year Water Supply Facilities Work Plan (2014-2033)*, Support Data, November 2014 http://www.miamidade.gov/water/library/20-year-water-supply-facilities-work-plan.pdf

There are three primary mechanisms by which saltwater contaminates the freshwater reservoir in the unconfined, surficial aquifers of the region: (1) encroachment of saltwater from the ocean along the base of the aquifer; (2) infiltration of saltwater from coastal saltwater mangrove marshes: and (3) the flow of saltwater inland through canals where it leaked into the aquifer. Per the USGS paper referenced below, "Saltwater intrusion of the Biscayne aquifer began when the Everglades were drained to provide dry land for urban development and agriculture."

Location

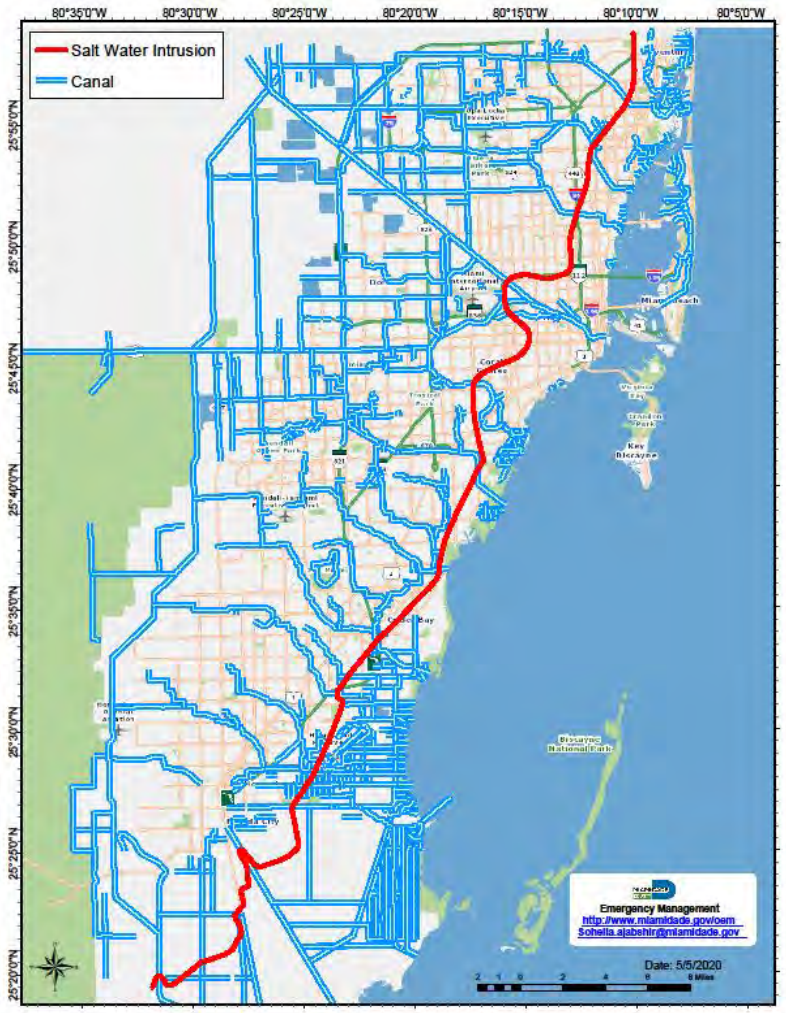
The above 2014 map was produces by the U.S. Geological Survey (USGS) and shows the areas of Miami-Dade that are experiencing saltwater intrusion. This includes unincorporated Miami-Dade County and the municipalities of Homestead, Cutler Bay, Palmetto Bay, Pinecrest, South Miami, Coral Gables, Miami, Miami Shores, North Miami, North Miami Beach and Aventura.

Extent

The USGS and Miami-Dade Water and Sewer Department actively monitor saltwater intrusion. As of 2011, approximately 1,200 square kilometers of the mainland part of the Biscayne Aquifer were intruded by saltwater.[53] The map on the next page shows future salt water intrusion impacted by projected sea level rise for year 2040, with projected pumpage rates for year 2030. The red line indicates the expected minimal change to the salt front.

[53] Report on Flooding and Salt Water Intrusion, September 2016: https://www.miamidade.gov/green/library/sea-level-rise-flooding-saltwater-intrusion.pdf

Impact



There is concern that saltwater intrusion can threaten the coastal drinking water supply well fields. Shallow-water marine organisms are very sensitive to environmental changes in salinity, temperature, nutrient input, and dissolved oxygen. Temporal and spatial salinity patterns in Biscayne Bay have profoundly affected the marine ecosystem caused by water-management driven changes in surface and ground-water discharge. In addition to those changes caused by natural events, long-term change in land and water uses during the 20th century in the bay watershed contributed greatly to the deterioration of marine conditions. Water quality has been greatly degraded by increased nutrient loads, trace metals, and other pollutants.[54] An increase in mangrove areas and reduction in sawgrass habitat have been recorded in the Everglades. Less salt-tolerant plants like sawgrass, spike rush and tropical hardwood hammocks are retreating as salt-loving mangroves expand.

Previous Occurrences

Saltwater intrusion has been monitored by the USGS since 1939. Per the USGS "in 1904 (prior to any human-induced drainage), the saltwater interface was estimated to be at or near the coast because of the very high-water levels which occurred naturally in the Everglades. Freshwater was reported to seep from the Biscayne aquifer offshore into Biscayne Bay in sufficient quantities to be used as a supply of freshwater for ships. Beginning in 1909 with the extension of the Miami River and continuing through the 1930's, construction of drainage canals (with no control structures) and pumpage from coastal well fields resulted in the lowering of water levels in the Biscayne aquifer, thereby inducing the inland movement of saltwater into the aquifer. Additionally, seawater driven by tides

[54] USGS South Florida Information Access: http://sofia.usgs.gov/publications/circular/1275/changebb.html

flowed inland in the drainage canals, resulting in the seepage of saltwater into the Biscayne aquifer from the canals. By 1946, salinity-control structures had been installed in all primary canals as far seaward as possible. These controls prevented saltwater driven by tidal changes from moving upstream in the canals beyond the controls. The controls also served to backup freshwater which maintained higher water levels in the Biscayne aquifer near the coastline. These water levels are higher than those that occurred during the period of uncontrolled drainage. The inland migration of saltwater in northern Miami-Dade County slowed or reversed in some areas as a result of the effects of these controls on water levels.

In the early 1960's, the existing canal system in southern Miami-Dade County was expanded to provide for flood control. The canals were equipped with flow-regulation structures both near the coast and inland, allowing water levels to be stepped down from structure to structure to prevent excessive drainage. However, the design and operation of this system lowered freshwater levels in the Biscayne aquifer, especially near the coast, allowing for the inland movement of saltwater during the drought years of 1970 and 1971. In 1976, additional water was routed to southern Miami-Dade County, raising water levels along the coast and slowing or reversing the inland movement of the saltwater interface.[55]

Since 1984, additional events have occurred which have affected water levels in the Biscayne aquifer and, hence, the movement of the saltwater interface. Among these events are the initial operation of the Northwest Well Field and a consequent reduction in pumping from the Hialeah-Miami Springs Well Field, expansion of the Southwest Well Field, and changes in the delivery schedule of water to southern Dade County and Everglades National Park. Future changes in water levels might occur as a result of changes in the management of the ecosystem of south Florida. These changes will be based on the results of studies being conducted as part of the U.S. Geological Survey South Florida Ecosystem Program and other studies.[56]

Per the USGS paper referenced below, “some saltwater likely leaked from canals prior to the installation of water control structures. Near the Miami Canal northwest of the water control structure S-26, this saltwater is gradually mixing with the groundwater and salinity is gradually decreasing. Modern leakage of saltwater likely is occurring along the Card Sound Road canal and upstream of salinity control structures in the Biscayne, Black Creek and Snapper Creek Canals. Saltwater also may have leaked from the Princeton Canal and the canal adjacent to well G-3698, although this leakage could not be confirmed or refuted with available information.”

[55] USGS Caribbean-Florida Water Science Center: http://fl.water.usgs.gov/Miami/online_reports/wri964285/index.html#Klein
[56] USGS Caribbean-Florida Water Science Center: http://fl.water.usgs.gov/Miami/online_reports/wri964285

Vulnerability

Physical Vulnerabilities
The SFWMD has identified "Utilities at Risk" for salt water intrusion, which include utilities with well fields near the saltwater/freshwater interface that do not have an inland well field, have not developed adequate alternative sources of water, and have limited ability to meet user needs through interconnects with other utilities; and "Utilities of Concern", which include utilities having well fields near the saltwater/freshwater interface, the ability to shift pumpages to an inland well field, or an alternative source that is not impacted by the drought (SFWMD, 2007). Miami-Dade WASD well fields included as "Utility at Risk" are South Miami-Dade Well fields (Newton, Elevated Tank, Naranja, Leisure City, Roberta Hunter Park and Caribbean Park). MDWASD Utilities of Concern include the North and Central Miami-Dade Well fields (Hialeah-Preston and Alexander Orr).

Well fields are at risk and as such protection areas have been delineated and are monitored. Saltwater intrusion can impact the rates at which groundwater is pumped to supply drinking water supplies and also may require deeper wells to be drilled. Agricultural crops may be impacted by the salinity levels. Saltwater intrusion can also displace the fresh groundwater thereby impacting the water-table elevations in urban areas levels that could increase localized flooding.

Social Vulnerabilities
This hazard does not tend to affect one population over another.

Sea Level Rise

Description
Sea Level Rise refers to the increase currently observed in the average Global Sea Level Trend, which is primarily attributed to changes in ocean volume due to two factors: ice melt and thermal expansion. Melting of glaciers and continental ice masses, such as the Greenland ice sheet, which are linked to changes in atmospheric temperature, can contribute significant amounts of freshwater input to the Earth's oceans. Additionally, a steady increase in global atmospheric temperature creates an expansion of saline sea water (i.e., salt water) molecules (called thermal expansion), thereby increasing ocean volume.

Sea level rise is occurring due to three main factors, all of which are occurring due to global climate change:

- Thermal Expansion: As with all water, when the ocean heats up, it expands. About 50% of the sea level rise in the past 100 years is because the ocean is warmer, and therefore takes up more space.

- Glacier and Polar Ice Cap Melting: Although glaciers and polar ice caps naturally melt a little each summer, they usually regain lost area during the winter. However, warmer winters have meant less opportunity to regrow this ice, resulting in more melted water remaining in the oceans, contributing to sea level rise.
- Greenland and West Antarctic Ice Loss: Similar to what is happening with glaciers and the polar ice cap, the huge ice sheets that cover Greenland and Antarctica are melting.

Sea level rise increases the impact and frequency of storm surge and the risk of tidal flooding. Sea level rise also increases the damage caused by hurricanes and tropical storms when surge and rainfall occur together, as happened with Tropical Storm Leslie (1999) and Hurricane Irene (2000).

But the rate of sea level rise is uncertain, and the interactions between sea level rise, surge and flooding is a complex technical problem that requires both near-term and long-term coordinated solutions. This is a challenging task. An emerging field of study called 'decision making under deep uncertainty' has developed several approaches to this type of problem. One approach, called Dynamic Adaptive Policy Pathways (DAPP), has been used to look for strategies to mitigate the increased risk of flooding caused by sea level rise in the C7 Basin of Miami-Dade.

The South Florida Water Management District recently completed a two-part FEMA sponsored flood study that, first, examined the impact of sea level rise on flood risk and, second, identified and examined a range of flood mitigation solutions including regional flood mitigation methods (e.g. pumps and stormwater detention), local flood mitigation methods (e.g. flood walls, municipal pumps, exfiltration trenches), and land-use change (e.g. raising minimum floor elevations, raising roads). From this, three flood-mitigation scenarios were developed and modeled and an economic/risk-based approach was used to compare the efficiency of these alternative flood mitigation scenarios, resulting in a first-order adaptation pathway for prioritizing future projects.

This process used a multi-disciplinary approach involving hydraulic engineers, planners, and economists together with stakeholders. Tools and techniques like those used in this study can be applied throughout Miami-Dade County to assess long and short-term options for mitigating flood risk. Pathways planning supports robust and flexible investments to avoid stranded assets and costly retrofitting. This will provide information for resiliency planning related to sea-level rise.

Location

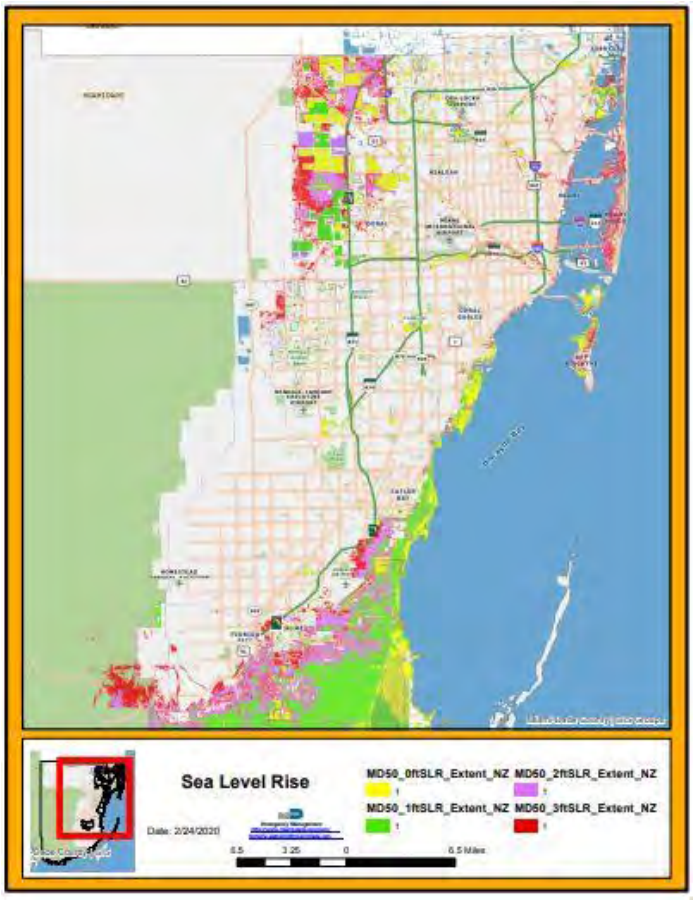
Mapping developed for the Southeast Florida Climate Change Compact (the Compact) illustrates potential areas of Miami-Dade County that may be impacted by sea level rise. These areas include unincorporated Miami-Dade County and portions of the following municipalities: Sunny Isles Beach; North Miami Beach; North Miami; Miami; Miami Beach; Key Biscayne; Coral Gables; South Miami; Palmetto Bay; Cutler Bay; Homestead; Florida City; Doral; Sweetwater; Hialeah Gardens; and Miami Lakes.

Extent

Based on the Compact's sea level rise projection a one-foot scenario could occur between 2040 and 2070, the two-foot scenario from 2060-2115 and the three-foot scenario from 2075-2150.

Impact

Sea level rise is likely to increase coastal flooding during high tides and storm surge events. Sea level rise will likely impact the ability of the canals in low lying areas to drain standing water after rainfall events and impact the ground water elevation. Gravity based outfalls that lie below sea level will be impacted by allowing salt water to flow up through the outfall system into the streets. Many communities in Miami-Dade County are experiencing the effects of sea level rise during king tides events. The king tide is the highest predicted high tide of the year, it is above the highest water level reached at high tide on an average day.[57] In the future, the water level seen during king tide events will be the water level during daily high tides. King tides can occur once or twice a year.



In terms of the amount of land which may be vulnerable, the number of acres impacted in Miami-Dade is three times greater than that experienced in Monroe County for the two and three-foot scenarios. Nearly 80% of the lands affected regionally in the one foot scenario are conservation lands especially coastal wetlands. Low lying natural systems made up of buttonwood, mangrove, scrub mangrove, and herbaceous coastal saline and freshwater wetlands are significantly impacted in all sea level rise scenarios. In terms of the critical infrastructure reviewed, inundation is often confined to marginal areas of the properties or impacting existing drainage infrastructure on site. This is generally true for the region's ports, airports, schools, landfills and hospitals. Within Miami-Dade these are mainly impacted at the 3-foot scenario. Power plants properties in Miami-

[57] EPA, King Tides and Climate Change: http://www.epa.gov/cre/king-tides-and-climate-change

Dade and Broward, as well as energy transmission facilities in Monroe are vulnerable at the one foot scenario. While railroads are negligibly at risk, more than 81 miles of road-way from Miami-Dade through Palm Beach are at elevations below sea level at the one foot scenario, increasing to more than 893 miles at the three-foot scenario.[58]

Upper estimates of taxable property values vulnerable across the region is greater than $4 billion with values rising to over $31 billion at the 3-foot scenario. The following table is taken from the Compact and illustrates Land Use and Property Values in Miami-Dade County vulnerable to Impacts from Sea Level Rise at 1, 2 and 3 feet scenarios.

Acres of Future Land Use Top Three Categories Impacted	1 Foot	Conservation	107,988 acres
		Electrical Generation	5,332 acres
		Agricultural	2,994 acres
	2 Feet	Conservation	126,809 acres
		Electrical Generation	5,999 acres
		Agricultural	7,746 acres
	3 Feet	Conservation	133,088 acres
		Electrical Generation	7,000 acres
		Agricultural	10,890

The Compact estimated that the total number of acres within urban Miami-Dade to be impacted by sea level rise for a 1 foot scenario is 121,378 acres (12%), for 2-foot 150,142 acres (16%) and for the 3 foot scenario it could be 168,896 acres (18%) of the county.

Previous Occurrences

2017 – The October king tides coincided with heavy rainfall and a strong easterly wind, which enhanced the effects of the event. This triggered a Coastal Flood Advisory from October 2nd through the 9th. Through this period, the Virginia Key tide gauge recorded high tides between 0.5 to 1.4 feet above predicted. Areas throughout Miami Beach and City of Miami flooded and reports of stalled vehicles and water entering businesses were recorded. The highest tide recorded for this event was 4.3 feet on October 5th.

Another round of king tides happened during the weekend of November 3rd, but there were no significant reports. The high tides recorded were below 0.3 feet and no Coastal Flood Advisory was issued.

2016 – Communities in Miami-Dade County were affected by the king tides on October and November. In October, increased swells due to Hurricane Nicole (located off the coast from Florida) and a full moon on October 16th enhanced the effects of this king tide event. Miami-Dade County was under a Coastal Flood Advisory from October 14th

[58] Southeast Florida Climate Change Compact: http://www.southeastfloridaclimatecompact.org//wp-content/uploads/2014/09/vulnerability-assessment.pdf

through the 18th. Throughout this period, as recorded by the Virginia Key tide gauge, the high tides were between 0.8 to 1.2 feet above predicted.

The November king tides coincided with the Supermoon. On November 14th, for the first time in over 65 years, the full moon was at its closest distance from Earth. Miami-Dade County was under a Coastal Flood Advisory from November 13th through the 16th. Throughout this period, as recorded by the Virginia Key tide gauge, the high tides were between 0.7 to 0.9 feet above predicted.

2015 – Communities along the coast of Miami-Dade were affected by the king tides on September and October. The king tides that occurred on September 27th – 28th coincided with the annual Supermoon, when the moon is closest to Earth, resulting in higher than predicted tides. South Florida was under a Coastal Flood Advisory until the 28th.

A Coastal Flood Advisory was in effect for Miami-Dade County from October 27th – 28th. Throughout this period, the tides were between 0.7 to 1.0 feet above the predicted.

2013 – There were also some minor street flooding (to the curb level) from astronomical high tides that occurred April 26-27, 2013, October 17-20, 2013 and December 3 2013 in the same South Beach areas.

2012 – On October 29, 2012 Key Biscayne issued a high tide alert to residents regarding water flowing out of the drainage system that was causing flooding on local stress and adjacent areas, especially in low lying areas.[59] There was also an extended period from November 21-27, 2012 with some street flooding in the South Beach areas of Miami Beach (Alton Road area south of 17th Street).

Astronomical high tides have in recent years caused localized flooding with salt water being pushed back up through storm drain outfalls that use gravity to function. According to the National Weather Service Miami, the greatest impacts for astronomical high tides were in combination with Superstorm Sandy from October 27-30, 2012. Certain areas of Miami Beach can flood when the tide reaches an elevation of 0.5 feet, typical high

[59] Village of Key Biscayne, High Tide Alert (October 2012): http://keybiscayne.fl.gov/index.php?src=news&refno=339&category=News

tide in Miami Beach reach about 0.3 feet, but in October and November 2012 levels reached as high as 2.2 feet.

Sea Level Rise is an emerging and future threat and with high tides occurring about two times a year (April and November) as sea levels rise more communities could be at risk from seasonal high tides as well as general sea level rise. The pictures to the right are in Miami Beach during the 2015 King Tide event.

Vulnerability

Physical Vulnerabilities

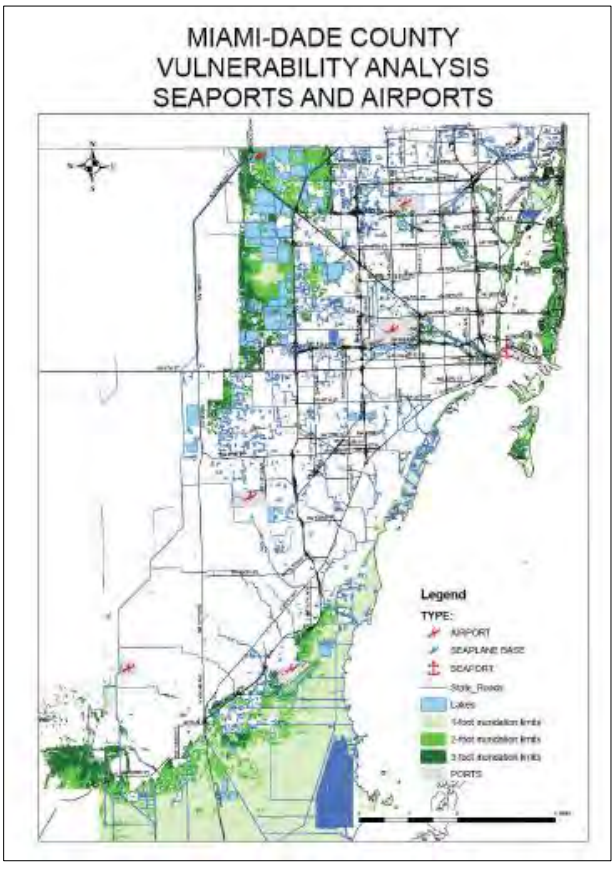
The built environment (Critical Infrastructure, Key Resources, and Building Stock) and natural environment are vulnerable to sea level rise and though some preliminary mapping shows southern portions of the county at highest risk there is risk to other portions as well. Coastal communities, such as Miami Beach, have already begun to experience sunny day flooding in relation to high and king tides that limit the gravitational drainage that drains to the bay. Additional mapping is being done to determine all areas that may be at risk.

The following information is excerpted from the Southeast Florida Climate Compact.

Analysis of Physical Features

Ports and Airports

One area determined by the group to be critical is Homestead Air Reserve Base. The County has already met with planners developing the long-term use of the base and provided input on sea level rise. Opa-Locka West is vulnerable, but this airport is only a landing strip used for training and so is not considered critical. Below are tables that represent the area that may be below mean high-high water sea level with a 1-, 2-, or 3-feet sea level rise.



1-Foot Sea Level Rise

Facility Name	More Likely	Possible	Total Inundation	Total Area of Facility (Acres)	Percent Inundation
Homestead General Aviation	0	4.92	4.92	770.71	0.6%
Kendall-Tamiami	22.86	2.37	25.23	1,428.48	1.8%
Miami International	36.01	2.38	38.39	2,731.06	1.4%
Opa Locka Executive	16.87	4.71	21.58	1,640.89	1.3%
Opa Locka West	12.08	1.46	13.54	412.03	3.3%
Port of Miami (Seaport)	0.61	0.16	0.77	534.5	0.1%
Port of Miami (River Port)	2.32	1.26	3.58	136.23	2.6%
USA Homestead Air Base	195.43	80.4	275.83	1,970.96	14.0%

2-Feet Sea Level Rise

Facility Name	More Likely	Possible	Total Inundation	Total Area of Facility (Acres)	Percent Inundation
Homestead General Aviation	5.6	0.66	6.25	770.71	0.8%
Kendall-Tamiami	26.87	1.6	28.47	1,428.48	2.0%
Miami International	42.34	5.63	47.97	2,731.06	1.8%
Opa Locka Executive	30.58	15.93	46.51	1,640.89	2.8%
Opa Locka West	24.2	68.55	92.75	412.03	22.5%
Port of Miami (Seaport)	0.89	0.22	1.11	534.5	0.2%
Port of Miami (River Port)	4.63	3.61	8.24	136.23	6.0%
USA Homestead Air Base	327.73	119.27	447	1,970.96	22.7%

3-Feet Sea Level Rise

Facility Name	More Likely	Possible	Total Inundation	Total Area of Facility (Acres)	Percent Inundation
Homestead General Aviation	6.58	0.83	7.41	770.71	1.0%
Kendall-Tamiami	31.01	2.82	33.83	1,428.48	2.4%
Miami International	57.47	24.24	81.71	2,731.06	3.0%
Opa Locka Executive	65.51	76.22	141.73	1,640.89	8.6%
Opa Locka West	212.09	96.59	308.68	412.03	74.9%
Port of Miami (Seaport)	1.63	0.5	2.13	534.5	0.4%
Port of Miami (River Port)	14.73	11.47	26.2	136.23	19.2%
USA Homestead Air Base	573.64	202.52	776.16	1,970.96	39.4%

Power Plants

Miami-Dade County has one nuclear power and one coal generation power plant. The generation facilities are not directly impacted. This data below includes impact to the Turkey Point Nuclear Power Plant cooling canals, the coastal wetlands at the Cutler Plant, and some scattered power transfer stations throughout western Miami-Dade County.

Power Plant	More Likely (acres)	Possible (acres)	Total Inundation (acres)	Total Area of Facility (Acres)	Percent Inundation
1-foot Sea Level Rise	4,812	247	5,059	7,228.77	70%
2-foot Sea Level Rise	5,259	233	5,492	7,228.77	76%
3-foot Sea Level Rise	5,707	233	5,940	7,228.77	82%

Railroads

Railroads did not seem to be particularly affected, perhaps due to the fact that most of the rail beds in Miami-Dade County are elevated above the road and surrounding surfaces. The impact reported is limited to FEC Railroad in the northeast coast of Miami-Dade County and to the portion of the CSX railroad serving the rock mine lakes along NW 12 ST in the western portion of the County. This data is reported in **miles**.

FEC and CSX Railroads	More Likely (miles)	Possible (miles)	Total Inundation (miles)	Total Length of Rail (miles)	Percent Inundation
1-foot Sea Level Rise	0.71	0.09	0.8	320.9	0.1%
2-foot Sea Level Rise	0.91	0.23	1	320.9	0.4%
3-foot Sea Level Rise	1.65	0.79	2	320.9	0.7%

Water and Wastewater Treatment Plants

Miami-Dade has three major water and three major wastewater treatment plants within the County boundary. The analysis was performed by land use category as provided by the Department of Planning and Zoning. The results, therefore, do not include the names of the facilities, only the area possibly or more likely affected by the inundation scenario. A more specific analysis is needed to determine if any equipment would be affected or not.

Water Treatment Plants	More Likely (acres)	Possible (acres)	Total Inundation (acres)	Total Area within Land Use Category (acres)	Percent Inundation
1-foot Sea Level Rise	0.38	0.16	0.54	210.37	0.26%
2-foot Sea Level Rise	0.85	0.64	1.49	210.37	0.71%
3-foot Sea Level Rise	2.58	1.6	4.18	210.37	1.99%

Wastewater Treatment Plants	More Likely (acres)	Possible (acres)	Total Inundation (acres)	Total Area within Land Use Category (acres)	Percent Inundation
1-foot Sea Level Rise	11.1	5.32	16.42	460.14	3.57%
2-foot Sea Level Rise	19.91	6.15	26.06	460.14	5.66%
3-foot Sea Level Rise	36.47	8.33	44.8	460.14	9.58%

Landfills

Inundation for all levels of sea level rise were primarily in retention or natural areas surrounding landfills since the landfills themselves are elevated (see graphic on next page). The South Dade Landfill, Munisport landfill, and Dade Recycling are surrounded by low lying areas.

South Dade Landfill, Munisport, & Dade Recycling	More Likely (acres)	Possible (acres)	Total Inundation (acres)
1-foot Sea Level Rise	154	80	234
2-foot Sea Level Rise	266	33	299
3-foot Sea Level Rise	333	30	363

Hospitals
No hospitals in Unincorporated Miami-Dade County were impacted. Of the 34 total hospitals within the county boundaries, only three hospitals were affected in municipalities in the 3-foot sea level rise scenario.

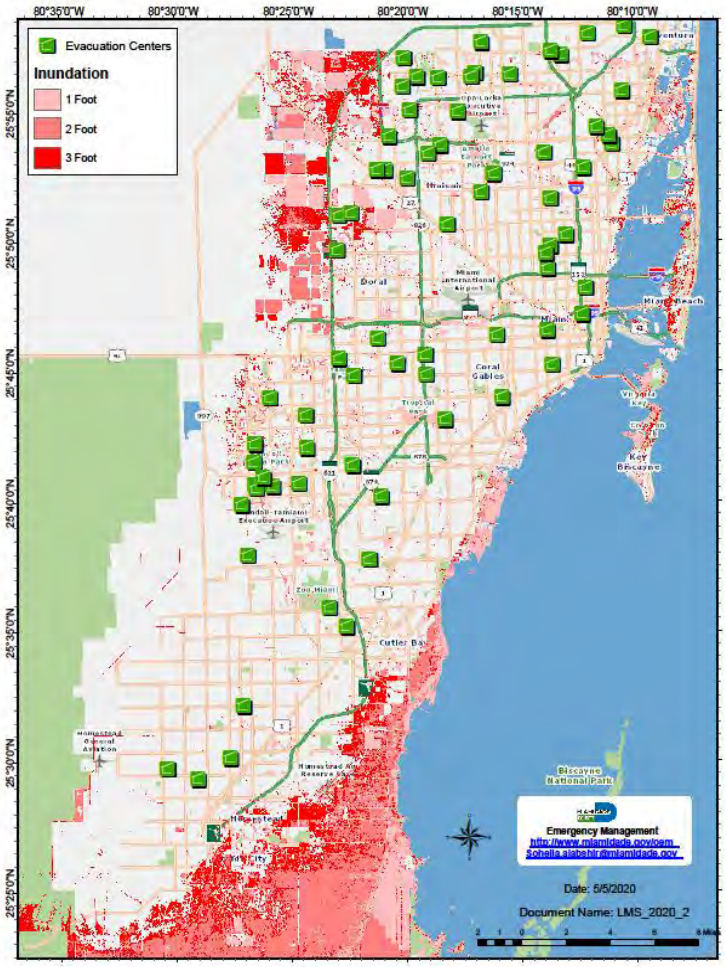
- Selected Specialty Hospital, 955 NW 3rd ST, City of Miami, 33128
- Mount Sinai Medical Center, 4300 Alton Road, City of Miami Beach, 33140
- South Beach Community Hospital[60], 630 Alton Road, City of Miami Beach, 33139

Schools
No schools in Unincorporated Miami-Dade County were impacted. Only three of the 392 public schools were affected in municipalities in the 3-foot sea level rise scenario. However, we need more specific survey information on all affected schools, such as elevation certificates and topographic survey to determine if those would be actually impacted.

- Student Services & Attendance, 489 East Drive, Miami Springs 33166
- School Board Administrative – Annex, 1500 Biscayne Boulevard, Miami 33132
- Biscayne Elementary, 800 77th Street, Miami Beach 33141

Emergency Evacuation Centers

None of the 83 emergency evacuation centers in Miami-Dade County were impacted.[61] However, more specific survey information and finished floor elevation certificates on all shelters are needed to determine actual impacts.



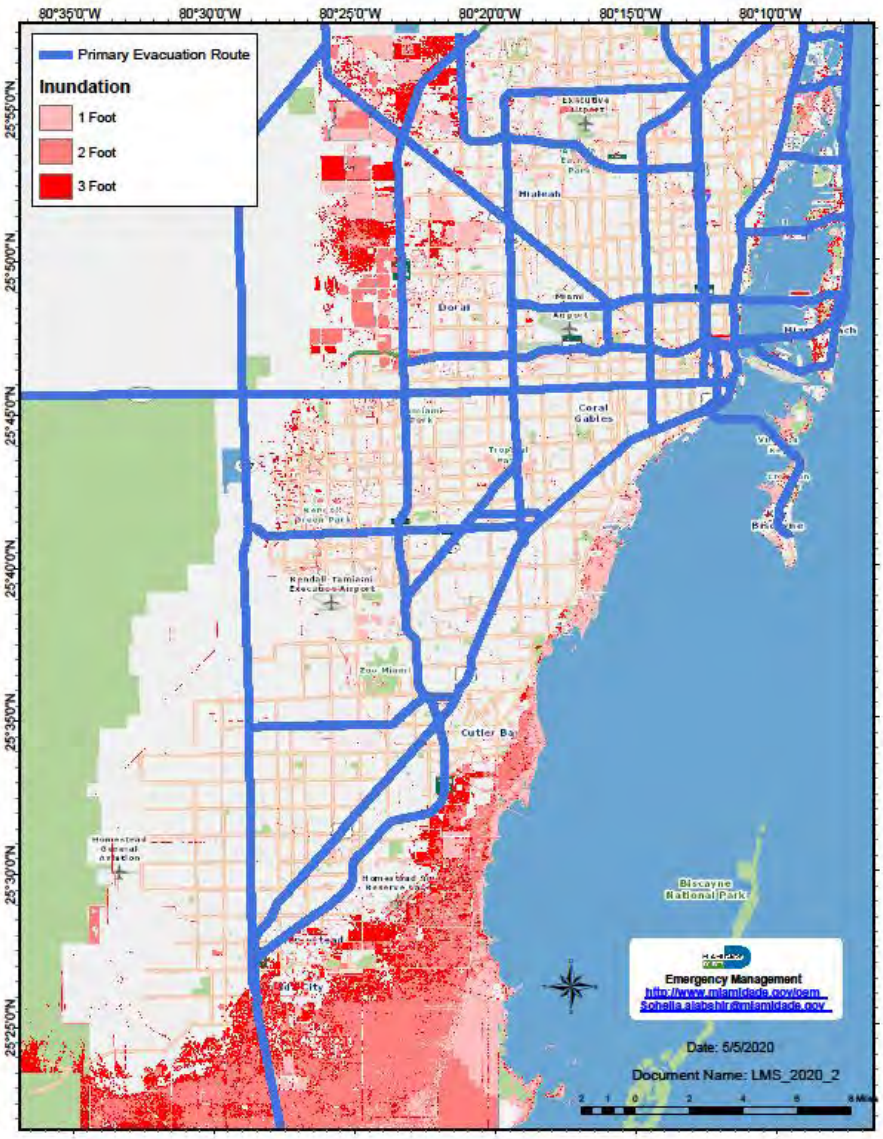
Evacuation Routes

Miami-Dade determined there are at most four miles of impact to all evacuation routes even at the 3-foot inundation because these routes are built at elevations to provide service in a 100-year storm. US1 Overseas Highway to the Florida Keys and the Rickenbacker Causeway to Key Biscayne have been improved in the past two years. Therefore, the 4 miles of impact are probably an over estimation. The concern for the evacuation routes is flooding of the local access roads leading to them. This information is summarized in the section Roads by FDOT Category.

[61] 2020 Florida Emergency Shelter Plan

Marinas

Marine facilities were analyzed using land use category maps provided by the Department of Planning and Zoning. Marine complexes and marine commercial land uses were combined. All marina facilities are located on or next to water features, east of all salinity control structures to give easy access to the ocean. The assumption is that all will be affected in some way, although the extent is only estimated by this current analysis. It is assumed that those docks with fixed infrastructure will be inundated while floating docks will rise with sea levels.



Marine Facilities	Total Inundation (acres)
1-foot Sea Level Rise	31
2-foot Sea Level Rise	75
3-foot Sea Level Rise	150

Results of Analysis
Geographic analysis was done based on the following criteria:

- Miles of road by Florida Department of Transportation category
- Future Land Use
- Habitat/Land Use Land Cover

Taxable Value of Property
Miami-Dade County has chosen not to estimate the taxable value of potentially impacted property until such time as the mapping and analytical methods are more robust. Miami-Dade, through the Stormwater Master Planning Process, has determined that the current assessment tools probably underestimate potential impacts.

Roads by FDOT Category
Roadways are summarized by Functional Class in miles. High volume categories include sections of roadway where bridges were removed from the LiDAR data and represented bare earth rather than the actual roadways.

1-Foot Sea Level Rise – Assumption: 50% Percent Inundation = Whole Segment Affected

Functional Class	Total Inundation (Miles)	Total Coverage (% impacted)
1 – high volume, maximum speed	3	0.08%
2 – high speed, channels traffic to FC1	4	
3 – high speed, lower mobility, connects to FC2	3	
4 – moderate speed, through neighborhoods	62	
5 – low volume, i.e. access roads, parking lanes	Not assessed	
Total	72	

2-Foot Sea Level Rise – Assumption: 50% Percent Inundation = Whole Segment Affected

Functional Class	Total Inundation (Miles)	Total Coverage (% impacted)
1 – high volume, maximum speed	6	3%
2 – high speed, channels traffic to FC1	11	
3 – high speed, lower mobility, connects to FC2	8	
4 – moderate speed, through neighborhoods	232	
5 – low volume, i.e. access roads, parking lanes	Not assessed	
Total	257	

3- Foot Sea Level Rise – Assumption: 50% Percent Inundation = Whole Segment Affected

Functional Class	Total Inundation (Miles)	Total Coverage (% segments impacted)
1 – high volume, maximum speed	12.18	6%
2 – high speed, channels traffic to FC1	26.33	
3 – high speed, lower mobility, connects to FC2	21.22	
4 – moderate speed, through neighborhoods	496.21	
5 – low volume, i.e. access roads, parking lanes	Not assessed	
Total	555.94	

Social Vulnerabilities
This hazard does not tend to affect one population over another.

Severe Storm

Description
A thunderstorm is a meteorological event generated by atmospheric imbalance and turbulence caused by unstable warm air that rises rapidly, heavy moisture, and upward lift of air currents that can bring a combination of heavy rains, strong winds, hail, thunder, lightning, and tornadoes. A thunderstorm does not have the same characteristics as a "severe" thunderstorm.

The National Weather Service classifies a severe storm as a thunderstorm that is capable of producing 1 inch or larger hail, wind gusts greater than 58 mph and/or a tornado. Although lightning and/or excessive rainfall may occur during a severe thunderstorm and have severe consequences, these are not considered primary elements of a severe thunderstorm. Severe thunderstorms, flood threats and lightning are handled through difference sets of warnings and watches by the National Weather Service.

The Southern Florida Rainy season is defined as the time of year when most of the yearly rainfall occurs. The rainy season in South Florida begins in mid-May and ends in mid-October. During this nearly five-month period, South Florida receives about 70% of the rainfall for the entire year.

The rainy season usually has three phases:

- Late May through early July ("stormiest" part of the season).
- Early July through mid-August (hotter with dry periods)
- Late August through mid-October (higher rainfall variability due to potential tropical systems and early-fall cold fronts)

Location
The entire County is vulnerable to severe storms.

Extent
Winds of up to 100 mph, F3 tornado and 4-inch hail during a severe storm.

Impact
Miami-Dade County is particularly susceptible for a variety of severe storms. One of the most powerful of these storms occurred in February 1995. This severe storm caused $5 million in damages. A twisting downdraft damaged four commercial jets, several loading platforms, and a catering truck at concourse G at Miami International Airport. It is estimated that the winds at the site were 100 mph.[62]

Previous Occurrences

May 6, 2019 – Thunderstorms caused damage across Miami-Dade County that resulted in downed trees, power poles, fences and street signs. A tractor trailer was also overturned on the Florida Turnpike.[63]

January 23, 2017 – A strong squall line ahead of a cold front produced a tornado near the Palmetto Expressway and NW 48th Street at 3:45am. The tornado continued a northeast track and moved over Miami Springs and the City of Hialeah producing between EF-0 and EF-1 damage. Damage consisted of an overturned tractor trailer, about 24 empty cargo containers were moved, downed trees and power lines, and damage on roofs. No injuries or fatalities were reported, but 13 families were displaced in Hialeah and required assistance by the American Red Cross.

July 18, 2016 – This thunderstorm produced gusty winds which resulted in property damage in Cutler Bay. This damage, estimated at $5,000 occurred in the vicinity of SW 200th Street between Old Cutler Road and Cutler Ridge Park.[64]

June 18, 2016 – A severe thunderstorm over Miami-Dade County led to wind damage. Power lines, trees, fences, and store signs were knocked down in Westchester. There was also damage in Downtown Miami to furniture being blown off high rise balconies into the streets due to the high winds.[65]

[62] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[63] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[64] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[65] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

February 16, 2016 – On February 15th, a strong squall line developed ahead of a cold front over the Gulf of Mexico and as it moved over the warm waters, it intensified. An unstable environment and strong low level rotation was in place over South Florida ahead of the line. In the overnight hours of February 16th, another squall line developed ahead of the first line. Both of these lines merged over southeast Florida before daybreak. As the squall line moved across Florida, it produced a number of severe thunderstorms throughout. A total of 6 tornadoes were confirmed across southern Florida, including an EF-0 in Northeast Miami-Dade. No injuries or fatalities were reported.

June 29, 2015 – Afternoon showers and thunderstorms caused sporadic tree damage in an area from Doral to Florida International University campus, then east to Fountainbleu. A total of 12,940 customers reported power outages in Miami-Dade County.[66]

June 6, 2012 – Severe thunderstorm with high wind gusts and hail occurred in Miami-Dade. Reports of numerous trees downed reported in Leisure City, South Miami Heights and Princeton. Wind gusts were estimated at 60 mph. In Perrine, several signs from businesses were blown off a building.

May 18, 2012 – Large tree branches were snapped and broken off in a two-square-block area near the intersection of SW 8th Street and SW 142th Avenue, resulting from a down-burst associated with a severe thunderstorm. Trees were also reported down in Sweet-water and Doral. Winds were estimated between 60-70 mph and large trees were up-rooted and a light pole was downed in Doral.

May 15, 2006 – Straight lined winds estimated at 70 to 80mph caused Metal roof sheeting to be torn off a hanger on the grounds of the Opa-Locka Airport. The roofing material was strewn across the adjacent parking lot and struck several parked vehicles.[67]

September 9, 2001 – Five to ten inches of rain fell across southeast Florida, causing widespread street flooding. This event also spawned into tropical storm Gabrielle in the east of the Gulf of Mexico.[68]

August 14, 1998 – A severe thunderstorm in Opa-Locka resulted in thousands of homes to lose power. There was also roof and window damage reported at several homes.[69]

[66] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Data-base: https://www.ncdc.noaa.gov/stormevents/
[67] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[68] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[69] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

February 13, 1995 – A severe thunderstorm with up to 100mph winds caused about $5 million in damages at the Miami International Airport. The damage was done to four commercial jets, several loading platforms and a catering truck at concourse G.[70]

Vulnerability

Physical Vulnerabilities

The entire built environment (Critical Infrastructure, Key Resources, and Building Stock) may be vulnerable to severe storms due to wind or hail damages. These types of events could cause power outages or some structural damages to mobile/manufactured homes (see Hurricanes/Tropical Storms for a listing), communications towers, or damage trees and overhead utilities. Underground utilities could be impacted if trees topple and uproot these systems. Severe weather may also cause flying debris to cause additional damages. Structures in areas where there has been repetitive losses and no mitigation may also be at higher risk but past flooding events do not necessarily indicate future flooding problems. Areas with ongoing construction or drainage problems may also be at greater risk. Parks and open spaces where people congregate outside are vulnerable to severe weather that may roll in with little notice, this includes coastal beaches, Crandon Park, all County and State parks, large venues such as the Homestead- Miami Speedway, Hark Rock Stadium, and Marlins Park.

Social Vulnerabilities

People who live in areas prone to flooding and may be uninsured or underinsured are at greatest risk. The cost of insurance may be prohibitive and people who live outside of a flood zone may believe they are not at risk. People who rent properties may not be aware of their flood risk as it may not be disclosed by the owner or they may not know the history of the area. Electric dependent and persons living in mobile/manufactured homes may be at greater risk when it occurs in their areas.

Tornado

Description

A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. Tornado are one of the most violent of atmospheric storms and they come from two types of thunderstorms, supercell and non-supercell. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be in excess of one mile wide and 50 miles long. A majority of tornadoes, however, have wind speeds of 112 mph or less. Florida tornadoes occur in the greatest number during June, July and August. These are typically small, short-lived events that can produce minor damage and seldom take lives. Florida's most deadly tornado outbreaks occur in the spring.

[70] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

A tornado's strength is determined by looking at the damage that it caused. From the damage, the winds speeds can be estimated. In 2007, the National Weather Service implemented that Enhanced Fujita Scale (EF scale), which takes into account more variables than the original Fujita Scale (F scale) for a more consistent and accurate manner.

TABLE 10. OPERATIONAL ENHANCED FUJITA SCALE

EF Number	3 Second Gust (mph)
0	65 – 85
1	86 – 110
2	111 – 135
3	136 – 165
4	166 – 200
5	Over 200

Source: Storm Prediction Center

Waterspouts, tornadoes that occur over bodies of water, are common along the southeast U.S. coast, especially off Southern Florida and the Keys. They are smaller and weaker than the most intense tornadoes, but still can be quite dangerous. Waterspouts can overturn small boats, damage ships, create significant damage when hitting land, and kill people.

Location
The entire county is equally vulnerable to tornadoes.

Extent
EF-3 tornado could be experienced.

Impact
Miami-Dade ranks fourth in the state with eighty-six (86) reported tornadoes from 1971 to 2002. Based on data from 1950-2019, there has been 140 occurrences of tornadoes in Miami-Dade that have resulted in 159 injuries, 1 death and $203 million in damage.[71] The F-3 tornado in 1959 touched down in Coral Gables and moved over the Miami business

[7171] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

district and Biscayne Bay and impacted Sunny Isles. Most injuries were from flying and broken glass. Another occurrence on March 27, 2003 had a tornado that peaked as an F-2 that hit the Brownsville/Liberty City neighborhood. One person was killed in their home by tree debris and fourteen people were injured. FEMA damage estimates included $2.2M for housing assistance and $6.2M for other assistance, totaling $8.4M.[72]

Previous Occurrences

January 27, 2019 – A thunderstorm developed ahead of the main line of storms and produced a brief tornado in Miami-Dade County. The tornado caused some damage to homes, trees and power lines in Hialeah and Palm Lakes. The tornado also overturned two cars and power outages were reported.

January 23, 2017 – During the overnight and pre-dawn hours of January 23rd, a powerful squall line well ahead of a cold front over the Gulf of Mexico moved over South Florida. The line of storms resulted in a tornado touching down several times. The tornado first touchdown was near the Palmetto Expressway and NW 48th Street at 3:45 am. It then touched back down on the east side of the Palmetto Expressway, from NW 50th Street to NW 52nd Street between NW 74th and 69th Avenue. The damages in this area included an overturn tractor trailer, about 24 empty cargo containers were moved and an office building sustained minor roof damage. These were EF-0 borderline EF-1 damages (75-85 mph winds). The tornado continued a northeast track and moved into the Miami Springs area with winds most likely in the EF-1 range (90-95 mph). Loss of roof covering material and downed trees was reported in the "Bird District" between Shadow and Ludlum Avenue and Falcon and Dove Avenue. As it continued its track through Miami Springs, more damage was recorded east of Hammond Drive to Okeechobee Road where downed power lines and trees were reported. Once it crossed Okeechobee Road and entered in to the City of Hialeah it caused EF-1 damage from Red Road to W 2nd Avenue between West 10th and 13th Streets. In this area, four apartment buildings sustained roof damage and although the tornado passed very close to a water plant, it did not sustain any damage. The tornado lifted near W 2nd Avenue and W 13th street. 13 families were displaced in Hialeah and required assistance by the American Red Cross.[73]

February 16, 2016 – A squall line moving through Florida produced an EF-0 tornado in NE Miami-Dade. The tornado had an intermittent path of about 3.4 miles and affected the areas between NE 191st Street and Ives Dairy Road, from NW 8th Avenue to NE 23rd Avenue. Damage consisted of uprooted trees, several leaning poles and minimal structural damage, including several structures with roof damage. No injuries or fatalities were reported.

[72] National Weather Service Miami – South Florida, Series of Tornadoes Hit South Florida Including Miami and Miami-Dade County.
[73] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

June 24, 2012 – Golden Beach Police reported a waterspout moving onshore moving north. The path was approximately 0.5 miles and it was estimated as an EF-0. Beach chairs were tossed about 30 feet in the air and there was damage to trees and a hut. One residence also had damage to a metal gate and trees. The estimated amount of property damage was $10,000.[74]

August 14, 2008 – A thunderstorm in Hialeah produced an EF1 tornado with the highest estimated wind speeds near 90 mph. The tornado damaged eight structures. The estimated property damage was $150,000.[75]

March 27, 2003 – An F1 to F2 tornado touched down in East Hialeah, reached maximum intensity in the Brownsville area, and then lifted just before entering Biscayne Bay. The F1 to F2 damage began in an industrial area where several warehouse roofs were damaged and several empty semi-tractor trailers were overturned. The tornado then heavily damaged 60 houses in Brownsville. A total of 343 other structures sustained damage, mostly to roofs and windows. Also, several cars were overturned. Total damage estimates were around $8 million. Numerous trees, utility poles, and signs were uprooted or knocked down.[76]

March 9, 1998 – An F1 tornado touched down near the Palmetto Expressway and the Terry Lakes area. Broken windows, roof damage, and downed signs were common. There were also numerous trees and utility poles knocked down.[77]

February 2, 1998 – An F2 tornado touched down near the Miami International Airport causing damage to 12 airplanes. The F2 tornado then crossed through the Virginia Gardens and south Miami Springs area in a 100 to 200 yard path, damaging many buildings, houses, trees and utility poles. Then the tornado caused similar damage to south Hialeah. The tornado weakened to F1 status near the Hialeah race track and the path widened to one to three miles, with indications of three or four individual tornados of F1 intensity moving in tandem to the north. The main tornado then re-intensified to F2 status as it approached the Opa Locka airport, severely damaging the roof of the UPS facility, damaging or destroying airplanes, and damaging a hangar at the airport. Finally the tornados weakened to F1 status as they moved through Carol City, damaging homes and utility poles.[78]

[74] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[75] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[76] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[77] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[78] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

January 3, 1996 – An F0 tornado touched down before Westwood Lake with minor roof damage and downed trees. However, the tornado then became an F1, with winds estimated around 110 mph, and it maintained this intensity before lifting. Along this F1 portion of the track, nine persons were injured, three requiring hospitalization. Major damage occurred to 26 buildings, mostly residences, and another 50 buildings sustained minor damage. Six vehicles were also overturned or blown several yards.[79]

January 15, 1991 – An F1 tornado touched down in Hialeah about 2 miles northeast of the Miami International Airport. Cars were overturned, trees were uprooted, and utility poles were knocked down. A few buildings were also damaged.[80]

March 6, 1982 – An F1 tornado moved on a long path through the southwest portion of Miami damaging about 100 homes, hundreds of cars, miles of power lines, and toppling numerous trees. Four people were injured.[81]

December 20, 1973 – An F2 tornado touched down in the eastern portion of Florida City and moved northward through the center of Homestead. 10 houses were destroyed and 40 others had major damage. 22 mobile homes were demolished and 60 others had major damage. Nine people were injured and required hospitalization.[82]

February 19, 1968 – An F2 tornado struck a heavily populated area of North Miami Beach and caused considerable damage but no deaths or serious injuries. 21 people suffered minor injuries, mainly due to flying glass. Damage estimates were around $2 million in 1968 dollars.[83]

June 17, 1959 – An F3 tornado touched down in the southwestern tip of Coconut Grove. The tornado then moved 4 miles northeastward then lifted, temporarily, over the Miami business section. The tornado returned to the ground near the Buena Vista neighborhood of Miami before lifting into Biscayne Bay. 77 people were injured. Most of the injuries sustained in the tornado were cuts from flying or broken glass.[84]

April 5, 1925 – The strongest and most intense tornado that struck Miami-Dade County was an F3 (though other sources said it could have been an F5) on April 5, 1925. It remains the deadliest tornado to affect the county as well. The tornado caused five fatalities and another 35 people were hospitalized because of injuries. The damage total estimates

[79] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[80] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[81] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[82] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[83] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment
[84] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

were up to $300,000 in 1925 dollars. In total, the tornado demolished nearly 50 residences, mostly north of the City of Miami. The exact path and strength of the tornado are uncertain, since it occurred prior to modern records which began in 1950.[85]

Vulnerability

Physical Vulnerabilities

The entire built environment is vulnerable to tornadoes depending on where it hits (may be directly or indirectly impacted). Mobile and manufactured homes tend to sustain the most damage from a tornado due to their lighter weight building materials. A list of mobile home parks in Miami-Dade is provided in the Hurricane/Tropical Storm section. Unreinforced concrete buildings and wood structures may be more vulnerable to tornado damage. Power lines and trees may be downed or underground utilities may be uprooted when trees topple.

Social Vulnerabilities

People with disabilities such as decreased vision or hearing may not be aware of the tornado warnings. Electrically dependent individuals may rely on life-sustaining medical equipment and may be at greater risk due to power outages.

Wildfire

Description

Wildfire is defined by the Florida Forest Service (FFS) as any fire that does not meet management objectives or is out of control. Wildfires occur in Florida every year and are part of the natural cycle of Florida's fire-adapted ecosystems. Many of these fires are quickly suppressed before they can damage or destroy property, homes and lives.
There are four types of wildfires:

- Surface Fires: Burn along the forest floor consuming the litter layer and small branches on or near the ground.
- Ground Fires: Smolder or creep slowly underground. These fires usually occur during periods of prolonged drought and may burn for weeks or months until sufficient rainfall extinguishes the fire, or it runs out of fuel.
- Crown Fires: Spread rapidly by the wind, moving through the tops of the trees.
- Wildland-Urban Interface Fires: Fires occurring within the Wildland-Urban Interface (WUI) in areas where structures and other human developments meet or intermingle with wildlands or vegetative fuels. Homes and other flammable structures can become fuel for WUI fires.

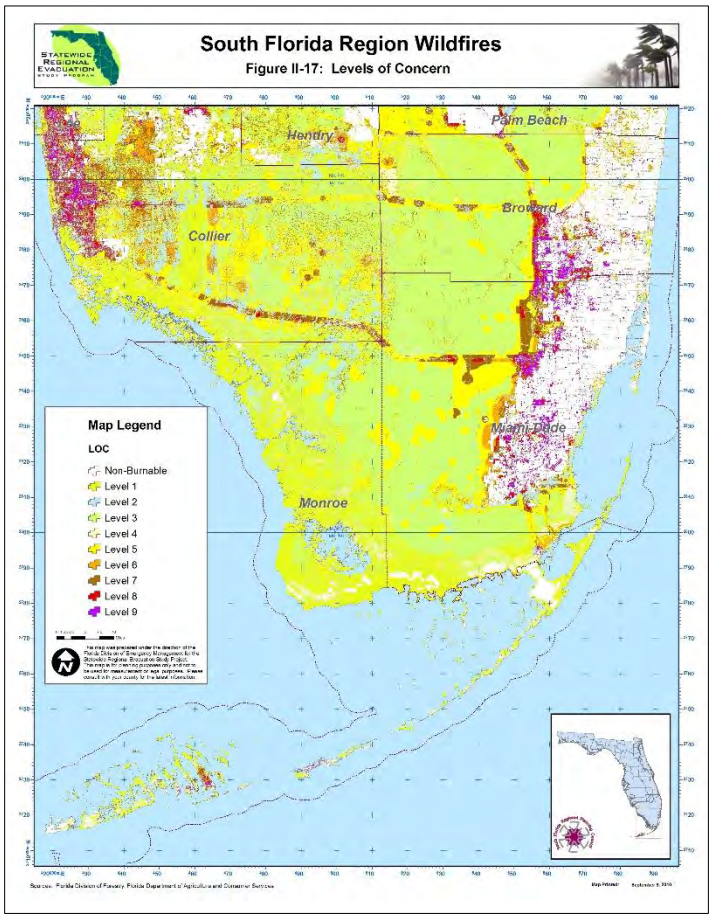
A wildfire is a naturally occurring event, often ignited by lightning or discarded cigarettes, and/or unattended camp fires and fueled by grasses, brush, and trees. Wildfires help to

[85] Miami-Dade 2015 Threat and Hazard Identification and Risk Assessment

control the buildup of woody debris, improve soil conditions, reduce weedy and invasive plants, reduce plant disease, and maintain the habitat conditions thus providing a healthy ecosystem. Fires in the Everglades tend to happen annually, with rapid wet-season fires, often started by lightning. Dry-season fires are less common, but can be more damaging.

Location

The populated areas of Miami-Dade County have on average a greater wildfire likelihood than 47% of counties in Florida.[86] This includes unincorporated Miami-Dade County and the municipalities of Homestead, Florida City, Sweetwater, Medley, Doral and Hialeah Gardens.



Extent

2000 acres.

Impact

In previous events homes have been threatened by wildfire, the Turnpike Extension and the Don Shula Expressway were closed due to heavy smoke, and acres of farmland and fields of grasses were destroyed.

[86] Wildfire Risk to Communities: https://wildfirerisk.org/explore/2/12/12086/

TABLE 11. FIRE DANGER LEVELS

Level	Criteria
Low	**Ignition**: Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires. **Spread**: Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. **Spotting**: There is little danger of spotting. Control: Easy
Moderate	**Ignition**: Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. **Spread**: Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. **Spotting**: Short-distance spotting may occur, but is not persistent. **Control**: Fires are not likely to become serious and control is relatively easy.
High	**Ignition**: All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. **Spread**: Fires spread rapidly. High-intensity burning may develop on slopes or in concentrations of fine fuels. **Spotting**: Short-distance spotting is common. **Control**: Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High	**Ignition**: Fires start easily from all causes. **Spread**: Immediately after ignition, spread rapidly and increase quickly in intensity. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels. **Spotting**: Spot fires are a constant danger; long distance spotting likely. **Control**: Direct attack at the head of such fires is rarely possible after they have been burning more than a few minutes.
Extreme	**Ignition**: Fires start quickly and burn intensely. All fires are potentially serious. **Spread**: Furious spread likely, along with intense burning. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. **Spotting**: Spot fires are a constant danger; long distance spotting occurs easily. **Control**: Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Source: National Fire Danger Rating System

Previous Occurrences

June 28, 2019 - A small wildfire developed in the Tamiami Pinelands Park area. The fire quickly spread causing damage to two vehicles. The estimated damage was $75,000.[87]

May 2008 – The Mustang Corner Fire was a large wildfire that burned over the Everglades of western Miami-Dade County. The fire burned 39,465 acres in the Everglades National Park. The fire also prompted the evacuation of some 1,753 prisoners and 250 employees from the Everglades Correctional facility and 535 detainees from the Krome Detention Center as the fire closed within ten miles. The fire prompted dense smoke advisories for the Miami Metropolitan area from May 17th to May 21st as dense smoke moved into the area during the night and early morning hours.[88]

May 7, 2008 – A wildfire broke out near Southwest 227th Avenue and Southwest 232nd Street in the Redland area of western Miami-Dade County, covering about 20 acres and threatening a home before being extinguished. The fire consumed 20 acres of a 30 acre farm, two vehicles, and some farm equipment. The estimated damage caused by this fire was $30,000.[89]

August 7, 2004 – A lightning-initiated wildfire burned 10,000 acres mostly in an area between the Homestead Extension of the Florida Turnpike and Krome Avenue. Smoke from the fire closed down portions of both roads for hours at a time and one person was killed in a vehicle crash likely caused by the restricted visibility. A local health alert was issued for persons mainly in the Doral area.[90]

April 5, 2000 – A 50-acre wildfire occurred in Homestead and destroyed two mobile homes and two boats. The total estimated damage was $100,000. [91]

March 30-31, 1999 – Redland area about a dozen wildfires burned as winds gusting near 30 mph quickly spread the flames. None of the fires exceeded 100 acres but a plant

[87] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[88] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[89] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[90] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[91] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

nursery was destroyed and several homes were threatened. Smoke closed the Florida Turnpike Extension and the Don Shula Expressway for several hours.[92]

Vulnerability

Physical Vulnerabilities
The built environment (Critical Infrastructure, Key Resources and Building Stock) and natural environment that are closest to the Everglades, agricultural areas or large open spaces are at a higher risk for exposure from wildfires. Critical facilities would include the Homestead Correction Institute, Dade Correctional Institution, Dade Juvenile Residential Facility, Everglades Correctional Institution, Krome North Service Processing Center, South Florida Reception Center, and Metro-West Detention Center. Residential areas of concern would include the Everglades Labor Camp, Gator Park Mobile Home Park, and Jones Fishing Camp Trailer Park. Visibility on roads may be compromised due to smoke and this may lead to the need for road closures or increased traffic accidents.

Social Vulnerabilities
Populations with respiratory complications may be at greater risk due to air quality issues in relation to wildfires. The social vulnerability section should be reviewed for more information on how these types of circumstances may affect populations differently.

Winter Storm

Description
Severe winter weather includes extreme cold, snowfall, ice storms, winter storms, and/or strong winds, and affects every state in the continental United States. Areas where such weather is uncommon, such as Florida, are typically affected more by winter weather than regions that experience this weather more frequently. Winter weather hazard events in Miami-Dade occur when high winds, and cold temperatures occur. In Miami-Dade, most winter concerns revolve around protecting crops from cold temperatures and providing shelter for vulnerable populations such as the homeless. Extreme cold conditions in Florida are considered to be slightly above freezing.

Location
The entire county is vulnerable to winter weather, inland portions tend to see colder temperatures by a few degrees. These areas tend to be south of Kendall Drive and west of the Florida Turnpike, primarily the Redland area and areas west of Homestead and Florida City.

Extent
26 degrees F with cold weather shelters open for over 10 consecutive days.

[92] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

TABLE 13. AVERAGE FREEZE DATES FOR SOUTH FLORIDA[93]

LOCATION	EARLIEST FREEZE	AVERAGE FIRST FREEZE	AVERAGE LAST FREEZE	LATEST FREEZE
HIALEAH	DECEMBER 15	DECEMBER 21-31	JANUARY 21-31	MARCH 3
HOMESTEAD	DECEMBER 28	DECEMBER 21-31	JANUARY 21-31	JANUARY 31
MIAMI BEACH	DECEMBER 24	DECEMBER 21-31	JANUARY 21-31	MARCH 3
MIAMI	DECEMBER 11	DECEMBER 21-31	JANUARY 21-31	MARCH 3

Impact

In January 2010, Miami-Dade experienced two back to back cold fronts, with temperatures below freezing in the interior portions of the county. Crop damage was extensive and severe, with estimates in excess of $500M in the region. Thousands of customers experienced intermittent power outages due to record-setting usage demands. Hazards such as carbon monoxide poisoning and household fires are increased in improperly ventilated homes during severe winter weather events. The loss of utilities stress resources and puts vulnerable populations at risk. Two fatalities were noted from exposure to cold, a homeless man in Fort Lauderdale and an elderly man in an unheated apartment in Miami. Cold weather shelters were open for over 10 consecutive nights in many areas of South Florida.

Previous Occurrences

January 2010 – A strong artic cold front moved through South Florida in the early part of January. This cold front produced freezing temperatures and very low wind chills. Freezing temperatures were noted over almost all of South Florida on the mornings of January 10th and 11th. This front resulted in the coldest 12-day period of temperatures throughout South Florida. Crop damage was extensive with total damage estimates in excess of $500 million. Thousands of customers experienced intermittent power outages during this period due to record-setting usage demands.[94]

January 5, 2001 – A freeze occurred throughout the interior sections of South Florida, causing damage to certain crops. The hardest hit were certain vegetable crops with 30% losses in the farming areas of south Miami-Dade County. Other crops that were damaged included newly planted sugar cane, ornamentals, and tropical fruits.[95]

[93] National Weather Service Miami Office
[94] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/
[95] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

February 5, 1996 – The coldest temperatures since the "Christmas freeze" of 1989 caused damage to fruit and vegetable crops in South Florida. Strong winds caused wind chill values in the teens, and disrupted electrical service to over 20,000 customers throughout the region.[96]

TABLE 14. PRESIDENTIALLY DECLARED FREEZE EVENTS IN MIAMI-DADE

Disas-ter Type	Disas-ter Number	Title	Incident Begin Date	Declaration Date	Incident End Date	Disaster Close Out Date
DR	1359	SEVERE FREEZE	12/1/2000	2/5/2001	1/25/2001	5/14/2010
DR	851	SEVERE FREEZE	12/23/1989	1/15/1990	12/25/1989	4/23/1996
DR	732	SEVERE FREEZE	3/18/1985	3/18/1985	3/18/1985	10/27/1988
DR	526	SEVERE WINTER WEATHER	1/31/1977	1/31/1977	1/31/1977	12/18/1978
DR	304	FREEZE	3/15/1971	3/15/1971	3/15/1971	6/18/1973

Source: data.gov, FEMA Disaster Declarations Summary

Vulnerability

Physical Vulnerabilities

Little of the built environment (Critical Infrastructure, Key Resources and Building Stock) is vulnerable to winter storms. Pipes carrying water to households could freeze and expand causing pipes to burst. Inadequately heated or insulated homes may resort to heating by kerosene heaters or stoves. These methods of heating are dangerous and contribute to carbon monoxide poisoning and household fires. Agricultural interests are more vulnerable to winter storms and frost can destroy crops. Crops most vulnerable to winter storms and freezes are the ones that are grown during the winter months and harvested in the spring months including cantaloupe, carambola, celery, cucumbers, dragon fruit, eggplant, fennel, guava, green beans, herbs, jackfruit, longyan, lychee, mushrooms, onions, papaya, passion fruit, plantains, radishes, sapodilla, spinach, squash, strawberries, sweetcorn, thyme, tomatoes and zucchini.

[96] National Oceanic and Atmospheric Administration, National Climatic Data Center, Storm Events Database: https://www.ncdc.noaa.gov/stormevents/

Social Vulnerabilities

Extreme cold weather is a particularly dangerous hazard for at risk populations such as the homeless, elderly, low income or people living in homes without heating or means to keep warm. These populations include those who have a difficult time keeping warm or finding a heat source during an extreme cold event. The homeless are particularly at risk. Age groups such as the elderly and infants have limited physiological capability to keep warm. It is estimated that there are 3,472 homeless individuals reside in Miami-Dade County as of April 2019[97]. Larger concentrations of homeless tend to be near the down-town Miami and Miami Beach areas. Body warming mechanisms such as "goose bumps" and shivering are restricted in these groups. Outdoor animals and pets are also at risk of extreme cold temperatures. In the event that ambient temperatures in the county are forecasted to be at or below 50 degrees Fahrenheit for any period of time the Miami-Dade Homeless Trust will open and operate cold weather shelters.

Natural Hazards by Jurisdiction

The following chart depicts the probability risk by location of all of the natural hazards. The estimate of risk is based on the judgment of local planners and the LMS Working Group regarding the likely frequency of occurrence of the hazard event based on the location of the jurisdiction to the hazard potentially occurring. Sea Level Rise probabilities were determined by potential future risk as identified in the map in the Sea Level Rise section. The rankings are Low (L), Medium (M) and High (H).

[97] 2019 Homeless Population Census http://www.homelesstrust.org/library/homeless-census-comparison.pdf

TABLE 15. NATURAL HAZARDS BY JURISDICTION

Jurisdiction	Drought	Erosion	Flooding	Hurricane/ Tropical	Saltwater Intrusion	Sea Level Rise	Severe Storm	Tornado	Wildfires	Winter Storms
Aventura	M	L	H	H	H	H	H	H	L	M
Bal Harbour	M	H	H	H	H	H	H	H	L	M
Bay Harbor	M	H	H	H	H	H	H	H	L	M
Biscayne Park	M	L	H	H	H	L	H	H	L	M
Coral Gables	M	L	H	H	H	H	H	H	L	M
Cutler Bay	M	L	H	H	H	H	H	H	L	M
Doral	M	L	H	H	L	H	H	H	L	M
El Portal	M	L	H	H	H	M	H	H	L	M
Florida City	M	L	H	H	H	H	H	H	M	M
Golden Beach	M	H	H	H	H	H	H	H	L	M
Hialeah	M	L	H	H	L	M	H	H	L	M
Hialeah Gardens	M	L	H	H	L	M	H	H	L	M
Homestead	M	L	H	H	H	H	H	H	M	M
Key Biscayne	M	H	H	H	H	H	H	H	L	M
Medley	M	L	H	H	L	M	H	H	L	M
Miami	M	L	H	H	H	L	H	H	L	M
Miami Beach	M	H	H	H	H	H	H	H	L	M
Miami Gardens	M	L	H	H	L	M	H	H	L	M
Miami Lakes	M	L	H	H	L	M	H	H	L	M
Miami Shores	M	L	H	H	H	M	H	H	L	M
Miami Springs	M	L	H	H	L	M	H	H	L	M
North Bay Village	M	L	H	H	H	M	H	H	L	M
North Miami	M	H	H	H	H	H	H	H	L	M
North Miami Beach	M	L	H	H	H	H	H	H	L	M
Opa-locka	M	L	H	H	L	M	H	H	L	M
Palmetto Bay	M	L	H	H	H	H	H	H	L	M
Pinecrest	M	L	H	H	H	H	H	H	L	M
South Miami	M	L	H	H	L	L	H	H	L	M
Sunny Isles	M	H	H	H	H	H	H	H	L	M
Surfside	M	H	H	H	H	H	H	H	L	M
Sweetwater	M	L	H	H	L	M	H	H	L	M
Virginia Gardens	M	L	H	H	L	L	H	H	L	M
West Miami	M	L	H	H	L	L	H	H	L	M
Unincorporated	M	H	H	H	H	H	H	H	M	M

Miami-Dade County Critical Facilities Inventory

The LMSWG recognizes the importance of mitigation to critical facilities and as such uses data supplied by the municipalities and the various county departments to develop a database which includes the critical facilities inventory, NFIP repetitive loss data, historic flood data and the locations of hazardous materials that fall under the jurisdiction of Section 302 of the Federal Emergency Planning and Community Right-to-Know Act. This data has been supplied by the Miami-Dade County Division of Environmental Resources Management (DERM) and the State Emergency Response Commission.

Similarly, Miami-Dade and the municipalities control a huge inventory of properties. Therefore, due to its voluminous size, the listing of non-critical municipal public building and facilities will be maintained separately by the county and each municipality.

A critical facilities inventory is maintained by Miami-Dade Office of Emergency Management (OEM) and the Miami-Dade Information Technology Department (ITD) that includes those facilities that have been deemed critical by the state and federal governments. A copy has been supplied to FDEM as well. The inventory includes GIS coverage for the following: the Miami-Dade County street network, day care centers, medical facilities (MMF, hospitals, nursing homes, adult living facilities), Miami-Dade fire stations, municipal fire stations, Miami-Dade police stations, municipal police stations, solid waste management sites, sewage treatment plants, sewer pump stations, water treatment plants, Miami-Dade County schools, hazardous materials sites, municipal critical facilities inventory, the Miami-Dade evacuation network, and hurricane evacuation centers. In 2014 OEM and ITD updated the *Debris Management Plan* to update debris clearance measures including critical facilities.

While the state and federal government defines critical facilities as those listed above, the Miami-Dade LMSWG has defined critical facilities in three types or levels, which are:

- Level 1 – A facility that must remain available in all circumstances and at all times. The community cannot do without this facility at all. Protective measures are an absolute must.
- Level 2 – A facility that must be restored within twenty-four hours or risk dire consequences to the community.
- Level 3 – A facility that must be restored within seventy-two hours or the community may suffer major problems.

The LMSWG concludes that any facility that the community can do without for more than seventy-two hours is not truly critical; important perhaps, but not critical.

Data Sources Identified

We have identified the following data sources as being important and comprehensive to the accomplishment of our mitigation goals. However, additional data sources will surely be discovered as we proceed with the task of mitigation.

Federal Emergency Management Agency (FEMA)

- National Flood Insurance Program repetitive loss inventory.
- Flood Insurance Rate Maps, hurricane storm surge maps, and previous natural hazard computer modeling results. The new FIRM maps are anticipated to be completed in June 2020.
- The FEMA website www.fema.gov has a wealth of accumulated data that can be extremely valuable in developing mitigation measures.

Other U. S. Government Databases and Information Sources

- National Hurricane Center and the National Oceanographic Atmospheric Administration (NOAA) historical storm related data (including, National Climatic Data Center).
- The National Weather Service Miami Forecast Office data files.
- National Hurricane Center "SLOSH" models.
- National Priorities List (NPL)
- Comprehensive Environmental Response, Compensation and Liability Information System List (CERCLIS – the "Superfund")
- No Further Remedial Action Planned List (NFRAP)
- Emergency Response Notification System List (ERNS)
- RCRA Corrective Action Tracking System List (CORRACTS)
- Resource Conservation and Recovery Information System List (RCRIS)
- Hazardous Waste Data Management System List (HWDMS)
- Facility Index Data System List (FINDS)
- Toxic Release Inventory System List (TRIS)
- U. S. Immigration and Naturalization Service databases.

State of Florida

- Florida State University Department of Meteorology hurricane historical database.
- State-Funded Action Sites List (SFAS).
- State Sites List (SITES).
- Solid Waste Facilities List (SLDWST).
- Petroleum Contamination Tracking System Report (PCTS).
- Stationary Tank Inventory System List (TANKS).
- Hazardous Waste Compliance & Enforcement Tracking System List (COMHAZ).
- South Florida Water Management District (SFWMD).

Miami-Dade County
- Municipal and County Emergency Management Plans and Comprehensive Plans.
- Municipal and County Floodplain Management Plans.
- Miami-Dade Stormwater Management Master Plan and Capital Improvements Projects.
- Miami-Dade County, Division of Environmental Resources Management (DERM) GIS database.
- Miami-Dade County, Information Technology Department, Critical Facilities Inventory and other GIS databases.
- Enforcement Case Tracking System Report (ECTS).
- Fuel Spill Report (FSPILL).
- Hazardous Waste Report (HW).
- Industrial Waste Reports.
- Underground Storage Tanks Report (UST).
- Agriculture extension services and databases.

Municipal Agencies
- Staff resources, records and data files.

Additional Resources
- The American Red Cross will provide information regarding shelters, as well as staff resources and records
- Internet web sites provided by the Florida Division of Emergency Management as part of the Local Mitigation Strategy Guidebook

CONFLICT RESOLUTION PROCEDURES

The Miami-Dade County Local Mitigation Strategy Working Group has established procedures to resolve conflicts between member entities that may arise from the development of the LMS. It has borrowed extensively from the *Regional Dispute Resolution Process of the South Florida Regional Planning Council*.

These procedures are designed to clearly identify and resolve problems as early as possible, to utilize procedures in a low-cost to high-cost sequence, to allow flexibility in which procedures are used, to provide for the appropriate involvement of affected and responsible parties, and to provide as much process certainty as possible.

There are two basic components: process initiation and settlement meetings. Additionally, there are five optional components: pre-initiation meeting, situation assessments, mediation, advisory decision-making, and referral to other dispute resolution processes.

The Working Group consists of representatives from Miami-Dade County, its incorporated municipalities, County departments and other participating organizations.

In the event of a dispute, parties named in the Initiation Letter (see below) are automatically allowed to participate. Other jurisdictions, public or private organizations, groups, or individuals must be suggested by a named party and agreed to by a majority of the named parties before inclusion; or recommended for inclusion by a mediator mutually selected by the named parties.

Other jurisdictions, public and private organizations, groups, or individuals seeking to become named parties can submit a written petition to the Working Group. Such groups will become named parties if agreed to by a majority of the named parties or by a mutually selected mediator. Named parties have twenty-one days to respond to the Initiation Letter.

Each named party must appoint a representative who should have authority to act. Jurisdictions are encouraged to designate a representative before one is needed. This person will be responsible for the party's interests and maintain communication throughout the process. The representative must be named in writing.

- Pre-Initiation Meeting: Any jurisdiction, organization, group or individual may request an informal pre-initiation meeting with the Working Group Coordinator.

- Initiation Letter: The conflict resolution process begins with an Initiation Letter from a jurisdiction's governing body, which is sent to all named parties and the Working Group coordinator. This must be accompanied by either a resolution or written authorization from the same governing body.

The Initiation Letter must identify the issues to be discussed; named parties to be involved; name of the initiating party's representative; others who will attend; and a brief history of the dispute that indicates why this dispute is appropriate for this process.

- Response Letter: The named parties must send a response letter to the Working Group coordinator and all other named parties. The response letter must indicate the respondent's willingness to participate in a settlement meeting and include any additional issues for discussion as well as a brief description and history of the dispute from the respondent's point of view.

- Situation Assessment: At the request of a jurisdiction, organization, group, or individual, the Working Group coordinator or other neutral party can perform a situation assessment at any time, before or after initiation of the process. The situation assessment can involve examination of documents, interviews and assessment meetings, and can result in a recommendation concerning the issues to be addressed, parties that may participate, appropriate dispute resolution procedures, and a proposed schedule.

Private interests may ask any member of the Working Group to initiate the process. Any public or private organization, group, or individual may request that the Working Group recommend use of the process. The Working Group can recommend that a potential dispute is suitable for the process and transmit its recommendation to the potential parties.

All requests must be in writing and provide all required information. A Working Group representative must respond after reviewing the petitioner's request; meeting with the requesting organization, group, or individual; and performing a situation assessment. If the Working Group representative agrees with this process, a recommendation will be sent to the potential parties.

- Settlement Meetings: At a minimum, the representatives of the named parties must attend the first settlement meeting. This meeting may be facilitated by a member of the Working Group or a mutually agreed upon neutral facilitator. At the initial settlement meeting the named parties must consider adding named parties; consider guidelines for participation; identify the issues to be addressed; explore options for a solution; and seek agreement.

If the settlement meeting is not held or it produces no agreement to proceed with mediation or advisory decision making, then the participating parties may formally withdraw from the process or proceed to a joint meeting of the governing bodies (as in Florida Statute 164); litigation; administrative hearing; or arbitration.

- Mediation: If two or more named parties submit a request for mediation to the Working Group, then a representative of the Working Group will assist them in selecting and retaining a mediator. Alternatively, the named parties may request that the Working Group coordinator make the selection or request similar assistance from the South Florida Regional Planning Council.

A mediator who understands hazard mitigation issues and is acceptable to the named parties shall mediate all disputes. Mediators shall be guided by the Standards of Professional Conduct, Florida Rules for Certified and Court Appointed Mediators, Rules 10.020-10.150 F.A.C.

- Advisory Decision Making: If two or more named parties submit a request for advisory decision making to the Working Group, then a representative of the Working Group will assist in selecting and retaining an appropriate neutral. Alternatively, the named parties may request that the Working Group coordinator make the selection. A neutral party that understands hazard mitigation issues and is acceptable to the named parties shall handle all disputes.

Initial settlement meetings are scheduled and held within thirty days of receipt of the initiation letter. Additional settlement meetings, mediation, or advisory decision-making must be completed within forty-five days of the date of the conclusion of the initial settlement meeting.

Timeframes may be altered by mutual agreement of the named parties. The optional components of this process may be used in any order.

In the early stages of the process, the parties should address deferring or seeking stays of judicial or administrative proceedings while using this process.

The form of all agreements shall be determined by the named parties and may include: inter-local agreements; concurrent resolutions; memoranda of understanding; contracts; plan amendments; deed restrictions; or other forms as appropriate.

Agreements signed by the party's representative may be in the form of a recommendation to a formal body and subject to its formal approval.

Two or more parties may reach agreements even if all of the named parties don't agree or don't sign a formal agreement.

After settlement meetings, mediation, or advisory decision-making, the named parties must submit a joint report to the Working Group. The report must contain any statements that any of the named parties wants included as well as:

- An identification of the issues discussed;
- A list of potentially affected or involved jurisdictions, public or private organizations, groups, or individuals (even those who are not named parties);
- A timeframe for starting and ending informal negotiations, additional settlement meetings, mediation, advisory decision making, joint meetings of elected bodies, administrative hearings or litigation;
- Any additional assistance required;
- A cost allocation agreement; and
- A description of responsibilities and schedules for implementing and enforcing agreements reached.

Appropriate opportunities for public input should be considered during the process. Applicable public notices and public records requirements must be observed (Chapters 119 and 120, F.S.).

The participants agree to make every effort to keep costs at a minimum. All costs are to be shared equally among the parties unless otherwise agreed upon or as recommended by a mediator mutually selected by the parties.

To the extent possible, the confidentiality provisions of Chapter 44, F.S. will govern mediation under this process. By participating in this process, participants agree not to offer any comments, meeting records, or written or verbal settlement offers as evidence in subsequent judicial or administrative action.

For further information please contact:

Steve Detwiler
9300 NW 41st Street, Miami, FL 33178
Phone: (305) 468-5423
Email: mdlms@miamidade.gov
Website: https://www8.miamidade.gov/global/emergency/projects-that-protect.page

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Local Mitigation Strategy

LMS
Miami-Dade

Whole Community Hazard Mitigation

Part 2: The Projects

July 2020

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INTRODUCTION

Part 2 of the Miami-Dade Local Mitigation Strategy (LMS) – The Projects – is a compilation of projects identified by Working Group members for mitigation measures or actions they have completed, are pursuing or one day hope to implement and how they are submitted, tracked, maintained and prioritized.[1]

METHODOLOGY

Over the years the listing of LMS projects have shifted from primarily being a tool to identify unfunded projects with hopes of securing mitigation grants to a tool to identify any project a stakeholder is implementing or hopes to implement that will make our community more resilient. We are utilizing the LMS to showcase the work being performed and the projects envisioned to lessen the impacts of disasters on our communities.

Project Submittal and Tracking

In 2013, a web-based LMS Project board was developed in our incident tracking software known as WebEOC. This system allows LMSWG members to input new projects and update existing projects at any time throughout the year. The Whole Community Mitigation Planner is responsible for the review of the projects and for providing an update to the State of Florida every January. The Whole Community Mitigation Planner will post an update of the current list of projects every January and July on the LMS website: https://www8.miamidade.gov/global/emergency/projects-that-protect.page

It is the responsibility of the LMSWG members that post projects, to ensure the projects are compliant with the local and Federal Emergency Management Agency (FEMA) requirements identified below. The Whole Community Mitigation Planner may also require additional information. Agencies with projects will be notified of any additional requirements and when possible, provided six months to come into compliance.

Project Requirements

Below is a list of the project fields and identification of requirement:

Project List Field	Level of Requirement	Comments
Agency Type	Local Requirement	Must be utilized to tie project to agency
Agency	Local and FEMA Requirement	Must be utilized to tie project to agency
Project Title	FEMA Requirement	Satisfies Name and Description
Entry type	FEMA Requirement	Identifies new projects and project to be removed from Active List

[1] EMAP 2016 Standard 4.2.3

Project List Field	Level of Requirement	Comments
Original Date of Entry	Default	Identifies when the project was first put in the LMS Project list.
Last Updated	Default	Identifies last date of update. If an agency fails to review and update projects on an annual basis they can be made inactive.
Status	FEMA Requirement	Current status of project. Satisfies New, Deferred, Completed or Deleted
Hazard	Local Requirement	Allows us to sort hazard type for potential funding and identify flood projects in support of Part 7
Project Type	Local Requirement	Allows us to sort for funding options by type of project
Mapper Label	Not Required at this time	For future use for mapping
Address	Local Requirement	Will allow us to geo-code and map projects
Longitude and Latitude	Local Suggestions	Will aid in future mapping of projects
Flood Basin	Local Requirement for Flood projects, Local Suggestion for ALL projects	Allows us to identify where mitigation projects for flooding have been identified and facilitate additional coordination and mapping. May assist with showing effectiveness of mitigation projects after significant rain events.
Completion Time Frame	FEMA Requirement	If a project is unfunded provide your best estimation as to when this project could be completed.
Mitigation Goals	Local Requirement	Shows alignment with LMS
Funding Source	FEMA Requirement	FEMA lists this a potential funding source, we split this to also identify internal funding sources or potential grant sources
Grant Source (Potential or secured)		
Is a Match Required	Local Requirement	May assist us with identifying projects for global match opportunities
Match Identified	Local Requirement	
Estimated Costs	Local Requirement	We are required to include this in the County Annual report.
Global Match	Local Requirement	Identifies if the project may be able to be used a global match for another project in need of a match
Project Description	FEMA Requirement	
Comments	Reserved for additional notations	Whole Community Mitigation Planner notates and changes or requests for letters of support in this area.
Attachments	Local Suggestion	Allows the agency to place supporting documents in the database with the record.
Name, Email and Phone	Local Requirement	Allows Whole Community Mitigation Planner to contact POC directly regarding projects
BCA Completed and BCA score	Required only when funding source requires this information.	Must be completed if a letter of support is requested and the funding source requires it.

Project List Field	Level of Requirement	Comments
Self-Prioritization	Local Requirement	Identifies agency priorities.
Benefit Cost Review	FEMA Requirement	Provides a score based on Suitability, Risk Reduction and Cost and Time.

The Whole Community Mitigation Planner has the responsibility for requesting that the LMS working group members update their projects and determine if these projects are missing information. This planner will also utilize the information provided to develop documents and other supporting documents such as maps to track mitigation projects.

The projects listed in this document are in a table format, which is an abridged version of the full project descriptions maintained in the WebEOC LMS Board. Additional information on listed projects, is available to all stakeholders with project accounts. Anyone wishing to have an account to add or review projects should make a request to the Whole Community Mitigation Planner at mdlms@miamidade.gov or 305-468-5427.

Updates and Reports

As stated in *Part 1*, the LMS is updated on an annual basis and as part of a regular update and monitoring process. An annual update of the LMS is provided to the State by January 31st every year and the documents are subsequently posted on the Local website. To keep the project list updated, agencies with listed projects are requested to review and update them within WebEOC on an annual basis by October 31. *Part 2* of the LMS will be updated on the website in January, following a review of the updates by the Whole Community Mitigation Planner.

In January of every year the Whole Community Mitigation Planner is required to provide a report to Miami-Dade Fire Rescue as part of the Department's Annual Preparedness Report that is submitted to the County Mayor. The Whole Community Mitigation Planner compiles information on projects that have been completed, are under construction, or are funded but not yet started since the previous year's report. This information is derived from the LMS Project list and is another way to showcase on an annual basis the progressive mitigation work being accomplished.

At all times, the latest published version of the LMS will be posted on the Miami-Dade County Internet website: https://www.miamidade.gov/global/emergency/projects-that-protect.page – for public review and commentary. Any comments received through this medium will be incorporated through the revision process identified in *Part 1*. An email address, mdlms@miamidade.gov, has been established for such commentary, which is strongly encouraged.

The projects are listed in this document in Appendix 3 in a table format which is an abridged version of the full project description maintained in the WebEOC LMS Board. Appendix 1 shows a sample project as it is found in the WebEOC LMS Board. Addi-

tional information on listed projects is available to all stakeholders with project accounts. Anyone wishing to have an account to add or review projects should make a request to the Whole Community Mitigation Planner at mdlms@miamidade.gov or 305-468-5427.

Project Administration and Implementation

The projects listed in Appendix 3 reflect the mitigation initiatives identified by members of the LMS Working Group. The initiator of the projects will be responsible for implementation and administration. Due to the variable nature of procurement and contracting procedures; availability of resources; and weather conditions, accurate implementation timelines are difficult to predict. Therefore, implementation timelines may not be developed for some projects until a funding source is identified and the factors above can be determined relative to the prevailing operating environment. Grant requirements may also dictate project implementation timelines for the appropriate recipient. If the project is funded through a grant, the grantee is responsible for implementing these projects as outlined in the grant's regulations.

Letters of Support

The Whole Community Mitigation Planner will write a letter of support for grant opportunities when a listed project has all of the required information provided and the minimum requirements met. The Whole Community Mitigation Planner will notify the requestor, if additional information is needed to be added to the project in order for a letter of support to be provided. Requests for letters must, at a minimum, be requested 10 working days in advance of the required deadline. Late requests may not be able to be facilitated. The Whole Community Mitigation Planner will make notations in the Comments section as to date and action taken.

The agency requesting a letter of support must be an active participant of the LMS, meaning they comply with the requirements set forth in *Part 1* of the LMS. Currently the requirements include their organization/agency must attend at least two (2) of the four (4) quarterly meetings held each year or an equivalent committee or sub-committee meeting as a substitution. The other requirements is that their project in the LMS WebEOC must be updated every calendar year.

Project Archiving

The Whole Community Mitigation Planner will archive a project once it has been marked as completed by the stakeholder. The planner will also review the project file to ensure that all information has been included before it is officially archived. Archiving it will move it from the Active projects view to the Archive view. The Whole Community Mitigation Planner will make notations in the Comments section as to date and action taken.

Project Deletion

From time-to-time stakeholders may wish to delete a project from the Project List. The Whole Community Mitigation Planner will review any project that has been identified for deletion and call to discuss the project with the point of contact to verify that this is the desired action. Sometimes it may be better to make a project inactive rather than completely deleting it, in case it may be a project that may be revisited at a later date. If the project is truly desired to be deleted the Whole Community Mitigation Planner will send a confirmation email to the point of contact that this action has occurred. The project will be marked for deletion, a printout of the confirmation email and the project to be deleted will be filed and a notation will be made in *Part 2* Appendix 2 that the project has been deleted and why.

Inactive Projects

If a project has not been updated by October 31, does not have the required fields completed, and the agency is non-compliant with meeting attendance, those projects associated with that agency or specific projects lacking required information or not updated on an annual basis will be made Inactive by the Whole Community Mitigation Planner. The planner will also the point of contact listed in the project, or if none is listed, a representative from the agency will be notified of the pending action. The agency will have until December 31 to update the project. Projects that are not updated by that time will be moved to "inactive status". At the first quarterly meeting of the year, the Whole Community Mitigation Planner will make a motion to permanently delete any projects that have been made inactive and the agency has not responded or updated the projects by that time.

PRIORITIZING MITIGATION INITIATIVES[2]

Once the vulnerability assessment and risk analyses are complete and the hazard mitigation opportunities have been identified, proper priorities must be established concerning each proposed project's impact on life safety, on quality of life, cost effectiveness and value to the overall community including but, by no means limited to, value as compared to other similar projects especially during times of limited funding availability. The Miami-Dade County Office of Emergency Management (OEM) is responsible for soliciting, securing, evaluating, and generally acting as the technical & administrative staff for the management of the prioritization process and for the coordination of the implementation of initiatives selected for priority treatment.

The prioritization process has been divided into three parameters: suitability, risk reduction potential and cost. Within each parameter are recommended measures to be considered during prioritization of the project. This process is known as the Benefit Cost Review (BCR) and was updated in October 2013. Table 1 is the BCR that is utilized within the WebEOC LMS Board to meet the prioritization process requirement.

[2] EMAP 2016 Standard 4.2.2

Each agency when they add a project to the LMS Project List is required, as of June 31, 2014, to complete a self-prioritization process.

It is important to note that this will be one level of consideration when limited funding sources are available to fund projects in Miami-Dade County. Other considerations include but are not limited to:

- Criteria of the available funding source.
- Overall cost of a project in relation to the total monies available.
- Readiness of projects for submittal.
- Ability to meet any match obligations.
- Ability of project to be completed within any designated grant period.
- Evaluation of other current and future mitigation funding opportunities.
- Review of other current or impending mitigation measures that when combined may provide a more comprehensive, community or countywide resiliency.

There may be situations when the window for a funding opportunity is very limited and in situations like this, projects that are "shelf-ready" may be put ahead of projects that may have a higher priority. The LMS Steering Committee will work to maximize opportunities for funding and will be called upon by the Whole Community Mitigation Planner when circumstances arise that require additional considerations to be made.

The Whole Community Mitigation Planner or designated representative will act as the committee facilitator. The committee's primary function will be to review and act on recommendations with respect to its evaluation of mitigation initiatives and its ranking of the priorities for their implementation. Projects that may not have a BCR completed will not be considered for funding.

Table 1: Miami-Dade LMS Project Benefit Cost Review

Initiative Being Scored:					
Name of Applicant:					
Project Cost:					
Parameter		**Weighting Factor**	**Scoring Criteria**	**Score**	**Points**
Suitability		**30%**			
1	Appropriateness of the Measure	35%	**5 - High:** Reduces vulnerability and is consistent with Local Mitigation Strategy (LMS) goals and plans for future growth. **3 - Medium:** Needed, but does not tie to identified vulnerability. 0 **- Low:** Inconsistent with LMS goals or plans.		
2	Vulnerability to Hazards	15%	**5 - High:** Project addresses 2 or more hazards, includes consideration for sea level rise impacts. **3 - Medium:** Project addresses at least 2 hazards. **1 - Low:** Project addresses one hazard.		
3	Lifespan of mitigation measure and consideration of future risk	15%	**5 - High:** Expected to last\address hazards for 40 or more years. **3 - Medium:** Expected to last\address hazards for 20-39 years. **1 - Low:** Expected to last\address hazards less than 20 years		
4	Environmental Impact	10%	**5 - Positive effect** on the environment. **3 - No effect -** environmentally neutral. **0 - Adverse effect** on the environment.		
5	Consistent with Existing Legislation and/or Policies	10%	**5 - High:** Consistent with existing laws and policies. **3 - Medium:** New legislation or policy changes needed, but no conflicts identified. **1 - Low:** Conflicts with existing laws, regulations and/or policies, requires waivers.		
6	Consistent with Existing Plans and Priorities	15%	**5 - High -** Consistent with existing plans and priorities. **3 - Medium -** Somewhat consistent with current plans and priorities. **1 - Low -** Conflicts with existing plans and priorities. Does not fit in with identified initiatives.		
	Parameter Subtotal	100%	**sum of parameter scores; max =**		
Suitability subtotal			(sum of parameter scores) / (maximum possible score)	100%	

Parameter		Weighting Factor	Scoring Criteria	Score	Points
Risk Reduction		**55%**			
1	Scope of Benefits	15%	**5 - High:** Benefits multiple jurisdictions. **3 - Medium:** Benefits more than half but not all of the municipalities and/or the unincorporated area. **1 - Low:** Benefits less than half of the municipalities and/or the unincorporated area.		
2	Potential to Protect or Save Human Lives	30%	**5 - High:** More than 1,000 lives. **3 - Medium:** Up to 1,000 lives. **1 - Low:** No lifesaving potential.		
3	Supports Protection of Critical Infrastructure or Continuity of Essential Services	20%	**5 - High:** Project will ensure continuity of operations for critical infrastructure or essential services for disaster response. **3 - Medium:** Project will support critical infrastructure or essential services with loss/damage history. **1 - Low:** Project will support infrastructure or services without loss/damage history. **0- Neutral -** Project has no impact on community infrastructure or services.		
4	Repetitive Damages Corrected	10%	**5 - High:** Alleviates repetitive loss. Property must have been damaged in the past by a disaster event. **3 - Medium:** Repetitive loss may have occurred but was not documented. **1 - Low:** No effect on repetitive loss.		
5	Economic Effect or Loss During Lifespan of the Project	10%	**5 - Minimal** economic loss (project improves resiliency of the community, does not increase risk of other adjacent areas/buildings.) **3 - Moderate** economic loss (project may help minimize disruption and economic losses). **1 - Significant** economic loss (project not likely to minimize economic impact of the community).		
6	Number of People to Benefit	15%	**5 - High: M**ore than 100,000 people. **3 - Medium:** 10,000 to 100,000 people. **1 - Low: F**ewer than 10,000 people.		
	Parameter Subtotal	100%	**sum of parameter scores; max =**		
Risk Reduction Subtotal			(sum of parameter scores) / (maximum possible score)		100%

Parameter		Weighting Factor	Scoring Criteria	Score	Points
Cost and Time		**15%**			
1	Estimated Costs*	30%	*(This score combines a weighted factor of Initial and Maintenance/Operating Costs)		
	i. Initial Cost (including design, project management, research…)	*75%*	**5 - Low:** $0 to $100,000. **3 - Moderate:** $100,001 to $1 million. **1 - High:** More than $1 million.		
	ii. Maintenance/ Operating (Annual/ Deployment) Costs	*25%*	**5 - Lower costs:** Less than 5% per annum of the initial cost. **3 - Moderate costs:** 5-10% per annum of the initial cost. **1 - Higher costs:** More than 10% annum of the initial cost.		
2	Affordability	30%	**5 - Good:** Project is easily affordable. Has been budgeted or a grant for this project is available and the likelihood of success is high. (If a match is needed, it is available.) **3 - Moderate:** Project is somewhat affordable. Grants for this project are available and the likelihood of success is moderate. (If a match is needed, high confidence that it could be obtained.) **1 - Poor:** Project is very costly for the agency. Grants for this project are limited. (If a match is needed, there may be difficulty in obtaining a match.)		
3	Complexity of Implementation	20%	**5 - Low:** This project is feasible, acceptable to most in the community, and does not require a public vote or hearing that may delay implementation. (Or has already been approved and accepted.) **3 - Moderate:** This project is feasible, may have some opposition from the community and may require specialized permitting or a public hearing or vote that may delay implementation. **1 - High:** This project is feasible, may have some opposition from the community, and will require either specialized permitting, or a public hearing or vote that will delay implementation.		
4	Completion Timeframe	20%	**5 - High:** 6 months or less from time of funding. **3 - Medium:** 6 months to 1 year from time of funding. **1 - Low:** more than 1 year from time of funding.		
	Parameter Subtotal	100%	**sum of parameter scores: max =**		
Cost Subtotal			(sum of parameter scores) / (maximum possible score)		100%
* Estimated costs are comprised of two secondary parameters: initial and maintenance/operating costs					

SUITABILITY	**30%**		100%	
RISK REDUCTION	**55%**		100%	
COST	**15%**		100%	
TOTAL	**100%**			

For a working Microsoft Excel worksheet of the LMS Prioritization Matrix send an e-mail request to: mdlms@miamidade.gov.

For further information please contact:

Whole Community Mitigation Planner
9300 NW 41st Street
Miami, FL 33178
(305) 468-5427
mdlms@miamidade.gov

Website: https://www8.miamidade.gov/global/emergency/projects-that-protect.page

Appendix 1– Sample Project

Projects are maintained in the Miami-Dade County WebEOC system. All LMS partners are granted access to this board and have the ability to update it regularly.

Record Section

- Agency Type: This is either a County Department, Municipality, Hospital, University, Non-Profit, Regional entity or other type of organization.
- Agency: Depending on the choice of agency type you can designate which department/agency or municipality is responsible for this project. This choose should reflect the individual department or agency that is responsible for implementing and administering this project.
- Project Title
- Entry Type: This allows the partner to designate this as a new project, an update to an existing project or to let the LMS coordinator that a project can be removed from the active list.
- Last Updated: This is auto-generated by WebEOC of when this project was last accessed.
- Status: This allows the partner to designate the current status of the project (completed, partially completed, funded, planned, etc.).

Hazard Section

Allows the partner to designate what hazard this project is designed to address.

Project Completion Section

- Completion Time Frame: This is the estimated time to complete the project.
- Mitigation Goals: This allows the partner to match this project with the existing goals of the LMS.
- Funding Status: This allows the partner to designate where they are in requesting funding whether through existing general funds, grants or loans.
- Is a Match Required: Yes or No
- Match Identified: Yes, No, N/A or Unknown

Funding Source Section

This allows the partner to provide additional details on the type of funding they have secured or are pursuing. Examples include Community Development Block Grants, Hazard Mitigation Grant Program or Flood Mitigation Assistance grant program.

Cost Details

- Estimated Costs
- Global Match: Yes, No, N/A or Unknown

Project Description Section

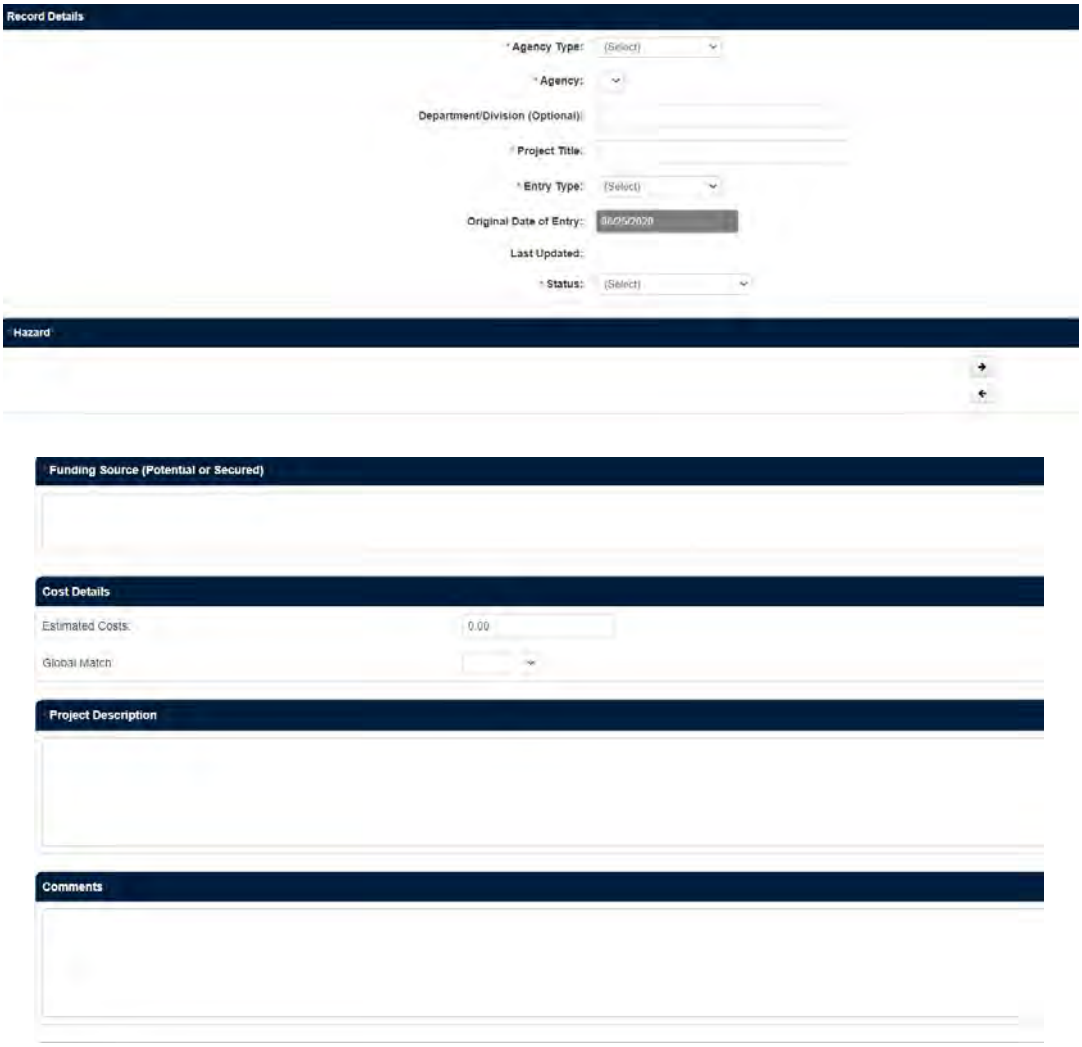
This allows the partners to include a description of the project.

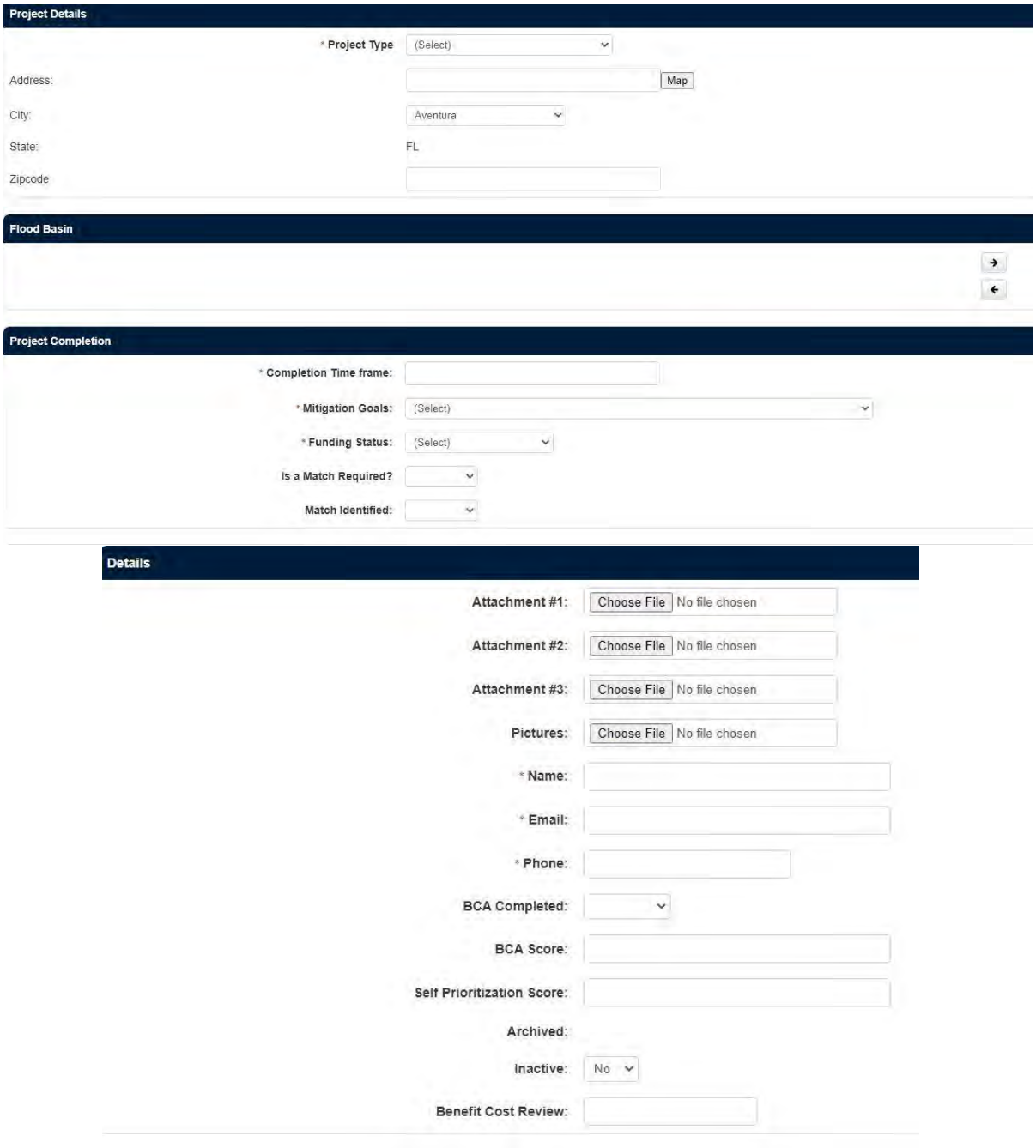
Details Section

In this section the partner can include additional documentation and pictures of this project. This also includes the information on the Benefit Cost Analysis, Self-Prioritization Score and Benefit Cost Review.

This section also documents the following information of the individual who is responsible for this project:

- Name
- Email Address
- Phone Number




Project Details
* Project Type
(Select)
Address:
Map
City:
Aventura
State:
FL
Zipcode
Flood Basin
Project Completion
* Completion Time frame:
* Mitigation Goals:
(Select)
* Funding Status:
(Select)
Is a Match Required?
Match Identified:
Details
Attachment #1:
Choose File
No file chosen
Attachment #2:
Choose File
No file chosen
Attachment #3:
Choose File
No file chosen
Pictures:
Choose File
No file chosen
* Name:
* Email:
* Phone:
BCA Completed:
BCA Score:
Self Prioritization Score:
Archived:
Inactive:
No
Benefit Cost Review:

Appendix 2– Deleted/Deferred Projects

In 2019 the following projects were requested to be deleted or deferred by the stakeholder agencies identified.

Action	Agency	Description	Reason
Deferred	Miami-Dade Fire Rescue	Air Rescue South Security Hardening Project	Requested by the agency
Deferred	Miami-Dade Public Library	Edison Center Library Roof	Requested by the agency
Deferred	Miami-Dade Public Library	South Miami Library Roof	Requested by the agency
Deferred	Miami-Dade Public Library	North Central Library Roof	Requested by the agency
Deferred	Miami-Dade Public Library	West Kendall Regional Library Roof	Requested by the agency

Appendix 3– Project List

This list is maintained in WebEOC and updated by the individual agencies/organizations, upon request by the Whole Community Mitigation Planner, two times a year by June 30 and December 31, respectively. The updated lists are published in July and January every year.

The WebEOC LMS Board will be used to pull current information as needed. The County, municipalities and all other members of the LMS Working Group reserve the right to, at any time, add to, delete from and in other ways change the order of priorities presented here. All entities participating in this program have agreed to undertake these initiatives, as necessary.

Miami-Dade County, Florida Office of Emergency Management (OEM)

MIAMI-DADE COUNTY

LMS

LOCAL MITIGATION STRATEGY

Part 3: Funding

July 2020

Miami-Dade County
Office of Emergency Management
9300 NW 41st Street
Miami, FL 33178-2414
(305) 468-5400
www.miamidade.gov/oem

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INTRODUCTION

The Miami-Dade Local Mitigation Strategy (LMS) – Part 3 provides a listing of some of the available funding sources for various types of mitigation measures. The funding sources have been divided into Pre-Disaster Programs and Post-Disaster Programs. However, there may be other funding opportunities that present themselves and when the LMS Planner is made aware of these opportunities they will be shared with the LMS Working Group. The LMS - Part 3 may be used as a guide to help stakeholders identify potential funding sources.

It is the responsibility of the organization/agency pursuing funding to fill out and complete all of the necessary documents and provide the supportive materials. The Project List should be updated to reflect any funding that is being pursued or has been awarded.

These funding sites may also render additional funding opportunities:

- Florida Mitigation Grants: https://www.floridadisaster.org/dem/mitigation/
- Federal Grants: http://www.grants.gov

PRE-DISASTER FUNDING PROGRAMS

Pre-Disaster Program	Purpose	Contact and/or Website
Aquatic Ecosystem Restoration	This program's goal is to ensure the construction of projects designed to carry out aquatic restoration will improve the quality of the environment, are in the public interest, and are cost-effective. Focuses on designing and implementing engineering solutions that restore degraded ecosystems to a more natural condition.	U.S. Army Corps of Engineers Jacksonville District 701 San Marco Boulevard Jacksonville, FL 32207-8175 www.saj.usace.army.mil/
Assistance to Firefighters Grant programs (AFG)	This program awards grants directly to Fire Departments to enhance their ability to protect the safety of the public and firefighting personnel. Projects can include operations and firefighter safety, firefighting vehicle acquisition, personal protective equipment, etc. The AFG programs includes Assistance to Firefighters Grant, Staffing for Adequate Fire and Emergency Response Grants, Fire Prevention and Safety Grants	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/welcome-assistance-firefighters-grant-program
Beach Management Funding Assistance	Under the program, financial assistance in an amount up to 50 percent of project costs is available to Florida's county and municipal governments, community development districts, or special taxing districts for shore protection and preservation activities located on the Gulf of Mexico, Atlantic Ocean, or Straits of Florida. Eligible activities include beach restoration and nourishment activities, project design and engineering studies, environmental studies and monitoring, inlet management planning, inlet sand transfer, dune restoration and protection activities, and other beach erosion prevention related activities consistent with the adopted Strategic Beach Management Plan.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, FL 32399-3000 https://floridadep.gov/rcp/beaches-funding-program
Brownfields Economic Redevelopment Grants	EPA's Brownfields Economic Redevelopment Initiative is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainable reuse Brownfields.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hudexchange.info/programs/bedi/
Clean Water Act Grant Program for States and Territories	Formula funds are awarded to States to implement certain non-point source programs pursuant to Section 319(h) of the Clean Water Act, including wetland restoration.	U.S. Environmental Protection Agency 1200 Pennsylvania Avenue, NW, Washington, DC 20460 https://www.epa.gov/nps/319-grant-program-states-and-territories

Pre-Disaster Program	Purpose	Contact and/or Website
Community Assistance Program State Support Services Element	This program provides funding to states to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/community-assistance-program-state-support-services-element
Coastal Partnership Initiative Grants	This grant program was developed to promote the protection and effective management of Florida's coastal resources at the local level. The Florida Coastal Management Program (FCMP) makes National Oceanic & Atmospheric Administration funds available, on a competitive basis, to eligible local governments.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, Florida 32399 https://floridadep.gov/fco/fco/content/coastal-partnership-initiative-grant-program
Coastal Zone Management Fund	Projects that improve Local coastal zone management, emergency grants to State coastal zone management agencies to address disaster-related circumstances, financial assistance for applying the public trust doctrine, etc.	National Oceanic and Atmospheric Administration 1305 East-West Highway Silver Springs, MD 20910 https://coast.noaa.gov/czm/about/
Community Development Block Grant (CDBG)	The CDBG provides for long-term needs, such as acquisition, rehabilitation or reconstruction of damaged properties and facilities and redevelopment of disaster-affected areas. Funds may also be used for emergency response activities, such as debris clearance and demolition, extraordinary increases in the level of necessary public services.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs
Community Facilities Loan Program	This program provides affordable funding to develop essential community facilities in rural areas.	U.S. Department of Agriculture 4500 NW 27th Avenue Suite D-2 Gainesville, FL 32606 https://www.rd.usda.gov/programs-services/community-facilities-direct-loan-grant-program
Conservation and Recreation Lands Grant Program	The Land and Recreation Grants Program promotes and fosters partnerships to enhance and sustain Florida's natural and cultural resources and provide increased outdoor recreational opportunities for Florida's citizens and visitors.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, Florida 32399 https://floridadep.gov/Grants

Pre-Disaster Program	Purpose	Contact and/or Website
Derelict Vessels Removal Program	This grant program to provide grants to local governments for reimbursement for the removal of derelict vessels from the public waters of the state.	Florida Fish and Wildlife Conservation Commission 620 S Meridian St # 108 Tallahassee, FL 32399 https://myfwc.com/boating/grants-programs/derelict-vessel/
EDA Disaster Funding	This Congressionally appropriated funding program is designed to promote long-term economic development and assist in the construction of public works and development facilities needed to initiate and support the creation or retention of permanent jobs in the private sector in areas experiencing substantial economic distress.	U.S. Economic Development Administration 1401 Constitution Avenue, NW Suite 71014 Washington, DC 20230 https://www.eda.gov/disaster-recovery/
State of Florida Emergency Management Program Assistance Grant Program	This program administers the Emergency Management Preparedness and Assistant Trust Fund, count base grants, and incoming Federal, state, or private funding. Within this program is the Municipal Grant Program.	Florida Division of Emergency Management 2555 Shumard Oaks Blvd., Tallahassee, FL 32399-2100 https://www.floridadisaster.org/dem/preparedness/grants-unit/
Emergency Management Performance Grant	This grant program provides funding to all to ensure that the 67 counties within the State of Florida have the capabilities to prevent, prepare, protect, respond and recover from disasters.	Florida Division of Emergency Management 2555 Shumard Oak Boulevard Tallahassee, Florida 32399-2100 https://www.floridadisaster.org/dem/preparedness/grants-unit/
Expanded Local Management Hazardous Waste Program	The primary purpose of this fund is to cover costs incurred to establish the expanded Local hazardous waste management program as stated in FS403.7238 including training for County personnel, materials & equipment for educational activities.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, Florida 32399 https://floridadep.gov/waste/waste-reduction/content/household-hazardous-waste-grants
U.S. Army Corps of Engineers Shore Protection Program	This program goals are to implement beach fills and nourishment to protect against storm surge and wave-generated erosion and the construction of shore structures, such as sea walls, breakwaters, and revetments, to protect against Flooding and erosion.	U.S. Army Corps of Engineers Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019 https://www.saj.usace.army.mil/Missions/Civil-Works/Shore-Protection/

Pre-Disaster Program	Purpose	Contact and/or Website
Federal Lands to Parks Program	This Program helps communities to acquire, reuse and protect surplus federal properties for local parks and recreation. States, counties, and communities may acquire federal land and buildings no longer needed by the federal government at no cost on condition they are protected for public parks and recreation.	National Park Service 1849 C Street NW Washington, DC 20240 https://www.nps.gov/orgs/1508/index.htm
Pre-Disaster Mitigation Grant Program (PDM)	The PDM program was authorized by Section §203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section §102 of the Disaster Mitigation Act of 2000, to assist communities to implement hazard mitigation programs designed to reduce overall risk to the population and structures before the next disaster occurs.	Florida Division of Emergency Management 2555 Shumard Oak Blvd., Tallahassee, FL 32399-2100 https://www.floridadisaster.org/dem/mitigation/pre-disaster-mitigation-grant-program/
Flood Mitigation Assistance Grant Program	To fund cost effective measures to States and communities that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other insurable structures.	Florida Division of Emergency Management 2555 Shumard Oak Blvd., Tallahassee, FL 32399-2100 https://www.floridadisaster.org/dem/mitigation/flood-mitigation-assistance-program/
Flood Plain Management Services	The goal of this program is to reduce flood risk by saving lives and reducing property damage in the event of floods and coastal storms.	U.S. Army Corps of Engineers Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019 https://www.saj.usace.army.mil/FloodRiskManagement/
Silver Jackets Program	The goal of the Silver Jackets teams are to bring together local, State, Federal agencies to work collectively on flood management issues to share information and resources related to flooding and mitigation, integrate mitigation and recovery efforts, and leverage available agency resources	U.S. Army Corps of Engineers Jacksonville District P.O. Box 4970 Jacksonville, Florida 32232-0019 https://silverjackets.nfrmp.us/State-Teams/Florida
Florida Beaches Funding Program	The program provides and manages grants to local governments for planning and implementing beach and inlet management projects to protect upland structures and infrastructure, to provide critical habitat for threatened and endangered species, to provide recreational opportunities, and to support local economies through tourism.	Florida Department of Environmental Protection 3900 Commonwealth Blvd, MS 300 Tallahassee, FL 32399-3000 https://floridadep.gov/rcp/beaches-funding-program

Pre-Disaster Program	Purpose	Contact and/or Website
Florida Communities Trust	This grant program facilitates the purchase of lands for conservation and/or recreation purposes by Local governments. This land acquisition program helps to implement conservation, recreation, open space, and coastal elements of Local comprehensive plans.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, FL 32399-3000 http://www.dep.state.fl.us/lands/FL_Communities_Trust/default_cont.htm
HOME Investment Partnerships Program	This program provides formula grants to States and localities that communities use - often in partnership with local nonprofit groups - to fund a wide range of activities including building, buying, and/or rehabilitating affordable housing for rent or homeownership or providing direct rental assistance to low-income people.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hud.gov/program_offices/comm_planning/affordablehousing/programs/home/
Hospital Preparedness Program	This program provides leadership and funding through grants and cooperative agreements to states, territories, and eligible municipalities to improve the capacity of the health care system to plan for and respond to medical surge events.	U.S. Department of Health and Human Services 200 Independence Avenue, S.W. Washington, D.C. 20201 http://www.phe.gov/Preparedness/planning/hpp/Pages/funding.aspx
Firewise Program	This program educates the public and provides funding to on wildfire adaptation techniques and strategies.	National Fire Protection Association 1 Batterymarch Park Quincy, Massachusetts https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA
National Hurricane Program	This program conducts assessments and provides tools and technical assistance to assist State and local agencies in developing hurricane evacuation plans. The program is a multi-agency partnership, involving the Federal Emergency Management Agency, the National Oceanic & Atmospheric Association, the National Weather Service, U.S. Department of Transportation, the U.S. Army Corps of Engineers, and numerous other Federal agencies.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 http://www.fema.gov
Land and Recreation Grant Program	This program which provides grants for acquisition or development of land for public outdoor recreation use.	Florida Department of Environmental Protection 3900 Commonwealth Blvd., MS 585 Tallahassee, Florida 32399-3000 https://floridadep.gov/lands/land-and-recreation-grants/content/lwcf-assistance

Pre-Disaster Program	Purpose	Contact and/or Website
Livable Grant Programs	These grant programs offer States, metropolitan areas, rural and small communities the opportunity to create these accessible, livable communities.	Federal Transit Administration 1200 New Jersey Avenue, SE Washington, DC 20590 http://www.fta.dot.gov/13747_11003.html
National Flood Insurance Program	This program enables individuals to purchase insurance against losses from physical damage to or loss of buildings and or contents therein caused by floods, mudflow, or flood-related erosion, and to promote wise floodplain management practices in the nation's flood prone areas.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/national-flood-insurance-program
North American Wetland Conservation Grant Program	This grant program is a competitive, matching grants program that supports public-private partnerships carrying out projects in Canada, the United States, and Mexico. These projects must involve long-term protection, restoration, and/or enhancement of wetlands and associated uplands habitats.	U.S. Department of Interior 5275 Leesburg Pike Falls Church, VA 22041 https://www.fws.gov/birds/grants/north-american-wetland-conservation-act.php
Payments to States in Lieu of Real Estate Taxes	This program compensates local taxing units for the loss of taxes from Federally acquired lands, 75 percent of all monies received or deposited in the Treasury during any fiscal year for the account of leasing of lands acquired by the United States for flood control, navigation and allied purposes, including the development of hydroelectric power, are paid at the end of each year to the States in which such property is situated.	U.S. Department of Interior 1849 C Street, N.W. Washington DC 20240 http://www.doi.gov/pilt/index.cfm
Partners for Fish and Wildlife	The US Fish and Wildlife Service provides financial and technical assistance to private landowners, businesses, and local governments interested in improving habitat for migratory birds, endangered, threatened and at-risk species while maintaining their primary land management goals.	U.S. Fish and Wildlife Service Florida Coordinator 7915 Baymeadows Way, Suite 200 Jacksonville, FL 32256-7517 https://www.fws.gov/southeast/our-services/partners-program/
Corps Planning Program	This program provides technical assistance via the floodplain management services (FPMS) program. FPMS activities cover the full range of information, technical services, and planning guidance and assistance on floods and floodplain issues within the broad umbrella of floodplain management. Technical services and planning guidance under the FPMS Program are provided to State, regional, and local governments without charge, within program funding limits.	U.S. Army Corps of Engineers Jacksonville District 701 San Marco Boulevard Jacksonville, FL 32207-8175 http://www.saj.usace.army.mil/

Pre-Disaster Program	Purpose	Contact and/or Website
Residential Construction Mitigation Program (RCMP)	This grant program provides retrofit measures rather than rehabilitative work to structures, which serves to protect homes against wind drive forces such as hurricanes. Services include re-roofing, load path reinforcement and opening (windows/shutters) protection.	Miami-Dade County Community Action and Human Services Department 701 NW 1st Court Miami, FL 33136 786-469-4730 https://www.miamidade.gov/global/service.page?Mduid_service=ser1541438535801741
Rivers, Trails, and Conservation Assistance Program	This program extends and expands the benefits of the National Park Service throughout the nation to connect all Americans to their parks, trails, rivers, and other special places. It also assists community groups, National Parks, nonprofits, state and local governments, tribes plan parks and trails, conserve and improve access to rivers and natural areas, and create recreation opportunities through locally led partnerships.	National Park Service 1849 C Street NW Washington, DC 20240 https://www.nps.gov/orgs/rtca/whatwedo.htm
Section 533 – Housing Preservation Grant Program	This program provides grants to sponsoring organizations for the repair or rehabilitation of low- and very low-income housing. The grants are competitive and are made available in areas where there is a concentration of need.	Housing Assistance Council 1025 Vermont Ave. NW, Suite 606 Washington, D.C. 20005 http://www.ruralhome.org/sct-information/mn-hac-research/mn-rrg/111-housing-preservation-grants-section-533
Section 5307 Urbanized Area Formula Grants	This program makes federal resources available to urbanized areas and to governors for transit capital and operating assistance in urbanized areas and for transportation-related planning.	Federal Transit Administration 1200 New Jersey Ave. SE Washington, DC 20590 https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307
Section 108 Loan Guarantee Program	HUD offers CDBG recipients guaranteed loan funds to acquire real property, relocate homeowners and businesses, rehabilitate publicly owned real property (including infrastructure), housing rehabilitation, and economic development.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hudexchange.info/programs/section-108/

Pre-Disaster Program	Purpose	Contact and/or Website
State Homeland Security Program (SHSP)	This core assistance program provides funds to build capabilities at the State and Local levels through planning, equipment, and training and exercise activities. SHSP also supports the implementation of State homeland security strategies and key elements of the national preparedness architecture, including the National Preparedness Goal, the National Incented Management System and the National Response plan.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/homeland-security-grant-program
Capital Investment Grants Program	This discretionary grant program funds transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit.	Federal Transit Administration 1200 New Jersey Ave. SE Washington, DC 20590 https://www.transit.dot.gov/capital-investment-grants-5309
Urban Areas Security Initiative (UASI)	UASI focuses on the unique planning, equipment, training and exercise needs of high-threat, high-density urban areas. It assists them in building sustainable capacity to prevent, protect, respond and recover form acts of terrorism.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/homeland-security-grant-program
Waterways Assistance Grant Program	Waterway related projects must be located on natural, navigable waterways within the District. Eligible waterway related projects include navigation channel dredging, channel markers, navigation signs or buoys, boat ramps, docking facilities, fishing & viewing piers, waterfront boardwalks, inlet management, environmental education, law enforcement equipment, boating safety programs, beach re-nourishment, dredge material management, environmental mitigation, and shoreline stabilization.	Florida Inland Navigation District 1314 Marcinski Rd. Jupiter, Florida 33477 http://www.aicw.org/assistance_programs/waterway_assistance_programs/2017_wap_grant_application/index.php
HOME Investment Partnership Program	To provide assistance for the acquisition of real property for affordable housing, demolition and clearance for a housing activity, housing construction and reconstruction, and rehabilitation of housing.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hud.gov/program_offices/comm_planning/affordablehousing/programs/home/
Public Safety Grant Program	This foundation aims to provide funding, life-saving equipment, disaster assistance, and educational opportunities for first responders and public safety organizations.	Firehouse Subs Public Safety Foundation 12735 Gran Bay Pkwy #150, Jacksonville, FL 32258 https://firehousesubsfoundation.org/

Pre-Disaster Program	Purpose	Contact and/or Website
Environmental, Education, and Human Services Projects	This grant program supports of the environment, education, human services, disaster relief, and other causes. Applications are accepted twice a year. The foundation awards both program and operating grants with no geographic restrictions to 501(c) (3) nonprofit organizations, as well as public schools and libraries.	The Lawrence Foundation 530 Wilshire Blvd., Suite 207 Santa Monica, CA 90401 https://thelawrencefoundation.org/application-process
Company Grants	This grant program provides funding for service-learning grants that focus on one of the following issue areas: Community Safety and Natural Disaster Preparedness; Access to higher education/closing the achievement gap; Financial literacy; Environmental responsibility; and Social Health and Wellness issues.	State Farm Foundation https://www.statefarm.com/about-us/community-involvement/community-grants/good-neighbor-citizenship-grants
Global Impact Cash Grants	These grants address a significant social problem, such as serving the underserved, and leverage technology to improve the reach and efficiency of services.	Cisco Systems https://www.cisco.com/c/en/us/about/csr/community/nonprofits/global-impact-cash-grants.html
Florida State Revolving Fund	This fund is composed of three programs: 1) Clean Water State Revolving Fund, 2) Drinking Water State Revolving Fund and 3) State Revolving Fund Management. Both the Clean Water and the Drinking Water SRF Programs are funded through money received from federal grants as well as state contributions. These funds then "revolve" through the repayment of previous loans and interest earned. While these programs offer loans, grant-like funding is also available for qualified small, disadvantaged communities, which reduces the amount owed on loans by the percentage that the community qualifies.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, FL 32399-3000 https://floridadep.gov/wra/srf
State of Florida Hurricane Loss Mitigation Program	This State-funded mitigation program goal is minimizing damages caused by hurricanes. Eligible activities for this grant include promoting property resiliency through retrofits made to residential, commercial, and mobile home properties, the promotion of public education and public information.	Florida Division of Emergency Management 2555 Shumard Oak Blvd., Tallahassee, FL 32399-2100 https://www.floridadisaster.org/dem/mitigation/hurricane-loss-mitigation-program/
State of Florida Resilience Planning Grant	This grant program promotes community resilience planning and vulnerability assessments; and addresses adaptation plans and comprehensive plan goals, objectives, policies and regional coordination.	Florida Department of Environmental Protection 3900 Commonwealth Blvd. Tallahassee, FL 32399-3000 https://floridadep.gov/rcp/florida-resilient-coastlines-program/content/frcp-resilience-grants

Pre-Disaster Program	Purpose	Contact and/or Website
State of Florida Pollution Control Bond Program	This program provides loans to Local governments for construction of stormwater, water and wastewater facilities. Special districts are eligible as well as municipalities and county governments.	Florida Division of Bond Finance 1801 Hermitage Centre, Suite 200 Tallahassee, Florida 32308 https://www.sbafla.com/bondfinance/Bond-Programs/Water-Pollution-Control-State-Revolving-Loan

POST-DISASTER FUNDING PROGRAMS

Post-Disaster Program	Purpose	Contact
Public Housing Capital Fund Emergency/ Natural Disaster Funding	This grant program provides emergency funding to public housing agencies that are confronted with an emergency situation or a natural disaster.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hud.gov/program_offices/public_indian_housing/programs/ph/capfund/emfunding
Community Development Block Grant Disaster Recovery Program	In response to Presidentially declared disasters, Congress may appropriate additional funding for the Community Development Block Grant (CDBG) program as Disaster Recovery grants to rebuild the affected areas and provide crucial seed money to start the recovery process. Since CDBG Disaster Recovery (CDBG-DR) assistance may fund a broad range of recovery activities, HUD can help communities and neighborhoods that otherwise might not recover due to limited resources.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hudexchange.info/cdbg-dr/
Emergency Operations Flood Response and Post Flood Response	To provide emergency flood response and post flood response assistance as required to supplement State and Local efforts and capabilities in time of flood coastal storm.	U.S. Army Corps of Engineers Jacksonville District 701 San Marco Boulevard Jacksonville, FL 32207-8175 http://www.saj.usace.army.mil/
Emergency Streambank and Shoreline Protection	To prevent erosion damages to public facilities by the emergency construction or repair of streambank and shoreline protection works.	U.S. Army Corps of Engineers Jacksonville District 701 San Marco Boulevard Jacksonville, FL 32207-8175 http://www.saj.usace.army.mil/
Emergency Watershed Protection Program	This program will assist in implementing emergency recovery measures to relieve imminent hazards to life and property created by a natural disaster that causes a sudden impairment of a watershed. Public and private landowners are eligible for assistance, but must be represented by a project sponsor, such as a city, county, conservation district or tribal government.	U.S. Natural Resources Conservation Services 4500 NW 27th Avenue Bldg. A Gainesville, FL 32606 www.fl.nrcs.usda.gov/programs/flewp.html

Post-Disaster Program	Purpose	Contact
Federal Emergency Shelter Grants Program for the Homeless	Grants for the provision of emergency shelter and essential support services to the homeless. Funds may be used for structural improvements to shelters, shelter operating expenses, furnishings and equipment, and other services.	U.S. Department of Housing and Urban Development 451 7th Street, SW Washington, DC 20410 https://www.hudexchange.info/programs/emergency-shelter-grants/
Hazard Mitigation Grant Program	To prevent future losses of lives and property due to disaster; to implement State or Local hazard mitigation plans; to enable mitigation measures to be implemented during immediate recovery from a disaster; and to provide funding for previously identified mitigation measures to benefit the disaster area.	Florida Division of Emergency Management 2555 Shumard Oak Blvd., Tallahassee, FL 32399-2100 https://www.floridadisaster.org/dem/mitigation/hazard-mitigation-grant-program/
Hazard Mitigation Grant Program Post Fire	This grant program is authorized under the Disaster Recovery Reform Act of 2018. It allows FEMA to provide HMGP assistance for hazard mitigation measures that substantially reduce the risk of future damage, hardship, loss, or suffering in any area affected by any area affected by a fire for which assistance was provided under Section 420 Fire Management Assistance Grant.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/hazard-mitigation-grant-program-post-fire
Public Assistance Program	To provide supplemental assistance to States, Local governments, and certain private nonprofit organizations to alleviate suffering and hardship resulting from major disasters or emergencies declared by the President. PA provides funding for the repair, restoration, reconstruction, or replacement of a public facility or infrastructure damaged or destroyed by a disaster.	Federal Emergency Management Agency 500 C Street SW Washington, DC 20472 https://www.fema.gov/media-library/assets/documents/111781

Local Mitigation Strategy

LMS
Miami-Dade

Whole Community
Hazard Mitigation
Part 5: Meeting Minutes

July 2020

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Part 5 – Meeting Minutes

Introduction to the Minutes of the Working Group Meetings

The initial meeting between Miami-Dade County and the first group of interested municipalities and other parties was held May 5, 1998 at the Miami-Dade County Emergency Operations Center (EOC) at 5600 S.W 87th Avenue, Miami, Florida 33173. These representatives formed the nucleus of the Working Group and were established to fulfill the obligations of a grant from the State of Florida. On June 15, 2000, the EOC moved to its present location at 9300 N.W 41st Street, Miami, FL 33178.

The Local Mitigation Strategy (LMS) – Part 5 is a compilation of the meeting minutes from the LMS Working Group (LMSWG) which provides the reader with an overview of the beginning, the development, and continuing activities of the LMSWG. Originally, it was required by the State that a meeting schedule was to be maintained; however, a year later the meeting schedule was no longer published. The meeting held on August 12, 1999 was the last meeting under the original State contract.

In September 1999 the meeting frequency was changed from monthly to quarterly. Meetings dates have now been stabilized and are generally held on the central Wednesday of March, June, September and December. In recent times, members of the LMS Working Group have volunteered to host the LMS Working Group meetings, which seems to enhance interest and attendance. The meeting minutes will be continuously published as they clearly demonstrate the growth and development of the Local Mitigation Strategy in Miami-Dade County.

The five-year planning cycle dating back to 2015 is included in the LMS - Part 5. A complete archive of meeting minutes from 1998 through the 2014 calendar year is available upon request from the LMS Chair at mdlms@miamidade.gov.

2015 Meeting Minutes

March 18, 2015 Meeting

The meeting was held at the Miami-Dade Fire Rescue (MDFR) Training Center Auditorium in Doral. There were a total of 68 attendees representing 50 agencies. Curt Sommerhoff, Director of Emergency Management, welcomed everyone to the LMS Meeting and thanked them for their continued support.

LMS Coordinator/Chair, Cathie Perkins, welcomed everyone and asked new attendees to identify themselves and welcomed them to our meeting. Group announcements including an afternoon session for the Community Rating System (CRS) Subcommittee with a webinar on Program for Public Information, the CRS Subcommittee meeting on March 24th (see LMS Calendar for more info) and the annual Feel the Force Event which will take place on May 30th at the Museum of Science. Ms. Perkins encouraged the CRS communities to support the event on the 30th for public outreach credit.

Ms. Perkins, introduced Josh Overmyer from the Florida CRS Initiative. Mr. Overmyer spoke to the group about the four (4) Planners from the State who are available to assist with CRS participation, are available for workshops for community staff, are working to help get additional credit points, liaison with FEMA, assist with planning and also help publicize the flood insurance discount. Mr. Overmyer spoke of how in Florida 45% of communities participate and this nets an annual savings of over $180 Million. Nationally, there are only 6% of community participation for an annual savings of over $360 Million. Mr. Overmyer spoke about the CRS activities and the numerous agencies that communities work with to help get credits including: various State agencies, Water Management Districts, State Dam Safety Office, Emergency Management, NFIP and FEMA. Mr. Overmyer showed how much money on an average annual premium could be saved if additional freeboard is used in construction. For a house built at Base Flood Elevation in an AE zone the premium is just under $2,000, but a house with one foot of freeboard saves 49% on their flood insurance and two feet of freeboard saves 63%.

Mr. Overmyer also recommended the following resources for more information on CRS:

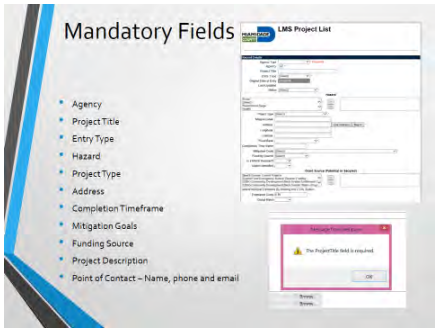
- http://www.floridadisaster.org/mitigation/CRS
- http://www.crsresources.org

For more information you can reach Josh Overmyer at 850-519-7955 or josh.overmyer@em.myflorida.com.

The next speaker, was Earl King who founded CRS Max Consultants, Inc. Mr. King is one of numerous contractors who can provide assistance to communities that are interested in joining the CRS or who may need assistance with maintaining their CRS. Mr. King spoke

of the three "WOWs of CRS". The first "Wow" is that this is a program where you can get money back in savings from the government. The second "Wow" is how complex it can be with19 activities, numerous Departments to coordinate with, and a new User Manual that is 614 pages, the CRS can be a daunting task. The third "Wow" is the reaction of the person tasked with getting the work done to get into or stay in the program. Mr. King mentioned that help is available to communities through the ISO/CRS Specialists, of which there are four in the State, the Florida CRS Initiative, CRS User Groups, and Consultants. CRS Max can help communities and is dedicated exclusively working only on NFIP /CRS program. For more information you can reach CRS Max at 954-421-7794 or crsmaxinc@bell-south.net.

Next Ms. Perkins provided an overview of the status of the LMS five-year update. On March 17th the LMS Plan was resubmitted to the State for review. The expiration on the current plan is May 10th. Once The State approves the plan, Miami-Dade County will let all of the stakeholders know and make it available so the relevant partners can do a local adoption while it is sent it to the Board of County Commissioners for their adoption.
The next segment of the meeting was entitled "Moving Forward" to discuss challenges and opportunities as the program continues:



1. Mandatory Project Fields – all new projects must have all of the mandatory fields completed in order to be saved. Existing projects should all be up to date and partners were advised to verify their projects.

2. New Potential Fields within WebEOC – it was noted that the ability to add multiple basins, allow partners to download more fields, also add an identifier partners can use to indicate additional departments/divisions or tracking numbers that may be unique to their programs to help with making updates. It was also noted that the grants selection should be updated to better reflect the different grant programs. It was also posed if WebEOC could allow the system to upload shapefiles, this will be researched.

3. Mandatory Project Updates – currently OEM requires partners to update their projects twice a year. This is a carryover from when they were Word documents and OEM did not have real time tracking like WebEOC currently allows. Failure to update projects on an annual basis will mean they will be moved to the Inactive List. Ms. Perkins proposed that projects should be updated once a year and opened it up for discussion. It was also suggested that OEM allow more time for the points of contact to ensure updates were done before they were moved to Inactive. It was proposed that OEM use the fiscal year cycle as a determination. Ms. Perkins proposed that October 31st would be the deadline for annual updates. A grace period of two (2) months will be allowed during which time the points of contacts for the projects will be notified and have until December 31st to make the updates. By January 1st those projects not updated will be moved to Inactive Status. A vote was taken and was unanimously supported. This will be updated in the LMS Plan.

4. Inactive Projects and permanent deletion. The next item of discussion revolved around what happens once a project becomes inactive. Once a project has been deemed Inactive due to failure to update, the point of contact will be notified that they have until the first Quarterly meeting (the third Wednesday of March) to make the requisite updates. Failure to do so during that time will mean the Inactive Projects will be put up for a vote to the Working Group for permanent deletion at the first quarterly meeting. It was opened up for discussion. The motion was put to the group for a vote and it was unanimously approved.

5. Points of Contact – all attendees were asked to provide three (3) layers of contacts at their agency to ensure that the LMS Coordinator can send project notices to the right people and also reduce the chances of turnover of staff and loss of contact. For those that were not at the meeting, they were asked via email to provide their (3) layers of contact information if they had projects.

6. The next item on the Agenda was to discuss additional opportunities or ways for us to get back to more strategic planning. It was opened for discussion as to other groups we might want to focus on to include as subcommittees or meetings. The example of perhaps working with partners in areas that experience repetitive flooding or areas where planned construction/development will be occurring so we can have the various stakeholders present and discuss concerns and potential solutions was brought up. Meeting with the professional groups such as American Public Works Association, building officials, realtors, colleges and universities. Also exploring speakers that can talk to their successes in pursuing grants, resource sharing, best practices and the challenges of universal match/credits. Historically, there was more interaction with the State from the County level in order to leverage what is needed and get them to assist the LMS partners, perhaps more of a watchdog role in tracking funds. Private sector developers and what they are looking at, gas station and businesses with generators and seeing how this is tracked and how prepared they are. Marcia Steelman offered to follow up on the permit cycles for the gas station generators to assess if they include any site visitation notations on seeing the generator or hookups. Discussion about FPL as to the status of their infrastructure hardening. Additionally, it was suggested that we have further discussions about the re-entry process in order to be able to assess damages.

7. Next we looked at the current composition of the Steering Committee to review if we have the right balance of people on board. It was suggested that maybe we want to include someone from the utilities side and first responders. Some of the current Steering Committee members will be retiring and they need to look for replacements. More information will be sent out regarding the fact that we are seeking volunteers for the Steering Committee.

8. Lastly the LMS Working Group talked about what else they can do as a strategy and there was some additional discussion about FPL power lines. For the next meeting, they will try to bring in folks from the utilities/private sector side who can speak about

to what they have been doing and where the LMS members are in terms of hardening and resiliency.

The meeting was closed, reminding everyone to sign-in and announcing that the next meeting will be on June 17th and asked for anyone that was interested in hosting the meeting. As always, everyone was encouraged to send emails to the LMS Planner with any additional comments or follow up. The meeting was adjourned.

Emergency Management	2	Chair Representing Recovery/ESF 18 Business and Industry
Municipal	2	Includes Floodplain Manager Public Works/Facilities
Education	4	Social Science Public Outreach/Research Grants Facilities
Health Care	1	Hospital/Planning & Gov. Relations.
Private Sector	3	Mitigation projects/measures
National Weather Service	1	
SFWMD	1	
Private Citizen	1	Represents Ag interests
Planner	1	Climate Change/Sea Level Rise
Social Service Agency	0	Currently vacant

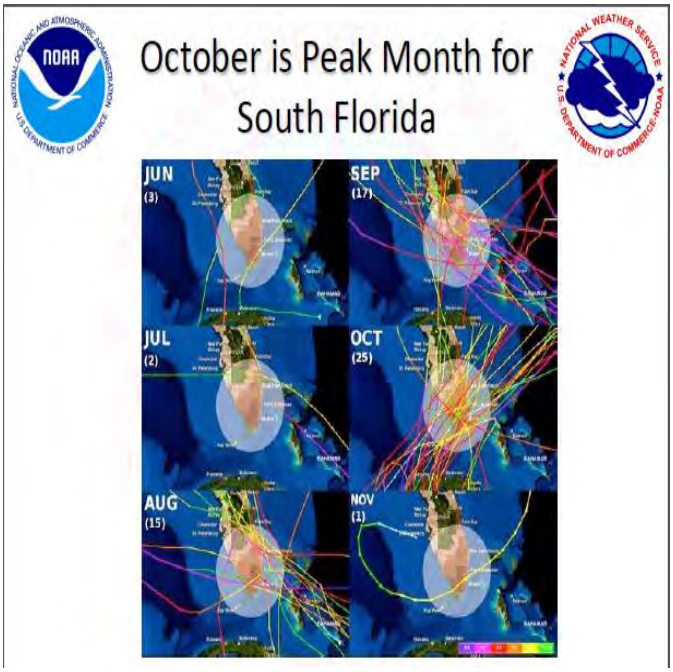
June 17, 2015 Meeting

The meeting was held at the Miami-Dade Fire Rescue Training Center Auditorium in Doral, FL. We had 65 people in attendance, representing 45 agencies. We also had a number of new people attending and welcomed them to the LMS. Cathie Perkins, LMS Chair made a few group announcements:

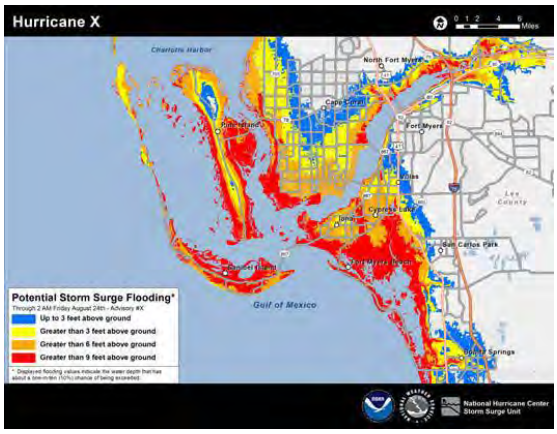
- Emergency Management Institute is having a four day class in September called the E212 Unified Hazard Mitigation Assistance: Developing Quality Application Elements.
- One hour free webinar on Maintaining Buildings and Grounds will be held on Tuesday, July 14th at 2:00 pm.

The first guest speaker was Erik Salna, Associate Director and Meteorologist with FIU Extreme Events Institute – International Hurricane Research Center. Mr. Salna was kind enough to help provide this years updated hurricane forecast and updates from the National Hurricane Center as Rob Molleda could not attend the meeting. Mr. Salna reminded the LMS members that it has been 10 years since we have been impacted locally by a hurricane and how in 2005 NOAA actually ran out of names because there were 28 named systems. Though this year is predicted to be less than average Mr. Salna reminded us that the LMS members must be prepared regardless and that it only takes one storm. An El Nino year may mean less chance of storms but 1992 was an El Nino year and Hurricane Andrew was an unforgettable event. Mr. Salna spoke about how as time goes on that communities tend to become complacent, apathetic, and amnesic and how Miami-Dade County now have more people here with no prior hurricane experience. Mr. Salna stressed that this has been the longest stretch on record dating back to 1851 that no hurricanes have made landfall in Florida. The longest prior to this was 5 years from 1980 – 1984.

Mr. Salna showed the graphic to the right that October historically has been the month with the most hurricane landfalls for the County, but that doesn't mean we have four more months before something could happen. The LMS members should also not be tricked by the "category of storm: Tropical Storms and Category 1's can do a lot of damage.



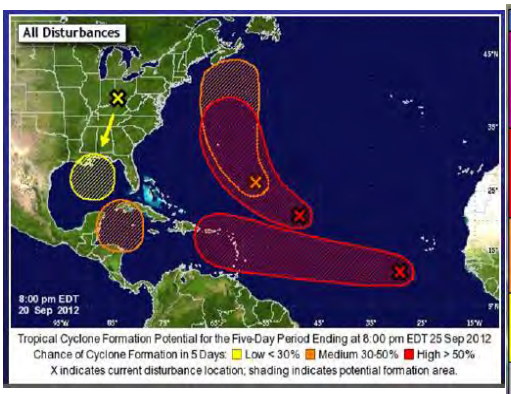
The National Hurricane Center will be providing the Potential Storm Surge Graphic to help convey the dangers of storm surge to the public. They are also looking to do an experimental product this year known as the Storm Surge Watch/Warning.



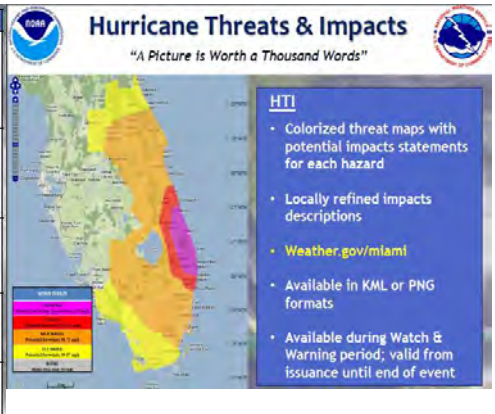
Mr. Salna stressed that everyone should know the storm surge planning zones and if their homes or facilities are located there. If any LMS members have any questions about this OEM can assist you with finding this information out. The NHC will also be issuing graphics to help display where systems are likely to develop. This tool may help LMS members with your preparedness and planning.

A new website will be available to provide information in Spanish and should be ready to launch June 29th. OEM will send out more information when it becomes available.

Mr. Salna stressed, what you have heard the National Weather Service and OEM has been saying for years that the cone is good for initial information about where the system is headed but when it comes to understanding the local impacts, the LMS members should turn to NWS – Miami. Mr. Salna talked about the new hurricane threat and impact graphics that have been developed utilizing social science to help ensure that the public at large understands the information being conveyed.



Wind Threat	Potential Wind Impacts
EXTREME Threat for wind greater than 110 mph	DEVASTATING TO CATASTROPHIC To be safe, aggressively prepare for the potential of devastating to catastrophic wind impacts from major hurricane force wind of equivalent Category 3 intensity or higher.
HIGH Threat for wind 74-110 mph	EXTENSIVE To be safe, aggressively prepare for the potential of extensive wind impacts from hurricane force wind of equivalent Category 1 or 2 intensity.
MODERATE Threat for wind 58-73 mph	SIGNIFICANT To be safe, earnestly prepare for the potential of significant wind impacts from strong tropical storm force wind.
ELEVATED Threat for wind 39-57 mph	LIMITED To be safe, prepare for the potential of limited wind impacts from tropical storm force wind.
LITTLE TO NONE Wind less than 39 mph	LITTLE TO NONE No immediate preparations needed; little to no wind impacts.

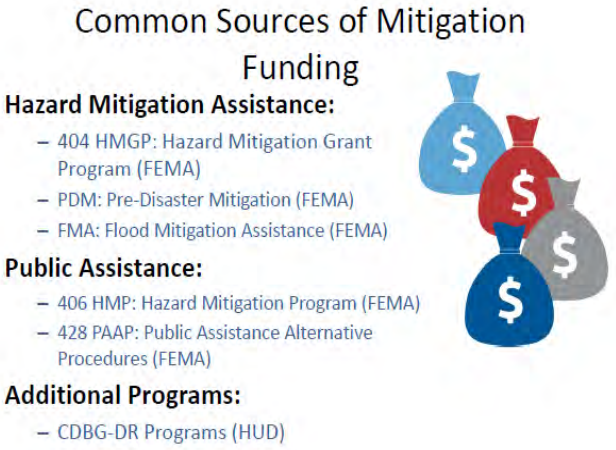


Mr. Salna opened the session with having people recall their hurricane experiences and stressed during the presentation that everyone should have a battery operated radio for weather advisories during a storm.

Mr. Salna closed with a slide on how mitigation really does work. Case in point this house to the right. It was built with mitigation in mind.

The second presenter was David Block who is a Mitigation Planner with the Florida Division of Emergency Management. Mr. Block spoke on how to keep the LMS programs going and on the FY2015 Hazard Mitigation Assistance Guidance. The funding that is available now is the Pre-Disaster Mitigation (PDM) grant and the Flood Mitigation Assistance (FMA) program. The PDM is limited to three projects for the entire State and $250K for all three. The focus will be on planning projects. For FMA FEMA revised the priorities for selection of mitigation projects on a competitive basis:

- Projects with the highest percentage of severe repetitive loss properties with at least 2 claims exceeding market value
- Projects with the highest percentage of repetitive loss properties
- Projects with the highest percentage of severe repetitive loss properties with 4 or more claims exceeding $5,000 each for a total exceeding $20,000
- FEMA added mitigation of contiguous NFIP-insured properties as the last priority for funding



All grants must be submitted to the State via eGrants application system on or before July 17, 2015 5:00 pm.

Our final speaker was Jason McCright, from ARCADIS and formerly with the State Mitigation Bureau, who spoke to the group about funding opportunities as well.
Mr. McCright spoke of the importance of the 404 money after a disaster and how that is a portion, in FL 20%, of the total monies declared through Public Assistance, Individual Assistance and Small Business Administration loans. When you fill out a project worksheet for a public building that has been damaged you can also check off for the 406 mitigation monies that will allow you to not only repair the damages but build in mitigation as well. Mr. McCright spoke of the 428 pilot program that is available now whereby you can set a dollar amount for the reparation of a project and get a one-time lump sum amount instead of reimbursement based on expenditures.

- Funding is given in a “capped grant”
- FEMA will only provide the capped amount: if the project exceeds this amount, the applicant incurs those costs
- If project costs incurred are less than the capped amount, the applicant may apply the money to other community projects.

Mr. McCright also mentioned the Community Development Block Grant – Disaster Recovery program. HUD has provided monies to areas that have had presidentially declared disasters. More information about this funding source is available here.

The meeting was closed by discussing the 2015 Wall of Wind Challenge held at FIU in May. This years' challenge was to create a barrier to reduce the wind impacts of beach front property.

WOW Challenge story by The Weather Channel:
http://www.weather.com/tv/shows/amhq/video/students-vs-wall-of-wind

Here is a link to the FIU News video story on the Challenge:
http://news.fiu.edu/2015/05/high-school-students-test-engineering-skills-at-wall-of-wind-challenge/88448

September 16, 2015 Meeting

The meeting was held at the Miami Beach and the Botanical Gardens Auditorium in Miami Beach. A total of 65 people attending which represented 39 agencies. With an all-time high of 33 municipal representatives.

The meeting opened by welcoming the newest members to LMS. General announcements included the following:

- New guidance has been released from FEMA for the Unified Federal Environmental and Historic Preservation Review – Guide for Federal Disaster Recovery Assistance Applicants (Applicant Guide).
- Florida C2C Developing Emergency Plans: Artifact Salvage and Recovery Work-shop. Deadline to apply is September 25th for a session at Frost Art Museum October 2nd.
- Training for Rapid Needs Assessment and Recovery from Disaster: Local Government Role will be held on October 5th and 6th here in Miami Dade. Individuals can register here .
- Agricultural Declaration for the Oriental Fruit Fly was declared on September 15 for more information visit here .
- The National Exercise Program's pilot Climate, Adaptation, Preparedness and Resilience Exercise Seminar will be held at FIU on September 21-22nd. *If anyone is interested please email ASAP as this is an invitation only event and OEM will try to get you an invite*. This two-day seminar will engage community leaders to learn, discuss, and practice use of exercise methodology to build community resiliency and adaptation capabilities in order to address long-term hazards related to a changing climate. The expectation is that participants will rely on knowledge and tools promoted during the seminar to empower action within their own community. Participants will learn to design and deliver discussion-based exercises that identify the most critical, climate-related challenges within their respective jurisdictions. Seminar participants will receive access to a climate-related resource center that includes climate science information, exercise templates, adaptation and planning strategies, climate networking directory, and other references and resources necessary to plan and execute climate-related exercises.

Next on the agenda was the best practices for the Community Rating System. Miami Gardens has contracted with Miami Lakes to assist them with portion of their CRS program. This may be a good model to partner with another municipality for those communities that have not been able to hire a full time person to help launch or maintain their own CRS program.

Next Alfredo Quintero and Yenier Vega of the Town of Cutler Bay provided a presentation on the outreach that they are doing in their community to promote NFIP and emergency preparedness measures.

- Website postings include project updates, stormwater information, flood awareness and upcoming Town events.
- Mailings to their entire community include informational brochures such as flood flyers, stormwater information, proper tree trimming and canopy uplifting and monthly project updates.
- Movie nights at the park, before the movies the Town shows public service announcements that they got from the internet including Only Rain Down the Drain clips.
- Open mic nights where the Town hosts question and answer sessions.
- Mailings to properties in and near Special Flood Hazard Area, flood awareness brochures, flood zone flyers and FEMA brochures.
- Copies of outreach materials in the kiosks of local retail stores. If the store has one they will as to utilize some of the space, if they do not have a kiosk they provide one with permission.
- Copies of outreach materials and a booth at annual emergency management events, Hurricane Fair and Repetitive Loss Workshop
- Copies provided via door hangers during various Town activities

The Town actively tracks all of their outreach activities and when able will count the number of people who attend.

Mr. Quintero and Mr. Vega also presented the Enviroscape project that they do on an annual basis in schools within their jurisdiction. They go to one school each year and spend an entire day working with grades 2-6 educating them on runoff. There is a power point, a movie and probably the most fun of all a hands on interactive model where they kids can simulate grass clippings, pesticides and even doggie doo, with candy sprinkles. Then with spray bottles they can see how when it rains these things can become contaminants to our water supply. At the end of the day the Town leaves an interactive butterfly garden for the school. Here is the link to the company that they purchased their kit from http://www.enviroscapes.com/. Mr. Vega demonstrated the power point presentation and how kid friendly it is. Their presentation includes lot of local pictures to help the kids visualize the impacts in their community. Mr. Vega provided a very interesting statistic that one quart of oil is sufficient to contaminate one million gallons of water. They even discussed how household pet waste can pollute the water and how you should pick up the poop (or train your dog to do it).

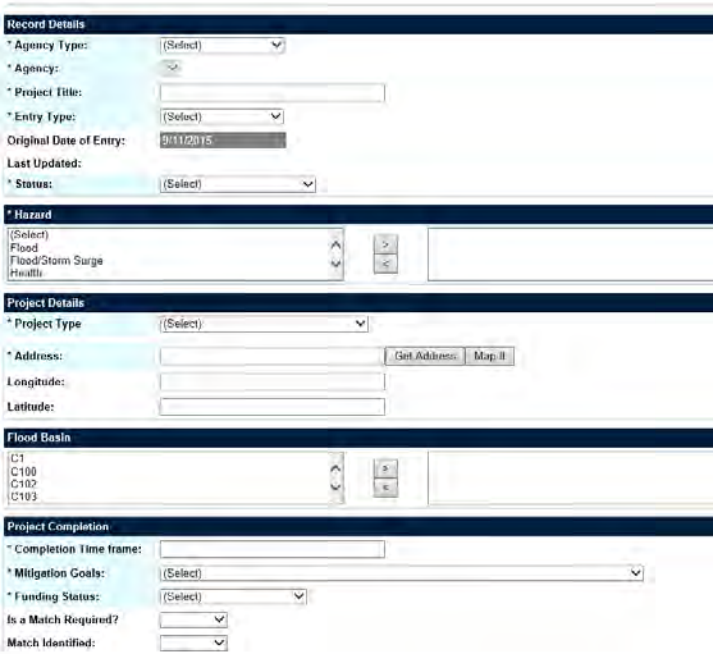
It was a great presentation and they very generously offered to make the word version of documents they have created available to others to customize.

Next was announced the official FEMA approval of the LMS and that the LMS partners had received the letter on September 15th. OEM emailed that out to everyone at the beginning of the meeting so as not to ruin the surprise. OEM talked about the importance of participation and not just through attending meetings but by contributing to the LMS document, including municipal codes and local hazard impacts. Also discussed was how remaining an active member is important and that if the LMS partner do not remain active then that could jeopardize their ability to access mitigation funding. This discussion also involved the letters of support and how OEM is happy to provide them to LMS members for any type of funding they may be applying for but they must be an active member of the LMS. LMS members were reminded that if they are going to apply for any type of grant please let the LMS Coordinator know so that they can create a letter of support and make sure their project is updated accordingly.

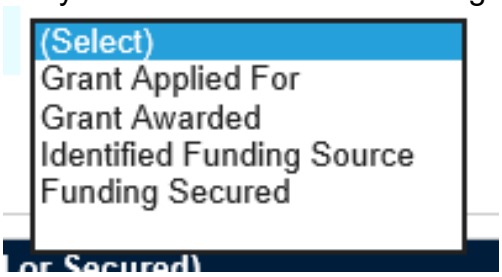
Attendees were reminded not to wait until the deadline to apply for a grant. Get your application in early to help accommodate the State's review and allow for time to provide additional information. The State has told OEM that the two main important components to project submittals are a good project description and a Benefit Cost Analysis (BCA) score. Once it is submitted the State will do additional reviews for technical, environmental and historical information.

Once an LMS member is awarded a grant, the work is just beginning and they need to let OEM know if they were awarded a grant and update the project. LMS members will be required to fill out reimbursement forms over the life of the grant and do quarterly reports. It is extremely important that they provide full documentation of all costs associated with the project and that the numbers align. This will need to be done in a timely manner. Charles Cyrille (OEM) added that if LMS members are a pass through agency for a grant that they may want to enter into a contract with the agency/homeowner that they are working with to ensure they understand their responsibilities in providing information for the grant. If they don't do it correctly the LMS member may be on the hook. Having a good documentation system is important and they may want to ensure that the way they are documenting things is acceptable to the State so they don't have a headache later on down the road and have to recreate their documentation.

Next OEM reminded everyone that their **annual updates are due by October 31st**. Mandatory fields have been added to the database to help ensure you don't miss any critical information.



The fields are highlighted in blue and have an asterisk next to them. The LMS members will not be able to save their project until they provide all of the required information. OEM have also changed the Funding Status selection. They can select from the following:



And OEM have made the Funding Source a fill in the blank section so they can specify where they are getting or where they think the funding is coming from. If they do not know, they can reference Part 3 of the LMS for funding ideas or put FMA, PDM or HMGP if you cannot find any other sources. A question was raised regarding the project status, if it is Future Unfunded, LMS members would select Identified Funding Source and put the potential funding source in the fill in the blank section.

Starting in November the LMS Coordinator will start reviewing all projects in the list and if they have not updated projects this year, they will be marked Inactive and the LMS member will be notified. LMS members will have until December 31, 2015 to comply with all update criteria. If they do not do so by that time your project will not appear on the updated list that gets sent to the State in January. At the March 16, 2016 meeting OEM will make a motion for all projects that had not been updated be permanently deleted.

Next up was Aimee Bojorquez, from OEM, who talked about the new Mapper feature in WebEOC for LMS. Jackson Health Systems was the first one to go in to map one of their projects after the meeting. Here is a quick tutorial on how to do the mapping. We will provide more detailed information soon. Mapper will work from Chrome and from IE if you have Adobe Flash.

Conclusion

The next meeting will be on December 9th, at a location to be confirmed.

December 9, 2015 Meeting

The meeting was held at the Miami-Dade Fire Rescue Training Center Auditorium in Doral. A total of 61 people attended that represented 45 agencies. The following items were discussed at the meeting:

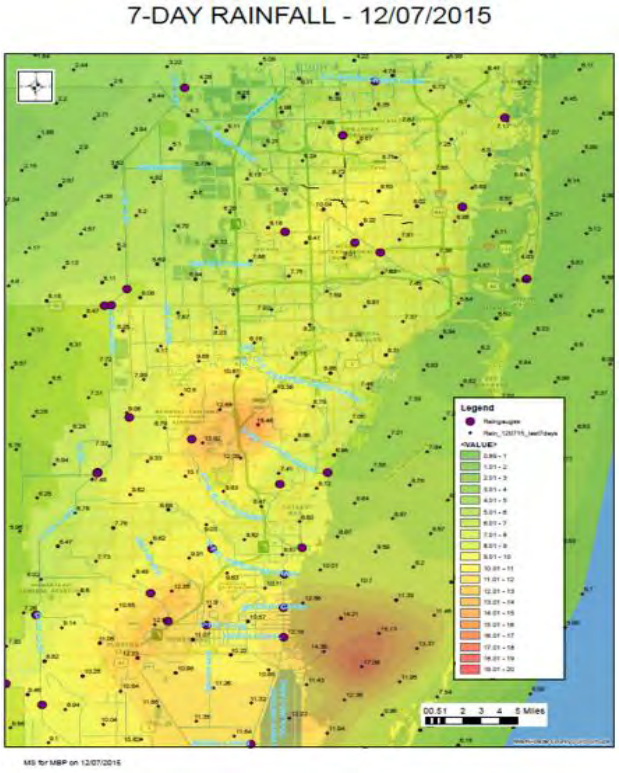
Cathie Perkins, LMS Chair, opened the meeting welcoming new attendees. General announcements included:

- OEM will host another L-278 class in the February/March timeframe. This four-day class covers the Community Rating System Coordinator's Manual. Class size will be limited and priority will be given to local communities first.
- OEM has prepared a draft document to address CRS Activity 610, Flood Warning and Response. They have received some comments that are being integrated, once it is complete OEM will submit to ISO.
- If an LMS member is a CRS community they were reminded that their jurisdiction must adopt the LMS if they plan to use it as their floodplain management plan. Please send copies of your adoption to Cathie Perkins, so they can be kept on file and incorporated into Part 4 of the LMS.
- LMS members are welcome to submit their Activity 510 to OEM as well. They will included in Part 7 of the LMS.
- SB 584 Flood Mitigation and Assistance was passed by the Senate Community Affairs Committee. SB 584 creates a matching grant program to provide up to $50 million in technical and financial assistance to local governments to implement flood risk reduction policies and projects consistent with the coastal management element of a local government comprehensive plan, an approved local hazard mitigation plan, or an adaptation action plan. The current version of SB 584 can be found here .

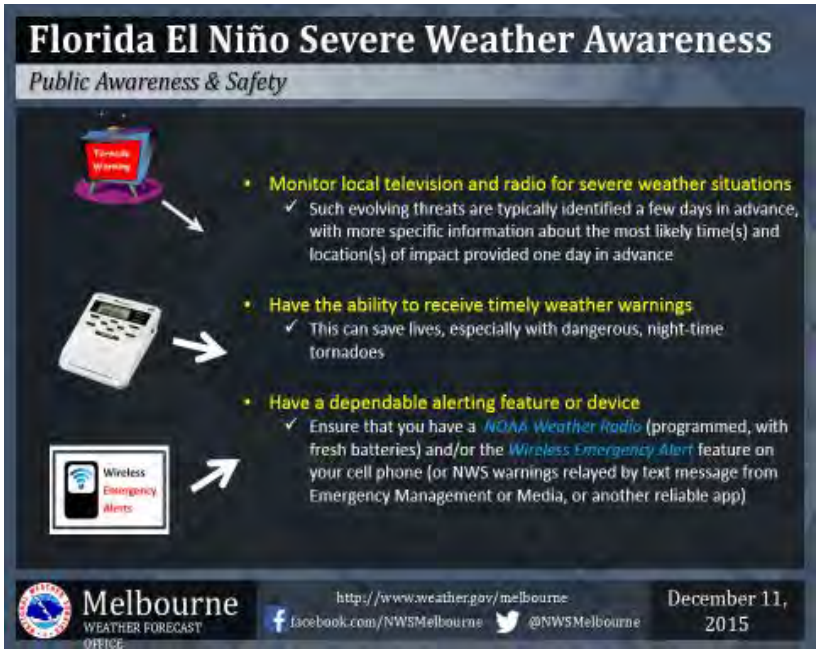
Scott Davis, Director of Public Works for Miami Shores, provided a presentation on their recent king tide flooding issues and how they addressed it. Miami Shores recently experienced issues with flooding with the astronomical high tides with water coming over the canal banks and also up through some of their storm drains. They installed inflatable plugs in the storm drains that could be deflated in case or rain. This helped with the part of the problems they were faced with. They needed a temporary solution along their canals where they had limited public property. This area during other recent king tides had a "river of water" running into a development of 118 homes. They looked at a number of solutions including sand bags and decided to go with a vendor called Trap Bags. (This should not be considered an endorsement of their products but this is an actual case study where this particular product was utilized by one of our LMS members.) The products is like an accordion barrier with reinforcements in it that you lay out and then fill with sand. Its lifespan is estimated at 5-10 yrs., some applications may

require UV protection to expand the lifespan. The product successfully held back up to 2 ½ feet of water with no leakage. Miami Shores took it down after the event as it was partially on private property and have identified a mitigation project of building a berm in this area for future king tides.

Next Marcia Steelman, Stormwater Utility Planning Division for Miami-Dade County, presented the maps that she created for the recent (early December) rainfalls. These maps illustrated the amount of rainfall for spans of 24 hours and 7 days and showed the accumulation in areas of the County. Ms. Steelman spoke to how with the recent rains that the groundwater table was higher than even a typical wet season and this impacted the ability of the rainwater to drain. The maximum infiltration into the ground is about 3 ½ inches per day so in areas where more than that amount fell in a short period of time or even 24 hours we saw ponding and flooding occurring. Cathie Perkins mentioned that these maps and rainfall and flood information was disseminated to a list of floodplain managers and public works personnel. Anyone wishing to be added to this list should contact Ms. Perkins.

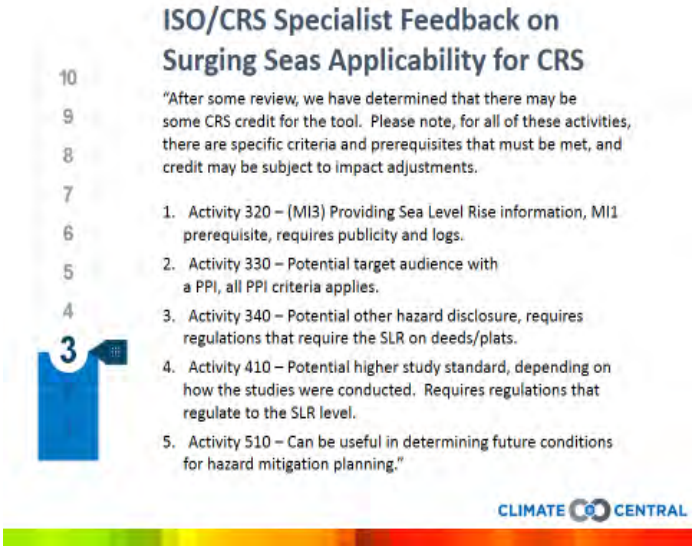


Next up was Rick Stauts, Executive Director for the Florida City Community Redevelopment Agency, to present on the newly completed (just in time) Friedland Manor drainage project. Mr. Stauts talked about how they have pulled together numerous funding sources over the years going back to the early 2000's and some then El Niño funding. There are about 150 homes in the Friedland Manor area that experienced repetitive losses and for some events up to several feet of water in their homes. Florida City designed an underground drainage system with a ten acre holding pond. The water is pumped by two pumps, with a backup generator in case of power outages. The project was literally in its final stages but luckily far enough along when the rains came the first few days of December. Mr. Stauts said at one point during the design they were going to do a five acre holding area and when DERM assessed the project they said they needed to do 10 acres. Mr. Stauts recalled how at the time many people said they didn't need it to be that big because an event that required that much would probably not occur, but they got the extra land and expanded it to 10 acres. By Saturday morning, 3 ½ million cubic feet of water had been pumped into the holding pond, with water lapping over the top. Friedland Manor and all those homes were dry. Mr. Stauts noted some glitches in their operations but their first big test of their mitigation project was hugely successful. Mr. Stauts mentioned some additional projects that Florida City is looking at including culverts and an area around Palm Drive.



Next Erik Salna, FIU International Hurricane Research Center, provided the LMS members a recap of the 2015 hurricane season and the potential impacts that could be faced with for El Niño this winter. Rob Molleda from NWS Miami was kind to provide some slides since he could not be there. We can expect our winter to be wet with an increase in potential for severe weather after the New Year. There are more tornadoes in El Niño years than La Niña, tornado activity is most likely from February to April. Tornadoes are not very common in South Florida but the County have had some and El Niño makes conditions "more favorable" for their development. The LMS members also saw that this year's hurricane season was less than average and Mr. Salna showed a comparison of 2005 to 2015. 2005 was a La Niña year and that year saw an unprecedented number of storms. Erik talked about having a tornado survival kit , very similar to a hurricane survival kit, but really stressed the importance of a weather radio (or you can install an app on your smart phone) to alert people. Remember with tornadoes you do not get much warning time. The Storm Prediction Center in Norman, Oklahoma can model risk areas 2-3 days in advance so we should look for these advisories and then stay tuned to our local NWS Miami for additional watches and warnings.

Next up was Dan Rizza from Climate Central to talk to the group about the web tools that are available to communities on climate related research. Climate Central built the Suring Seas Risk Zone Map and Risk Finder as public web tools available at no cost. There may be some applicability of the Surging Seas app for CRS communities. Listed in the graphic here are potential CRS activities.



Mr. Rizza talked about the capabilities of the tool such as data downloads and reports. Here is a link where you can learn more about the science behind the tool and how they developed it. Mr. Rizza walked everyone through a quick demo of the tool and how they can select an area, put the level or sea level rise they want to assess risk for and then the subsequent data sets that are available.

- Thousands of localized data downloads available for Florida.
- Access Surging Seas Risk Finder for other states.

Mr. Rizza would like very much to get feedback from communities and to discuss how they might be able to improve their tools to assist local communities. Mr. Rizza can be reached at: drizza@climatecentral.org or 604-945-7821

Next Yahiritza Alvarez discussed the annual updates for projects. Currently there are 1,016 active projects on the list. In total for 2015, 18 projects have been reported as completed for the year. For those of you who have not done an update in the last few months, please go in and mark any completed projects so they can be counted for this year. In about September we made some adjustments to some of the fields and also made it so you cannot add a new or save an update to a project unless you have completed the mandatory fields. Please make sure you review your projects to ensure they have all the necessary info. We reiterated that a project should only be marked for "removal" if you actually want to have it permanently removed. When you complete a project it gets archived so we have historical record of it. You can access the archived projects for your agency under the "Archived" tab. (It is on your main page right next to the Active tab.)

Reminder to complete your BCRs. These should have been done by now. Remember if competitive funding becomes available this is one of the tools we use when prioritizing projects so this should be done for all projects you have in on the list. You do not have to do BCRs for projects that are underway or already completed.

We will continue to work with all of you to ensure your projects are up to date. There are a few dropdowns that contain an "other" option – we are going to be removing this in the future. If you have a suggestion for other items we need to add or consider, please let us know. This database is a work in progress but it is capturing so much and now that we are mapping, is a great illustration of where you are all mitigating.

Since we had time at the end of the meeting, believe it or not, we had Buzz Ward from Trap Bag talk on his product and he had a sample on the side of the room and brochures available. He showed how they have used it for Hurricane Sandy and other applications like for landslides in redirecting mud flow. For more information on their products you can go to buzz@trapbag.com 239-229-5285 www.trapbag.com

Our next meeting will be March 16, 2016. If anyone is interested in hosting, we need room for about 80 people and parking, let me know. One other announcement that was made was that Cathie Perkins was recently promoted to Planning Bureau Manager and an assurance that at this point will continue to be the Chair for the LMS. The meeting was adjourned.

2016 Meeting Minutes

March 16, 2016 Meeting

This meeting was conducted by webinar and a total of 57 people participated which represented 43 agencies. Out of the 55 people who took the post webinar survey, 53 said they liked the format and 53 said they would like us to offer at least two of the meetings per year via webinar.

Here are the highlights from the meeting:

- Statewide Hurricane Exercise will be held on May 18th. OEM will be activating the EOC in the morning and host the Divisional EOC and other EOC representatives. They will be offering a segment just for CRS and flooding concerns and OEM have a survey monkey tool open for input.

OEM has received feedback from a few people and they will be moving forward with the planning for that component in Early April.

Zika Virus – the message continues to be Drain and Cover. Florida Health in Miami-Dade County and the Miami-Dade Department of Transportation and Public Works, Mosquito Control Division are actively monitoring, educating and spraying. If any LMS members need any outreach materials they can find them here . As of the March 16th there were 30 cases of Zika in Miami-Dade County and all of them travel related.

- OEM has submitted Activity 510 and 610 to ISO for review for CRS credit. Under the LMS if an LMS member is a CRS community and have done a local adoption, they can get 211 points for Activity 510. OEM is happy to share with the LMS members what OEM submitted so if they do activities above and beyond they can get additional credits. OEM were asked to submit some additional documentation for Activity 610 to get points and are currently working on that. If any LMS members have done a local adoption of the 2015 LMS please send Ms. Perkins a copy. If a LMS member needs some sample language, let Ms. Perkins know and she will be happy to pass along the ordinances that some other local communities have done. OEM have Dropboxes for the Activity 510 and 610 items we submitted.
    - Activity 510
    - Activity 610

- Current funding opportunities that are open include the following
    - Flood Mitigation Assistance (FMA)
    - Pre-Disaster Mitigation (PDM)
    - Residential Construction Mitigation Program
    - Small Business Association Loans

The FMA and PDM applications are due to the State by May 3, 2016 5:00 pm.

If you are applying please let Ms. Perkins know so she can write a letter of support. The following conditions must be met to get a letter of support:

- They must be an active member of LMS
- The project must be on the list and have all of the required fields completed

Please try to give Ms. Perkins a two-week notice so she can ensure to get it to the LMS member in plenty of time. Also include the project number and which grant is being applied to and remember to update the project to "Funding Applied For".

OEM discussed the funding priorities per the guidance that was sent out. Ms. Perkins attached the funding guidance and the power point presentation. Briefly for FMA the Severe Repetitive Loss and Repetitive loss projects will have the highest priority. For PDM, FEMA will prioritize communities that do not currently have HMGP funding and is looking at Climate Resilient Mitigation Activities (CRMA), including Aquifer Storage and Recovery (ASR), Floodplain and Stream Restoration (FSR), and Flood Diversion and Storage (FDS); and pre- or post-wildfire mitigation activities or any mitigation action that utilizes green infrastructure approaches. The State of Florida is looking for non-flood projects and include generators for critical facilities.

There will be a FEMA webinar on the Climate Resilient Mitigation Activities on Thursday, March 24, 2016 1pm (EST)
FEMA ADOBE Connect: https://fema.connectsolutions.com/crma/
Call-in Number: 1-800-320-4330 PIN 789819#

If there are additional questions about the mitigation funding please contact Susan Harris-Council, Project Manager
Susan.Harris-Council@em.myflorida.com
(850) 414-8419

The RCMP funding is for hurricane for residential structures and can be applied for by communities, nonprofits and State agencies. If the LMS members have additional questions, please contact Tara Walters in the State DEM Procurement, Office Phone at (850) 410-1391.

SBA Loans – due to the economic losses and flooding in Miami-Dade County in December, SBA will make available to qualified applicants SBA loans. Loans are for uninsured losses and can be for up to $2 Million.

Applicants may apply online using the Electronic Loan Application (ELA) via SBA's secure website at https://disasterloan.sba.gov/ela.

Disaster loan information and application forms may also be obtained by calling the SBA's Customer Service Center at 800-659-2955 (800-877-8339 for the deaf and hard-of-hearing) or by sending an email to disastercustomerservice@sba.gov. Loan applications can be downloaded from www.sba.gov/disaster. Completed applications should be mailed to: U.S. Small Business Administration, Processing and Disbursement Center, 14925 Kingsport Road, Fort Worth, TX 76155.

WebEOC mapping of projects
Yahiritza Alvarez demonstrated how to map projects for the LMS board. OEM is working on getting them color coded by status. Ms. Alvarez is developing a simple guide on how to use Mapper and Ms. Perkins will send it out when it is available.

Many Thanks to Ed Bowe of Homestead
We offered our best wishes to Ed Bowe, who was a founding member of the LMS and has been an advocate both for LMS and for the EOC. The LMS members wished him good luck, because he is retiring in May 2016.

Next Meeting
The next meeting will be on June 15th. OEM is looking for a place to host it.

June 15, 2016 Meeting

This meeting had 34 people participate, representing 26 agencies. Thank you to the City of Homestead and Linda Blanco, Homestead's Building Official, for hosting this meeting in the city hall building. This building is an LEED Silver certified and offers amenities to the employees including shower facilities to encourage biking to work and working out during the day. The building is rated for Category 5 hurricanes and contains their Emergency Operations Center that will host the various satellite municipalities and the Miccosukee Tribe representatives.

The meeting began with the following announcements:

- Miami-Dade Emergency Management is conducting the 2016 Evacuation Survey and OEM asked that everyone help get the word out to the public. Postcards with the survey information available have been created and LMS members were encouraged to post the following link on their websites and social media pages: http://www.miamidade.gov/hurricane/

This site will also provide information for the public so this is a link to refer constituents to for information. As of today OEM have had 783 completed surveys. They are aiming for 2,500 so OEM can have a good representation of the community.

OEM stressed the continuation of the "Drain and Cover" campaign that Miami-Dade Department of Solid Waste is promoting to educate residents on what they can do to help reduce mosquito breeding and protect themselves from getting bit. Additional educational material is available here .

- OEM continue to work on the Community Rating System program. Congratulations to The Village of Pinecrest who is entering the program as a Class 8 and effective October 1 their residents will see a 10% discount on their flood policies as they are renewed. Cutler Bay is awaiting their final reviews to see what their score will be. Miami Springs and Medley are also working on entering the program.

- Rob Molleda from the National Weather Service Miami presented on all things hurricanes. Even though there has already had three names storms (and a new depression over the weekend) this is not necessarily an indicator for how the rest of the season will be. El Niño is gone and La Niña is here. With La Niña is typically less wind shear which could help promote formation more. The stormiest weather in terms of thunderstorms and rain can be expected from mid-May to early July. Hotter temperatures with some dry periods (with Saharan dust) are expected early July through mid-August and from late August through mid-October the County may see highly variable precipitation. Mr. Molleda stressed the threat of storm surge and noted that during Hurricane Andrew that the surge was about 17 feet in south Miami-Dade County and during the 1926 storm

there was 2 feet of sand on Collins Avenue. Starting in 2017 the watches and warnings will start to be issued for storm surge to help communities be better aware.

Mr. Molleda talked about the tracking cones of hurricanes and reminded everyone that that only shows where the eye of the storm will be 2/3 of the time. This does NOT account for the wind fields and storm surge and 1/3 of the time the eye of the storm may be outside of the cone. Once we get within 3-4 days of a storm we need to look at the local conditions that will impact us.

- Jose Palacios from Peninsular Insurance Bureau Adjusters talked about the insurance perspective. Mr. Palacios said from the insurers' side they are identifying and mobilizing as many adjusters as possible to respond to the areas that may be or have been impacted by an event. He spoke about how the insurance companies try to spread the risk to disasters and after Hurricane Andrew and the storms of 2004-2005 many insurance companies left Florida and the Citizens Hurricane Insurance program grew. Re-insurance grew as an industry, this is a practice where insurance companies seek insurance from other companies to spread the risk. He talked about the insurance discount program for homeowners who implement mitigation measures that can include roofing straps, window and door protection. LMS members can go here for a calculator on potential savings. Mr. Palacios also said that there may be changes as to how people can get flood insurance as private insurers are looking into offering this as well.

- Tiffany Troxler, the Director for the FIU Sea Level Solution Center, spoke to the group about integrating educational institutions into mitigation. Dr. Troxler has been very proactive in working to help educate communities about the risk of sea level rise, mitigation and the community rating system. To improve understanding of localized flood conditions and develop information for baseline monitoring of flooding and flood mitigation improvements, municipalities can coordinate with the Florida International University Sea Level Solutions Center (slsc.fiu.edu) to develop an activity for collecting this information. We will help coordinate students to support data collection and documentation with on-site measurements and use of our Eyes on the Rise application (eyesontherise.org), created by the FIU School of Communication and Journalism and GIS Center.

For King Tide flooding events expected this fall, FIU will be organizing an event on October 16, 2016 - Sea Level Solutions Day. As part of this event, OEM will be conducting flood monitoring activities and may be able to include locations from your area. Other dates can also be considered. Please contact Brad Schonhoff or Tiffany Troxler via slsc@fiu.edu if you are interested to organize a flood monitoring activity.

The meeting was adjourned.

September 21, 2016 Meeting

This meeting was conducted via a webinar and had 49 people in attendance.

Announcements

- OEM will be having a FEMA evaluated Turkey Point exercise in February of next year. For those CRS communities that are within the emergency planning zone for Turkey Point this is another opportunity for exercise credit.
- OEM will hold our annual hurricane exercise with a flooding component as well, most likely around mid-May 2017.
- November 2-3 there is a G393 Mitigation for Emergency Managers class being offered in Broward County. Individuals can register at: http://trac.floridadisaster.org/trac/loginform.aspx
- The 8th Annual Southeast Florida Regional Climate Leadership Summit will be in Palm Beach County Oct. 5-6. http://www.climateleadershipsummit.com/
- Sign up for Miami-Dade Alerts to be notified of tornado and tropical cyclone warnings. http://www.miamidade.gov/alerts/
- A free training from NOAA is available for GIS folks the week of December 12th. Certification credits are available for AICP, GISP and CFMs. (see presentation slides for more info) to sign up email Katie Hageman at hagemk@miamidade.gov
- The CRS manual will have minor updates in 2017 and will undergo another major review and update in 2020. Trainings on the CRS program and manual updates can be found at www.crsresources.org/training

Guest Speaker – Shari Holbert Lipner - Miami Beach Zika Virus Response and Messaging

Ms. Lipner gave a presentation on how the city has been addressing mosquito abatement and the Zika virus. Miami Beach took a very pro-active stance early on with setting goals and objectives:

- Educating stakeholders
- Knowing that they could not stop but could perhaps delay transmission through mosquito abatement
- Respond and mitigate with effective vector control
- Protect vulnerable populations
- Disseminate accurate, timely and consistent information (this is really key and huge reason why the Joint Information calls are held and why we (OEM) created a repository at the County level to share all information so everyone can have the same messaging)

Ms. Lipner walked everyone through the timeline of when Miami Beach began their monitoring (back in January) and actions they took within their city. Miami Beach attended meetings and conference calls to help themselves get up to speed with what Zika was and what they could to help minimize the risk of their employees and residents. They met with key departments in February and started including information in their daily City Warning Point emails that go to all employees. In May they addressed how to protect employees and

developed an Exposure Control Plan. Ms. Lipner wrote an article entitled Mitigating Mosquito Mayhem (attached to the email sent with this bulletin). Miami Beach continued their proactive measures and continues to be active as they are dealing with local transmitted cases and the first Zika positive mosquitos as well.

Miami Beach has continued to promote the Drain and Cover messaging and has been doing a lot of education on bromeliads and how people either need to be responsible bromeliad owners which means they need to ensure they are treating them/vigorously washing them out. They implemented Code Compliance measures that include fines for people who do not remove or treat standing water. Their police officers have information on hand that they can pass out to residents/visitors on Zika and mosquito control as they are often asked questions. Their Housing and Community Development Department ensure that the homeless populations are provided transportation, temporary shelter and a nice breakfast when the aerial sprayings have occurred to help protect them and after the spraying their Parks personnel rinse down the tot lots, outdoor drinking fountains and tables that may be used by the public. They have engaged multiple departments and made the effort a citywide response.

The County has Drain and Cover door hangers and rack cards available in English, Spanish and Creole. Let OEM know if you need any and they will let you know where you can pick them up. OEM will be hosting another Mosquito Abatement Training on Tuesday, September 27, 2016 at the MDFR Training Center Auditorium at 1:30 pm.

LMS Updates

The annual updates are due by October 31st, below are the important points when LMS members need to do their updates:

- Municipalities must have at least one project on the list to be considered an active LMS member
- All projects are to be updated at least once per calendar year. Please go in and review all of your projects and make any updates. Even if there are none, hit save and it will update the "last updated date" and you are all set.
- Please verify the contacts for each of the projects.
- Ensure the project includes the funding source, the completion date to the year or month/year it was completed, the final cost and if available attach photos or articles.
- All projects should have the Benefit Cost Review score completed. If the project does not have this score, then if a competitive grant award (HMGP) is awarded to the County then the project will not be considered a priority.
- If the project was "new" last year, then this year it should be updated to "Update".
- If the following is selected "removal" or "project deleted" – Ms. Perkins will follow up with the LMS member before it is permanently deleted.
- If an LMS members wants to defer a project – put it on hold for now.
- Inactive projects are also projects that have not been updated within the one year time frame until they are either brought back up to date with all required fields or deleted.
- Completed projects should not be marked for removal - OEM archives those so they can keep records.

- Please provide an exact address or cross streets or perimeters of the project so it can be mapped on WebEOC.

If an LMS member doesn't have an account and want to add projects, let Ms. Perkins know and she will create one for a member.

State LMS Update

The State is in the process of updating their plan for its 2018 submittal to FEMA. If LMS members are interested in working on their plan they have a number of committees that members can volunteer for:

- Risk Assessment Committee
  - This Committee will be responsible for updating Section 3: Risk Assessment, including vulnerability of state assets and jurisdictions, updating data as necessary based on new information, and documenting changes in development.
- Strategy Committee
  - This Committee will be responsible for updating Section 4: Goals and Capabilities and Section 5: Funding and Projects. It will also assist in the updating of other aspects of the SHMP including prioritizing mitigation actions; program and capability updates; and demonstrating progress.
- Planning and Maintenance Committee
  - This Committee will be responsible for updating Section 1: Introduction, Section 2: Planning Process, and Section 7: Plan Maintenance.
- Enhanced Plan Task Force
  - This Task Force will be able to work with all three committees to ensure the entire plan meets the requirements of an Enhanced Plan.
- SRL Task Force
  - This Task Force will be able to work with all three committees to ensure the plan addresses RL/SRL appropriately.
- EMAP Task Force
  - This Task Force will be able to work with all three committees to ensure the plan meets the EMAP Standards.

If anyone is interested, please take a moment to sign up here to be part of one of their committees via the below link.

December 14, 2016 Meeting

A total of 68 people attended that represented 34 different agencies.

Here is what we covered:

Announcements

- Reminder to all LMS Working Group members with projects that they must be completely updated by December 31st.
- There is a grant writing class being held in Broward County for free on Tuesday, February 7th. (See Flyer attached to the email with this bulletin.)
- Miami-Dade County offers free trainings and workshops. Go to http://www.miamidade.gov/grants/. Terry Parker is the point of contact and their # is 305-375-1459.
- Doral is hosting the Advanced Floodplain Management Concepts II class January 30 - February 2nd. For more info contact Mark Haggerty mark.hagerty@cityofdoral.com.
- Ms. Perkins will be reaching out to municipalities to get updates on the mitigation measures they are implementing locally – through new ordinances or new participants in the CRS program.

The main part of the meeting focused on the 100 Resilient Cities presentation by Stephanie Tashiro (Miami) and Amy Knowles (Miami Beach). Greater Miami and the Beaches was awarded a grant from the Rockefeller Foundation to assist with planning to be a more resilient community socially, economically and physically. The goal is for the local communities to help identify what is the best strategy to deal with the shocks (immediate impacts like disasters) and the stressors (chronic conditions like poverty) that the County faces now and how things may be further impacted by urbanization, globalization and climate change. Ms. Knowles and Ms. Tashiro launched an interactive survey and dialogue as part of a series of public meetings to gather input. Everyone present helped inform the conversation about not only our work priorities but also our personal priorities and concerns. This process will continue with gathering data and then compiling it to identify what the future actions will be. There will be an online component to this as well, so if a LMS member missed the meeting they will have an opportunity to help provide input. More information on the 100 Resilient Cities is available here .

The second presentation of our meeting was by Susan Jacobson from the FIU School of Communication and Journalism who reported on engaging citizens in sea level rise, a project that was conducted by the FIU Sea Level Solutions Center. FIU engaged community members and armed them with tape measures and salinity test kits to help document the recent king tides on October 13 and November 13.

The Sea Level Solutions Center identified locations and times for community members to go so, they could assist with reporting data. The reports were plotted on a Google map with attached measurements and pictures. There was a report of more than 12 inches of flooding in central Virginia Key.

Flooding at Sewell Park in Miami, over 18". On Purdy Avenue on Miami Beach, fish could be found on the sidewalks.

FIU gathered great data and we talked about how the LMS partners can assist with data collection. FIU will continue to develop this toolbox and also works with the Code for Miami which meets the last Monday of every month in Wynwood. Ms. Jacobson email address is sujacobs@fiu.edu .

2017 Meeting Minutes

March 15, 2017 Meeting

A total of 68 people representing 51 different agencies attended this webinar.

Announcements

- There will be an Open House at NWS Miami on Saturday March 18th from 10:00 am – 2:00 pm 11691 SW 17 Street, Miami 33165

- The Statewide Hurricane Exercise will be held on May 3rd. This year the seven Divisional EOCs will activate and host the Satellite EOCs. For the CRS communities that need the credit they should coordinate with the relevant Divisional EOC to ensure representation on the exercise day. If you have questions contact Yahiritza Alvarez - yda@miamidade.gov or 305-468-5424

- The 100 Resilient Cities partnership for Greater Miami and the Beaches has opened a survey to get feedback from the community in relation to what their concerns are now and in the future with climate change and sea level rise. Please post or send out the following Survey Monkey link to help get the community to take the survey, https://www.surveymonkey.com/r/gm-b the survey is available from that location in English, Spanish and Haitian Creole.

- On March 30th from 1:00 – 3:00 pm there will be a Whole Community Engagement Meeting to discuss trending topics such as screwworm and rabies updates, emergency shelters, preliminary damage assessment and Zika. It will be held at the MDFR Training Auditorium (building behind EOC) at 9300 NW 41 Street in Doral.

- There will be a Mosquito Abatement Meeting on April 3, 2017 from 9:30 – 11:00 am in the MDFR Training Auditorium at 9300 NW 41 Street in Doral. OEM will make available the Drain and Cover door hangers, rack cards and posters in English, Spanish and Haitian Creole for LMS members to pick up and disseminate/display in their community. Please contact Cathie Perkins if you are interested in attending or picking up materials. perkins@miamidade.gov or 305-468-5429.

- There will be a FEMA Coastal Flood Map Technical Update Meeting on March 28th from 10:30 – 12:00 in the MDFR Training Auditorium at 9300 NW 41 Street in Doral. This meeting is a follow up for the new proposed FEMA Coastal Flood Maps that are being updated and ensuring we have incorporated any local knowledge to help information flood risk areas.

- On May 12th NOAA will be hosting the National Hurricane Tour at Opa-locka Airport. It will be open to selected public schools in the morning and then to the public from 2:30 – 5:00 pm. There will be two hurricane hunter planes on site with educational presentations, static displays and informational booths. If a member is interested in having a table at the event to help promote any hurricane preparedness information.

Please contact Cathie Perkins at perkins@miamidade.gov. This may be a good opportunity for CRS communities to have someone to speak on flooding issues and have information on hand. Currently, there will be about 1,000 school kids in the morning and about 1,000 people from the public.

- There will be a Hazard Mitigation Grant Program (HMGP) Webinar on March 22nd at 9:00 am to discuss monies from Hurricanes Matthew and Hermine. Please register here .

State Hazard Mitigation Plan update

The state is working on the update for their plan. They have sent a copy of the risk matrix and the ranking of the hazards for all the Counties. During the meeting, we discussed it and encouraged everyone to review and provide feedback.

County	FL	DF	HU/TS	TO	SS	WF	DR	EH	WS	FR	ER	SH	LS	SM	TR	TC	MM
Lee	M		M	M	H	H	M	M		H	H						
Leon	M		L	M	H	M	M					H			L	M	
Levy	H		M	H		H	H	H		H	M	H					
Liberty	H		H	MH	H	H	MH	H	MH	H	H	L					
Madison	H		MH	M	H	M	H		MH							H	
Manatee	H	M	H	H	H	H	H	M	L	L	M	L		L	H	H	
Marion	H		L	M		M	L	L	L		L	M					
Martin	H	L	M	M	H	M	L	L			M	L		L	L	M	L
Miami-Dade	H		H	H	H	L	M		M		M						
Monroe	H		MH	H	H	MH	L	L		L	H						

Key for Hazard Summary Table

- H- High Hazard Ranking (mapped in Red)
  - One or more occurrences each year
- MH- Medium/High Hazard Ranking (mapped in Blue)
  - One occurrence every 3 years
- M- Medium Hazard Ranking (mapped in Yellow)
  - One occurrence every 5-7 years
- L- Low Hazard Ranking (mapped in Green)
  - One occurrence every 10 years
- Not Identified (mapped in Tan)

Codes for each Hazard

- DF- Dam Failure
- DR- Drought
- EH- Extreme Heat
- ER- Erosion
- FL- Flooding
- FR- Freezes
- HU/TS- Hurricanes and Tropical Storms
- LS- Landslides
- MM- Mass Migration
- SH- Sinkholes
- SM- Seismic Events
- SS- Severe Storms
- TC- Technological Events
- TO- Tornadoes
- TR- Terrorism
- WF- Wildfires
- WS- Winter Storms

The State will send out a draft of the Hazard Profiles soon and OEM stressed the importance of getting local reviews and input to ensure that any hazards faced here locally are documented in the State plan to ensure that the County's unique concerns are included.

Impacts Catalog
The guest presenter for the meeting was Arlena Moses from National Weather Service Miami to discuss the Impacts Catalog and how you can help. The NWS Miami wants to ensure they best understand your thresholds/criteria for different weather hazards and how they impact your decision making. The NWS Miami wants to be able to create better tools to enable them quickly to identify potential weather threats based on your hazard assessment input.

The next meeting will be on June 21, 2017, from 9:30 AM – 11:30 AM.

June 21, 2017 Meeting

This meeting was attended by 40 people representing 27 different agencies.

Announcements

- The Senate has confirmed the new Director for FEMA. Brock Long who served as a previous Director of Emergency Management for Alabama and currently works for Hagerty Consulting will be sworn in soon.

- The proposed federal budget includes cuts to the National Flood Insurance Program. This includes eliminating the funding to the RiskMAP program. The NFIP program is up for reauthorization the end of September and this may have a big impact on the State. Florida has more NFIP policies than any other state and Miami-Dade County has most of those policies. Surcharges that may be added onto the program will be passed onto the policy owners. Getting into and maintaining the status in the Community Rating System will be essential to helping residents save money.

- The state recently provided OEM with the Environmental and Historical Preservation class. Federal dollars that are received may be subject to EHPA considerations. Some of the items LMS members should be taking into consideration can be found here in the Florida Greenbook.

- Miami-Dade County is updating their Comprehensive Development Master Plan. Comments can be provided via this link.

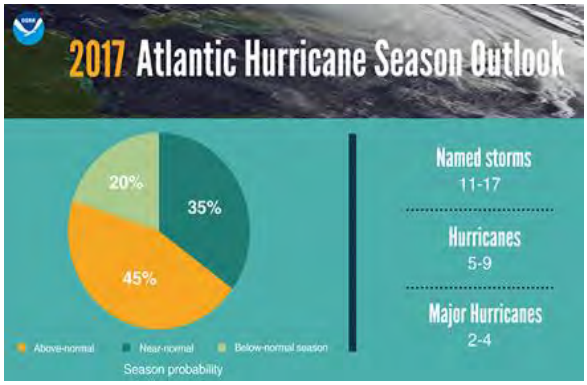
- Katie Hageman reported that the County recently wrote a report on which roadways are vulnerable to flooding and sea level rise. The report points to two resources in a recent FHWA administration study that identified major roadways that are currently vulnerable and FDOT/UF's tool that is an online tool where users can explore in more detail future impacts.

- Miami-Dade ITD and OEM are working with the DSWM and DTPW to create a real-time tracking tool for debris clearance and removal. This will be rolled out to municipal and the State DOT for their usage as well to help track the status of debris issues real time after an event.

- Miami-Dade OEM continues to work with the ARM360 vendor for the update of the damage assessment system that will include the Android and IOS versions.

2017 Hurricane Season and Products Presentation

Rob Molleda of NWS Miami was kind enough to provide an annual update on the hurricane season and new products that are available to the public this season. Though Mr. Molleda provided the 2017 Hurricane Season Outlook. The current conditions of warmer waters and less wind shear can increase the formation of storms.



This year you will see some changes in the National Hurricane Center products that will be made available.

The overall look of the tropical advisory graphics has been designed to have a “cleaner” look and feel. It will display the initial wind field size of the storm and not just the cone. Remember the cone shows where the center of the storm is 2/3 of the time but does not show the extent of the winds. The new image shows the extent – in this case (to the right) of tropical storm force winds. If there were hurricane force winds they would be indicated in the reddish-brown color in the key at the bottom of the graphic.

Storm Surge Watches and Warnings will be issued this year to help notify the public of the greatest threat to life for hurricanes. Storm Surge Watch indicates there is a possibility of life-threatening inundation within 48 hours and the Warning within 36 hours to these areas. Remember except for mobile homes residents and electric dependent folks, this is the reason we issue evacuation orders. There will also be a Potential Storm Surge Flooding Map to show how much inundation may be expected.

One of the most important things once you know a hurricane is coming your way, is to start monitoring what the local impacts are going to be. The National Hurricane Center and National Weather Service Miami have a great new Hurricane Threats and Impacts (HTI) page that will give you information on the winds, surge, flooding, rain, and tornado threats.

There is also an experimental Time of Arrival Graphic that will show the Earliest Reasonable and the Most Likely arrival times for Tropical Storm Force Winds (TSFW). From an emergency management and preparedness point of view the Earliest Reasonable will be a good guide for when you should plan to have everything battened down and get all of your personnel to safety.

The Potential Tropical Cyclone development is the other new product this year. There have been several storms that have developed just off the coast and since the systems did not have closed circulation there was no product available to issue advisories, watches or warnings. The NHC starting this year will issue Potential Tropical Cyclone products when there is a threat of tropical storm or hurricane conditions to land within 48 hours.

If needed, there will also be Extreme Wind Warnings issued for an area when there is a Category 3 or higher storm and there are sustained surface winds of 115 mph or greater expected to occur within one hour. If you hear this warning you should seek shelter within your shelter. Look for those interior rooms/closets without windows.

To notify the public of the threats in the area the Wireless Emergency Alert (WEA) system will include the issuance of Hurricane Warnings, Extreme Wind Warnings and Storm Surge Warnings.

The experimental NHC products will be utilized this year and are open to comment. You can send feedback to the NHC on the various new products at http://www.nhc.noaa.gov/experimental/?text

Community Rating System
Josh Overmyer, CFM, from the State CRS Initiative provided updates to the CRS Manual. The 2017 CRS Coordinator's manual is now available. If you recently had your cycle visit you will continue to use the 2013 CRS manual until you have your next 3/5-year cycle visit. When you have, your next cycle visit you should use the 2017 manual. The updated manual is here .

Miami-Dade County residents save approximately $34 Million a year on their flood insurance policies due to the hard work and diligence of their communities. The new ISO representative for the area is Craig Carpenter who can be reached at BCarpenter@iso.com or 404-825-3003.

State Hazard Mitigation Plan update
The State continues to work on their plan update. They are asking for input on their hazard analysis. The documents are available here until June 27th.

If you have any comments or concerns about their profiles, please let Ms. Perkins know so she can compile the comments and send them up to the State. They currently have drafts of the following hazards:

- Winter Storm and Freeze
- Wildfire
- Tsunami
- Tropical Cyclone
- Severe Storm
- Seismic Event
- Geological Event
- Flood
- Extreme Heat
- Erosion
- Drought

The next meeting will be on September 20, 2017, from 9:30 AM – 11:00 AM as a webinar. You can register at this link .

November 15, 2017 Meeting

The scheduled September 20, 2017 meeting was cancelled due to Hurricane Irma. In lieu of the quarterly meeting a special meeting was held on November 15, 2017 for a discussion on Mitigation Opportunities under 406 and 404 mitigation, the Environmental and Historic Preservation considerations and how the Local Mitigation Strategy Working Group will move forward with the pending Hazard Mitigation Grant Program. Presentations were provided by FEMA representatives who also responded to questions from the LMS WG.

The PowerPoint presentations that were provided can be made available upon request.

December 13, 2017 Meeting

There was 62 people representing 48 different agencies in attendance.

Announcements

- Tornado Awareness training on January 17th from 8:30 – 4:30 at the MDFR Training Center to register go to https://ndptc.hawaii.edu/training/delivery/2002/

- Per the State, they believe the HMGP announcement will come out in early January 2018.

- Tetra-Tech is doing an After Action on Hurricane Irma and the County's response. We welcome input from our partner agencies so we can best understand what you feel went well and areas that may need improvement.

- When an LMS project is completed please mark it as "Project Complete", update the timeframe to include the year or month and year, update the total cost and how it was funded under the funding source and if possible add pictures of the finished project.

- The Intent to Apply form for HMGP Hurricane Irma monies is due to the LMS Chair by 5:00 pm on January 12th. The excel form is included in the email with this bulletin.

- The annual update of the LMS is underway and OEM will be including the updated list of projects to the State, updates to any legislative or policy measures that LMS members have that incorporate mitigation into their organization, updates to our hazards and recent impacts. LMS members were instructed to send any updates ASAP as the report is due to the State by January 31, 2018.

Guest Speakers

Kim Brown, Supervisor of Long-Range Planning, from RER presented on the Evaluation and Appraisal Report (EAR) for the Miami-Dade County Comprehensive Development Master Plan (CDMP). The CDMP sets a broad vision for how the County is going to grow and develop over time, this is required by State law. This helps guide Capital Improvement Programs, and ensure that Regulations and Development Approvals are consistent. The CDMP must be evaluated every 7 years and reflect changes in State law. The County conducts a comprehensive review and assessment of major issues and reviews the progress towards meeting goals, objectives and policies and identifies needed changes. There are 12 different elements included in the CDMP: Land Use, Transportation, Water, Sewer and Solid Waste, Coastal Management, Conservative, Aquifer Recharge and Drainage, Intergovernmental Coordination, Housing, Capital Improvements, Recreation and Open Space, Public School Facilities, Economic, and Community Health and Design. You can find out more information about the CDMP at: http://www.miamidade.gov/planning/cdmp.asp

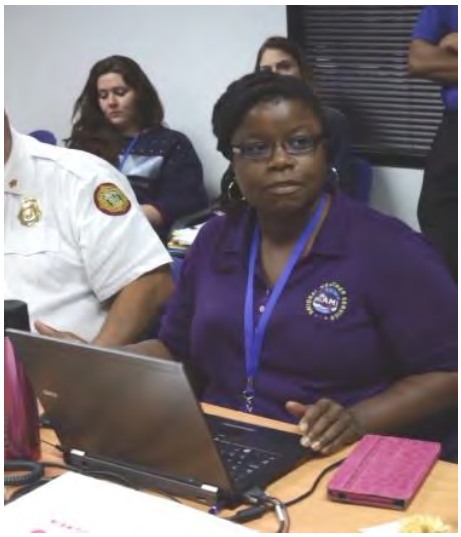
Ms. Brown provided an overview of each element to show the importance of the work being done through this planning process. Of key importance to all of our communities are the

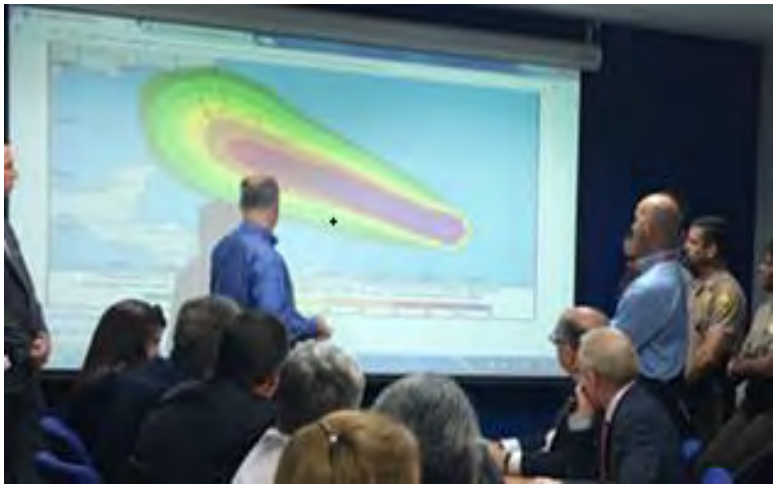
Coastal High Hazard Areas (CHHA), those that are below the elevation of the Category 1 Storm surge line, and limiting public expenditures and development in those areas. Ms. Brown provided an interesting projection that the County will grow from the current population of 2.7 million to 3.4 million by 2040. By 2030 the housing supply within the current Urban Development Boundary (UDB) is projected to be depleted. Agricultural lands which support our economy as the second largest sector are critical. 52,000 acres of agricultural land are needed to maintain a viable agricultural industry and 57,000 acres fall outside of the UDB. As developers look for more places to build and locate people where are they going to go? For Hurricane Irma the County evacuated about 650,000 people and as the County continues to grow they may be putting more people in harm's way, increasing the shelter demand and evacuation clearance times.

Our second speaker, Robert Molleda from the National Weather Service Miami provided a recap of Hurricane Irma. As we all know we really dodged a bullet with this storm. One that was not a direct impact on Miami-Dade and two that the back side of the storm was much weaker and did not produce as much rain as is typical. We could have had twice the amount of rain if the storm had been stronger on the backside. Locally South Florida had hurricane force gusts and additional work is being done to determine if sustained one minute hurricane force winds were a factor. The images of the trajectory of cone from 3 days before to 2 days before illustrates how critical monitoring and planning is. If this had been the other way around and projected to come into the Keys and then veered more to the north then the center could have been us.

The big picture that goes beyond the trajectory of the cone is the overall size of the storm and the wind fields. This next graphic illustrates how the entire state was experiencing the winds. Even though the eye of the storm was 90 miles away we had frequent gusts of hurricane force winds (as high as 100 mph) in SE Florida.

The NWS Miami was an amazing partner to MD OEM, between on-call and in-person presence. For the first time ever we had a NWS Miami forecaster here in our EOC during the lockdown. Their guidance and input on the threats and hazards helped us make decisions about where to evacuate. NWS Miami provided more than 200 media interviews and gained over 30,000 Twitter followers in less than one week.





Our last speaker was Colton Bowles from the U.S. Army Corps of Engineers who spoke about assistance programs they have available through their General Investigation and Continuing Authorities Program (CAP). Mr. Bowles provided and overview and handouts on each program that were sent out on December 13th. Below is a list of the programs that Colton spoke about.

CORPS AUTHORITIES

Authority	Project Purpose
Section 14	**Emergency Streambank and Shore Line Protection for Public Facilities**
Section 22	**Planning Assistance to States**
Section 103	**Protection of Properties (public and private) Against Storm Damages**
Section 107	Improvements to Navigation
Section 111	Mitigation of Damages from Federal Navigation Project
Section 204	Regional Sediment Management
Section 205	**Flood Damage Reduction**
Section 206	Aquatic Ecosystem Restoration
Section 208	Channel Clearing and Excavation
Section 1135	Modification to Existing Corps Projects
Section 7001	Future Water Resource Projects

The USACE has over 36,000 engineers with expertise in a tremendous amount of areas so they are a great contact to see if they can help with a study or a project. The Corps can pay up to $100K for a feasibility study and then beyond that it is a 50-50 split.

To initiate projects a letter is sent to the District Engineer to request assistance. A template was made available as well. The contact here in Florida if you have questions is Dave Apple at 904.232.1757 or david.p.apple@usace.army.mil.

The meeting was concluded and the next meeting will be on March 21st as a webinar at 9:30 am. https://register.gotowebinar.com/register/4786897981911801603

2018 Meeting Minutes

March 21, 2018 Meeting
A total of 80 people representing 46 different agencies participating on this webinar.

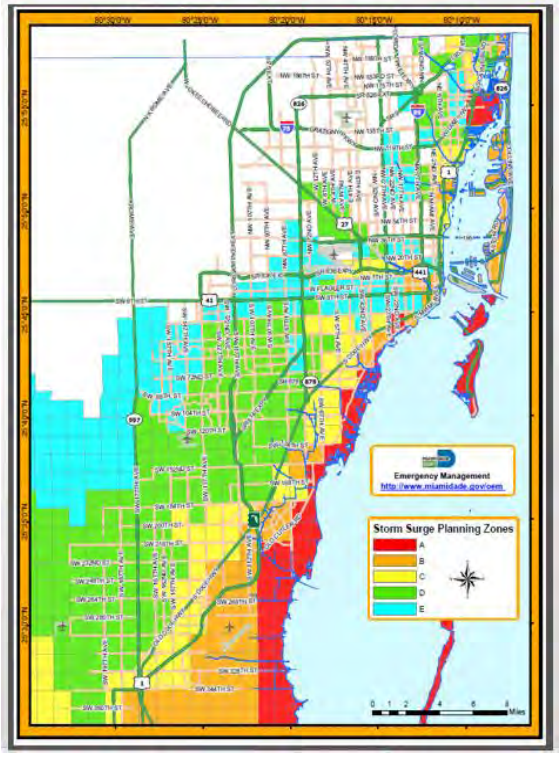
Announcements

- OEM is currently at the Youth Fair (3/15-4/8) providing hurricane preparedness information.

- On Saturday April 21st OEM will have a call down for the Emergency Evacuation Assistance Program so volunteers are needed, if anyone is interested please email Roberto Cepeda at Roberto.Cepeda@miamidade.gov or 305-468-5419.

- They have several exercises coming up:
  - April 5, 2018 a Post Disaster Housing Exercise that will focus on housing issues and will also have a flooding component. Anyone interested in attending can contact Sherry Capers Sherry.Capers@miamidade.gov or 305-468-5452.
  - May 2, 2018 will be our annual Hurricane Exercise with the State. Invitations for this should be coming out shortly. CRS communities that are also Divisional EOCs can also participate in this for credit.

- OEM spoke about Community Outreach and the importance of ensuring that everyone is providing consistent information.
  - The updated Storm Surge Planning Zone Map is available this year.
  - OEM is currently working on the 2018 brochure. It will be larger in size than the mail out last year and will include 2 pages for Spanish and Haitian Creole. This will get mailed out to 1 million households in Miami-Dade so an increase from last year.
  - It is important that OEM helps ensure people understand the difference between FEMA Flood Zones and Storm Surge Planning Zones.



- OEM is working with ITD to create an app to have real time information for people to try to help direct them to look at one place to get the correct information specific to the hurricane.

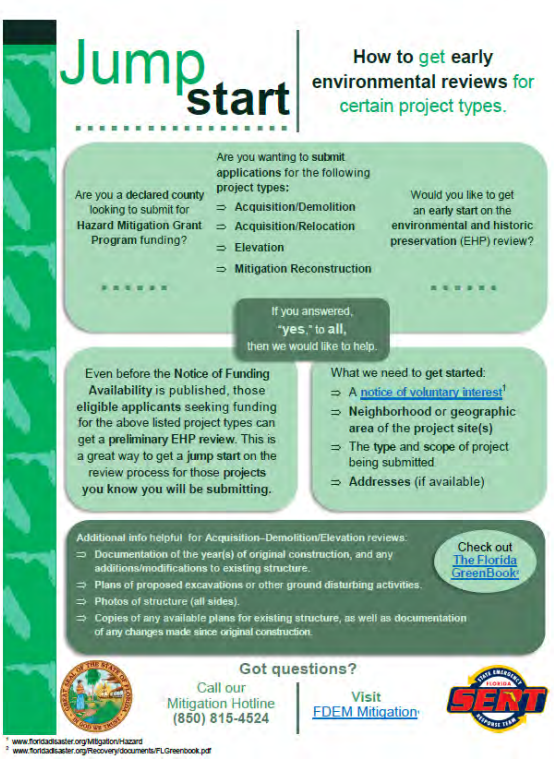
HMGP Update
Next in the meeting the LMS members discussed the drop in the estimation of how much HMGP monies would be available. Overall the State and Miami-Dade saw about a 50% drop.

	State	Miami-Dade
90-day estimate	$929,880,399	$168,980,208.39
6-month estimate	$354,066,081	$64,341,780.10

The Steering Committee will be meeting on March 23rd to discuss what changes if any they should make to the list. Some LMS Working Group members had suggestions that the Steering Committee will discuss.

Sandy Bridges from FEMA was on the webinar as well and talked about ways to look for the match including looking to the Private Public Partnership. Were there any businesses in your jurisdiction that were impacted as well? Might they want to help cover the match for projects that will benefit them as well? The State is looking to help expedite the Environmental and Historical reviews by working closely with FEMA.

Ms. Bridges also mentioned the Increased Cost Compliance Coverage and provided a Fact Sheet. This can provide up to an additional $30,000 the help flood insurance policy holders cover the cost of mitigation measures that will reduce flood risk.



Community Development Block Grants (CDBG)
The State will also be receiving $616 M in CDBG monies from Hurricane Irma. They met with stakeholders from Miami-Dade to discuss unmet needs and areas to be considered for an action plan for utilizing this money. I have attached the power point they provided to us to the email. But here are few highlights:

- Flexible fund to address community needs that remain after other funding has been exhausted.

- Must primarily address housing unmet needs but can also be used for unmet economic revitalization and infrastructure needs that impact housing and economic revitalization.
- Can be used as a match for other Federal funding.
- Must meet of HUD's 3 National Objectives.
    - Benefit persons of low-moderate income (70% of funding for LMI).
    - Aid in prevention or elimination of slums or blight.
    - Meet other urgent community development needs because of serious or immediate threat.

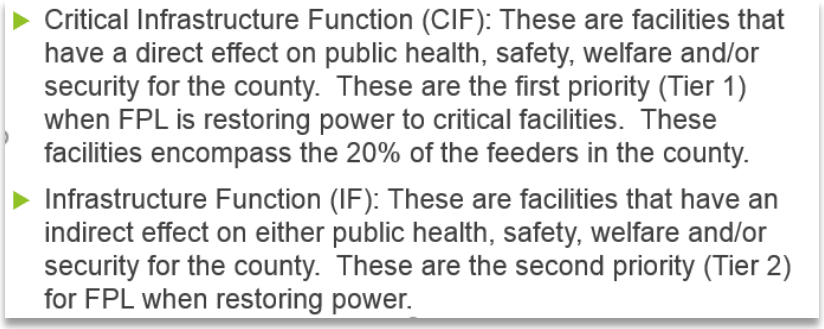
The draft of the Action Plan will be on the Department of Economic Opportunity website in April – with a comment period of 14 days. Then in May they will submit the plan to HUD for approval.

Priority Power Restoration
Steve Detwiler presented on our work with FPL for the priority restoration of critical facilities. FPL allows us to select 20% of the feeders for priority restoration. We are currently over the 20 % and will be revisiting what is on the list. It is important for everyone to understand that being on the list does not guarantee your power will be restored quickly. It depends on the magnitude of the damages. Therefore, everyone should ensure they have the following in place:

- Continuity of Operations Plans that identifies your mission essential functions and alternate facilities where you can conduct them if site A is not available.
- Redundant power sources that may include back up generation or dual feeders from FPL.
- Transfer switches so you can switch over to generator power.
- Generator/Electrician contracts that you can activate if needed.

Mr. Detwiler will be working with our partners to help identify the Critical Infrastructure Facilities and Infrastructure Facilities (CIF and IF) in our community.

You can see more information in the LMS presentation slides. You can contact Steve Detwiler at SteveD@miamidade.gov or 305-468-5423 for more information.



Next Meeting
The meeting concluded and the next meeting will be on June 20, at 9:30 AM.

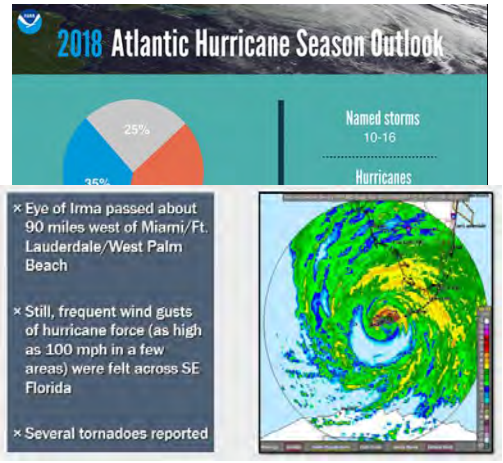
June 20, 2018 Meeting
This meeting was attended by 53 people representing 37 different agencies. The meeting was hosted by the City of Coral Gables.

Announcements

- Curt Sommerhoff the Director of Miami-Dade Emergency Management has moved on to be the EM Director for Florida State University. Frank Rollason is the new Director. Mr. Rollason has many years of experience with the City of Miami working on response and recovery measures and as the City Manager for both Miami and North Bay Village.
- The next quarterly Whole Community Engagement Meeting will be on June 26th from 1:30 – 3:30 pm at the MDFR Training Auditorium at 9300 NW 41 Street in Doral. Topics will cover:
    - Welcome from the Miami-Dade Office of Emergency Management Director Frank Rollason
    - AT&T Disaster Response Strategies and Resources.
    - Debris Clearance Agreements for Municipalities.
    - County Shelter Operations Updates.
    - 2018 Hurricane Season Outlook.
- A Flood Hazards: Science and Preparedness class will be offered on July 12th from 8:30 – 4:30 pm at the MDFR Training location. To register go here .
- On June 1st OEM hosted a Mosquito Abatement meeting, below are the highlights:
    - The County's Mosquito Control Division has increased their staffing to 26 inspectors, 4 supervisors, and 2 officers for code enforcement.
    - The County's code is Chapter 26A-2.1 Prohibition of Nuisance. This ordinance is to reduce mosquito breeding areas in the county by allowing for fines and costs of abatement to be leveraged.
    - The County does active surveillance and when 10 or more female mosquitoes (the biters) are found they will actively do abatement. They will notify municipalities if they are doing any active measures in your community.
    - Outreach materials including door hangers and posters are available by contacting Michael Mut at 305-310-1451 or Michael.Mut@miamidade.gov
    - Construction sites are an area of particular concern and areas to watch for are ponding of water, buckets, hard hats, cups or any receptacle that can hold water, including jersey barriers and Roll-off containers for construction debris.
- Hurricane Season is almost here and OEM has Hurricane Brochures in English, Spanish and Haitian Creole. If LMS members need copies for their offices or outreach events please let Steve Detwiler know (steve.detwiler@miamidade.gov).
- Miami-Dade County has the ReadyMDC app, which will provide residents with preparedness information and real time information including which areas are in the Evacuation Order, which Evacuation Centers are open and which Hurricane Bus Pick up points are activated.

2018 Hurricane Season Update

Arlena Moses from National Weather Service - Miami gave a presentation on hurricanes terms and tools. Here are some of the highlights:



- Though predictions are made for how many named storms and major storms there may be for the season, remember that is not an indication of land falling events. In 1992, the first named storm for the season was Andrew.
- The "cone" is a good tool to help residents see if a storm is headed their way, but only focuses on the where the center of the storm will be. It is not an indicator of how far out the impacts may be felt. Irma was 90 miles away and the County still had gusts of over 100 mph and areas that saw up to 6 feet of storm surge.
- NWS issues plain language text products for storms on a routine basis for a named or numbered storm.
- Main Advisories are issued at 5am/pm and 11 am/pm. And Intermediate Advisories will be issued at 2 am/pm and 8 am/pm.
- Once a storm gets closer to Miami-Dade County residents should monitor the local NWS so they are abreast on the timing and specific impacts for the area. https://www.weather.gov/srh/tropical

Community Development Block Grants-Disaster Recovery (CDBG-DR)

The State will also be receiving approximately $1.3 Billion in CDBG monies from Hurricane Irma. The State has developed a Draft Action Plan that is available here .

Below is an overview of this program:

- Flexible fund to address community needs that remain after other funding has been exhausted.
- Must primarily address housing unmet needs but can also be used for unmet economic revitalization and infrastructure needs that impact housing and economic revitalization.
- Can be used as a match for other Federal funding.
- Must meet of HUD's 3 National Objectives:
    - Benefit persons of low-moderate income (70% of funding for LMI).
    - Aid in prevention or elimination of slums or blight.
    - Meet other urgent community development needs because of serious or immediate threat.

The next step is for the State to enter into an agreement with HUD.

HMGP Update
Next in the meeting the LMS members discussed the status of the Hazard Mitigation Grant Program.

- The LMS Chair submitted the final list to the State on May 22nd.
- Endorsement letters were sent to the potential applicants on May 23rd.
- We submitted 96 projects for a total of $410,195,987 (Federal share of $315,099,431).
- Reminder applications are due to the State on August 6th 5:00 pm.
- If LMS members have received an endorsement letter they should do the following:
    - Ensure the name of the project is correct
    - If the amount they are asking for (Federal share) drops, please notify Cathie Perkins. This impacts all projects after yours.
    - Get the environmental and historic preservation reviews completed as soon as possible.

Steering Committee Members – Open for new nominations
Thank you to the Steering Committee members that helped with working on the priority list for the HMGP grant. Some of the Steering Committee members have stepped down there is an opportunity for others to become committee members. OEM is looking for a broad base of experience and backgrounds to help represent the diverse mitigation work the County undertakes.

Flood Resources on the State Website
The State of Florida has some resources that may be of benefit to explain flooding to the public and one that looks at Post-Disaster assessment and services. There is an app that the State has created to track high water marks, you will need an ArcGIS online account that is publicly visible and permission granted from the State. More details are available at:
https://www.floridadisaster.org/dem/mitigation/floodplain/community-resources

#HurricaneStrong Designation

Miami-Dade was designated as a # HurricaneStrong community, the second County in the nation. This designation was bestowed upon the County by the Florida Alliance for Safe Homes (FLASH) and is part of the National Hurricane Resilience Initiative that focuses on improved hurricane preparedness, mitigation, and overall readiness through increased public awareness and engagement.

Next Meeting

The next meeting will be a webinar on September 19th at 9:30 AM.
https://attendee.gotowebinar.com/register/8893667374192809985

September 19, 2018 Meeting
This meeting was attended by 69 people representing 42 different agencies.

Announcements

- The next quarterly Whole Community Engagement Meeting will be on September 25th from 9:30 – 11:30 am at the MDFR Training Auditorium at 9300 NW 41 Street in Doral. Topics will cover:
  - Welcome from the Miami-Dade Office of Emergency Management Director Frank Rollason.
  - Publix Supermarket Restoration Operations.
  - Terrorism Prevention and Crisis Management.
  - MD Communities Organized to Respond in Emergencies (CORE).
  - 2018 Hurricane Season Outlook Update.
- The 10th Annual Southeast Florida Regional Compact Climate Change Summit will be held in Miami- Beach October 24 & 25th you can register here .
- Resilient Energy Systems Workshop will be held on September 27 & 28th at UM you can register here.

Recovery Support Function (RSF) Mitigation
Phil Myer from Tetra Tech led a discussion on the importance of us updating our RSF Mitigation Plan. RSF Mitigation will be implemented when there is the transition from response to recovery and begin identifying mitigation projects. This will essentially be the Local Mitigation Strategy Working Group implementing projects that had been previously identified or newly identified from the event. The discussion focused on a few key items:

- What are the strengths and challenges of the LMS/RSF Mitigation?
- Other partners that should be involved?

Community Development Block Grants (CDBG)
The State is getting ready to launch the first component of the CDBG monies for homeowners who had damages that they have not been able to repair. On Tuesday September 25th at 11:30 at 7900 NW 27th Ave, Suite 200 there will be a launch of the Rebuild Florida center for Miami. There will also be mobile sites and other locations where homeowners can apply for assistance to repair or rebuild their homes.

OEM was also contacted by DEO to provide them with a list of unmet infrastructure needs related to Irma. DEO was seeking information pertaining to infrastructure that was:

1. Infrastructure damaged by Hurricane Irma.
2. Infrastructure in an area impacted by Hurricane Irma and will mitigate future damage.
3. Improvements to existing infrastructure that contributed to Hurricane Irma damage (e.g. Stormwater/wastewater systems that overflowed).

HMGP Update
Next was discussed the status of the Hazard Mitigation Grant Program.

- OEM submitted the list to the State of the priority projects for HMGP and updated it again on September 20th.
- Applicants should receive an email from the State if additional information is needed. If LMS members require an updated letter due to changes in dollar amounts, please let Ms. Perkins know so she can assist.
- OEM is still waiting on the 12-month lock-in amount.

Steering Committee Members – Open for new nominations
OEM will be sending out an interest form for the Steering Committee nominations.

A Fond Farewell
The final item on the agenda was to let everyone know that Ms. Perkins will be leaving Miami-Dade County effective October 12th. She will be the next Emergency Management Director for Pinellas County.

As of now Ms. Perkins will transition the program to Steve Detwiler as lead and Yahiritza Alvarez as support. Both have been an integral part of the LMS for years now and she has full confidence that they will continue to assist the LMS members until a permanent replacement has been found.

Next Meeting
The next meeting will be on December 12, 2018, **at** 9:30 AM at a location to be determined.

December 12, 2018 Meeting

Introductions
Steve Detwiler opened the meeting and welcomed everyone.

Hurricane Irma Hazard Mitigation Grant Program
Jared Jaworski provided an update on Hurricane Irma's Hazard Mitigation Grant Program (HMGP). Mr. Jaworski reported the State is on track for processing HMGP applications. The only time an applicant should be hearing from the State is if they need additional information.

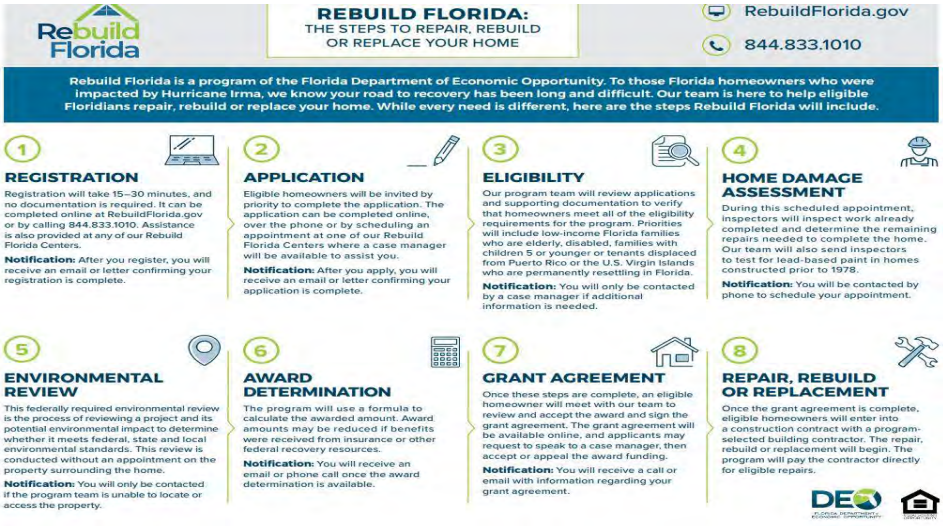
Florida counties are encouraged to apply for Hurricane Michael Tier 3 HMGP funds. No deadline to apply has been established yet, but Steve Detwiler will put together guidance and send it out to the Miami-Dade County members.

U.S. Army Corps of Engineers Back Bay Study
Katie Hagerman with the Miami-Dade County Office of Resilience gave an overview of this project. This study is being conducted by the U.S. Army Corps of Engineers Norfolk District. This study will be conducted over the next three years and include all of Miami-Dade County with the exception of the barrier islands. Public comments are still being accepted until January 9th. If anyone feels they need to be included in this study please let Steve Detwiler know.

The Resilience Office is also planning a sea level rise study which will start in the near future. Details on this study will be forthcoming.

AIA Resiliency Recovery Task Force
Elizabeth Camargo is with the American Institute of Architects and provided a brief talk on their new Recovery Task Force. They have several members trained in Miami-Dade County that can assist in augmenting damage assessment teams. OEM will be meeting with her early in 2019 on how best to integrate their group with the county and the municipalities.

Rebuild Florida
Mr. Detwiler provided a short presentation on this program. The deadline to apply for assistance is December 23rd. They have a mobile location and a mobile registration center in the county this week. If anyone needs additional information on this program please contact Steve Detwiler.



Other Matters
Kristen Martin was introduced to the LMS group. Ms. Martin is an FIU intern with OEM and will be focusing on mitigation and resilience projects.

We will begin the Local Mitigation Strategy which is due in 2020 in January. Moving forward the working group will receive more information on this process and may be solicited for information.

There are two recovery engagement sessions occurring next week, they include:

- Session #1 (Federal Reimbursement) is on Dec 18th at 9-11am: POC is Steve Detwiler
- Session #2 (Community Based Organizations involvement in Recovery) is on Dec 19th at 9-11am. They can register at: https://form.jotform.com/Ptmyer/engagementsession2registration

Next Meeting
The meeting was concluded, and the next meeting will be on February 14, 2019.

2019 Meeting Minutes

February 14, 2019 Steering Committee Meeting

This meeting addressed how projects would be prioritized for Tier 3 HMGP money from Hurricane Michael.

- There has been no Notice of Funding Opportunity or deadline to apply announced from the State yet
- Prioritized list of projects that were submitted under Hurricane Irma was recommended to be used to submit projects for Tier 3 under Hurricane Michael

A motion was made for the following:

Hurricane Michael Tier 3 HMGP money will be prioritized by the following criteria:

- Priority level 1: Projects that already applied for Hurricane Irma HMGP and they are on the Hurricane Irma project priority list (these projects can make slight adjusts to projects as needed)
- Priority level 2: New projects that did not apply for Hurricane Irma HMGP, but they must meet all other LMS requirements
- Priority level 3: Projects that did not apply for Hurricane Irma HMGP, but they are on the Hurricane Irma priority list

A motion made by Natalie French from City of Doral, seconded by Armando Vilaboy from SFWMD. All other members present were in agreement to pass the motion.

Yahiritza Alvarez, OEM EM Planner, recommended that at least one project from each municipality be included on this new priority list

Additional matters discussed include:

- Hugh Gladwin will be retiring from FIU this summer, but requested to stay on the LMS Steering Committee as a private citizen
    - Steering Committee unanimously agreed

Meeting was adjourned at 11:00am.

March 14, 2019 Quarterly Meeting

Steering Committee Updates

- Steve Detwiler gave an update on the Hazard Mitigation Grant Program (HMGP) for Hurricane Irma and Michael.
- Irma HMGP projects are being reviewed at this time, the State will communicate directly with the applicants.
- OEM is awaiting more information on Michael HMGP program.

Vizcaya Museum and Gardens HMGP Project Updates

- Ana Rico gave an update on their HMGP project.
- Vizcaya suffered major damage from Irma to include damage to the island and the pool.
- Their HMGP project includes enhancing the main house electrical system, replacing the roof and windows and doors.

Sea Level Rise Project Update

- Katie Hagemann provided an update on this project from the Miami-Dade Office of Resilience.
- Ms. Hagemann provided a history on Miami-Dade past efforts to control the region's water system.
- This project addresses how rising sea levels will impact critical infrastructure, housing, and transportation systems.
- The project is also examining how the County and region can adapt to these issues. Some of these projects include restoring natural reefs, protecting existing beaches and dunes, rebuilding seawalls and what areas of the county should we build on and which areas should be limit future development.

2020 Update of the LMS

- Steve Detwiler reported that OEM is working on the 5-year update of the LMS. OEM would be reaching out to the partners in the near future soliciting comments and reviews of the revised plan.

June 19, 2019 Quarterly Meeting

Steve Detwiler reported that FEMA is revising the Pre-Disaster Mitigation Program. To accomplish this they are seeking input via a series of webinars. The next two webinars are:

- June 20: Funding and Resource Management and Benefit-Cost Analysis
- June 25: Building Codes and Enforcement and Capacity and Capability

2019 Hurricane Forecast

- The 2019 forecast was provided by Anthony Reynes with the National Weather Service, Miami Office.

Hurricane Michael HMGP Update

- FEMA has not issued the Notice of Funding Availability (NOFA) for Hurricane Michael. This is due to the changes in HMGP from the Disaster Recovery Reform Act and FEMA Policy #104-11-1 which required changes in cost rates.
- The State received the initial funding estimates for HMGP in April 2019, they are still breaking these down in terms of what will be available to applicants.

Florida International University Wall of Wind

- Erik Salina provided a presentation on the Institute International Hurricane Research Center and the Wall of Wind.
- The Wall of Wind officially began in 1996 with only two fans. It has expanded to include 12-fans.
- Mr. Salina also presented on the previous work of the center and their findings. This include the impact of wind on message signs and rooftops.
- Following the meeting Mr. Salina provided a tour of the Wall of Wind.

MacTown

- Robert Ruano provided a presentation on this organization that has been in operation since 1962 and provides services to adults with autism and developmental disabilities.
- This organization is licensed by the State and has a 56 bed main facility and five group homes.
- One third of their clients are over 60 years old and have lived in the main facility or group homes most of their lives.
- During Hurricane Irma the main facility was left without power affecting 140 people. The facility was without power for five days.
- The organization submitted a project for Irma HMGP funding to buy a new generator and transfer switch. The total cost of the project is $300,000.

Hurricane Irma HMGP Updates

- Mr. Detwiler provided an update on the projects submitted for HMGP funding.
- The State has begun the process of the final obligation of HMGP projects for Irma.

- He also asked that everyone update the WebEOC LMS Board with the current status of their projects.

Tiger Dam System

- Ms. Cheryl Witmer with the US Flood Control Corporation provided a presentation and demonstration of the Tiger Dam System.
- The tiger dam was originally invented for snow melt and river flooding. US Flood Control was started in 2004 and began manufacturing the tiger dam in 2006.
- There are tiger dams currently being used in seven counties around the world.
- The system is a system that can be used to prevent flooding at critical facilities.
- The piping comes in a standard of 50 feet and is made of Nylon Scrim coated with a flexible PVC. This piping includes interlocking sections that can join together seamlessly and is stackable in a triangle configuration.
- There is no need for heavy equipment to deploy the system and it requires minimal manpower to deploy it.

October 10, 2019 Meeting

This webinar was attended by 73 people representing 42 different agencies.

Introductions
Steve Detwiler opened the meeting and welcomed everyone. Mr. Detwiler introduced Mitch Graham as the new Whole Community Mitigation Planner. Mr. Graham provided his background experience as a hazard mitigation planner for the State of Michigan government for 11 years.

Rebuild Florida Mitigation Grants
Steve Detwiler discussed how Rebuild Florida is managed by the Florida Department of Economic Opportunity and is managing the Community Development Block Grant-Disaster Recovery (CDBG-DR). The U.S. Department of Housing and Urban Development in April 2018 allocated an additional $633,485,000 for mitigation activities. Mr. Detwiler announced the Florida DEO had reached out to the County to host a workshop on this program and what will be eligible projects. Further details are forthcoming.

Mr. Detwiler also announced today at 3pm the U.S. Department of Housing and Urban Development will host a webinar on conducting a Mitigation Needs Assessment for the CDBG-MIT grant.

The February 2019 Steering Committee meeting established the priority levels for Michael projects, which are:

- Priority level 1: Projects that already applied for Hurricane Irma HMGP and they are on the Hurricane Irma project priority list.
- Priority level 2: New projects that did not apply for Hurricane Irma HMGP, but they must meet all other LMS requirements.
- Priority level 3: Projects that did not apply for Hurricane Irma HMGP, but they are on the Hurricane Irma priority list.

Pre-Disaster Mitigation Grant Program
Steve Detwiler discussed that the Pre-Disaster Mitigation Grant Program is available annually and allows jurisdictions to plan for and implement sustainable cost-saving measures designed to reduce risk to individuals and property from natural hazards. Each State is allocated $575,000 for potential projects. The number of projected projects that will receive funding nationwide is 350. This grant program is now available to all Florida counties, the application period opened on Monday, September 30. The deadline to apply for this grant is Tuesday, November 12th. The grant program also added resilient infrastructure projects.

Mr. Detwiler also announced that FEMA has a webinar scheduled discussing pre-disaster mitigation grant application errors and how to avoid them on October 15th at 2pm.

Flood Mitigation Assistance Grant Program
Steve Detwiler discussed that the Flood Mitigation Assistance (FMA) Program's goal is to reduce or eliminate the risk of repetitive flood damage to buildings and structures insured under the National Flood Insurance Program (NFIP). In Fiscal Year (FY) 2019, the FMA

Program will prioritize proposals that address community flood risk by setting aside $70 million for this purpose. The remaining funding, at least $90 million, will be used for FMA technical assistance, flood mitigation planning, and mitigation projects that reduce the risk of flooding to severe repetitive loss (SRL) and repetitive loss (RL) properties. A total of 120 projects will be funded nationwide. The application period is September 30th to November 12th, 2019.

Mr. Detwiler also mentioned that in order to receive a support letter, the project must be in the WebEOC LMS Board and had to be updated by the end of the day on October 4th.

October 30, 2019 Steering Committee Meeting

Introduction

Steve Detwiler serving as the Acting LMS Steering Committee Chair declared that a quorum with 11 steering committee members were present and the meeting could proceed. The principle purpose of this meeting is to decide on the final ranking strategy for Hurricane Michael HMGP projects.

Overview of Hurricane Michael HMGP

The Notice of Funding Availability (NOFA) was sent to Miami-Dade County on September 10th and the application period closes on March 10, 2020. Eligible applicants for this grant are State and local governments and private non-profit organizations. The following are eligible projects under this grant:

- Acquisition or relocation of hazard prone structures
- Retrofitting of existing buildings and facilities
- Elevation of flood-prone structures
- Infrastructure protection measures
- Stormwater management improvements
- Minor structure flood control
- Flood diversion and storage
- Aquifer storage and recovery
- Floodplain and stream restoration
- Safe Rooms
- Generators for critical facilities (must be part of a project that further strengthens the structure)

The funds allocated for this grant based on the 12-month lock in is $302,586,535.

The February 2019 Steering Committee meeting established the priority levels for Michael projects, which are:

- Priority level 1: Projects that already applied for Hurricane Irma HMGP and they are on the Hurricane Irma project priority list (these projects can make slight adjusts to projects as needed)
- Priority level 2: New projects that did not apply for Hurricane Irma HMGP, but they must meet all other LMS requirements
- Priority level 3: Projects that did not apply for Hurricane Irma HMGP, but they are on the Hurricane Irma priority list

Ranking Discussion

The Steering Committee has determined the scoring priority of the priority levels 1-3 project list assembled by Steve Detwiler. The scoring will incorporate the following:

- Only 2 projects will be accepted from each of the municipal partners. The relevant municipality will be notified and given the choice of which projects will be included in the Michael HMGP priority list.
- The higher the BCR score the higher it will appear on the priority level 2 list.

- The projects in levels 1-3 cannot exceed 25% of the total allocated funding for HMGP. A project can exceed 25% if it is a multi-jurisdictional project involving multiple municipalities.
- Projects with a lower BCR score may be moved up higher in priority level 2 group to meet the latest estimates for HMGP funds from the State.

The committee unanimously passed this guidance and requested Mr. Detwiler implement it and work with the designated applicants.

Conclusion

Mr. Detwiler will hold a webinar with the municipalities to advise them of how the Steering Committee will rank these projects. This webinar will be followed by a deadline to respond back with the prioritized projects. If a municipality or County department do not respond back their project will be removed from the project list for Michael HMGP.

The Steering Committee will meet again in December 2019 to approve the finalized list.

December 4, 2019 Quarterly Meeting

This meeting was held at Miami Lakes from 10am to Noon and had 51 people attended.

Introductions
Mitch Graham welcomed everyone and said this is his first LMS meeting.

Annual Local Mitigation Strategy (LMS) Update
Mitch Graham informed the attendees about the LMS schedule for the update process. Mr. Graham stressed that local governments must have a FEMA approved hazard mitigation plan in order to apply for and/or receive project grants administered by FEMA. Mitch Graham described the 7 components of the LMS, which are:

- Part 1: the Strategy
- Part 2: the Projects
- Part 3: Funding
- Part 4: Appendices
- Part 5: Meeting Notes
- Part 6: Completed Projects
- Part 7: Flooding – the NFIP (National Flood Insurance Program) and CRS (Community rating system)

Mr. Graham discussed the municipal participation active participation eligibility process. The public review and comment, and the project submittal and tracking process were also discussed.

Mitch Graham explained the LMS Web EOC Project Board. He also described the LMS letter of support process. A mention of the Municipal Integration of Mitigation Measures was mentioned with providing an example.

Next, Mr. Graham discussed the hazard analysis about the natural hazards already included in the LMS. He talked about natural hazards that were under consideration but not included in the LMS. Also, he brought up technological and human caused hazards that are under consideration.

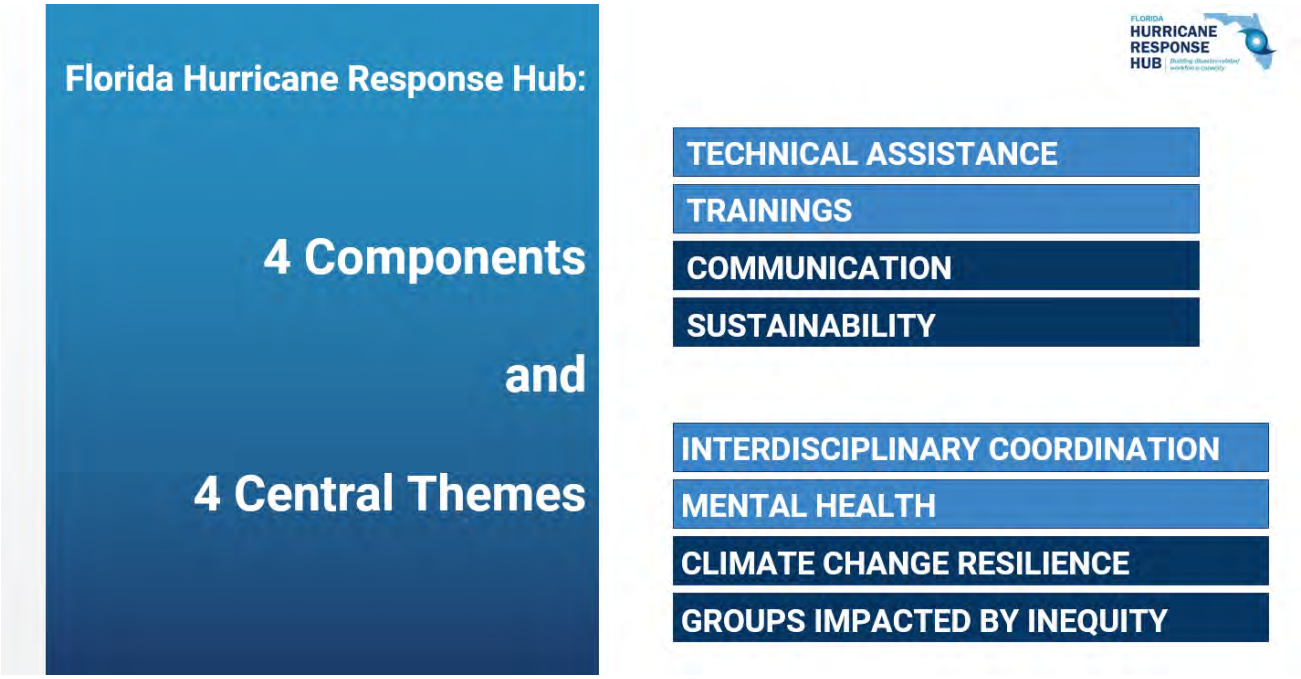
Finally, to close out the LMS update presentation, Mr. Graham reminded the attendees to attend at least 2 of the 4 LMS Quarterly meetings per calendar year to be continuing participants. He also reminded them to update their LMS projects on the WebEOC LMS project board and to have open lines of communication because working with partners make this work out well.

Integrated Solutions Consulting (ISC)
Bob Stewart the Program Manager for Integrated Solutions Consulting provided a PowerPoint presentation about ISC's services related to hazard mitigation that they provide to clients. Mr. Stewart also discussed planning and post-disaster mitigation services.

Mr. Stewart discussed the difference between good mitigation and bad mitigation. He also discussed the importance of compliance and disaster recovery. To conclude Mr. Stewart's presentation he talked about the overall importance of hazard mitigation.

The Hurricane Response HUB Initiative

Alicia Horner, the Health and Medical Coordinator for the Miami-Dade Office of Emergency Management gave a presentation of the Florida Hurricane Response HUB Initiative. Ms. Horner discussed the Core Team and the Technical Advisory Committee members. The four components and four central themes of the Florida Hurricane Response Hub include:



Alicia Horner also explained that the themes have matured into 3 priority areas:

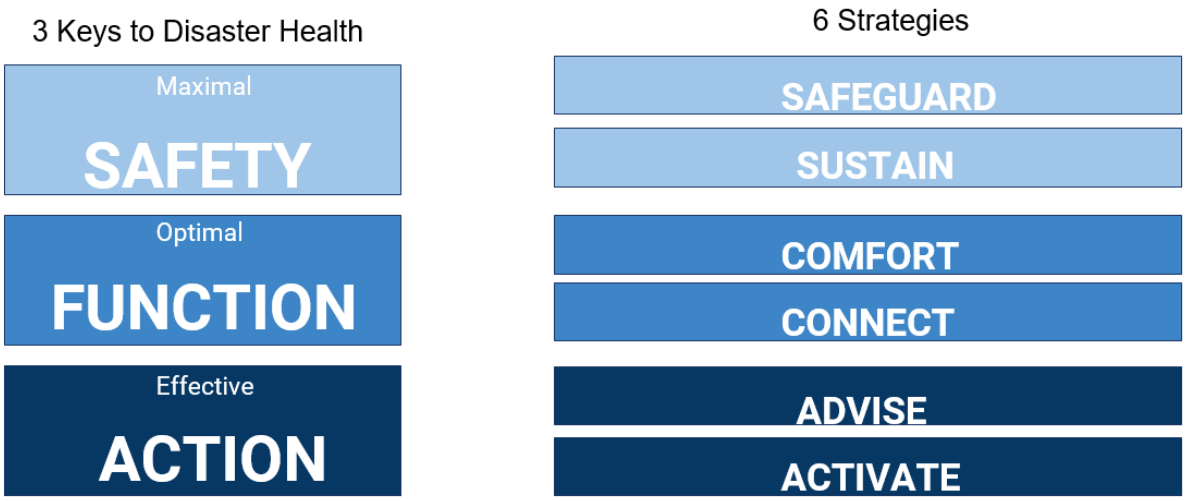
1. Groups impacted by inequity and climate gentrification.
2. Non-acute healthcare agencies and emergency response plan requirements.
3. Mental health capacity building through interdisciplinary coordination.

Information about the Florida Hurricane Response Hub:

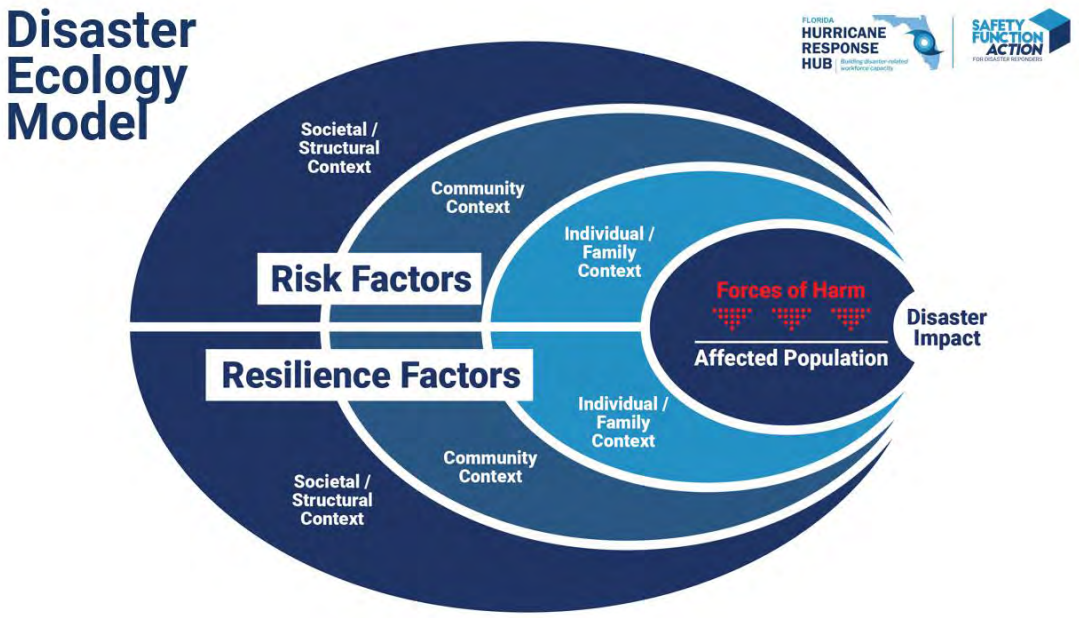
- Funded in January 2019 for an 18-month funding period.
- Headquartered at the Florida Institute for Health Innovation.
- Purpose is to lead public health work force capacity building activities in disaster related surveillance, environmental, and occupational health needs.

Partners include a wide array of academic, governmental, and community-based organizations:

The Safety Function Action:



Ms. Horner explained the Disaster Ecology Model:



Alicia Horner also stressed that when disaster strikes, persons from all ranks apply the strategies, objectives, and tactics of the Safety Function Action.

Technical assistance requests were mentioned. They provide technical assistance to the workforce in Florida on:

- Disaster-related morbidity and mortality surveillance.
- Disaster-related environmental health.
- Occupational health.

Ms. Horner concluded her presentation by showing the NOAA Coastal Flood Exposure Mapper Demo. Then she asked the audience for any questions.

Hurricane Michael HMGP Priority List

Steve Detwiler the Emergency Management Planner and the current LMS Chair presented information about Hurricane Michael HMGP Guidance. Key information he presented included:

- The Notice of Funding Available was sent to Miami-Dade County on September 10th.
- The application period closes on March 10th, 2020.
- Eligible applicants for this grant are State and local governments and private non-profit organizations.

In February 2019 the LMS Steering Committee established the priority levels for Michael Projects, which are:

- Priority level 1: Projects that already applied for Hurricane Irma HMGP and they are on the Hurricane Irma project priority list.
- Priority level 2: New projects that did not apply for Hurricane Irma HMGP, but they must meet all other LMS requirements.
- Priority level 3: Projects that did not apply for Hurricane Irma HMGP, but they are on the Hurricane Irma priority list.

The Steering Committee met and established Michael scoring and ranking of priorities for Priority Level 1-3 Projects:

- Applicants must be an active participant in the LMS for 2018.
- The project is required to be updated annually in the LMS.
- Only 2 projects will be accepted for each of the municipal partners.
- For Level 2 projects the higher the BCR score the project has, it will be ranked higher.
- Projects with a lower BCR score may be moved up higher in priority level 2 group to meet the latest estimates for HMGP funds from the State.
- The projects in levels 1-3 cannot exceed 25% of the allocated funding for HMGP.

Mr. Detwiler explained that an email will be sent out to the appropriate LMS members requiring them to update their projects on the HMGP list according to the criteria mentioned in the paragraph above. LMS members will have until Monday, December 16th to respond to OEM. If they do not respond, their projects will be removed from consideration.

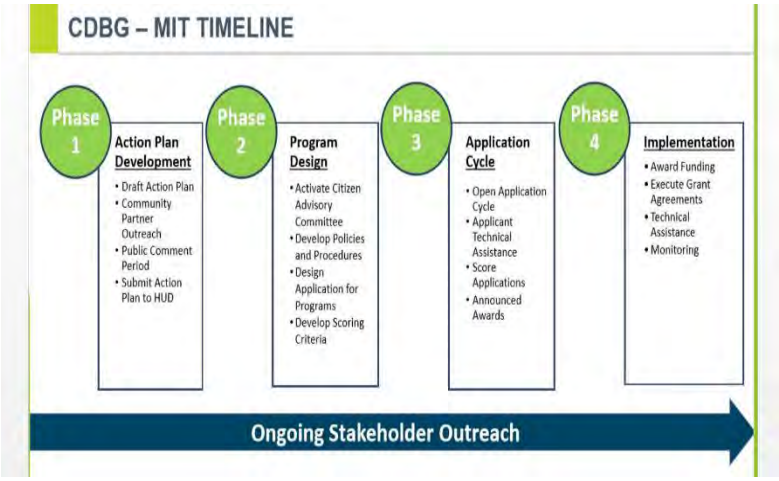
Rebuild Florida Update

Steve Detwiler also presented about the Rebuild Florida Update. The overview of the Community Development Block Grant-Mitigation Program includes:

- Funds were originally announced in April 2018.
- Florida's allocation is $633,485,000.
- CDBG-MIT State Action Plan is due to HUD on February 3rd, 2020.

CDBG-MIT Action Plan funding:

- At least 50% of funds must be spent on mitigation needs in HUD designated Most Impacted and Distressed (MID) areas which includes Miami-Dade County.
- All allocated funds must be spent within 12 years.
- Funds will likely be available in April 2020.



Mr. Detwiler explained that The Florida Department of Economic Opportunity (DEO) will lead the State's efforts to create the Action Plan:

- Provides a high-level strategy for how the funding will be used to address eligible communities' disaster mitigation needs.
- Will be developed in partnership with State and local partners involved in mitigation and resiliency efforts.
- The Action Plan is due to the Federal government on February 3rd, 2020.
- The State will include language regarding that the Local Mitigation Strategy should be involved in the process.

Steve Detwiler concluded his presentation by discussing the eligible and ineligible activities. Eligible activities examples include:

- Regional investments in risk reduction from hazards to develop disaster resistant infrastructure.
- Water, sewer, solid waste, communications, energy, transportation, health and medical, and other public infrastructure to address specific identified risks.
- Multi-use infrastructure.
- Green or natural mitigation infrastructure development.
- This grant can be used as a match for Federal grant programs.
- Development of modernized and resilient building codes and land use plans.
- Integration of mitigation planning with other local and regional mitigation community development, land use and other plans.
- Upgrade mapping, data, and other capabilities to better understand evolving potential disaster risks.
- Eligible plans (master plans, historical preservation plans, community recovery plans, resilience plans, and neighborhood plans).

Ineligible activities examples include:

- Funding for buildings used for the general conduct of government.
- Forced mortgage payoff.
- Enlargement of dam or levee beyond original design.
- Assistance to private utilities.

December 19, 2019 Steering Committee Meeting

Introduction
Steve Detwiler began the meeting with only nine members in attendance which is not a quorum. In the interim Mr. Detwiler showed the members in attendance the ranking list for Hurricane Michael HMGP projects.

Review of Ranking of HMGP Projects
There was a total of eight municipalities that had more than two projects, they were:

- Homestead
- Miami Beach
- Miami
- North Bay Village
- North Miami
- Opa Locka
- Palmetto Bay
- West Miami

The Office of Emergency Management (OEM) received responses from Homestead, Miami Beach, North Bay Village, Opa Locka, Palmetto Bay and West Miami. Unfortunately, the projects selected for Homestead and North Bay Village were not updated in 2018 and have been removed from consideration. The Miami-Dade Water and Sewer Department (WASD) had one project that was $80 million which exceeded the 25% cap on project. WASD informed OEM that they reduced the project cost to $40 million.

The City of Miami had three projects but the point of contact never responded of which projects should be included in the Michael ranking list. However, Jane Gilbert informed the members present that one of the projects should have not been included because it was already being funded through Hurricane Irma HMGP. Mr. Detwiler was asked by the Steering Committee to send an email clarifying this and upon clarification to add the City of Miami projects back into the Hurricane Michael HMGP project list.

The Steering committee also directed Mr. Detwiler to send out the revised ranking list to all Steering Committee members and via email ask for the committee approval for the final list. This was passed unanimously by the committee members present.

Conclusion
Mr. Detwiler asked if any members had any new business they wanted to discuss. No one brought anything forward so the meeting was adjourned.

2020 Meeting Minutes

February 18, 2020 Steering Committee Meeting

Introduction

Mr. Steve Detwiler called the meeting to order via conference call at 2:40pm. The following members were present on the call:

- Tiffany Troxler
- Natalie French
- Jane Gilbert
- Samantha Nagy
- Erik Salna
- Nichole Hefty
- Rob Molleda
- Steve Detwiler- Committee Chair

The meeting does not have a quorum present.

Status of Hurricane Michael HMGP Projects

Mr. Detwiler provided an overview of the projects submitted to the Florida Division of Emergency Management (FDEM). Currently, a total of 14 Hazard Mitigation Grant Program (HMGP) applications are being submitted for Hurricane Michael HMGP from seven applicants who are:

- Miami-Dade County Library
- Miami-Dade Fire Rescue
- Miami-Dade Parks and Open Spaces
- Town of Sweetwater
- City of West Miami
- City of Miami Beach
- MacTown

These projects have a total cost of $11,584,057. Miami-Dade originally submitted a total of 37 projects that were worth $105,261,376.

Miami-Dade Office of Management and Budget (OMB) Proposal and Discussion

Background

One of Public Library projects “South Dade Regional Library” was mistaken added to the ranking list by Mr. Detwiler. The total cost of this project was $812,748. There was a miscommunication regarding funding for this project. It is already being funded by Hurricane Irma HMGP. OMB is requesting that this project being replaced with another project that did not receive funding through Hurricane Irma HMGP. This project is the West Dade Regional Library Hardening Project. The total budget was $983,542.

OMB specific proposals were:

1. Applicants should be allowed to replace a project already ranked on the Hurricane Michael HMGP Ranking list.
2. If an applicant doesn't notify OEM of the status of their project by a certain deadline that the project should be removed from consideration.

Steering Committee Discussion

Mr. Detwiler pooled the members individually to gather their input. Natalie French commented that the municipalities were only limited to two projects and it would unfair for the County to add additional projects. Tiffany Troxler also commented that replacing a project with another project is not consistent with the ranking system the Steering Committee established when it ranked the projects. The other members all agreed with these statements. However, the committee asked Mr. Detwiler to poll the members not present to see if they have any differing positions.

Conclusion

Based on the fact that the members present were not willing to consider OMBs proposal it was agreed that another conference call would not be scheduled.

March 4, 2020 Quarterly Meeting

Introduction
Steve Detwiler informed the group that Mitchell Graham broke his leg and will be out on medical leave for possibly a few months.

LMS 5-Year Update
Steve Detwiler will be directing this update with the State of Florida and FEMA. He will likely be sending out parts of the LMS for additional review by the LMS partners. The first will likely include Part 6 which highlights completed projects.

WebEOC LMS Board and Point of Contact Forms
The WebEOC access for LMS members in the past has been through an organization account. However, due to security changes accounts to access the WebEOC LMS Board will be by individual. As a result Steve Detwiler sent an email out to all LMS partners to complete a Point of Contact Form which designates the individuals that need to have access to WebEOC. This form will also be used to create a new email distribution list. Mr. Detwiler has also required that for organizations to be considered an active member of the LMS they must complete these forms annually.

We have received completed Point of Contact forms from the following partners:

- Vizcaya Museum & Gardens
- Miami-Dade Department of Transportation & Public Works
- Miami-Dade Internal Services Department
- Miami-Dade Public Housing Department
- Port Miami
- Miami-Dade Office of Resilience
- Citrus Health Network
- Jackson Health Systems
- Mount Sinai Medical Center
- City of Coral Gables
- City of Doral
- Florida City
- City of Homestead
- City of Miami Gardens
- City of Miami Springs
- City of Sweetwater
- Miami Shores Village
- Town of Cutler Bay
- Town of Miami Lakes
- Village of Pinecrest
- Miami Dade College
- University of Miami

These points of contact have the following responsibilities:

- Respond to day-to-day communications from OEM.
- Participate in the quarterly LMS meetings or designate someone to attend.
- Forward relevant information to their coworkers, senior managers and/or elected officials.

An email was sent out on February 25. LMS members have until Friday, March 16th to complete these forms and send them to Kulsum Agha at: Kulsum.Agha@miamidade.gov

Drone Use in Mitigation and Damage Assessment

Bob Stewart and Dan Martin presented on their company's drone program. Their company has FAA certified drone pilots. They have used their drones in numerous missions to include damage assessment and mitigation projects. This has included digital surface modeling, storm surge and flood level tracking. This includes determines washout measurements. The drones have also been used to map both visually and by 3-d modelling for debris management operations.

ILC Dover Flood Protection Group

Steve Brady gave an overview of the products his company offers in flood protection. This company was founded in 1947 and has five business areas:

- Space Systems
- Aerospace and Maritime
- Infrastructure Protection
- Containment Systems
- Protective equipment

Under infrastructure protection the company provides products in dry flood proofing, this include flex wall technology. This system can be open and operated by a small group of personnel. The company began providing this product after Hurricane Sandy. In the Mitigation Assessment Team report FEMA found that 90% of buildings with dry flood proofing systems wasn't effective or wasn't used properly.

Back Bay Study

Katie Hagemann gave a briefing on this study which is ongoing. This project is being led by the U.S. Army Corps of Engineers. This is one of several studies ongoing in South Florida. This project is designed to make recommendations on reducing the impact of hurricanes and protecting critical facilities. The study itself is being revamped based on initial input from Miami-Dade County. This study so far is including flood proofing recommendations (elevation and buyouts). One of the initial recommendations is storm surge barriers in three locations in the County with 110 individual flood gates. The draft plan will likely be made available in April 2020. Steve Detwiler will send it out to the LMS members.

Hurricane Michael HMGP

Mr. Detwiler provided an update on this grant program. The LMS Steering Committee submitted the ranking list to the Florida Division of Emergency Management (FDEM) in January 2020. The initial ranking list had 39 projects listed:

- As of March 4th, eight organizations have submitted 15 applications to FDEM worth $13.8 Million.

The deadline to apply for this grant is March 10, 2020. Mr. Detwiler reminded partners to inform him on whether they are or are not submitting an application. Requests for support letters should also be sent to Mr. Detwiler.

CDBG-Mitigation

Mr. Detwiler informed the partners that the State Action Plan was submitted to the U.S. Department of Housing and Urban Development (HUD) on February 3. This plan is available here.

Miami-Dade County collected comments on this plan from numerous municipalities and County departments:

- A majority of Miami-Dade County comments were not added to the action plan.
- County was successful in adding Non-Profit Organizations as applicants for the different programs.

Elected Officials Coordination

Mr. Detwiler asked that the LMS partners to keep your elected and appointed officials aware of your LMS activities. This should include:

- Projects listed in the LMS and your priorities
- What mitigation grants your organization has applied for?
- If you need assistance in briefing these officials please let Mr. Detwiler know.

Discussion on Florida Administration Code 27P-22 Public Workshop

Mr. Detwiler provided a briefing on the Florida Division of Emergency Management upcoming public workshop on revising this administrative code that governs the LMS Working Groups and the ranking of projects for HMGP projects.

This public workshop will occur on March 13 at 3pm. The call-in information is: 1-888-585-9008 Conference Code: 454-953-845.

This rule change will allow the State to override the County's ranking on HMGP projects and establish their own agenda for funding. Mr. Detwiler asked that municipal members be on the call to inform the State that they are not in agreement regarding this rule change.

Novel Coronavirus Discussion
Mr. Detwiler provided a short briefing on this virus. As of March 3rd there was a total of 88 confirmed and presumptive positive cases in the United States as of March 2. There were two confirmed cases in Hillsborough and Sarasota counties.

CDC recommends everyday preventive actions to help prevent the spread of respiratory diseases, including:

- Avoid close contact with people who are sick.
- Avoid touching your eyes, nose, and mouth.
- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces using a regular household cleaning spray or wipe.
- Wash your hands often with soap and water for at least 20 seconds, especially after going to the bathroom; before eating; and after blowing your nose, coughing, or sneezing.

Mr. Detwiler also informed the partners regarding the use of facemasks by personnel and employees. CDC does not recommend that people who are well wear a facemask to protect themselves. Facemasks should be used by people who show symptoms of COVID-19 to help prevent the spread of the disease to others. The use of facemasks is also crucial for health workers and people who are taking care of someone in close settings.

Conclusion
Mr. Detwiler concluded the meeting by stating that the tentative schedule for the 2020 LMS meetings is:

- June 3
- September 15. This meeting will be via webinar.
- December 10

If any LMS partners want to host a future meeting, please contact Steve Detwiler at: steved@Miamidade.gov

2015-2019 Meeting Attendance

Organization	Jurisdiction	2015	2016	2017	2018	2019
Barry University	Colleges and Universities	1	0	0	0	0
Florida International University	Colleges and Universities	4	4	3	3	4
International Hurricane Research Center	Colleges and Universities	2	2	2	2	1
Johnson and Wales University	Colleges and Universities	1	0	0	0	0
Miami Dade College	Colleges and Universities	4	3	4	4	4
St. Thomas University	Colleges and Universities	1	0	1	1	0
Talmudic University	Colleges and Universities	0	0	0	0	0
University of Florida IFAS Extension	Colleges and Universities	2	3	0	0	0
University of Miami	Colleges and Universities	4	4	3	3	2
MD-County Unincorporated MD	County	0	0	0	0	0
MD-Animal Services	County	0	2	2	2	0
MD-Aviation	County	0	0	0	0	0
MD - Communications	County	0	0	1	1	2
MD-Corrections and Rehabilitation	County	0	0	0	0	0
MD-Courts	County	0	0	0	0	0
Community Action and Human Services	County	0	0	1	1	0
MD Cultural Affairs	County	1	0	0	0	0
MD-Finance	County	2	2	2	2	1
MD - Fire Rescue	County	4	3	3	3	3
Office of Emergency Management	County	4	4	4	4	4
MD-Internal Services (GSA, HR, Procurement, A&E of CIP)	County	0	0	0	0	0
General Services Administration	County	3	3	1	1	0
MD - Information Technology Dept.	County	0	3	1	1	0

Organization	Jurisdiction	2015	2016	2017	2018	2019
MD-Library	County	3	4	3	3	4
MD - Management and Budget	County	4	1	4	4	3
Office of Capital Improvements	County	0	0	0	0	0
MD-Parks, Recreation and Open Spaces	County	2	3	2	2	4
Agriculture Extension	County	0	0	0	0	0
MD-Police Department	County	1	2	1	1	3
MD-Public Housing and Community Development	County	3	0	4	4	2
MD- Seaport	County	2	1	2	2	1
MD-Regulatory and Economic Resources	County	4	4	4	4	4
MD- Dept. of Solid Waste Management	County	2	4	2	2	3
MD-Transit	County	3	1	3	3	0
MD-Public Works	County	4	4	1	1	2
Vizcaya Museum and Garden	County	3	0	2	2	4
MD- Water & Sewer Dept.	County	3	0	3	3	4
Miami Dade County Public Schools	County	4	3	2	2	4
South Florida Water Management District	Regional	1	1	0	0	1
FDEM	State	4	2	3	3	2
Florida Forest Service	State	0	0	0	0	1
Florida Department of Health	State	1	1	0	0	2
FEMA	Federal	0	0	1	1	0
Homestead Air Reserve Base	Federal	1	0	0	0	0
Miami VA	Federal	0	0	0	0	0
NOAA	Federal	1	4	3	3	0
NWS Miami	Federal	0	0	0	0	2
SBA	Federal	0	0	0	0	0
US ARMY	Federal	0	0	1	1	0
USDA	Federal	0	0	0	0	0

Organization	Jurisdiction	2015	2016	2017	2018	2019
Baptist Health	Hospital/Health Care	2	4	2	2	1
Citrus Health	Hospital/Health Care	4	4	2	2	4
Health Choice Network	Hospital/Health Care	0	0	0	0	0
Jackson Health Systems	Hospital/Health Care	4	3	3	3	4
Mercy	Hospital/Health Care	0	0	0	0	0
Miami Beach Community Health Center	Hospital/Health Care	3	2	1	1	1
Miami Jewish Health System	Hospital/Health Care	0	0	0	0	1
Mount Sinai Medical Center	Hospital/Health Care	2	2	0	0	4
Niklaus Children's Hospital	Hospital/Health Care	2	0	1	1	0
Aventura	Municipalities	2	4	1	1	1
Bal Harbour	Municipalities	3	1	2	2	0
Bay Harbor	Municipalities	3	2	2	2	0
Biscayne Park	Municipalities	2	1	0	0	0
Coral Gables	Municipalities	1	2	2	2	3
Cutler Bay	Municipalities	4	4	4	4	4
Doral	Municipalities	4	4	4	4	4
El Portal	Municipalities	3	1	1	1	4
Florida City	Municipalities	3	3	3	3	2
Golden Beach	Municipalities	0	2	0	0	0
Hialeah	Municipalities	4	3	3	3	0
Hialeah Gardens	Municipalities	2	0	1	1	1
Homestead	Municipalities	3	4	3	3	1
Key Biscayne	Municipalities	4	3	4	4	1
Medley	Municipalities	4	3	2	2	1
Miami	Municipalities	4	4	4	4	2
Miami Beach	Municipalities	4	4	4	4	3
Miami Gardens	Municipalities	4	4	4	4	4
Miami Lakes	Municipalities	4	2	4	4	3
Miami Shores	Municipalities	2	3	4	4	4

Organization	Jurisdiction	2015	2016	2017	2018	2019
Miami Springs	Municipalities	2	3	0	0	1
North Bay Village	Municipalities	2	4	2	2	0
North Miami	Municipalities	4	4	4	4	3
North Miami Beach	Municipalities	4	3	3	3	2
Opa-locka	Municipalities	1	2	1	1	0
Palmetto Bay	Municipalities	2	4	4	4	4
Pinecrest	Municipalities	3	3	3	3	2
South Miami	Municipalities	1	2	0	0	0
Sunny Isles	Municipalities	1	0	2	2	2
Surfside	Municipalities	0	3	2	2	1
Sweetwater	Municipalities	4	2	2	2	1
Virginia Gardens	Municipalities	3	3	4	4	4
West Miami	Municipalities	0	1	1	1	2
Broward	Region	0	2	1	1	0
American Red Cross	PNP	0	2	0	0	0
Chapman Partnership (Homeless)	PNP	0	0	1	1	0
dsi	PNP	0	0	1	1	0
Jessie Trice Community Health Center	PNP	0	0	0	0	1
Mactown	PNP	0	0	2	2	3
Camilus House	PNP	0	0	0	0	4
United Community Options	PNP	0	0	0	0	1
McMullen Opportunity Center	PNP	0	0	0	0	1
FPL	Utility	3	3	3	3	0
AECOM/URS	Private	0	1	0	0	0
Aluces Corporation	Private	3	0	0	0	0
AMEC	Private	4	3	0	0	0
ARCADIS	Private	1	0	0	0	0
Bermello Ajamil & Partners, Inc.	Private	0	0	0	0	1
CRS Max	Private	2	0	0	0	0
Downtown Development Authority	Private	2	2	0	0	0
Ecostrata Services	Private	0	0	0	0	1

Organization	Jurisdiction	2015	2016	2017	2018	2019
ILC Dover	Private	0	0	0	0	0
ISC Consulting Group	Private	0	0	0	0	1
Tidal Basin	Private	0	0	0	0	2
Moffatt and Nichol	Private	1	0	0	0	1
T.Y. Lin International	Private	0	0	0	0	1
Verizon	Private	0	0	0	0	0
Walgreens	Private	1	0	0	0	0
Guests	N/A	3	3	1	0	0

MIAMI-DADE COUNTY

LMS

LOCAL MITIGATION STRATEGY

Whole Community Hazard Mitigation

Part 4: The Appendices

July 2020

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PART 4 - THE APPENDICES

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Appendix A: List of LMS Changes

Page	Location	Change

Appendix B: LMS Working Group and Subcommittee Agencies 2020 [1]

Coordinator/Chair: Steve Detwiler, Miami-Dade County Office of Emergency Management
Co- Chair: Robin Yang, Miami-Dade County Office of Emergency Management

Colleges and Universities

Agency	Position Title	Name
Florida International University	Assistant Director of Emergency Management	Marc Jean
Miami-Dade College	Director of Resource Development	Teresa Grandal-Cusse
St. Thomas University	Assistant Director of Public Safety	Braulia Dingle
University of Miami	HazMat Manager	Vaughan Munro

Miami-Dade County Agencies and Departments

Agency	Position Title	Name
Aviation Department	Assistant Aviation Director	Ralph Cutie
Corrections and Rehabilitation Department	Captain	Rose Green
Information Technology Department	Systems Support Manager	Peter Oelkers
Regulatory and Economic Resources Department	Senior Planner	Cindy Dwyer
Cultural Affairs Department	Capital Projects Chief	Marie Denis
Solid Waste Department	Intergovernmental Affairs Coordinator	Stacy Santos
Transportation and Public Works Department	Engineer 3	Daryl Hildoer
Internal Services Department	Manager	Terrence Thompson
Libraries	Administrative Officer 3	Jeff Rosenberg
Public Housing and Community Development Department	Construction Manager	Francisco Trujillo
Police Department	Grants Administrator	Dorcas Perez
Seaport	Grants Administrator	Kelli Gay
Extension Service	Director	Teresa Olczyk
Water & Sewer Department	Special Projects Administrator	Lonnika Bender
Animal Services Department	Assistant Director	Annette Jose
Fire Rescue Department	Grants Section Manager	Lisset Elliott
Resilience Office	Resilience Communications Coordinator 2	Karina Castillo
Parks, Recreation and Open Spaces Department	Assistant Director, Planning, Design and Construction Excellence Division	Joe Cornely

[1] EMAP (2016) 4.2.4

Hospitals and Health Care

Agency	Position Title	Name
Baptist Health South Florida	Director, Construction Management	Susan Magner
Citrus Health Network Inc.	Chief Financial Officer	Silvia Suarez
Jackson Health System	Grant Writer/Developer	Gail E. Wright
Jessie Trice Community Health System, Inc	Safety Officer	Luckner Denord
Miami Beach Community Health Center, Inc.	Director of Environment of Care & Safety	Aniruddha Upadhyay
Mount Sinai Medical Center	Administrative Director, Engineering	Samantha Nagy

Municipalities

Agency	Position Title	Name
Aventura	Capital Projects Manager	Antonio F. Tomei
Bal Harbour	Chief of Police	Raleigh Flowers, Jr
Bay Harbor Islands	Acting Chief of Police	Pablo Lima
Biscayne Park	Public Works Manager	David Hernandez
Coral Gables	Deputy Director / City Engineer	Jorge Gomez, P.E.
Cutler Bay	Town Manager	Rafael Casals
Doral	Media & Emergency Management Specialist	Natalie French
El Portal	Police Chief	David Magnusson
Florida City	Executive Director	Jon Ward
Golden Beach	Administrative Lieutenant	Yovany Diaz
Hialeah	Zoning Inspector	Lilibet Muniz
Hialeah Gardens	Accreditation Manager	Liza Usan
Homestead	Emergency Manager	Stephen Taylor
Indian Creek Village	Captain	Christopher McDonald
Key Biscayne	Special Projects Coordinator	Javier Pena, CFM
Medley	Chief	Jeanette Said Jinete
Miami	Asst. Fire Chief/Emergency Mgr.	Robert Hevia
Miami Beach	Grants and Intergovernmental Affairs Director	Judy Hoanshelt
Miami Gardens	Public Works City Engineer	Leslie Pettit
Miami Lakes	Grants and Governmental Affairs Manager	Renee Wilson
Miami Shores	Chief of Police	Kevin Lystad
Miami Springs	Police Chief	Armando Guzman
North Bay Village	Chief of Police	Carlos Noriega
North Miami	Public Works Director	Wisler Pierre-Louis
North Miami Beach	Assistant Director	Marlon Lobban
Opa Locka	Acting City Manager	Newall J. Daughtrey
Palmetto Bay	Interim Village Manager	Gregory Truitt
Pinecrest	Administrative Services Manager	Eduardo Pozas
South Miami	City Manager	Shari Kamali
Sunny Isles Beach	City Manager	Chris Russo
Surfside	Interim Town Manager	Jason Greene
Sweetwater	Assistant City Manager	Robert Herrada
Virginia Gardens	Mayor	Fred Deno
West Miami	City Manager	Yolanda Aguilar

Other Government Agencies

Agency	Title	Name
Miami-Dade Public Schools	Director, Property Loss Control	William B. Wever Jr.

Non-Profit Organizations

Agency	Title	Name
Camillus House, Inc.	Director, Grants	Shelley-Anne Glasgow-Wilson
Casa Familia, Inc.	Senior IDD Housing Consultant	Deborah Lawrence
MACtown, Inc.	Consultant	Robert Ruano
Vizcaya Museum and Gardens	Director of Corporate, Foundation & Government Relations	Talmage Thornhill

Appendix C: LMS Committees

Local Mitigation Strategy Steering Committee: 2020

Agency	Title	Name
Florida International University	Research Associate	Tiffany G. Troxler
National Weather Service, Miami Field Office	Warning Meteorologist	Robert Molleda
City of Doral	Emergency Management Specialist	Natalie French
City of Miami	Chief Resilience Officer	Jane Gilbert
University of Miami	HazMat Nanager	Vaughan Munro
Mount Sinai Medical Center	Administrative Director, Engineering	Samantha Nagy
FIU International Hurricane Research Center	Associate Director and Meteorologist	Erik Salna
Florida International University	Consultant	Ricardo Alvarez
Town of El Portal	Volunteer	Hugh Gladwin
Miami-Dade College	Director of Resource Development	Teresa Grandal Cusse
City of Miami Gardens	Flood Plain Administrator	Mike Gambino
Miami-Dade Office of Resilience	Deputy Resilience Officer	Nichole Hefty
Town of Miami Lakes	Permit Clerk Supervisor	Loudres Rodriquez
South Florida Water Management District	Intergovernmental Coordinator	Armando Vilaboy
Jackson Health System	Grant Writer/Developer	Gail E. Wright
T.Y. Lin International	Associate Vice President	Francisco J. Alonso

LMS Sub- Committees

- Agriculture and Landscaping
- Education and Outreach
- Extreme Weather Events
- Financial and Grants
- Flooding and CRS
- Marine Interests
- Structural

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Appendix D: 2020 Miami-Dade Resolution Adopting the LMS

Appendix E: 2020 State of Florida Approval Letter

Appendix F: 2020 FEMA Approval Letter

Appendix G: Metropolitan Form of Government

Miami-Dade County has a unique metropolitan form of government, which varies greatly from typical county powers, in that it provides for resolutions, laws, rules, regulations passed by the county to be fully and automatically inclusive of all municipalities within the County.

Specific lines in the Charter that would apply to a document such as the LMS (which is adopted by resolution) being automatically applicable to all municipalities are:

Section 1.01. Board of County Commissioners: Powers
Section 1.01, A, 5:
Prepared and enforce comprehensive plans for the development of the county. *(LMS is a part of the Comprehensive Emergency Management Plan)*

Section 1.01, A, 21:
Exercise all powers and privileges granted to municipalities, counties, and county officers by the Constitution and laws of the state, and all powers no prohibited by the Constitution or by this Charter

Section 1.01, A, 22:
Adopt such ordinances and resolutions as may be required in the exercise of its powers, and prescribe fines and penalties for the violation of ordinances

Section 6.02. Municipalities: Municipal Powers
Each municipality shall have the authority to exercise all powers relating to its local affairs not inconsistent with this Charter. Each municipality may provide for higher standards of zoning, service, and regulation than those provided by the Board of County Commissioners in order that its individual character and standards may be preserved for its citizens.

Section 9.04 General Provisions: Supremacy Clause This Charter and the ordinances adopted hereunder shall in cases of conflict supersede all municipal charters and ordinances, except as herein provided, and where authorized by the Constitution, shall in cases of conflict supersede all special and general laws of the state.

Specific lines in the Florida Constitution of 1968 that would further apply to a document such as the LMS (which is adopted by resolution) being automatically applicable to all municipalities within Miami-Dade County are:

Section 6. Schedule to Article VIII. –
(f) DADE COUNTY; POWERS CONFERRED UPON MUNICIPALITIES. To the extent not inconsistent with the powers of existing municipalities or general law, the Metropolitan Government of Dade County may exercise all the powers conferred now or hereafter by general law upon municipalities.

Specific lines in the Miami-Dade County Ordinance 8b that would further solidify something like the LMS (which is adopted by resolution) being automatically applicable to all municipalities within Miami-Dade County are:

Sec. 8B-8. Duties of the Director of the Office of Emergency Management
1) The Director or designee shall prepare a Comprehensive Emergency Management Plan and program for the emergency management of Miami-Dade County pursuant to F.S. 252, including, but not limited to elements addressing mitigation activities, preparedness, responses to disasters and emergencies, and recovery operations and submit the Plan and program to the Director of the Division of Emergency Management. State of Florida for review and certification for consistency with the State Comprehensive Emergency Management Plan and compliance with Federal emergency management mandates.

Additionally, the most recent resolution (R-452-10) adopting the LMS further reiterates the fact the municipalities are included in the line:

Whereas, the State of Florida Department of Community Affairs and/or Florida Division of Emergency Management enters into agreements with Miami-Dade County to provide the funding for the County and municipalities to jointly develop a Local Mitigation Strategy to become a component of the Statewide Mitigation Strategy …

Whereas, the Local Mitigation strategy meets the State agreement requirements and was accomplished with the participation of local governments, the Schools Board of Miami-Dade County.

Effective comprehensive planning has also been a central focus of the Miami-Dade government from the onset. The power to "prepare and enforce comprehensive plans for the development of the county" was one of twenty-four specified in the County Home Rule Charter in 1957 and a Department of Planning is one of the four departments required by the County Home Rule Charter. The County adopted its first land use plan in 1965 and has since enacted a series of increasingly more refined growth management plans and procedures as required by the Local Government Comprehensive Planning Act of 1975 as amended from time to time.

In summary, Miami-Dade has a fifty-two year history of intergovernmental coordination for effective comprehensive planning and plan implementation. This element provides a review of this coordination and identifies selected aspects in need of change.

Miami-Dade County Municipalities and Public Schools

Aventura
Bal Harbour
Bay Harbor Islands
Biscayne Park
Coral Gables
Cutler Bay
Doral
El Portal
Florida City
Golden Beach
Hialeah
Hialeah Gardens
Homestead
Indian Creek Village
Key Biscayne
Medley
Miami
Miami Beach
Miami Lakes
Miami Gardens
Miami Shores
Miami Springs
North Bay Village
North Miami
North Miami Beach
Opa-locka
Palmetto Bay
Pinecrest
South Miami
Sunny Isles
Surfside
Sweetwater
Virginia Gardens
West Miami
Public Schools

Adjacent Counties

Broward
Collier
Monroe

Adjacent Municipalities

Hallandale Beach
Pembroke Park
Miramar

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Appendix H: Integration Document[2]

Integration of Policies and Guidance

A myriad of agencies and departments are integral to future land use and development, building codes and enforcement. The LMS Working Group works to review and integrate policies and guidance to enhance our collaboration to build a more sustainable and disaster resistant community.

A review of a number of these plans was done to identify elements where mitigation measures are incorporated and identify items for consideration for future incorporation of mitigation.

The plans reviewed included:

- Resilient 305 Strategy
- Southeast Florida Regional Climate Action Plan
- Miami-Dade Comprehensive Development Master Plan (CDMP)
- Miami-Dade Emergency Management Recovery Plan
- Miami-Dade 2040 Long Range Transportation Plan
- Florida Administrative Code 73C-40.0256

[2] EMAP 4.4.3

Resilient 305 Strategy

This Resilient305 Strategy is a living document created to address resilience challenges prioritized through intergovernmental and community collaboration. Throughout the process – in public meetings, surveys and focus groups. This strategy is a collaborative effort between Miami-Dade County, the City of Miami and the City of Miami Beach.

The strategy identifies stresses and shocks that can impact the County's overall resiliency. The stresses include:

- Growing traffic congestion
- Sea level rise and coastal erosion
- Aging infrastructure
- Decreasing housing quality and affordability
- Income inequality

The shocks include the following:

- Erosion
- Storms (Tropical storms & Hurricanes)
- Infrastructure disruptions
- Economic recessions
- Flooding
- Pandemics

Some of these shocks are analyzed in detail in the LMS Part 1 and Part 7. A breakdown of the impact of these shocks include:

- Southeast Florida has $21 Billion in assets at risks from the different shocks and has suffered $2.9 Billion in damages since 2005.
- A total of 53,000 homes are located less than three feet above high tide.
- Sea level rise: Since 1992 the sea level has risen by four inches and between three and seven inches of additional rise is expected in Southeast Florida by 2030.
- Storms: Hurricane Irma in 2017 caused $467,371,000 in damages.

The City of Miami's Chief Resilience Officer is a member of the LMS Steering Committee. The Miami-Dade County Office of Resilience is also an active partner of the LMS and is currently managing the Rebuild Florida Voluntary Buyout Program under Hurricane Irma Community Development Block Grant-Disaster Recovery funds.

Southeast Florida Regional Climate Action Plan (CAP)

In January 2010, Miami-Dade, Broward, Palm Beach and Monroe counties entered into a Regional Climate Change Compact ("Compact") - a collaborative effort to unite, organize and assess the region in relation to climate change. The Compact set out to develop regionally consistent methodologies for mapping sea-level rise, assessing vulnerability and understanding the regional greenhouse gas emissions. The CAP was developed to identify recommendations to accomplish the goals of the Compact and in October 2012 the CAP was published. The CAP organized the recommendations into seven categories:

- Sustainable Communities and Transportation Planning.
- Water Supply, Management and Infrastructure.
- Natural Systems.
- Agriculture.
- Energy and Fuel.
- Risk Reduction and Emergency Management.
- Outreach and Public Policy.

The goals identified in the CAP are highlighted below with a brief overview of the supportive elements that dovetail into the LMS well. The Regional Climate Action Framework Implementation Guide can be found at: http://southeastfloridaclimatecompact.org/compact-documents/ and includes potential partners and funding sources, policy/legislation needed and progress as of October 2012.

In January 2013, Nichole Hefty, Chief, Office of Sustainability, Planning Division was invited to participate as an LMS Steering Committee member to help ensure the integration of the work being done by the Compact. Several LMS Working Group members and the LMS Chair are active in attending meetings and workshops held by the Compact.

The following is a brief synopsis of the areas being incorporated into the LMS and Miami-Dade Emergency Management plans.

Sustainable Communities

Goal: Reduce financial and physical losses in our building stock by reshaping where and how we build.

Policy		Notation
SP-3	Incorporate "Adaptation Action Area" definition (as provided for in Florida law) into municipal and/or county Comprehensive Plans, to provide a means to identify those areas deemed most vulnerable to sea level rise and other climate change impacts including but not limited to extreme high tides, heavy local rain events, and storm surge for the purpose of prioritized funding and adaptation planning.	*OEM will incorporate language into the LMS in relation to Adaptation Action Areas and will consider this future designation in relation to the Benefit Cost Review for LMS Projects.*
SP-7	Develop sea level rise scenario maps to be considered for inclusion in appropriate Comprehensive Plans and/or regional planning documents as determined by the appropriate local government to guide municipal and county government climate adaptation planning efforts and continue to update regional and local planning efforts as more data becomes available and scientific projections are refined.	*OEM is currently working with WASD to roll out the ground and surface model with variable inputs to start to develop more refined maps on the potential impacts of sea level rise.*
SP-10	Work with appropriate local, regional and state authorities to revise building codes and land development regulations to discourage new development or post-disaster redevelopment in vulnerable areas to reduce future risk and economic losses associated with sea level rise and flooding. In these areas, require vulnerability reduction measures for all new construction, redevelopment and infrastructure such as additional hardening, higher floor elevations or incorporation of natural infrastructure for increased resilience.	*OEM is updating the Recovery Plan and the Mitigation Recovery Support Function and the Post Disaster Redevelopment plan and the Technical Advisory Committee that will be involved in post disaster recovery and redevelopment guidance/decisions.*

Water Supply, Management and Infrastructure

Goal: Advance water management strategies and infrastructure improvements needed to mitigate for adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems.

Policy		Notation
WS-3	Utilize existing and refined inundation maps and stormwater management models to identify areas and infrastructure at increased risk of flooding and tidal inundation with increases in sea level, to be used as a basis for identifying and prioritizing adaptation needs and strategies.	*OEM is currently working with WASD to roll out the ground and surface model with variable inputs to start to gather more refined maps on the potential impacts of sea level rise.*
WS-9	Incorporate and prioritize preferred climate adaptation improvement projects in capital improvement plans and pursue funding.	*Stakeholders are beginning to identify projects in the LMS Project list whereby the mitigation measures may also address the potential impacts of climate change.*

Natural Systems

Goal: Implement monitoring, management and conservation programs designed to protect natural systems and improve their capacity for climate adaptation.

Policy		Notation
NS-7	Coordinate "living shorelines" objectives at regional scale to foster use of natural infrastructure (e.g. coral reefs, native vegetation and mangrove wetlands) instead of or in addition to grey infrastructure (e.g. bulkheads).	*Promotes coastal protection and aligns the CDMP CM objectives.*
NS-14	Maintain/restore urban tree canopy.	*Aligns with CDMP CON-8M* *Area for consideration: Education on proper placement and maintenance of trees should be provided in conjunction with this program to avoid underground and overhead infrastructure being damaged during severe weather events with trees being uprooted or toppled.*

Agriculture

Goal: Ensure the continued viability of agriculture in Southeast Florida through polices which remove barriers to production, promote economic incentives, improve water reliability, and provide research on best management practices thereby encouraging sustainable production in the face of a changing climate.

The LMS has an Agriculture/Landscape Sub-Committee that will be engaged in the updated modeling that will be run to better determine the impacts on the agricultural community.

Risk Reduction and Emergency Management

Goal: Provide a more resilient natural and built physical environment in light of climate change.

Policy		Notation
RR-1	Perform vulnerability analysis to identify and quantify the economic value of regional infrastructure at risk under various sea level rise scenarios and other climate change scenarios utilizing inundation mapping, modeling, and other appropriate tools. While the initial regional vulnerability assessment completed by the Compact Counties for use in this Regional Climate Action Plan has yielded important new insights on	*Area for consideration: Incorporate analysis of future hazards with new WASD ground/surface water interactive model and mapping from PWWM on design storms including current and future development.*

Policy		Notation
	regional risk, additional and ongoing analysis is required to further refine our current understanding and to monitor changes in Southeast Florida's risk profile over time.	
RR-2	Evaluate and improve adaptation responses for communities at risk, to include: • Development and implementation of methodologies for the assessment and evaluation of evacuation and relocation options.	*Area for consideration: New and updated mapping will provide OEM with local impacts so that a local response can be implemented. Currently SLOSH and the FEMA Flood Zones do NOT incorporate any future sea level rise considerations nor will the new Coastal Study that is being conducted. The new Coastal Study Maps will go into effect in 2019. Local governments need assistance from the federal government to incorporate sea level rise into hazard planning.*
RR-3	Incorporate climate change adaptation into the relevant Local Mitigation Strategy (LMS) to reduce or eliminate long-term risk to human life and property from disasters. Within the LMS, update local risk assessments to include climate change in the hazard analysis and vulnerability assessment section. Develop strategies for hazard mitigation and post-disaster redevelopment planning.	*The 2014 five year update of the LMS will include climate change considerations. OEM is currently working with WASD to roll out new modeling capabilities to help better define local potential impacts. Climate Change impacts are being integrated into the Threat and Hazard Identification Risk Analysis (THIRA) document that both the CEMP and the LMS reference for the hazard and vulnerability analysis. The Whole Community Infrastructure Planner/LMS Chair is coordinating with the Whole Community Recovery Planner for incorporation and integration of adaptation action areas and climate change impacts in the Recovery and Post-Disaster Redevelopment Plans.*
RR-4	Identify transportation infrastructure at risk from climate change in the region; determine whether, when, where, and to whom projected impacts from climate change might be significant. Employ inundation mapping, modeling and other appropriate tools to assess the vulnerability of transportation infrastructure to the projected impacts of climate change under various sea level rise and other climate change scenarios.	*OEM is currently working with WASD to roll out the ground and surface model with variable inputs to start to gather more refined maps on the potential impacts of sea level rise. Once we have these more detailed maps we can overlay the Critical Facility/Infrastructure data layers to identify structures/facilities.*
RR-5	Enforce Coastal Construction Line and build upon goals, objectives and policies related to Coastal High Hazard Area designations in Comprehensive Plans.	*OEM will work with RER in relation to the CHHA and HVZs as the evacuation zones have shifted based on new SLOSH data and new zones set in 2013.*
RR-6	Adopt consistent plans at all levels of regional government that adequately address and integrate mitigation, sea level rise and climate change adaptation. The following plans must all be consistent: Disaster recovery and redevelopment plans; Comprehensive plans; Long range transportation plans; Comprehensive emergency	*OEM is currently updating and working on the CEMP, LMS, Recovery Plan, Post-Disaster Redevelopment Plan and the THIRA. The Whole Community Infrastructure Planner/LMS Chair has engaged in a review of other relevant community*

Policy		Notation
	management plans; Capital improvement plans; Economic development plans, Local Mitigation Strategy, Climate Change Action Plan; Future Land Use Plan.	*planning documents to identify areas of integration and areas for consideration. This review will also be circulated to the LMS Working Group to encourage review and incorporation of other community planning documents including but not limited to municipalities and other regional and state planners.*
RR-7	Continue to implement and enforce strong building codes that require new construction and substantial improvements to existing structures to mitigate against the impacts of flooding, severe winds, and sea level rise, and which are consistent with Climate Change Adaptation policy	*Area for consideration: Develop mitigation measures for existing structures facing future impacts is needed to help determine feasible measures that can be implemented.* *RER: Does this include considering new codes for storm surge damage which may be more significant with SLR?*

Public Outreach

Goal: Communicate the risks related to climate change and the value of adapting policies and practices to achieve resilience throughout the region.

Policy		Notation
PO-1	Provide outreach to residents, stakeholders and elected officials on the importance of addressing climate change adaptation and preparedness and develop a program to educate specific interest groups about the Compact, Regional Climate Action Plan, and the benefits of Adaptation Action Area. Consider utilizing the Leadership Academy concept to educate elected leaders, academic interests and other decision makers.	*Area for consideration: Develop a PPI for Activity 330 for the CRS. Currently being looked at the CRS Sub-Committee of the LMS.*
PO-2	Counties, municipalities and appropriate agencies will collaborate to develop and carry out outreach/educational programs to increase public awareness about hazards exacerbated by climate change, mitigation efforts, and adaptation strategies to minimize damage and risk associated with climate change.	*Area for consideration: Inclusion in the PPI being developed for Activity 330 for the CRS.*
PO-6	Develop early warning systems and social media applications to both inform residents and visitors of extreme high-tide events and to raise overall awareness on sea level rise and climate change issues. Also consider roadway signage for tidal flooding zones.	*Area for consideration: develop and install posts that show potential storm surge, historic flooding levels and future projected sea level rise heights in vulnerable areas.* *RER: Also consider developing an app or public notice that warns of expected high tides so residents can take appropriate action in advance.*

Public Policy

Goal: Guide and influence local, regional, state and federal climate change related policies and programs through collaboration and joint advocacy.

Policy		*Notation*
PP-4	Counties, municipalities, regional agencies and other appropriate government and private sector partners should integrate consideration of climate change impacts and adaptation strategies into existing and future system wide planning, operations, policies, and programs. The guiding principles developed by the Interagency Task Force on Climate Change Adaptation for federal agencies should be incorporated by entities when designing and implementing adaptation strategies: □ Adopt integrated approaches. □ Prioritize the most vulnerable. □ Use best-available science. □ Build strong partnerships. □ Apply risk-management methods and tools. □ Apply ecosystem-based approaches. □ Maximize mutual benefits. □ Continuously evaluate performance.	*Review of other planning documents to look for areas for consideration in integrating and improving mitigation practices.*
PP-11	Urge Congress to provide recognition of an "Adaptation Action Area" designation in federal law for the purpose of prioritizing funding for infrastructure needs and adaptation planning, with special attention to modifications in law that enhance funding opportunities through USACE and EPA appropriations processes, as requested by members of Congress.	*Area for consideration: Identify projects in the LMS Project list that are in the future designation of Adaptation Action Areas for review and prioritization of funding opportunities.*

Comprehensive Development Master Plan (CDMP) expresses Miami-Dade County's general objectives and policies addressing where and how it intends development and the conservation of land and natural resources to occur during the next 10-20 years. This review includes updates that were added as of June 2013.

Every seven years, the CDMP is reviewed and updated as required per Chapter 163 of the Florida Statutes, a process known as an Evaluation and Appraisal Report (EAR). The EAR includes an evaluation of the progress the County has made in implementing the goals, objectives, policies, maps and text of the CDMP and also recommends changes.

The following applications have been filed as part of the Evaluation and Appraisal Report:

- SMART Plan Corridors
- Agriculture
- Urban Development Boundary/Urban Expansion Areas
- Climate Change – Adaptation
- Climate Change - Mitigation

The following is a brief synopsis of the elements that support and promote mitigation. The complete CDMP may be found at: http://www.miamidade.gov/planning/cdmp-adopted.asp

Land Use Element

Objective LU-1

The location and configuration of Miami-Dade County's urban growth through the year 2030 shall emphasize concentration and intensification of development around centers of activity, development of well- designed communities containing a variety of uses, housing types and public services, renewal and rehabilitation of blighted areas, and contiguous urban expansion when warranted, rather than sprawl.

Policy		*Notation*
LU-1H	The County should identify sites having good potential to serve as greenbelts, and should recommend retention and enhancement strategies, where warranted. Such greenbelts should be suggested on the basis of their ability to provide aesthetically pleasing urban spaces, recreational opportunities, or wildlife benefits. Considered sites should include canal, road or powerline rights-of-way, or portions thereof, particularly where they could link other parklands, wildlife habitats, or other open spaces.	*This will provide for additional drainage areas and may help alleviate flooding issues.* *Area for consideration: If the sites are mapped we can overlay it with RL and SRL loss properties and areas of reported flooding so that we can see if they may help those areas.*
LU-1R	Miami-Dade County shall take steps to reserve the amount of land necessary to maintain an economically viable agricultural industry. Miami-Dade County shall adopt and develop a transfer of developments rights (TDR) program to preserve agricultural land that will be supplemented by a purchase of development rights program to preserve agricultural land and environmentally sensitive property. The density cap of the land use category in the receiving area established by the TDR program may be exceeded. Land development regulations shall be developed to determine the extent that the density cap may be exceeded based on parcel size but in no case shall it exceed 20 percent.	*This will help maintain "open spaces" and any future development would be limited in density to reduce potential drainage concerns.* *Area for consideration: The density cap may need to be re-evaluated as we continue with the modeling process for potential sea level rise and with consideration that some of the areas may become adaptation action areas.*
LU-1S	The Miami-Dade County Strategic Plan shall be consistent with the Comprehensive Development Master Plan (CDMP). The Miami-Dade County Strategic Plan includes Countywide community goals, strategies and key outcomes for Miami-Dade County government. Key outcomes of the Strategic Plan that are relevant to the Land Use element of the CDMP include increased urban infill development and urban center development, protection of viable agriculture and environmentally-sensitive land, reduced flooding, improved infrastructure and redevelopment to attract businesses, availability of high quality green space throughout the County, and development of mixed-use, multi-modal, well designed, and sustainable communities.	*This measure promotes consistency amongst plans.* *One item for consideration would be to track which policies apply to all jurisdictions and ones that may be for only the UMSA. For areas where policies do not apply to municipal entities a review should be conducted to see if there is a comparable initiative at the municipal level exists.*

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Objective LU-3
The location, design and management practices of development and redevelopment in Miami-Dade County shall ensure the protection of natural resources and systems by recognizing, and sensitively responding to constraints posed by soil conditions, topography, water table level, vegetation type, wildlife habitat, and hurricane and other flood hazards, and by reflecting the management policies contained in resource planning and management plans prepared pursuant to Chapter 380, Florida Statutes, and approved by the Governor and Cabinet, or included in the Comprehensive Everglades Restoration Plan approved by Congress through the Water Resources Development Act of 2000.

Policies

Policy		*Notation*
LU-3D	Miami-Dade County shall not sponsor any growth-subsidizing programs which promote future population growth and residential development on the barrier islands of Miami-Dade County or within the coastal high hazard areas (CHHA). Miami-Dade County shall coordinate with municipalities in Coastal High Hazard Areas, and areas with repetitive losses due to flooding or storm damage, to minimize demand for facilities and services that result from redevelopment and increases in residential densities. The provision of facilities and services to accomplish the timely evacuation of already-developed barrier islands in advance of approaching hurricanes shall be a priority of Miami-Dade County's transportation planning and hurricane preparedness programs.	*Restriction on development in Coastal High Hazard Area addresses RL, SRL and storm surge flooding and impact on evacuation clearance times.* *Area for consideration: Evacuation is a protective measure that is accomplished when there is time and adequate resources to support the need. There could be situations whereby there is not enough notice or people may not heed the warnings and may have to shelter in place. Is there any provision that the developers/building owners are responsible for developing a plan or designating a "safe area"? This should not be seen as an alternative to evacuation but rather a last ditch option when evacuation is not a safe possibility. See also discussion in FAC 73C-40.0256.* *RER comment: CDMP policies CM-8C and CM-8D pertain to this and encourage residents to be better prepared, plan ahead and enroll in the County's public safety alert system. It does not seem likely that a safe room requirement would become a part of the Florida Building Code for residents; as there already are specific requirements for the County's emergency public shelters and capacity requirements.*
LU-3E	By 2017, Miami-Dade County shall initiate an analysis on climate change and its impacts on the built environment addressing development standards and regulations related to investments in infrastructure, development/redevelopment and public facilities in hazard prone areas. The analysis shall consider and build on pertinent	*Forward looking action item to identify potential impacts and identifying considerations.*

	information, analysis and recommendations of the Regional Climate Change Action Plan for the Southeast Florida Regional Climate Change Compact Counties, and will include the following elements: a) an evaluation of property rights issues and municipal jurisdiction associated with the avoidance of areas at risk for climate hazards including sea level rise; b) an evaluation of the current land supply-demand methodology to consider and address, as appropriate, the risk associated with infrastructure investments in flood prone areas; and c) an evaluation of the CDMP long-term time horizon in relation to addressing projected long-range climate change impacts. Recommendations from the analysis shall address appropriate changes to land use designations and zoning of impacted properties, and development standards, among other relevant considerations.	*OEM is currently working with WASD for the roll out of the ground and surface water interaction model that will provide for additional information/maps for how sea level rise may impact different areas of our community.* *Area for consideration: Identify measures for retro-fitting and future building standards in relation to the impacts of sea level rise.* *Consider evaluating projects in the LMS Project list for areas where sea level rise impacts cannot be mitigated to determine the benefit cost of investing limited funding sources.*
LU-3F	By 2017, Miami-Dade County shall develop a Development Impact Tool or criteria to assess how proposed development and redevelopment project features including location, site design, land use types, density and intensity of uses, landscaping, and building design, will help mitigate climate impacts or may exacerbate climate related hazards. The tool would also assess each development's projected level of risk of exposure to climate change impacts, such as inland flooding.	*Area for consideration: Climate impacts may also have increased wind speeds associated with tropical cyclones, reduced coastal barriers and higher sea levels that can push storm surge further inland. Will the Development Impact Tool include such considerations?* *RER: Not sure, will need to determine what it includes as it is developed.* *RER: This issue would first be discussed as part of the Adaptation Action Areas to determine how these additional assumptions should be incorporated into the model to identify vulnerable areas.*
LU-3G	Miami-Dade County shall, by 2017, analyze and identify public infrastructure vulnerable to sea level rise and other climate change-related impacts. This analysis shall include public buildings, water and waste water treatment plants, transmission lines and pump stations, stormwater systems, roads, rail, bridges, transit facilities and infrastructure, airport and seaport infrastructure, libraries, fire and police stations and facilities.	RER working with WASD and PWWM to create an internal workgroup to determine how to use the surface/groundwater model to help identify vulnerable areas and infrastructure. This will help develop methodology for implementing R-451-14 and Ord. 14-79 *RER: BCC Resolution R-451-14 partially implements this policy.*
LU-3H	In order to address and adapt to the impacts of climate change, Miami-Dade County shall continue to improve analysis and mapping capabilities for identifying areas of the County vulnerable to sea level rise, tidal flooding and other impacts of climate change.	*OEM is currently working with WASD to introduce and provide the new surface/ground water interactive model to our local stakeholders. (September 2014)*
LU-3I	Miami-Dade County shall make the practice of adapting the built environment to the impacts of climate change an integral component of all planning processes, including but not limited to comprehensive planning, infrastructure planning, building and life	*Area for consideration – identify how municipal entities are addressing this as well.*

	safety codes, emergency management and development regulations, stormwater management, and water resources management.	*RER comment: This is under the jurisdiction of the affected municipality(ites), in which some such as Miami Beach have begun addressing this in their Stormwater Master Plan. Also See Comment in LU-3G* *RER: BCC Resolution R-451-14 and Ordinance 14-79 partially implement this policy.*
LU-3J	Miami-Dade County shall continue to actively participate in the Southeast Florida Regional Climate Change Compact and collaborate to increase regional climate change resiliency by sharing technical expertise, assessing regional vulnerabilities, advancing agreed upon mitigation and adaptation strategies and developing joint state and federal legislation policies and programs.	*This measure promotes collaboration and integration into additional planning processes.*
LU-3K	By 2017, Miami-Dade County shall determine the feasibility of designating areas in the unincorporated area of the County as Adaptation Action Areas as provided by Section 163.3177(6)(g)(10), Florida Statute, in order to determine those areas vulnerable to coastal storm surge and sea level rise impacts for the purpose of developing policies for adaptation and enhance the funding potential of infrastructure adaptation projects.	*This language is being integrated into the LMS as well.* *Area for consideration: AAAs should also be looked at for post-disaster redevelopment as well. RER: new surface/ground water interactive model will also be important for this.*
LU-3L	Miami-Dade County shall work with its local municipalities to identify and designate Adaptation Action Areas as provided by Section 163.3164(1), Florida Statute, in order to develop policies for adaptation and enhance the funding potential for infrastructure projects.	*OEM will add this designation for projects in the LMS Project list to help identify this criteria.* *Area for consideration: AAA designation should also be incorporated into the Benefit Cost Review for the LMS projects.* .
LU-3M	Miami-Dade County shall support the implementation of climate-change related policies, through education, advocacy and incentive programs. Public outreach, such as workshops or a website with relevant information, shall seek to shift residents' everyday transportation decisions and housing choices to support transit oriented communities and travel patterns. The County shall provide opportunities for the public, including students, building industry and environmental groups, to participate in the development of any new climate-change related land development regulations and initiatives.	*Community outreach and education are also addressed in Policy CM-8C and Policy ICE-8E.* *Realtor disclosure of hazards for real estate transactions.* *RER comment: Chapter 11-C of the Miami-Dade County Code requires real estate disclosure if the property is located in a Special Flood Hazard or Coastal High Hazard Area (FEMA definition), see http://www.miamidade.gov/publicworks/flooding-disclosure.asp*

Objective LU-6
Miami-Dade County shall protect, preserve, ensure the proper management, and promote public awareness of historical, architectural and archaeologically significant sites and districts in Miami-Dade County, and shall continue to seek the addition of new listings to the National Register, and increase the number of locally designated historical and archeological sites, districts and zones.

Policy		*Notation*
LU-6I	Miami-Dade County shall pursue efforts with other local, State and federal agencies to develop policies that recognize the importance of designated historic resources and that comply with the provisions of the County's Historic Preservation Ordinance.	*This objective presents an opportunity as a number of the LMS stakeholders have structures that are or are becoming historic designations.* *Area for consideration: Identify mitigation measures for historic structures.* *Develop database of local, state and national historic structures. (PROS and Office of Historic and Archaeological Resources may already have this.)* *Consider how impacts of sea level rise/flooding will be considered for designated historic resources.*

Objective LU-9
Miami-Dade County shall continue to maintain, update and enhance the Code of Miami-Dade County, administrative regulations and procedures, and special area planning program to ensure that future land use and development in Miami-Dade County is consistent with the CDMP, and to promote better planned neighborhoods and communities and well-designed buildings.

Policies

Policy		*Notation*
LU-9B	Miami-Dade County shall continue to maintain, and enhance as necessary, regulations consistent with the CDMP which govern the use and development of land and which, as a minimum, regulate: iv) areas subject to seasonal or periodic flooding	*Area for consideration: Determine if this is also being done in the incorporated areas of the county.*
LU-9K	By 2016, Miami-Dade County shall initiate the review and revision of its Subdivision Regulations to facilitate the development of better planned communities. The Public Works Department shall specifically review and update the Subdivision Regulations for urban design purposes. Changes to be considered shall include provisions for: i) Open space in the form of squares, plazas, or green areas in residential and commercial zoning categories;	*Provides for improved drainage.* *Area for consideration: Determine if this is also being done in the incorporated areas of the county.*

Policy		Notation
LU-9M	Building, zoning and housing codes will be vigorously enforced in all areas of Miami-Dade County	*Promotes consistency of measures.* *Area for consideration: Determine if this is also being done in the incorporated areas of the county.*

Objective LU-11
Miami-Dade County shall take specific measures to promote redevelopment of dilapidated or abandoned buildings and the renovation, rehabilitation or adaptive reuse of existing structures.

Policy		Notation
LU-11B	Miami-Dade County shall continue to utilize its Community Redevelopment Area (CRA) Program and federal programs such as the Community Development Block Grant and the HOME program to facilitate redevelopment of dilapidated or abandoned buildings and the renovation, rehabilitation or adaptive reuse of existing structures in eligible areas.	*Area for consideration: Integration of mitigation such as hardening buildings, elevation to minimize impacts of disasters.* *Post disaster redevelopment should be incorporated here as well.*

Transportation Element

GOAL
DEVELOP AND MAINTAIN AN INTEGRATED MULTIMODAL TRANSPORTATION SYSTEM IN MIAMI-DADE COUNTY TO MOVE PEOPLE AND GOODS IN A MANNER CONSISTENT WITH OVERALL COUNTYWIDE LAND USE AND ENVIRONMENTAL PROTECTION GOALS AND INTEGRATION OF CLIMATE CHANGE CONSIDERATIONS IN THE FISCAL DECISION-MAKING PROCESS.

Objective TE-1
Miami-Dade County will provide an integrated multimodal transportation system for the circulation of motorized and non-motorized traffic by enhancing the Comprehensive Development Master Plan and its transportation plans and implementing programs to provide competitive surface transportation mode choice, local surface mode connections at strategic locations, and modal linkages between the airport, seaport, rail and other inter-city and local and intrastate transportation facilities. These plans and programs shall seek to ensure that, among other objectives, all transportation agencies shall consider climate change adaptation into their public investment processes and decisions.

Policy		Notation
TE-1G	Miami-Dade County shall develop and adopt climate change adaptation and mitigation strategies for incorporation into all public investment processes and decisions, including those concerning transportation improvements.	*Promotes consistency.* *FHWA Pilot project being implemented by MDC, Broward and PB Counties MPO's is exploring vulnerabilities of transportation*

Policy		Notation
		infrastructure to climate change and SLR impacts. This should be complete sometime in 2015. New surface/ground water interactive model will also be important for this.
TE-1H	Transportation agencies developing their transportation plans for Miami-Dade County shall take into consideration climate change adaptation and mitigation strategies through project review, design, and funding for all transportation projects. Transportation agencies should consider extending their planning horizons appropriately to address climate change impacts.	*Area for consideration: Impacts on evacuation needs to be incorporated as well.* *RER comment: Evacuation routes are part of the FDPT, MDX and PWWM roadway systems and RER reviews development for concurrency to ensure there is enough capacity for all services, including roadways.* *New LRTP incorporates climate change mitigation, adaptation and SLR considerations*

Traffic Circulation Sub-element

Miami-Dade County, since 1957, has been a home rule charter county. The Department of Regulatory and Economic Resources Planning Division therefore serves as a metropolitan agency, and the traffic circulation needs and the goal in this Sub element are presented for the entire County, including the 34 municipalities.

GOAL
DEVELOP, OPERATE AND MAINTAIN A SAFE, EFFICIENT AND ECONOMICAL TRAFFIC CIRCULATION SYSTEM IN MIAMI-DADE COUNTY THAT PROVIDES EASE OF MOBILITY TO ALL PEOPLE AND FOR ALL GOODS, IS CONSISTENT WITH DESIRED LAND USE PATTERNS, CONSERVES ENERGY, PROTECTS THE NATURAL ENVIRONMENT, ENHANCES NON-MOTORIZED TRANSPORTATION FACILITIES, SUPPORTS THE USAGE OF TRANSIT, AND STIMULATES ECONOMIC GROWTH.

Objective TC-6
Plan and develop a transportation system that preserves environmentally sensitive areas, conserves energy and natural resources, addresses climate change impacts, and promotes community aesthetic values.

Policy		Notation
TC-6A	The County shall avoid transportation improvements which encourage or subsidize increased development in coastal high hazard areas, environmentally sensitive areas II-17 identified in the Coastal Management and Conservation, Aquifer Recharge and Drainage Elements, and areas of high risk of significant inland flooding.	*Promotes reduction of building in hazard areas.* *Area for consideration: How is "significant flooding" being defined? Is this being correlated to the RL, SRL and flooding complaints? New surface/ground water interactive model will also be important for this.*

TC-6D	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.	*Promotes flood mitigation measures.* *New surface/ground water interactive model will also be important for this.*

Objective TC-7
Miami-Dade County's Traffic Circulation Sub-element, and the plans and programs of the State, region and local jurisdictions, will continue to be coordinated.

Policy		*Notation*
TC-7A	Miami-Dade County shall annually review subsequent Florida Department of Transportation (FDOT) Five-Year work programs to ensure that they remain consistent with and further the Traffic Circulation Sub-element and other Elements of Miami-Dade County's CDMP.	*Area for consideration: Impacts on evacuation needs to be incorporated as well.* *RER comment: See previous comment on TE-1H.*
TC-7E	The County shall promote coordination with all relevant transportation agencies to address climate change impacts.	*Promotes collaboration and integration.* *See Comments in TE-1G*

The Metropolitan Planning Organization (MPO), which coordinates all transportation planning for Miami-Dade County, is responsible for periodically updating the MPO's Long Range Transportation Plan. It is anticipated that the future traffic circulation network included in the Transportation Element will be adjusted during future plan amendment cycles to reflect the findings of that planning activity, in keeping with the goals, objectives and policies of the CDMP.

Housing Element

GOAL II
THROUGHOUT MIAMI-DADE COUNTY IDENTIFY AND PROVIDE AFFORDABLE HOUSING OPPORTUNITIES FROM WITHIN THE EXISTING HOUSING STOCK AND ENSURE ITS EFFICIENT USE THROUGH REHABILITATION AND RENOVATION, AND FACILITATE ADAPTIVE CONVERSION OF NON-RESIDENTIAL STRUCTURES TO HOUSING USE FOR EXTREMELY LOW, VERY LOW, LOW, AND MODERATE-INCOME HOUSEHOLDS, INCLUDING WORKFORCE HOUSING.

Objective		*Notation*
HO-7	Miami-Dade County shall support the preservation and enhancement of existing mobile home communities as an additional source of affordable housing options for extremely low through moderate income households and encourage residents and	*Area for consideration: On site protection for residents, such as a community building/center.*

	builders to incorporate energy and natural resource conservation strategies into housing design, site plan design, and improvements for existing mobile homes.	*Assess for impacts of sea level rise and other hazards as the low to moderate income households may have less resources to buy insurance or recovery quickly after a disaster.*
HO-5	Reduce the number of substandard housing units in the County by encouraging the rehabilitation or conservation of the existing housing stock, including historic structures, and provide that an increased number of extremely low, very low, low and moderate-income, and workforce units comes from housing rehabilitation and adaptive re-use of non-residential structures.	*Area for consideration Add language for mitigation measures built into housing rehabilitation.* *Assess for impacts of sea level rise and other hazards as the low to moderate income households may have less resources to buy insurance or recovery quickly after a disaster.*

GOAL III
ALL VARIATIONS OF AFFORDABLE HOUSING PRODUCTS IN MIAMI-DADE COUNTY SHOULD BE PROVIDED THROUGH THE MOST ECONOMICALLY FEASIBLE ALTERNATIVES, WHILE ENSURING THAT SITE LOCATIONS, SITE AND HOUSING DESIGNS, AND BUILDING PRACTICES FOSTER ENERGY AND LAND CONSERVATION.

Objective		*Notation*
HO-8	Bring about housing design and development alternatives that are aesthetically pleasing, encourage energy efficiency and enhance the overall health, safety and general welfare of County residents.	*Area for consideration: Building outside of high hazard areas and with mitigation measures to lessen the impact to residents from hazards.*
H-11	Continue governmental assistance to persons and families displaced and relocated by public projects and encourage private-sector assistance in relocating people displaced by private projects.	*Area for consideration: Enter into public private partnerships to provide for safe and affordable housing. Consider involving Emergency Support Function #18 and input from the County's Public Housing and Community Development Department.*
HO-11C	Assure the availability of suitable emergency shelters, transitional housing, and relocation programs for very low, low- and moderate-income populations who have lost their housing, especially when displacement occurs due to redevelopment or natural disaster.	*Promotes temporary and transitional housing.* *Area for consideration: Assess housing stock and identify areas where construction under previous codes or Pre-FIRM regulations exist and identify mitigation measures that could minimize the need for relocation and reduce potential damages due to hazards, including consideration for impacts of climate change and sea level rise.* *RER: A GIS analysis of housing stock by year might also aid in identifying older homes that may be at risk in the event of hurricanes or other natural disasters.*

Conservation, Aquifer Recharge and Drainage Element

GOAL
PROVIDE FOR THE CONSERVATION, ENVIRONMENTALLY SOUND USE, AND PROTECTION OF ALL AQUATIC AND UPLAND ECOSYSTEMS AND NATURAL RESOURCES, AND PROTECT THE FUNCTIONS OF AQUIFER RECHARGE AREAS AND NATURAL DRAINAGE FEATURES IN MIAMI-DADE COUNTY.

Objective CON-5
Miami-Dade County shall continue to develop and implement the Stormwater Master Plans comprised of basin plans for each of the sixteen primary hydrologic basins being addressed by the County, and cut and fill criteria as necessary to: provide adequate flood protection; correct system deficiencies in County maintained drainage facilities; coordinate the extension of facilities to meet future demands throughout the unincorporated area; and maintain and improve water quality. Each of the basins' Master Plans is to be updated every five years, with the next update to be completed by 2017. The implementing actions recommended in each basin plan shall continue to commence immediately after the applicable plan is approved. Outside of the Urban Development Boundary the County shall not provide, or approve, additional drainage facilities that would impair flood protection to easterly developed areas of the County, exacerbate urban sprawl or reduce water storage. RER: New surface/ground water interactive model will be important for all or most of these policies.

Policies

Policy		*Notation*
CON-5A	The Stormwater Management (Drainage) Level of Service (LOS) Standards for Miami-Dade County contain both a Flood Protection (FPLOS) and Water Quality (WQLOS) component. The minimum acceptable Flood Protection Level of Service (FPLOS) standards for Miami-Dade County shall be protection from the degree of flooding that would result for a duration of one day from a ten-year storm, with exceptions in previously developed canal basins as provided below, where additional development to this base standard would pose a risk to existing development. All structures shall be constructed at, or above, the minimum floor elevation specified in the federal Flood Insurance Rate Maps for Miami-Dade County, or as specified in Chapter 11-C of the Miami-Dade County Code, whichever is higher.	*Promotes consistency between CDMP and Building Code.* *Area for consideration: Integration of Climate Change and Sea Level Rise.*
CON-5B	Applicants seeking development orders approving any new use or site alteration outside the Urban Development Boundary where the elevation of any portion of the site will remain below County Flood Criteria shall be advised by the permitting agency that those portions of the land that are not filled to Miami-Dade County Flood Criteria may be subject to periodic flooding.	*Promotes education of flooding risk.* *Area for consideration: Integration of future risk with Climate Change and Sea Level Rise impacts.*
Con-5C	Miami-Dade County shall work with the South Florida Water Management District to better identify the developed urban areas within the County that do not have	*Promotes risk assessment across jurisdictional boundaries*

Policy		Notation
	protection from a one in ten year storm. The County shall develop stormwater management criteria and plans for all unincorporated areas identified. Where such areas fall within municipal boundaries, the County will coordinate the stormwater management planning with the appropriate municipality(ies).	*Area for consideration: Currently the CRS program only allows for individual jurisdictions to participate. Due to our dependent relationship with SFWMD and the risk that all of our communities face with flooding, a strategy to try to get our entire County to be seen as one community in relation to floodplain management challenges should be investigated.* *SFWMD to add their projects to the LMS Project list.*
CON-5D	Miami-Dade County shall seek funding for a comprehensive basin-by-basin drainage engineering study which will include: identification of public drainage facilities and private drainage facilities that impact the public facilities, and the entities having operational responsibility for them; establishment of geographic service areas for the drainage facilities; and, a facility capacity analysis by geographic service area for the planning periods 2015 and 2025.	*The LMS has started tracking mitigation projects by drainage basin so we can also map where mitigation projects are planned. The plan is to be able to show over time where drainage projects have occurred and to track the progress in the reduction of flood complaints, and RL and SRL properties.*
CON-5E	Miami-Dade County shall establish a priority listing of stormwater drainage including: Drainage/stormwater sewer system improvements in developed urban areas with persistent drainage problems • Canal and/or stormwater drainage improvements for developed urban areas that have less than one in ten year storm protection and where no roadway drainage improvements are planned or proposed, which would remedy problems.	*PWWM lists drainage projects in the LMS Project list and they are required to be prioritized.* *Area for consideration: Identify if this also applies to municipal areas*
CON-5H	Miami-Dade County shall periodically evaluate stormwater drainage criteria as outlined in the County Code to ensure proper flood protection is being provided to County residents.	*Promotes effectiveness evaluation.* *Area for consideration: Identify if this also applies to municipal areas.* *Can this tie into 73C-40.0256.*
CON-5I	When building, expanding or planning for new facilities such as water treatment plants, Miami-Dade County shall consider areas that will be impacted by sea level rise.	*Promotes consideration of future hazard impacts.*

Objective CON-8
Upland forests included on Miami-Dade County's Natural Forest Inventory shall be maintained and protected.

Policy		*Notation*
CON-8M	Miami-Dade County shall seek to increase the percentage of tree canopy from the present level of 10% to the national average of 30% by 2020 through the implementation and/or enforcement of: Adopt-A-Tree and other programs; landscape and tree protection ordinance changes to further increase canopy; and, other mechanisms as feasible and appropriate.	*Area for consideration: Education on proper placement and maintenance of trees should be provided in conjunction with this program to avoid underground and overhead infrastructure being damaged during severe weather events with trees being uprooted or toppled.* *RER comment: Consult with DERM as they periodically host an "Adopt a Tree" event which they may provide a pamphlet or guidance to residents in the proper care and placement of the tree.* *RER: This issue is also addressed in the County's Landscape Ordinance – specifically Chapter 18B.*

Water and Sewer Sub element

GOAL
PROVIDE FOR POTABLE WATER, AND SANITARY SEWER FACILITIES WHICH MEET THE COUNTY'S NEEDS IN A MANNER THAT PROMOTES THE PUBLIC HEALTH, ENVIRONMENTAL PROTECTION, OPERATIONAL EFFICIENCY, CDMP-PLANNED LAND USE, AND ECONOMIC OPPORTUNITY.

Objective WS-4
Miami-Dade County shall protect the health of its residents and preserve its environmental integrity by reducing the proportion of residences and commercial establishments within the County using private wastewater treatment facilities. Miami-Dade County shall discourage the new or continued use of such facilities through the strict application of the CDMP and land development regulations.

Policy		*Notation*
WS-4H	Miami-Dade County shall coordinate with municipalities and the State of Florida to monitor existing septic tanks that are currently at risk of malfunctioning due to high groundwater levels or flooding and shall develop and implement programs to abandon these systems and/or connect users to the public sewer system. The County shall	*Promotes mitigation and future hazard impacts.* *New surface/ground water interactive model will also be important for this.*

	also coordinate to identify which systems will be adversely impacted by projected sea level rise and additional storm surge associated with climate change and shall plan to target those systems to protect public health, natural resources, and the region's tourism industry.	*Currently in the LMS Project list El Portal, Florida City, Miami Gardens, North Miami Beach, Homestead and South Miami have identified projects to support this policy. (July 2014)*

Recreation and Open Space Element

Miami-Dade County Parks, Recreation and Open Spaces Department strives to provide equitable access to all residents of the County in order to VI-2 provide the opportunity to participate in at-will[1] and/or programmed physical activities. The criteria established in the Equity Access Criteria Chart[2] is developed to make Miami-Dade County a more livable and sustainable community where residents should have access to parks within their neighborhood and be able to walk or bike to a park within ½ mile from their home. In addition, residents should have access to regional parks and the recreation opportunities there-in within 2-3 miles biking or driving distance from their home.

Area for consideration: Currently under the CRS program municipal entities are not getting credit for open spaces owned and operated by the County. This can impact their ability to get credit for this and negatively impact their overall CRS score which translates into higher flood insurance rates for their residents. The map and chart of sites referenced in this element of the CDMP has been included in Part 7: NFIP/CRS of the LMS.

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GOAL
DEVELOP, PROGRAM, AND MAINTAIN A COMPREHENSIVE SYSTEM OF PARKS AND RECREATIONAL OPEN SPACES OFFERING QUALITY AND DIVERSITY IN RECREATIONAL EXPERIENCES WHILE PRESERVING AND PROTECTING VALUABLE NATURAL, HISTORICAL AND CULTURAL RESOURCES, UNIMPAIRED, FOR PRESENT AND FUTURE GENERATIONS.

Objective ROS-1
Provide a comprehensive system of public and private sites for recreation, including but limited to public spaces, natural preserve and cultural areas, greenways, trails, playgrounds, parkways, beaches and public access to beaches, open space, waterways, and other recreational facilities and programs serving the entire County; and local parks and recreation programs adequately meeting the needs of Miami-Dade County's unincorporated population., through 2017.

Policy		*Notation*
ROS-1D	In cases of annexation or incorporation efforts, the County shall employ the following guidelines on a case-by-case basis: i.) The County shall not transfer either the operation and maintenance or title of any district park, metropolitan park, natural area preserve, special activity area, or greenway to a municipality;	*Area for consideration: Currently under the CRS program municipal entities are not getting credit for open spaces owned and operated by the County. This can impact their ability to get credit for this and negatively impact their overall*

	ii.) The County shall not allow proposed municipal boundaries to create multiple jurisdictions within any one area wide park; iii.) The County shall retain ownership of County-owned local parks encompassed by municipal annexation or incorporation areas if the majority of park program participants are residents of unincorporated areas;	*CRS score which translated into higher flood insurance rates for their residents.* *RER comment: This issue needs to be addressed with the County's Parks, Recreation and Open Spaces Department, as it involves County parks.*

Objective ROS-2
Require the availability of adequate local recreation open space as a condition for the approval of residential development orders, and maintain an adequate inventory of recreational areas and facilities through 2017.

Policy		*Notation*
ROS-2B	Local recreation open space counted when measuring level of service shall include: 1) public local parks which exist or are committed by covenant; 2) public school and college playfields; 3) portions of private recreation open space; and, 4) County-owned or operated parks that have been incorporated or annexed into municipalities but in which a majority of park program participants are unincorporated area residents.	*Area for consideration: Currently under the CRS program municipal entities are not getting credit for open spaces owned and operated by the County. This can impact their ability to get credit for this and negatively impact their overall CRS score which translated into higher flood insurance rates for their residents.* *RER comment: see previous comment under ROS-1D.*
ROS-2E	The County shall maintain an updated inventory of County and municipal recreation open spaces serving public recreational demand. The Parks, Recreation and Open Spaces Department shall maintain information on designated public and private recreation open space and facilities necessary for accurate and regular measurements of levels of service and administration of concurrency requirements.	*Area for consideration: Currently under the CRS program municipal entities are not getting credit for open spaces owned and operated by the County. This can impact their ability to get credit for this and negatively impact their overall CRS score which translated into higher flood insurance rates for their residents.* *RER comment: see previous comment under ROS-1D.*

Objective ROS-3
Access to parks and recreational facilities will be improved in Miami-Dade County.by 2017.

Policy		Notation
ROS-3D	Through its park and recreation programs and all other available means, Miami-Dade County shall preserve and protect beaches and shores, water views and maximize public ownership of these coastal resources. The County shall improve the maintenance of existing public park and recreation entrances and shall, where feasible, provide additional access points at waterfront and coastal locations.	*Beach re-nourishment programs, dune restoration all have benefits for mitigating sea level rise and storm surge.*

Objective ROS-4
The County shall maintain a capital financing plan to enable provision of park and recreation open spaces and facilities through a variety of public and private sources and partnerships.

Policy		Notation
ROS-4D	The County shall continue to explore the use of special taxing districts and other dedicated funding mechanisms for the long-term provision and management of park and recreation open space and facilities, especially where they offer economic advantages to the County and residents.	*Area for consideration: Currently under the CRS program municipal entities are not getting credit for open spaces owned and operated by the County. This can impact their ability to get credit for this and negatively impact their overall CRS score which translated into higher flood insurance rates for their residents.* *RER comment: see previous comment under ROS-1D.*
ROS-4F	The County shall continue implementation of capital projects funded by 2004 Building Better Communities General Obligation Bond and 2000-2008 Quality Neighborhood Improvement Bond proceeds available for the acquisition, renovation, restoration, and development of recreation open spaces and facilities, and that these activities can be accomplished in a timely fashion. The Parks, Recreation and Open Spaces Department will continue to explore both fee-simple and less-than-fee-simple mechanisms for the establishment of open space *conservation* areas and will seek additional funds in any future bond issue that the County may propose.	*Area for consideration: Currently under the CRS program municipal entities are not getting credit for open spaces owned and operated by the County. This can impact their ability to get credit for this and negatively impact their overall CRS score which translated into higher flood insurance rates for their residents.* *RER comment: see previous comment under ROS-1D.*
ROS-4G	The Parks, Recreation and Open spaces Department will collaborate with County agencies that oversee funding programs and accounts related to horticulture, arboriculture, environmental mitigation, hazard mitigation, transportation, crime prevention, tourist development, and community and economic development, which can potentially benefit local residents through the enhancement of parks and recreation programs, should assist with the implementation of the policies in this	*Restoration of dunes and beaches and natural areas to protect the coastal areas from current and future risks such as sea level rise, coastal flooding and storm surge.*

	Element by participating in inter-agency partnerships to address, for example, the following: i.) Acquisition of parkland through leases and management agreements, forfeitures of land, and developer dedications or conveyances; ii.) Landscaping maintenance and continued resource management of parkland and natural areas such as through the use of regulatory fines collected by the Public Works and Waste Management Department or the Division of Environmental Resources Management of the Department of Regulatory and Economic Resources; iii.) Designation of park sites as off-site mitigation areas for environmental restoration;	

Objective ROS-5
Maintain a formal capital improvements planning program that improves and expands the park and recreation system through the acquisition of land, the renovation and restoration of facilities and natural areas, the development of new park and recreation open space and facilities, and the linking of parks and other public spaces.

Policy		*Notation*
ROS-5C	The Parks, Recreation and Open Spaces Department shall, as funds are available, renovate, restore, and upgrade County facilities following the guidelines of the Miami-Dade County Park Structure and Landscape Pattern Book "Pattern Book" to enhance park aesthetics and ensure that the public can safely and securely enjoy recreational opportunities, and that the County can cost-effectively extend the useful life of existing facilities. Expenditures for the renovation, restoration and upgrade of existing parks and recreation facilities are prioritized as follows: 1) repairs and projects increasing visitor safety; 2) hazard reduction; 3) facility upgrade and resource management; 4) accessibility improvements in compliance with ADA; and, 5) energy efficiency improvements. The County shall implement projects and activities including but not limited to the following in order to address these priorities: ii.) The Parks, Recreation and Open Spaces Department will remove known hazards existing within its facilities. Provisions will be made to remove or abate asbestos within buildings, remove or mitigate materials containing lead, and provide storm protection to walls, windows, and doors.	*PROS actively tracks projects in the LMS Project list.*

Objective ROS-8

Objective		*Notation*
ROS-8	The Miami-Dade County Parks and Open Space System Master Plan (OSMP), through a 50-year planning horizon, shall guide the creation of an interconnected framework of parks, public spaces, natural and cultural areas, greenways, trails, and streets that promote sustainable communities, the health and wellness of County residents, and that serve the diverse local, national, and international communities.	*Area for consideration: Integration of consideration for impacts of future hazards, including climate change.*

Coastal Management Element

The Coastal Management Element reflects the uniqueness of the coastal area of Miami-Dade County and the realities of planning for a highly developed barrier island chain and low-lying mainland, a complex metropolitan area of over 2.7 million residents and 16.5 million annual tourists that heavily use the urban park system, especially coastal parks and waterways. The County continues its stewardship of these coastal resources, with activities including water quality monitoring, coastal wetland restoration, and increasing public awareness of and access to these coastal areas. Furthermore, Miami-Dade County is the only county in the nation to possess within its boundaries two national parks, Biscayne National Park and Everglades National Park, as well as the heavily used Biscayne Bay Aquatic Preserve, which is urban Miami-Dade's signature amenity.

Miami-Dade County continues its tradition of strong pre- and post-hurricane planning, utilizing lessons learned from Hurricane Andrew and other natural disasters. The County's storm surge planning zones, labeled A, B, C, D and E are not storm category dependent. Each storm's dynamics are modeled to predict potential impacts based on the Sea, Lake and Overland Surge from Hurricanes (SLOSH) II computer model, developed by the National Hurricane Center, U.S. Army Corps of Engineers, the U.S. Geological Survey and the Federal Emergency Management Agency, in cooperation with state and local offices of emergency management. Orders for evacuations are based on the storm's track, projected storm surge potential impacts and consultation with knowledgeable agencies. These planning zones as delineated by the Miami-Dade County Office of Emergency Management (OEM) are presented for information purposes on Figure 1. In accordance with Chapter 163, Florida Statutes, coastal high hazard areas (CHHA) are areas that are seaward of the elevation of a category one storm surge line and is depicted in Figure 13 in the Land Use Element.

Area for consideration:

- In 2013 with the new SLOSH data OEM updated the previous evacuation zones with Storm Surge Planning Zones. A closer look at utilizing the Category one storm surge information needs to be done. OEM uses 18" as the delineation for evacuation but lesser amounts of storm surge may impact areas that are not reflected in the storm surge planning zones. When the new SLOSH data was analyzed and the new planning zones were set by OEM there was a shift geographically where the A zone was designated. This may have a direct impact on the CHHA. See the section on the review of Florida Administrative Code 73C-40.0256
- FEMA is currently conducting the Southeast Florida Coastal Study that includes Miami-Dade, Broward, Palm Beach and Monroe Counties. Data is being collected and PWWM and OEM worked collectively to get all municipalities to participate in the Discovery Meeting held on June 24, 2014. The proposed maps would go into effect in 2019 after the data collection, analysis, review and community input process.

RER comment: An update of the Storm Surge Planning Zones map and text reference is warranted, but needs to be with a comprehensive discussion and evaluation with OEM, Office of Sustainability, PWWM and other County agencies regarding the change in terminology from “evacuation zones” to “storm surge zones”, and also address OEM’s concerns with the SLOSH model. This update may be done in coordination with the Adaptation Action Areas and the Development Impact Tool referenced in the LU Element, or can be updated separately if needed.

GOAL
PROVIDE FOR THE CONSERVATION, ENVIRONMENTALLY SOUND USE AND PROTECTION OF ALL NATURAL AND HISTORIC RESOURCES; LIMIT PUBLIC EXPENDITURES IN AREAS SUBJECT TO DESTRUCTION BY NATURAL DISASTERS; AND PROTECT HUMAN LIFE AND PROPERTY IN THE COASTAL AREA OF MIAMI-DADE COUNTY, FLORIDA.

Objective CM-1
Protect, conserve and enhance coastal wetlands and living marine resources in Miami- Dade County.

Policy		*Notation*
CM-1A	Mangrove wetlands in the following locations and mangrove wetlands within the “Environmental Protection” designation on the Adopted Land Use Plan (LUP) Map for Miami-Dade County shall be designated as "Mangrove Protection Areas" □□Publically owned mangrove wetlands within and adjacent to the Oleta River State Recreation Area • Haulover Park • Bird Key (privately owned) • Near-shore islands and northwestern shoreline of Virginia Key • The western shore of Key Biscayne • Bear Cut Preserve • The Cocoplum Mangrove Preserve • Matheson Hammock Park • R. Hardy Matheson Preserve • Chapman Field Park • The Deering Estate and Chicken Key • Royal Harbor Yacht Club and Paradise Point south shoreline (privately owned) • Mangrove and scrub mangroves within and adjacent to Biscayne National Park and Everglades National Park to the landward extent of the mangroves	*Natural systems (including mangrove wetlands) provides natural storm surge attenuation.*

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	• Mangrove and scrub mangroves within and adjacent to Card Sound, Manatee Bay, Florida Bay and Barnes Sound to the landward extent of the mangroves In these areas no cutting, trimming, pruning or other alteration including dredging or filling of mangroves shall be permitted except for purposes of surveying or for projects that are: (1) necessary to prevent or eliminate a threat to public health, safety or welfare; (2) water dependent; (3) required for natural system restoration and enhancement; or (4) clearly in the public interest; and where no reasonable upland alternative exists. In such cases, the trimming or alteration shall be kept to the minimum, and done in a manner, which preserves the functions of the mangrove system, and does not reduce or adversely affect habitat used by endangered or threatened species.	

Objective CM-2
Protect, conserve or enhance beaches and dunes and offshore reef communities.

Policy		***Notation***
CM-2B	Beaches shall be stabilized by planting, maintaining and monitoring appropriate dune vegetation, and by providing elevated footpaths or other means of traversing the dune without contributing to erosion. All subsequent activities or development actions on, or bordering the restored beach, shall be compatible with and contribute to beach maintenance.	*Promotes coastal protection.*

Objective CM-4
Miami-Dade County shall continue to work in cooperation with other appropriate agencies to increase the acreage, restoration and enhancement of publically owned benthic, coastal wetland and coastal hammock habitat. Endangered and threatened animal species and coastal wildlife shall be protected and coastal habitats restored and managed to improve wildlife values.

An added benefit of restoration and enhancement of these areas is that it serves as a natural buffer for storm surge and sea level rise. Studies to determine the projected impacted of sea level rise and climate change on these natural areas would be beneficial to determine if additional measures can be taken.

Objective CM-5
Miami-Dade County shall increase the amount of shoreline devoted to water-dependent, water-related, and publicly accessible uses.

Policy		***Notation***
CM-5C	Miami-Dade County shall continue to place a high priority on the acquisition of coastal lands for use as parks and preserves.	Promotes coastal protection.
CM-5F	The siting of public or private water dependent facilities shall be based on upland, shoreline and in-water characteristics, as well as submerged land ownership. At a minimum, the following general criteria shall be used to determine the appropriateness of sites within the Coastal Area for marina/water-dependent projects: (d) Provide a hurricane contingency plan.	Area for consideration: Where are the hurricane contingency plans submitted and who reviews them? Is this a one- time hurricane plan or a requirement that plans are updated? RER comment: Certain marine facilities are required to obtain a yearly Marine Operation Permit (MOP) from DERM. The thought was coordinate this with the MOP to have the facilities provide us guidance on their plans in the event of a hurricane. A sample form is shown in UF-IFAS/Seagrant's publication "Hurricane Manual for Marine Interests" (available on pg. 14 at http://miami-dade.ifas.ufl.edu/pdfs/disaster/HurricaneManual1.pdf) to foster awareness of the importance of preparing for hurricanes. In addition, these marine facilities could also be mapped, which would aid in post-hurricane recovery in locating boating and marine damage.

Objective CM-6
Miami-Dade County shall preserve traditional shoreline uses and minimize user conflicts and impacts of man-made structures and activities on coastal resources.

Policy		Notation
CM-6A	By 2017, Miami-Dade County shall seek funding to study protection of traditional public uses of the shoreline and water, user conflicts, and impacts of construction and activities on coastal resources, including potential solutions.	*Promotes mitigation and future hazard impacts.*

Objective CM-7
Improve the public's awareness and appreciation of Miami-Dade County's coastal resources and water-dependent and water-related uses.

Policy		Notation
CM-7D	Miami-Dade County shall continue its public involvement in natural areas restoration including removing invasive exotic plant species, reseeding or replanting native vegetation, enhancing habitat, monitoring wildlife, and re-nourishing dunes in coastal County parks.	*Promotes mitigation.*

Objective CM-8
The existing time period required to complete the evacuation of people from flood vulnerable Coastal Areas and mobile homes prior to the arrival of sustained tropical storm force winds shall be maintained or lowered. Shelter capacity within Miami-Dade County shall be increased as necessary to provide a safe haven for storm evacuees.

Policy		Notation
CM-8A	Miami-Dade County shall annually review and update, if necessary, the hurricane evacuation procedure section of its Comprehensive Emergency Management Plan (CEMP) and maintain or enhance, as necessary, the resources and capabilities of the Miami-Dade Office of Emergency Management to provide effective implementation of the CEMP.	*Area for consideration: when new construction of multi-family dwellings or business parks occurs, notify emergency management so outreach on hazards and protective measures can occur.* *RER comment: OEM is notified of all public hearings for CDMP amendments, which can change the land use and possibly also the usage and expected population. For permits for construction and certificates of occupancy, coordination with the County's Building department is needed. However, this only covers the County's jurisdiction over property located in unincorporated Miami-Dade County, as municipalities have their own jurisdiction*

Policy		Notation
		over land use and zoning, should also coordinate with the municipalities' building departments. *Monitor the evolution of population density to better plan for supportive resources.*
CM-8B	Miami-Dade County shall request that State government better assist Miami-Dade County with funding emergency planning and operations, including future State funding for the preparation of hazard mitigation and post-disaster redevelopment plans. To reflect the larger scale and complexity of planning, preparation, response, and recovery within large counties, Miami-Dade County shall request the State to revise its current funding distribution formula for natural disaster planning and emergency operations from the present equal distribution of monies between the 67 Florida Counties to a proportionate distribution formula reflecting population.	
CM-8C	Miami-Dade County shall develop a public education program prior to the hurricane season to notify households and operators of hotels, motels or time-share condominiums in flood vulnerable Coastal Areas of their need to evacuate and seek safe shelter in the event of a hurricane. The public education program should also be utilized to disseminate emergency preparedness information. Emergency information shall be printed in the community interest section of the telephone book.	*Area for consideration: Consistency in language utilized for other planning purposes such as the Coastal High Hazard and Hurricane Vulnerable Zones.* *Engage CRS community planners to assist with outreach for flood issues and education on insurance and mitigation measures.* *Update the reference to the telephone book or include other more modern forms of media.* *RER Comment: The last update of the comprehensive plan kept the language intact as to keep in mind vulnerable populations who may not have immediate internet access. The next comprehensive plan update can add in terms pertaining to the internet or to social media.*
CM-8D	Miami-Dade County shall encourage its residents to be better prepared and more self-reliant in the event of a hurricane, including planning ahead for early evacuation, sheltering with family or friends living outside evacuation areas, or enrolling in County programs such as the Emergency and Evacuation Assistance Program, residential shuttering program, or public safety alert programs.	
CM-8E	Miami-Dade County shall establish and maintain mutual aid agreements and contracts that would facilitate and expedite post-disaster emergency response and recovery.	

Policy		Notation
CM-8F	If any update of the hurricane evacuation study shows an increase or projected expansion in the time required to safely clear the roadways in and from areas subject to coastal flooding, measures shall be undertaken to maintain the existing evacuation period. These measures may include programming transportation improvements to increase the capacity of evacuation routes, eliminate congestion at critical links and intersections, adjust traffic signalization or use directional signage, public information programs, or amendments to the Comprehensive Development Master Plan to reduce permitted densities in the areas subject to coastal flooding.	*Area for consideration: Ensure the new updates made in 2013 have been incorporated into the CDMP.*
CM-8G	The existing network of designated major evacuation routes shall be kept up-to-date utilizing the regional hurricane evacuation study or the best information available to Miami-Dade County.	*Area for consideration: Evaluation of these routes in relation to current and future hazards and identification of potential mitigation measures.*
CM-8H	The Transportation Improvement Program shall include improvements to roadways that would eliminate severe congestion on major evacuation routes and critical links and intersections. All future improvements to evacuation routes shall include remedies for flooding. All local bridges shall be rated by the Florida Department of Transportation for structural and operational sufficiency. All State and local bridges with unsatisfactory sufficiency ratings shall be programmed for improvements, or where necessary, replacement.	*Area for consideration: also link this to TE-1H the consideration of climate change adaptation* *OEM developed a bridge board in WebEOC to track the status of bridges in the county, primarily the drawbridges and bridges that are evacuation routes. This should be updated to reflect any concerns with the safety or weight restrictions for bridges and bridges under construction should be notated in this system to ensure that during activations agencies in the EOC are aware of any evacuation concerns/challenges.*
CM-8I	The Miami-Dade County Transit Agency shall allocate sufficient buses to safely evacuate areas with large concentrations of households without autos such as south Miami Beach. The Office of Emergency Management and Miami-Dade County Transit shall study options for securing drivers.	
CM-8J	The Office of Emergency Management (OEM) shall maintain and annually update a listing of people with special needs to plan for the mobilization required to safely evacuate and shelter those who may need assistance due to physical or medical limitations. All public shelters should be in compliance with the Americans With Disabilities Act of 1990. Special shelters within south, central, and north Miami-Dade County should be medically staffed and equipped for those persons in need.	
CM-8K	Miami-Dade County shall annually evaluate the need for expansion of its shelter capacity and provide for the projected number of hurricane evacuees as determined by the best information available. Existing and proposed future public facilities, such as schools, shall be inventoried to identify and designate additional structures suitable for shelters. Public facilities that are used permanently for public shelters shall be listed, mapped, and publicized.	*Sites that are identified in need of mitigation measures should be put into the LMS Project List. Currently there are a number of projects listed for Arnold Hall.*

Policy		Notation
CM-8L	Miami-Dade County shall examine incentives for using privately owned buildings for public shelters and incorporate into its emergency plans a strategy for providing post-disaster shelter and temporary housing to large numbers of disaster victims. Miami-Dade County shall examine the feasibility of requiring, or adding as an option for new residential construction, a structurally reinforced "safe room" for use as a private storm shelter. For existing residences, Miami-Dade County shall encourage retrofitting a safe room on a voluntary basis. Miami-Dade County shall also explore incentives and other measures to encourage the wind and/or flood hardening of structures.	*Area for consideration: provide guidance on how a safe room could be retrofitted. FEMA has some publications that can be used to promote this.* *RER comment: Should coordinate this with the County's Building Department.*
CM-8N	No new mobile home parks shall be allowed in areas subject to coastal flooding and any new mobile home parks outside the areas subject to coastal flooding shall include one or more permanent structures in accordance with current and applicable building and construction codes for use as shelter during a hurricane. All mobile home park residents, regardless of their location, shall be advised to evacuate in the event of a hurricane.	
CM-8O	Trees susceptible to damage by sustained tropical storm force winds (39 knots) shall be removed from the rights-of-way of evacuation routes and replaced with suitable, preferably native, species. To strengthen trees planted along roadways and reduce future breakage and blowdowns, the County shall implement an ongoing tree maintenance program of regular trimming and fertilizing and encourage other governments responsible for landscaped roadways to adopt similar tree maintenance programs	*Area for consideration: Ensure other county programs that encourage tree planting include information regarding best locations to plant trees to minimize damages to underground and overhead infrastructure.* *RER comment: See previous comment under CON-8L.*

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Objective CM-9
Miami-Dade County shall continue to orient its planning, regulatory, and service programs to direct future population concentrations away from the Coastal High Hazard Area (CHHA) and FEMA "V" Zone. Infrastructure shall be available to serve the existing development and redevelopment proposed in the Land Use Element and population in the CHHA, but shall not be built, expanded, or oversized to promote increased population in the coastal high-risk area.

Policy		*Notation*
CM-9A	Development and redevelopment activities in the Coastal High Hazard Area (CHHA), Hurricane Evacuation Zone A, and the Hurricane Vulnerability Zone1 Hurricane Zone B shall be limited to those land uses that have acceptable risks to life and property. The basis for determining permitted activities shall include federal, State, and local laws, the pre-disaster study and analysis of the acceptability of various land uses reported in the County's Comprehensive Emergency Management Plan required by Policy CM-10A, when approved, and the following guidelines: i) Discourage development on the CHHA, including the barrier islands and shoreline areas susceptible to destructive storm surge; ii) Direct new development and redevelopment to high ground along the Atlantic Coastal Ridge and inland environmentally suitable lands; iii) Maintain, or reduce where possible, densities and intensities of new urban development and redevelopment within Hurricane Evacuation Zone A to that of surrounding existing development and zoning; iv) Prohibit construction of new mobile home parks and critical facilities in Hurricane Evacuation Zone A; v) Prohibit Land Use Plan map amendments or rezoning actions that would increase allowable residential density in the FEMA "V" Zone, the CHHA or on 1 According to 92.0256, F.A.C., Hurricane Vulnerability Zones are defined as areas delineated in the regional or local evacuation plan as requiring evacuation in the event of a 100-year or category three hurricane event. In Miami-Dade County, the Hurricane Vulnerability Zones are considered Hurricane Evacuation Zones A and B, land seaward of the Coastal Construction Control Line (CCCL) established pursuant to Chapter 161, F.S.; and, vi) Continue to closely monitor new development and redevelopment in areas subject to coastal flooding to implement requirements of the federal flood insurance program.	*Area for consideration: This needs to be evaluated as per the comments in the FAC 9J-2.0256 the criteria that OEM uses to designate evacuation zones is based on a higher threshold of water than the data compiled in the evacuation studies. In 2013 a major change in the extent of areas where storm surge was modeled covered a more extensive portion of the county and the areas at risk from surge for a category one shifted to the southern portions of the county.* *Incorporate Adaptation Action Areas into areas for restricted or no development and considerations for post disaster redevelopment.* *Update this section to include Zones A, B and C as the storm surge zones have increased to five from three.* *RER comment: See previous comment at the introduction of this Element. This requires further discussion as to the exact terminology, as this and several other policies reference "evacuation zones" while OEM now has five "storm surge zones".*

Policy		Notation
		Utilize modeling done by PWWM for design storms with future development to identify future concerns, integrating new modeling to be done for sea level rise.
CM-9B	Land use amendments to the Comprehensive Development Master Plan shall not be approved in Coastal High Hazard Areas if they would decrease Levels of Service on roadways below the LOS standards established in the Transportation Element.	
CM-9C	Miami-Dade County shall consider undeveloped land in areas most vulnerable to destructive storm surges for public or private recreational uses and open space, including restoration of coastal natural areas.	*Promotes mitigation.* *Area for consideration: incorporate also areas identified as Adaptation Action Areas and those identified as at potential risk for climate change impacts*
CM-9D	New facilities which must function during a hurricane, such as hospitals, nursing homes, blood banks, police and fire stations, electrical power generating plants, communication facilities and emergency command centers shall not be permitted in the Coastal High Hazard Area and when practical, shall not be located in the Hurricane Vulnerability Zone.	*Promotes mitigation of future risk.* *Area for consideration: Also consider analysis as discussed in LU-3G and adaptation of the built environment in LU-3I for these facility types.*
CM-9E	The construction or operation of new non-water dependent industrial or business facilities that would generate, use or handle more than 50 gallons of hazardous wastes or materials per year shall be prohibited in the Coastal High Hazard Area. Miami-Dade County shall seek funding to wind- and flood-harden existing public facilities of this type.	*Promotes mitigation*
CM-9F	Public expenditures that subsidize new or expanded infrastructure that would encourage additional population growth in the Coastal High Hazard Areas shall be prohibited. New public facilities shall not be built in the Coastal High Hazard Area, unless they are necessary to protect the health and safety of the existing population or for the following exceptions: public parks, beach or shoreline access; resource protection or restoration; marinas or Ports; or roadways, causeways and bridges necessary to maintain or improve hurricane evacuation times. Potable water and sanitary sewer facilities shall not be oversized to subsidize additional development in the Coastal High Hazard Area.	*Area for consideration: Links to LU-3! And practice of adapting the built environment with consideration of climate change*
CM-9G	Miami-Dade County shall utilize its Geographic Information System and other forms of mapping of public buildings and infrastructure within the Coastal High Hazard Area and Hurricane Vulnerability Zone to facilitate and expedite pre- and post-disaster decision-making.	
CM-9H	Rise in sea level projected by the federal government, and refined by the Southeast Florida Regional Climate Change Compact, shall be taken into consideration in all future decisions regarding the design, location, and development of infrastructure and public facilities in the County.	*OEM is currently working with WASD for the roll out of the ground and surface water interaction model that will provide for additional information/maps for how sea level rise may impact different areas of our community.* *OEM is incorporating climate change and sea level rise into the Threat Hazard Identification and Risk Assessment (THIRA).*

Policy		Notation
		The LMS has added climate change and sea level rise in the Benefit Cost Review of projects. *Unified SLR Projection of Compact being revisited and should be confirmed as is or refined by end of 2014/beginning of 2015.*

Objective CM-10
Reduce the exposure of life and property in Miami-Dade County to hurricanes through the planning and implementation of pre-disaster hazard mitigation measures. Pre-disaster planning for post-disaster redevelopment shall direct population concentrations away from the undeveloped designated Coastal High Hazard Areas and away from identified high-risk areas during post-disaster redevelopment.

Policy		Notation
CM-10A	Miami-Dade County shall update its Comprehensive Emergency Management Plan every two years to provide comprehensive pre-disaster planning for pre- and post-disaster activities, development, and redevelopment.	
CM-10B	During pre-disaster planning, hazard mitigation proposals shall be developed by Miami-Dade County in conjunction with other agencies and, where appropriate, included in the Comprehensive Emergency Management Plan or the Comprehensive Development Master Plan.	*The LMS Project List is actively updated and tracked. A review of the CDMP and other community planning documents is being conducted to better integrate our efforts and work collaboratively.*
CM-10C	Prior to post-disaster redevelopment, sources of funds to reconstruct, relocate, or construct new public buildings and infrastructure, consistent with Policy CM-9F, shall be identified to support and expedite the demands generated by post-disaster reconstruction.	*Area for consideration: incorporation and consideration for post disaster redevelopment in areas designated as Adaptation Action Areas.*
CM-10D	Applications for comprehensive plan amendments, rezoning, zoning variances or subdivision approvals for all new development in areas subject to coastal flooding shall be reviewed for emergency evacuation, sheltering, hazard mitigation, and post-disaster recovery and redevelopment.	
CM-10E	During pre-disaster planning, Miami-Dade County shall determine the feasibility of relocating public buildings and infrastructure away from the Coastal High Hazard Area and Hurricane Vulnerability Zone, particularly the FEMA "V" Zone, except as provided in Policy CM-9F. The County shall develop a formal process and guidelines for evaluating alternatives to the replacement or repair of public facilities damaged by hurricanes such as abandonment, relocation, or repair and reconstruction with structural modifications. The costs; environmental impacts; mitigation effects; community impacts; economic development issues; employment effects; legal issues; consistency with state, regional	*Promotes mitigation*

Policy		Notation
	and local plans; time period for implementation; and availability of funds should be evaluated for each alternative.	
CM-10-F	The Coastal High Hazard Area (CHHA) and Hurricane Vulnerability Zone (HVZ) boundaries shall be delineated on maps for the unincorporated areas as public information maintained by Miami-Dade County. The CHHA shall be identified using the Sea, Lake, Overland Surges from Hurricanes (SLOSH) model and shall be depicted as one of the maps in the Future Land Use Map series. Geographic Information Systems (GIS) and other forms of mapping will be used for the purpose of public information and government planning, administration, emergency management, zoning, and location of public facilities and services in the unincorporated areas of Miami-Dade County. This mapping shall be maintained by the Department of Regulatory and Economic Resources, the Office of Emergency Management, and other appropriate departments and updated as needed. The SLOSH model shall be used to identify the Coastal High Hazard Areas. The Office of Emergency Management shall manage and update the SLOSH model and hurricane evacuation studies for Miami-Dade County and shall work with the South Florida Regional Planning Council to ensure that such maps and studies are done in a consistent manner, and that the methodology used for modeling storm surge is that used by the National Hurricane Center.	*Area for consideration: As per other notations regarding the evacuation study and designation of evacuation zones by OEM this needs to be looked at.*
CM-10G	In advance of major storms, Miami-Dade County shall identify and map areas in coordination with the Florida Department of Environmental Protection suitable and unsuitable for post-disaster relief staging areas, debris storage, and disposal or burning. Debris shall not be located in well field protection areas, wetlands, parklands with adjacent natural areas, Natural Forest Communities, historic sites, and designated or known archaeological sites as determined by the County archaeologist, or other areas identified as unsuitable for such activities. Debris shall not be burned in the air sheds of Biscayne National Park and Everglades National Park.	*Pre-planning in areas of lower risk and suitable for disaster response and recovery operations.*
CM-10H	Miami-Dade County shall request the South Florida Water Management District (SFWMD), the U.S. Army Corps of Engineers, and the Federal Emergency Management Agency (FEMA) to develop interactive computer modeling capabilities between the Sea and Lake Overland Surge from Hurricanes (SLOSH) and inland flood models.	*Area for consideration: As the SFWMD plays such major role in local drainage control it is paramount that they assist with the provision of maintenance plans for credit in the CRS.*
CM-10I	Miami-Dade County shall seek funds to conduct a comprehensive marine hurricane contingency study to: i.) Describe what owners in all the major public and private marinas in Miami-Dade County expect to do with their boats in the event of a hurricane; ii.) Identify areas of potential conflicts and needs; iii.) Recommend appropriate solutions, such as emergency mooring systems; iv.) Seek coordinated and multi-jurisdictional adoption and enforcement of the recommended solutions, and if applicable; v.) Seek funding to implement capital improvement projects.	*This is mainly to support any studies or grants sought by PROS, DERM, UF-IFAS or SeaGrant in support of these activities.*

Policy		*Notation*
CM-10J	All facilities subject to DERM's annual marine facilities operating permit shall provide as a part of their renewal a hurricane contingency plan.	*Area for consideration: Whom does this get submitted to and who reviews it?* *RER comment: See RER remarks under CM-5F.*

Objective CM-11
During post-disaster recovery and redevelopment, Miami-Dade County shall implement its Comprehensive Emergency Management Plan (CEMP) and applicable CDMP policies and assist hurricane damaged areas with recovery and hazard mitigation measures that reduce the potential for future loss of life and property.

Policy		*Notation*
CM-11A	To facilitate post-disaster recovery and redevelopment following a major hurricane and consistent with available personnel and funding, Miami-Dade County shall implement the County's Comprehensive Emergency Management Plan as updated pursuant to Policy CM-10A.	*A new damage assessment system to identify the effects of a disaster on the local community to include the physical, economic, human needs, the environmental impacts is being implemented in 2014.*
CM-11B	During post-disaster recovery periods, the Miami-Dade County Public Works and Waste Management Department, the Office of Emergency Management, the Department of Regulatory and Economic Resources and other appropriate agencies shall identify damaged areas requiring rehabilitation or redevelopment; implement the redevelopment plan along with public input to reduce or eliminate future exposure of life and property to future disasters; analyze and recommend to the County Commission hazard mitigation options for damaged areas and public facilities; and recommend amendments, if needed, to the Miami-Dade County Comprehensive Development Master Plan.	*Areas to be identified using the new Impact Assessment system.* *In the event the Recovery Plan is activated RSF Land Use will work with and through the appropriate partners to implement the redevelopment plan to reduce or eliminate future exposure of life and property to future disasters; analyze and recommend to the County Commission hazard mitigation options for damaged areas and public facilities; and recommend amendments, if needed, to the Miami-Dade County Comprehensive Development Master Plan.*
CM-11C	If rebuilt, structures with damage exceeding 50 percent of pre-storm market value shall be reconstructed to ensure compliance with the High Velocity Hurricane Zone portion of the Florida Building Code and the requirements of Chapter 11-C of the Miami-Dade County Code for structures located in the "V" Zone and the 100-year floodplain. Miami-Dade County shall implement uniform spatial and engineering standards for determining if substantial reconstruction is required.	*Promotes mitigation*
CM-11D	If an area in need of major post-disaster redevelopment is determined to be a high-risk area for development, permitted post-disaster densities and intensities shall not exceed the permitted pre-storm densities and intensities.	*Area for consideration: incorporation of Adaptation Action Areas to limit or restrict reconstruction in those areas. Tie into LU-3E.*
CM-11E	Miami-Dade County shall give priority to the public acquisition of properties in the HVZ and, in particular, in the CHHA that have been destroyed as a result of a hurricane. Miami-Dade County shall identify and encourage potential federal and state acquisition programs to assist with the purchase of these properties and for possible relocation of facilities on these properties to outside of the CHHA.	*Area for consideration: incorporation of Adaptation Action Areas*

Policy		Notation
CM-11F	During post-disaster redevelopment, structures which suffer repeated damage to pilings, foundations, or load bearing walls shall be required to rebuild landward of their present location and/or be structurally modified to meet current building codes.	*Area for consideration: Consider future risk. Tie into LU-3E*
CM-11G	During post-disaster redevelopment the capacities of evacuation routes shall be improved through redesign and reconstruction of the street network, signage, and expansion of public transportation systems and services.	*Area for consideration: Consider future risk and climate change impacts.*

Objective CM-12
Protect, preserve, and sensitively reuse historic resources and increase the number of locally designated historic sites and districts and archaeological sites and zones in the coastal area.

Policies

Policy		Notation
CM-12A	In addition to the policies contained in the Land Use Element, the County shall establish performance standards for the development and sensitive reuse of historic resources in the Coastal Area.	*Helps preserve tourism and economic value of historic resources.*
CM-12B	The County shall work with the appropriate municipalities to ensure that historic structures included within designated historic districts are not destroyed unless they are damaged by a hurricane or otherwise rendered beyond reasonable use and repair.	*Area for consideration: work with LMS group to identify mitigation measures and guides for historic structures*
CM-12C	The County shall improve the protection of historic resources from the damage caused by natural disasters and recovery operations by implementing pre- and post-storm hazard mitigation measures and code enforcement.	*A number of stakeholders have mitigation projects identified for historic structures.*

Intergovernmental Coordination Element

GOAL
USE INTERGOVERNMENTAL COORDINATION AS A MAJOR MEANS OF ENSURING CONSISTENCY AMONG LOCAL, COUNTY, REGIONAL AND STATE GOVERNMENT PLANS AND POLICIES AND OF IMPLEMENTING MIAMI-DADE COUNTY'S COMPREHENSIVE DEVELOPMENT MASTER PLAN.

Objective ICE-1
Maintain and improve coordination of planning, development and impact assessment among governmental entities with applicable responsibilities within Miami-Dade County's area of concern

Policy		*Notation*
ICE-1D	In subsequent comprehensive plans, amendments and/or updates, seek to consider local, County agencies and regional comprehensive plans as necessary to better reflect Regional/County/City division of local and area wide comprehensive planning, development regulation and services provision, for consistency with the County's CDMP.	*Review of various plans for LMS five year update(July 2014)*
ICE-1T	During pre-development program planning and site selection activities, Miami-Dade County Internal Services Department and other facility and service providers shall coordinate with the Miami-Dade County Public School System to consider all reasonable opportunities to collocate new libraries, parks, and other public facilities with public schools, where compatible and the potential exists to create logical focal points for community activity. Early review and coordination activities will be modified as necessary to timely consider these potentials.	*Area for consideration: Identification of potential shelter locations, if not for hurricanes, for other local disasters that may require temporary sheltering.*

Objective ICE-3
Encourage the use of inter-local agreements and municipal boundary changes to improve coordination of local development and the effective and efficient delivery of local services.

Policy		*Notation*
ICE-3G	Maintain and utilize the authority provided in the Miami-Dade County Home Rule Charter for the County to maintain, site, construct and/or operate public facilities in incorporated and unincorporated areas of the County. Furthermore, in order to protect and promote the health, safety, order, convenience, and welfare of the residents, the County shall retain regulatory control over land use, development and service delivery for all facilities of countywide significance as listed in **Table 3.** While the County reserves all rights provided by the Miami-Dade County Home Rule Charter, when siting facilities of countywide significance within the boundaries of an incorporated municipality, the County will consider the municipal comprehensive plan and development regulations, as well as the need for the public facility and suitable alternative locations. The County shall at a minimum retain the authority to enforce covenants accepted in connection with Comprehensive Development Master Plan (CDMP) or Zoning approvals to provide facilities of countywide significance in areas subsequently incorporated, or annexed into existing municipalities.	*Area for consideration: Currently the CRS program only allows for individual jurisdictions to participate. Due to our dependent relationship with SFWMD and the risk that all of our communities face with flooding, a strategy to try to get our entire County to be seen as one community in relation to floodplain management challenges should be investigated.* *Parks notate in Table 3 (abridged) below are not currently counted towards open spaces for CRS communities as they are county parks.*

Table 3
Facilities of Countywide Significance

Department/Facility	Address	Municipality If Applicable
Parks, Recreation and Open Spaces Department (PROS)		
Metropolitan Parks – As located by PROS		Various
Natural Area Preserves – As located by	Various	
Greenways – As located by PROS		Various
Special Activity Areas – As located by PROS	Various	
District Parks – As located by PROS		Various
Vizcaya Museum and Gardens	3251 South Miami Ave	Miami
Deering Estate	16701 SW 72 Avenue	Palmetto Bay
Miami-Dade Zoological Park and Gardens (aka Zoo Miami)	12400 SW 152 Street	Miami-Dade
Zoo Miami Entertainment Area I	12400 SW 152 Street	Miami-Dade
Zoo Miami Entertainment Area II	12300 SW 152 Street	Miami-Dade

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Policy		*Notation*
ICE-5F	The County shall continue participation in the Southeast Florida Regional Climate Change Compact and shall coordinate with other agencies, local municipalities, and the private sector to develop initiatives and goals to address climate change mitigation and adaptation. Climate change related goals that support regional climate change objectives shall be integrated into the CDMP as appropriate.	Promotes integration and collaboration.
ICE-5G	All County departmental master plans and strategic business plans shall include and prioritize climate change mitigation and adaptation strategies. Climate change related amendments shall be recommended through the next feasible, regularly scheduled amendment process or departmental master plan update for each respective planning document. a) Each County department shall consider extending planning horizons (i.e. 30, 50, 75-year plans) as appropriate to adequately address the projected long-term climate change impacts into resource allocation recommendations. b) All new departmental climate change policies and programs shall be monitored for effectiveness.	OEM adding climate change to the THIRA, which is the threat and risk assessment that is referenced by the CEMP and the LMS.

Objective ICE-8
Ensure adequate and timely shelter within the region for those residing in hurricane evacuation areas by encouraging all levels of government to work together.

Policies

Policy		*Notation*
ICE-8A	Encourage local governments and federal, State and regional agencies to protect the population by developing a system of emergency communication on roadways including electronically-controlled message signs and a radio station to broadcast highway conditions.	*Supports evacuation and emergency messaging.*
ICE-8B	Promote the establishment and maintenance of mutual aid agreements among local governments to protect the population.	Promotes integration and coordinated response, maximizing resources and minimizes duplication.
ICE-8C	The Miami-Dade County Department of Regulatory and Economic Resources and the Office of Emergency Management shall facilitate the coordination of emergency planning issues by increasing interaction	*The Whole Community Infrastructure Planner/LMS Chair is working more closely with RER in relation to integration of the CDMP into the LMS and the Adaptation Action Areas.*
ICE-8D	Encourage local, regional, State and federal agencies and organizations to work together in evaluating the existing criteria for designating places for shelter and reaching consensus. Such criteria should include but not be limited to: locations of shelter; structural integrity of shelter; space provided per person; and availability of essential provisions.	*Area for consideration: Identification of potential shelter locations, if not for hurricanes, for other local disasters that may require temporary sheltering. This has been announced in a municipal quarterly meeting by the Human Services EM Coordinator*
ICE-8E	Promote the coordination by federal, State, regional and local agencies of a public information and awareness program concerning various types of hazards and appropriate response.	*Area for consideration: Development of a PPI (Activity 330) for the CRS program and integration of annual events that OEM participates in.*

Capital Improvement Element

GOAL
MIAMI-DADE COUNTY SHALL PLAN FOR AND MANAGE IN A FISCALLY PRUDENT MANNER, ITS FACILITIES AND INFRASTRUCTURE IN ORDER TO ADEQUATELY SERVE CURRENT AND NEW RESIDENTS WHILE EFFICIENTLY USING AND MAINTAINING EXISTING PUBLIC INVESTMENTS, AND MAKING TIMELY PROVISION OF REQUIRED NEW CAPITAL INVESTMENT.

Objective CIE-2
Development in coastal high hazard areas will be retained at permitted levels, as of July 1, 1989.

Policies

Policy		*Notation*
CIE-2A.	Public funds will not be used to subsidize increased overall density or intensity of urban development in coastal high hazard areas. However, public beach, shoreline access, resource restoration, port facilities or similar projects may be constructed.	*Mitigation through density control.*
CIE-2B.	Replacement of infrastructure in coastal high hazard areas will be at or below existing service capacity except where such replacement will improve hurricane evacuation time, mitigate storm damage, or meet regulatory requirements.	*Area for consideration: review the CHHA in relation to the new storm surge planning zones. Incorporate future risk of climate change impacts* *RER: Will be addressed in future update and other related policies.*
CIE-2C.	The Coastal High Hazard Area (CHHA) is defined as areas seaward of the elevation of the category 1 storm surge line, as established by a Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model.	*Area for consideration: review the CHHA in relation to the new storm surge planning zones.*

Objective CIE-3
CDMP land use decisions will be made in the context of available fiscal resources such that scheduling and providing capital facilities for new development will not degrade adopted service levels.
Policies

Policy		Notation
CIE-3A.	The capital facilities and infrastructure implications of land use and development plans and implementation will be analyzed and set forth with attention to the following: 1. Safety improvements and elimination of hazard.	*Promotes mitigation opportunities.*

Objective CIE-5
Development approvals will strictly adhere to all adopted growth management and land development regulations and will include specific reference to the means by which public facilities and infrastructure will be provided.

Policy		Notation
CIE-5A.	It is intended that previously approved development be properly served prior to new development approvals under the provisions of this Plan. First priority will be to serve the area within the Urban Infill Area and Transportation Concurrency Exception Areas. Second priority shall be given to serve the area between the Urban Infill Area and the Urban Development Boundary. And third priority for investments for services and facilities shall support the staged development of the Urban Expansion Area (UEA). Urban services and facilities which support or encourage urban development in Agriculture and Open Land areas shall be avoided, except for those improvements necessary to protect public health and safety and which service highly localized needs. Areas designated Environmental Protection shall be particularly avoided	*Area for consideration: Analyze future risk with climate change impacts and design storm maps that show potential flooding implications in relation to future development plans.*

Community Health and Design

GOAL
TO DEVELOP SUSTAINABLE COMMUNITIES THROUGH DESIGN AND FOOD ACCESS POLICIES THAT IMPROVE THE HEALTH OF RESIDENTS BY INCREASING PHYSICAL ACTIVITY, ASSURING SAFETY, PROVIDING A NUTRITIONAL FOOD ENVIRONMENT AND PROTECTING NATURAL SYSTEMS.

Policy		*Notation*
CHD-5A	The County shall investigate onsite stormwater management alternatives, such as bio-swales and green roofs, which reuse stormwater and reduce the rate of runoff from impervious surfaces.	*Area for consideration: Development of onsite stormwater management for residents. Can residents in areas with no stormwater drains proactively do something to help reduce their flood risk and their flood insurance costs.* *RER: May need coordination with PWWM, DERM on this.*
CHD-5B	Enhance street cross section design standards to incorporate planting strips for both stormwater percolation and tree planting to provide shade.	*Promotes flood mitigation.*

Miami –Dade Emergency Management Recovery Plan

The Miami-Dade County Office of Emergency Management in 2016 revised the Recovery Plan. The new plan mirrors the National Disaster Recovery Framework. This plan provides an operational overview and organizational framework that will be implemented during all phases of the disaster recovery process. It details a coordinated roadmap for recovery operations, identifies the operational concepts, and provides an overview of organizational structures, which will bridge the gap between the Comprehensive Emergency Management Plan (CEMP) and the Post-Disaster Redevelopment Plan (PDRP) if necessary. The Recovery Plan addresses policies that promote an expedited, all-hazards disaster recovery process among all stakeholders including public sector agencies and organizations; non-profit and faith-based organizations; municipal jurisdiction and independent districts including water control districts, fire districts, and school districts.

As part of this plan 12 Recovery Support Function (RSF) annexes have been created. These annexes include:

- RSF Economic
- RSF Environment
- RSF Finance
- RSF Health
- RSF Housing
- RSF Infrastructure
- RSF Intergovernmental
- RSF Land Use
- RSF Mitigation/LMS
- RSF Public Information/Outreach
- RSF Social Services
- RSF Transportation

The RSFs are groups of agencies and organizations that share similar responsibilities into an RSF. During the recovery phase these agencies and organizations will work together to accomplish the missions assigned to their RSF. The RSF Mitigation Annex will initiate and encourage meaningful actions to reduce or eliminate the long-term risk to human life and property from natural hazards throughout the post-disaster recovery and reconstruction process.

During the recovery phase this RSF will serve as the bridge between the Local Mitigation Strategy Working Group and the other RSFs. They will be responsible for working in partnership with the RSFs to incorporate mitigation into any recovery efforts, this can include:

- Redevelopment of coastal areas that experienced flooding
- Seeking and procuring alternate funding streams for rebuilding efforts
- Incorporating mitigation best-practices in new housing developments
- Educating the public on mitigation steps they should take at their homes and businesses

Miami-Dade 2045 Long Range Transportation Plan (LRTP)

The Miami-Dade 2045 Long Range Transportation Plan (LRTP), is adopted to guide transportation investment in the County for the next 25 years. The Metropolitan Planning Organization Governing Board just adopted the 2045 LRTP in October 2019. The LRTP is a strategic and comprehensive plan that identifies highway, transit, freight, and non-motorized transportation improvements. The Plan addresses mobility, safety, security, resiliency, and sustainability in its twenty-year horizon while also considering the impact of emerging technologies and innovation on the County's existing and future transportation infrastructure

This plan may be found at: http://eresources.gfnet.com/docs/md2045/Miami-Dade2045LRTP.pdf

The plan addresses mitigation in several sections, which include:

Goal 3 Plan Process-Update: Security Improvements
This section addresses the benefits of a secure transportation system. This involves the protection of travelers, commerce and the transportation infrastructure itself from injury, loss of life, damage and/or destruction from acts of terrorism and natural disaster. The LRTP addresses how the U.S. Department of Homeland Security's National Infrastructure Protection Plan governs how the County classifies and addresses threats to the transportation system through the goals of this plan, which are:

- Goal 1: Manage the security risks to the physical, human and cyber elements of critical transportation infrastructure.
- Goal 2: Employ the sector's response, recovery and coordination capabilities to support whole community resilience.
- Goal 3: Implement processes for effective collaboration to share mission-essential information across sectors.
- Goal 4: Enhance the all-hazards preparedness and resilience of the global transportation system.

Also discussed is the U.S. Department of Transportation's Transportation Systems Sector-Specific Plan (TSSSP) which guides and integrates efforts to secure and strengthen the resilience of transportation infrastructure and to describe how this sector contributes to the overall security and resilience of the nation's critical infrastructure. The TSSSP is aligned with the National Preparedness Systems mission areas, which are:

- Protection: Aimed at reducing or managing the risk to critical transportation infrastructure.
- Prevention: Activities taken in response to an imminent terrorist attack.

- Mitigation: Actions aimed at reducing the consequences of an incident and identifying best practices to strengthen the transportation infrastructure.
- Response: Involves the coordination of actions to save lives and property.
- Recovery: Guides long-term restoration of the transportation infrastructure.

Goal 8: Sustainability
This section of the LRTP addresses sustainability as it relates to the transportation infrastructure. The definition used for sustainability as a commitment that encompasses economic, environmental and social considerations. The LRTP references the Resilient 305 Strategy which is also references in this section of the LMS. It also addresses Miami-Dade Greenprint and the U.S. Federal Highway Administration Climate Resilience Pilot Program in South Florida.

The Climate Resilience Pilot Program's purpose was to conduct a detailed vulnerability assessment of transportation infrastructure that is vulnerable to the effects of sea level rise, storm surge and rain driven flooding. This project utilized Geographic Information Systems to determine vulnerability scores for individual segments of the transportation system. This project finally made recommendations on adaptation strategies based on the vulnerability scores.

Appendix I: Community Profile

The Community Profile is the first component of the THIRA and provides valuable intelligence and situational awareness. In many jurisdictions, a detailed and in-depth community profile is developed as a key element of a Hazard Mitigation Plan; however, its utility goes far beyond that plan alone. The Community Profile is an overview of the political governance, economy, geography, climate, population, community assets, future development and trends, and commercial and industrial make-up of Miami-Dade County.

The Community Profile provides Miami-Dade County with a solid foundation for developing a common operational picture for the THIRA, and can also be referenced for other activities, such as emergency training, exercises and actual incidents.

A. Climate

The climate of a region is determined by the monthly or longer weather pattern conditions that exist within a specified area. Miami-Dade County, in Southern Florida, has a tropical climate with high humidity and precipitation. The seasons are determined by the amount of and changes in precipitation. The rainy season usually begins in late May and ends in mid-October, subjecting Miami-Dade County to thunderstorms, tropical storms, and hurricanes. The average annual precipitation in the county is 61.9 inches compared to Florida's annual average of 54.6 inches. The average temperature during the rainy season is 80°F in Miami-Dade County.

Total precipitation in Miami-Dade County varies greatly between the rainy and dry seasons, peaking at 10 inches in June and dipping to less than 2.5 inches in December and January. The dry season lasts from mid-October to late May, and has an average temperature of 77 °F in Miami-Dade County. The Gulf Stream regulates the climate variants throughout the state with rare extremes of over 100 °F or below 32 °F. The average annual temperature of Miami-Dade County is 77.1°F.

B. Geology, Hydrology, and Ecology

Geology

Miami-Dade County is located in the southern portion of Florida, whose geological conditions are considered young and formed around 120,000 years ago during the Pleistocene Period. Just below the ground surface there is Miami Limestone, the Fort Thompson Formations, and Anastasia Formations. Miami Limestone consists of oolitic and bryozoans facies. The oolitic facies are a combination of oolitic, small round grains, limestone and fossils. The bryozoans facies are a sandy fossil limestone. The fossils found include mollusks, bryozoanz, and corals. In some regions, the Miami Limestone reaches a thickness of 40 feet. Fort Thompson Formations underlies the Miami Limestone and consists of sandy soils, marine beds, and brackish and freshwater limestones. The Fort Thompson Formations can reach thicknesses up to 150 feet. The Anastasia Formations also underlies the Miami Limestone and consists of shelly limestone and coquina limestone. The Miami Limestone is highly porous and permeable

and forms much of the Biscayne Aquifer system. The natural marl soils found above the Miami Limestone have been affected by drainage and erosion due to development and agriculture. The Biscayne Aquifer lies just below the surface, and due to the permeability of the soil, makes the aquifer vulnerable to contamination.

Hydrology
The hydrology of Florida is a system of low-gradient drainage, high ground water table, and an extensive drainage canal network. There are two major aquifers in Florida that comprise the water table. Aquifers are areas of rock below the ground surface that can produce sufficient amounts of water to efficiently supply the communities within the region. There are three different types of aquifers: unconfined, where the water table is able to move freely without interference due to the lack of aquitard (a non-permeable formation); semi-confined, where the water table is partially confined due to semi-permeable formations; and confined, where the water table is completely confined by non-permeable formations above and below the body of water. The aquifers found within Florida are varying degrees of combinations of all three types.

The Florida Aquifer encompasses the entire state while the Biscayne Aquifer only supports the southern portion of the state. The Florida Aquifer produces much of northern and central Florida's water supply, however the southern region of the Aquifer has been polluted by brackish water from deep wells. The Biscayne Aquifer supplies the southern region of the state; mainly Miami-Dade, Broward, and Monroe counties. This aquifer is one of the most productive aquifers in the world, but it is very susceptible to pollution from agricultural and industrial practices because of the permeability of the soil and rock formations.

The extensive system of levees and canals in Miami-Dade County and South Florida, managed by the South Florida Water Management District (SFWMD), transports surface and ground water and protects against flooding and salt water intrusion. Precipitation during the rainy season is the main source of surface water, which travels from the northern and central regions of Florida to the southern region, flowing from Lake Okeechobee. The levees direct and store surface water to prevent flooding and to maintain reserves for use during the dry season. Ground water also flows from the northern regions to the coast and is drawn from field wells from the Biscayne Aquifer.

Ecology
The ecology of Florida is a relationship between organisms and their environments. Due to the unique combinations of Florida's geology, hydrology, and climate, over 20 different ecosystems have been identified by scientists. The various classifications differ depending on the organization and scale of the system being evaluated, but the basic ecosystems include the following:

- **Coral Reefs**: Colonies of polyps that form complex calcium carbonate shells to protect themselves against predators and pollutants. As the colonies compete for space or die, new coral grows on top to form a coral reef. There are over 30

different coral reefs identified around Florida that are home to thousands of plant and animal species.

- **Dunes**: Mounds of sand that are created by coastal winds and are held together by grass vegetation. Over 60% of Florida's coast is comprised of sand and the dunes serve as a protective barrier for inland areas from coastal winds and waves.
- **Freshwater Marshes**: An inland standing body of water, generally year round, with little to no tree or scrub life. Grasses, sedges, and rushes act as a filter to remove particles and pollutants from the waters that flow through. There are four different types of freshwater marshes in Florida: wet prairies, sawgrass marshes, ponds, and aquatic sloughs.
- **Salt Marshes**: Areas where freshwater and saltwater meet along the coastal regions. Salt marshes also contain little to no tree or scrub life. The vegetation that inhabits the areas is brackish in nature.
- **Freshwater Swamps**: Areas inland where there is considerable standing water during the rainy season and the soils typically dry out during the dry season. There is a variety of vegetation that inhabits the swamps including softwood trees, hardwood trees, vines, and ferns.
- **Upland Hardwoods**: Areas of forest with nutrient clay soil that are typically bordered by sand hills and flatwoods in northern and central regions of the state. There is a vast variety of tree and plant life with no dominating species within the forests. Most of Florida's state parks consist of upland hardwood ecosystem.
- **Bottom Hardwoods**: Areas of forest with wet nutrient soil that typically border lakes, rivers, and sinkholes found throughout Florida. Bottom hardwood forest provides a transition area between the upland hardwoods, swamps, marches, and other wetlands and is dominated by Live Oaks, Red Maples, and Water Oaks. This region typically floods and is constantly changing because of the different climates and regions in which the forest is found.
- **Sand hills**: Areas of forest with permeable, dry, sandy soils that typically do not flood. The forest is dominated by Longleaf Pine and Turkey Oak trees with different grass species blanketing the forest floor. The forest is vulnerable to fire due to the dry, sandy conditions.
- **Scrubs**: Areas with permeable, nutrient poor, sandy soils found on higher elevations where the water table is low. Scrubs are communities of pinelands with an undergrowth of oaks, shrubs, and palmettos, and are fire dependent to regenerate because of the soil conditions and lack of water supply.
- **Flatwoods**: Areas of forest of semi-permeable soil and limestone of level land that makes up 50% of the covered land mass of the state. The forest is dominated by Longleaf Pines and Slash Pines with undergrowth of palmetto, wildflowers, and ferns. Flatwood forests are fire dependent to regenerate not only due to the soil conditions but the competition between the hardwood forest for space and sunlight.
- **Tropical Hammocks**: Areas of hardwood forest with thick mounds of permeable soil and peat bordered by marshes, mangrove swamps, and flatwoods, but typically does not flood due to soil elevation. Hammock forests are dominated by Gumbo-Limbo and Pigeon Plum trees that are only found in southern Florida and contain plant and animal life found nowhere else in the United States.

- **Mangroves**: Areas of mangrove tree habitat. There are three species of mangroves in Florida: the White Mangrove, the Black Mangrove, and the Red Mangrove. Each species of mangrove grows in different regions. All three species typically inhabit areas near saltwater or areas that are regularly flooded by saltwater. The Red Mangrove inhabits areas along the coast. The Black Mangrove inhabits inland areas below the water table. The White Mangrove inhabits higher evaluations where there is a lower water table.

C. Environment

Florida is a peninsula surrounded by two main bodies of water, the Gulf of Mexico and the Atlantic Ocean, resulting in an environment mostly composed of marshes, swamps, lakes, rivers, and springs. There are 1,711 rivers, streams, and creeks in the state, with notable rivers including St. John's River, St. Mary's River, and Suwannee River. There are 111 lakes in the state; Central Florida has the highest concentration of lakes, including Lake Okeechobee, the largest freshwater lake in Florida. The Miami Canal connects Lake Okeechobee to Biscayne Bay, crossing through Miami-Dade County.

Miami-Dade County is the third largest county in the state, with an area of 2,431 square miles; 1,946 square miles of land and 485 square miles of water. The Everglades National Park encompasses one-third of the entire county. Most of the land is close to sea level with an average elevation of 6 feet above sea level. The eastern side of Miami-Dade County is composed mainly of Oolite Limestone while the western side is composed mainly of Bryozoa. Most of the county's water mass is located in the Biscayne Bay area and the Atlantic Ocean. The Biscayne Bay is divided by South Beach and Miami Beach and is approximately 40 miles long and ranges from 2-10 miles wide.

The agricultural and industrial development of South Florida since the early 1920's has caused damage, erosion, and pollution to some of the ecosystems within the region. The establishment of the Biscayne National Park in 1968 served to protect marine, plant, and animal life along the coastal region. Since the 1980s, over 20% of the Bay has been degraded due to tourism and development. Efforts are in place to preserve aquatic life, rebuild reefs, remove air and water pollutants, protect endangered lands, initiate restoration projects, and ultimately reduce the human impact on the environment.

The County protects the environment through a number of ordinances, including Chapter 24, the Miami-Dade County Environmental Protection Ordinance, through which "the Board [found] and [determined] that the reasonable control and regulation of activities which are causing or may cause pollution or contamination of air, water, soil and property is required for the protection and preservation of the public health, safety and welfare" (Part 3, Chapter 24, Article I, Division 1, Section 24-2 of County Code of Ordinances). Other notable chapters that concern environmental stewardship include:

- Chapter 7: Boats, Docks, and Waterways
- Chapter 11B: Dumps and Landfill Sites

- Chapter 11C: Development within Flood Hazard Districts
- Chapter 15: Solid Waste Management
- Chapter 24: Environmental Protection
- Chapter 24A: Environmentally Endangered Lands Program
- Chapter 32: Water and Sewer Regulations
- Chapter 33: Zoning
- Chapter 33B: Areas of Critical Environmental Concern
- Chapter 33D: Biscayne Bay Management
- Chapter 33F: Key Biscayne Beach Preservation

D. Population & Demographics

Miami-Dade County has experienced steady and rapid population growth, particularly in the 1960s and 1970s. Population doubled between 1960 and 1990. Projected growth through 2025 is expected to follow a similar trend, albeit at a somewhat slower rate. The principal driver of population growth has been and will continue to be immigration. Net immigration is projected to reach over 240,000 persons between 2020 and 2025. Clearly the effects of immigration over the past half century have dramatically shaped the ethnic composition of Miami-Dade County. It is expected that there will be a more moderate augmentation of Hispanics as the dominant ethnic group.

The U.S. Census 2019 population estimate for Miami-Dade County is 2,716,940 residents.[3] The most populated city in Miami-Dade County is Miami, with an estimated 470,914 residents as of 2018.[4] An estimated 52% of the countywide population lives in the unincorporated portion of the County. Between 2010 and 2018, Miami-Dade County as a whole had a growth rate of 13.0%. Based on the 2018 Population Estimates, the most rapidly growing municipality in Miami-Dade County by average annual change is the City of Sweetwater, which has increased its population by an average of 7.9% each year between 2010 and 2018. The largest growth by sheer numbers was the City of Miami, increasing by 71,457between 2010 and 2018. Additional information about Miami-Dade County's population and demographics is available in the Social Vulnerabilities section of the THIRA.

E. Culture

Florida has a rich cultural history dating back 10,000 years through archeological discoveries of Native American nomads that lived off the land and local game. The Tequesta people inhabited the region unaffected by outside influence until the arrival of Spanish explorer Juan Ponce de Leon in 1513. After the first attempt to build a mission in 1567, the Spanish eventually gained and continued to control Florida for 250 years. The United States purchased Florida for 5 million dollars in 1821. At the time of purchase, the main industry was “wrecking,” and residents survived by retrieving goods from ships that crashed on the nearby coral reefs.

[3] U.S. Census 2019 Population Estimate
[4] U.S. Census 2018 Population Estimate

Florida's population and industry began to boom with the arrival of the railroad in 1896 by Henry Flagler and again with the development of subdivisions and tourist resorts in the 1920s. During World War II, nearly half a million men (one-fourth of all Army Air Force officers and one-fifth of the military's enlisted) were trained at Miami Beach by the Army Air Forces Technical Training Command. After the war, many troops returned with their families to take-up a permanent residence, resulting in another population boom. Furthermore, Florida has become home to thousands of refugees with a significant influx following the Cuban Revolution during the 1960s and from Haiti in the 1990s.

Miami-Dade County is a multi-cultural population center. As of 2018 53% of the resident population was born in a foreign country. The largest segment of the population is Hispanic which accounts for 69% of the population, the next largest ethnic groups are African-Americans (17%) and Caucasians (13%).

F. Political Governance

Miami-Dade County was named after a soldier, Major Francis Dade, killed in the Second Seminole War. The county was formally created in 1836 under the Territorial Act as Dade County. In 1956, a constitutional amendment was approved by the people of Florida to enact a home rule charter. Up until then the county was governed and ruled by the state. Since 1957 the county has operated under a two-tier federation metropolitan system, which separates the local and county government.

The local governments may be responsible for zoning and code enforcement, police and fire protection, and other city services required within each jurisdiction. The Unincorporated Municipal Services Area (UMSA) covers the residents of all the unincorporated areas within the County.

The structure of the county government has an elected official, Executive Mayor, and the Board of County Commissioners with 13 elected members, each serving a four-year term. The Mayor is not a part of the Board of County Commissioners but has the veto power over the board. The Mayor directly oversees the majority of the operations of the County. The Board of County Commissioners is the legislative branch that oversees the legislation, creates departments, and business operations. Miami-Dade County is the only county in Florida where the Sheriff is appointed by the Mayor and is not elected by the residents.

Miami-Dade County Departments:

- Animal Services
- Audit and Management Services
- Aviation
- Communications
- Community Action and Human Services
- Corrections and Rehabilitation
- Cultural Affairs
- Elections
- Finance
- Fire Rescue
- Human Resources
- Information Technology
- Internal Services
- Juvenile Services
- Libraries
- Management and Budget
- Medical Examiner
- Parks, Recreation and Open Spaces
- Police
- Public Housing and Community Development
- Regulatory and Economic Resources
- Seaport
- Solid Waste Management
- Transportation and Public Works
- Transportation Planning Organization
- Water and Sewer

G. Built Environment

The term built environment refers to the human-made surroundings that provide the setting for human activity, ranging in scale from personal shelter and buildings to neighborhoods and cities that can often include their supporting critical infrastructure (bridges, water treatment, highways, etc.) and key resource (schools, museums, etc.) assets. The built environment is a material, spatial and cultural product of human labor that combines physical elements and energy in forms necessary for living, working and playing. In urban planning, the phrase connotes the idea that a large percentage of the human environment is man-made, and these artificial surroundings are so extensive and cohesive that they function as organisms in the consumption of resources, disposal of wastes, and facilitation of productive enterprise within its bounds.

The built environment can be organized into three broad categories (critical infrastructure, key resources, and housing stock), which are detailed more thoroughly in the Vulnerability Assessment.

Critical Infrastructure

- Airport
- Chemical Sector
- Communications
- Energy Sector
- Freight
- Information Technology
- Monuments and Icons
- Pipelines
- Solid Waste Facilities
- Transit
- Transportation
- Water Control Structures
- Water/Wastewater Treatment
- Waterways & Ports

Key Resources

- Banking & Finance
- Commercial Sector
- Critical Manufacturing Sector
- Defense Industrial Base
- Emergency Services
- Food and Agriculture Sector
- Healthcare
- Schools
- Universities
- Other Key Resources

Building Stock

- Commercial & Industrial
- Governmental
- Housing Stock

H. Economy

In terms of average annual employment there are five sectors of the economy that are the top employers. The first is the trade, transportation and utilities which employs 25% of the county workforce ad 20% of the statewide workforce. The education and health services sector is the next highest employer that accounts for 15.9% of the workforce. The professional and business services sector employs 14.2% of the county's workforce. The final two top employment sectors is leisure and hospitality (12.4%) and government which employs 12% of the workforce.[5]

The two significant external generators of economic activity in Miami-Dade County are international trade and tourism. While there is no rigorous way to determine the weight of international trade and tourism in Miami-Dade County's economy, without doubt, both of these external sectors are vital components for a healthy and growing local economy.

The top drivers of international trade in Miami-Dade County is the Miami International Airport (MIA) and Port Miami. The Miami International Airport in 2018 was ranked 13th in the nation for total passengers.[6] The total passengers received by MIA was 45 Million. In terms of international passengers MIA was ranked number three in the nation receiving 21.9 million international passengers. In terms of total cargo, MIA was ranked number four in the nation receiving 2.35 million tons of cargo. In 2018 MIA contributed $32 Billion in direct business revenue and employed directly and indirectly 425,000 people. Port Miami is the largest cruise port in the world. In 2019 the port handled 6.8 million passengers and handled 9.61 million tons of cargo in 2018[7]. The port's expansion will likely generate an increased economic impact to South Florida of about $7.8 billion, which will support an additional 27,500 jobs annually.

Tourism in the Greater Miami area continues to be an important component of the overall Miami-Dade County economy. Since 1980 tourism, as measured by overnight visitors, has grown steadily from just over 6.7 million in 1980 to 24.3 million total visitors in 2019. However, this growth had been marred by several significant downturns in tourist activity. From 1980 through 1986, there was a continuous decline in total visitors. In fact, it was not until 1988 that the total visitor count reached the 1980 level. In addition, from 2000 until 2003, total visitor count fell continuously, decreasing by 927,700. Currently, tourism continues to grow. For 2019, Miami-Dade

[5] State of Florida Office of Economic and Demographic Research, Miami-Dade County Profile
[6] MIA US and Worldwide Airport Rankings http://www.miami-airport.com/library/pdfdoc/Rankings/2018%20Rankings%20-%20US%20and%20Worldwide%20(Final).pdf
[7] Miami-Dade County, State of the County Economic Development https://www.miamidade.gov/global/government/mayor/state-of-the-county/economic-development.page

County had record overnight visitors of more than 15.9 million.[8]. In addition, there was near record spending by visitors of more than $18 billion by visitors to the Greater Miami area in 2018. The county also experienced record travel and tourism employment of 146,700 jobs. (Source: State of the County 2019).

[8] Miami-Dade County, State of the County Economic Development https://www.miamidade.gov/global/government/mayor/state-of-the-county/economic-development.page

I. Future Development & Commercial Trends

Miami-Dade County faces many of the same growth issues that challenge communities around the country. With highly urbanized areas, suburban strip development, and farmland, the county contains many resources and assets, but must also deal with a variety of development issues and pressures as it balances continued growth with utilizing and maintaining existing infrastructure and investments. According to a recent Urban Development report for the county, Miami-Dade County wants to keep its agricultural identity, protect its unique natural environment, and encourage development to locate in areas with existing infrastructure, transit and other amenities. For example, one goal is to keep development from spilling toward highly sensitive lands, including the Everglades National Park.

According to a 2013 Demographic Overview & Population Trends report issued by the Florida Legislature's Office of Economic and Demographic research, by 2030 all of Florida's population growth will be from net migration, boosting Miami-Dade County's population to an estimated 3.2 million people. Where these people will live is a critical consideration that drives decisions about growth management, provision of affordable housing, and transportation investments. Furthermore, these decisions will have a profound impact on how the County works to address issues related to disaster management and mitigation.

Notable projects include the following:

Urban Development Boundary:
The Urban Development Boundary is a line that separates the agricultural and environmental lands from the urban areas. The boundary will be expanded to add 9.9 acres of land for commercial development of the current 16,140 acres of undeveloped land within the boundary. Please see the Environmental Protection Agency's growing for a Sustainable Future: Miami-Dade County Urban Development Boundary Assessment for more information on the UDB.

Appendix J: Economic Summary

This summary provides an overview of the County's unemployment, employment, and wages earned.

Unemployment Rates
As of December 2019 the unemployment rate in the United States was 3.7%.[9] The unemployment rate in Miami-Dade County is below the national average and in December 2019 it was 2.8%. The unemployment rate increased since December 2018 when the rate was 1.6%.

Average Weekly Wages
In the third quarter of 2019 the average weekly wage for employees in Miami-Dade County was $1,039. This was slightly higher than the other large Southeast counties. The average weekly wage for Broward County is $1,000 and Palm Beach County is $1,009.[10] The Miami-Dade County median household income in 2018 was $48,982 and 16.6% of the population lived in poverty.[11]

Economic Sectors
There are eight sectors of the economy in Miami-Dade County that employs more than 100,000 people. The sector that employs the most number of people was rgw trade, transportation and utilities sector that employs 633,000 employees. The second largest sectors are the professional and business services that employs 461,300 people and the education and health services that employs 426,500 people. The third largest employers are the leisure and hospitality sector which employs 342,400 people and the government sector who employs 322,000 people. The other major employment sectors is the construction sector (143,000 people), financial services (189,700 people) and other services (125,800 people).[12]

[9] U.S. Bureau of Labor Statistics, Miami Economy Summary
[10] U.S. Bureau of Labor Statistics, Miami Economy Summary
[11] U.S. Census Bureau
[12] U.S. Bureau of Labor Statistics, Miami Economy Summary

Figure 1: Employment by Industry Employment: Miami-Dade County by Industry[13]

Industry	November 2018	November 2019	Percent Change: '18-'19
Mining and Logging	500	500	0.0
Construction	54,000	55,700	3.1
Manufacturing	42,400	39,900	-5.9
Trade, Transportation and Utilities	306,800	310,800	1.3
Information	20,300	20,100	-1.0
Financial Activities	81,200	80,800	-0.5
Professional and Business Services	182,400	185,000	1.4
Education and Health Services	190,500	203,500	6.8
Leisure and Hospitality	145,200	148,600	2.3
Other Services	52,300	53,100	1.5
Government	145,300	147,600	1.6

Data Source: US Bureau of Labor Statistics.

Largest Employers

The top employers in Miami-Dade County are a combination of the private and the public sector. The top private sector employer is the University of Miami which employs 12,818 employees.[14] The other top private sector employers are:

- Publix Supermarkets with 12,451 employees
- Baptist Health South Florida with 11,353 employees
- American Airlines with 11,031 employees

Additional top private employers are listed in Figure 2.

The top public-sector employer in the county is the Miami-Dade County Public Schools which employees 33,477 employees.[15] The other top employees include:

- Miami-Dade County government employs 25,002 employees
- The Federal government employs 19,200 employees
- The State of Florida employs 17,100 employees
- The Jackson Health System employs 9,797 employees

[13] U.S. Bureau of Labor Statistics, Miami Area Employment, November 2019
[14] Beacon Council website: https://www.beaconcouncil.com/data/economic-overview/top-employers/
[15] Beacon Council website: https://www.beaconcouncil.com/data/economic-overview/top-employers/

2015 TOP PUBLIC EMPLOYERS[16]	
Company	**No. of Employees**
Miami-Dade County Public Schools	33,477
Miami-Dade County	25,502
Federal Government	19,200
Florida State Government	17,100
Jackson Health System	9,797
City of Miami	3,997
Florida International University	3,534
Homestead Air Force Base	3,250
Miami VA Healthcare System	2,500
Miami Dade College	2,390
City of Miami Beach	1,971
U.S. Southern Command	1,600
City of Hialeah	1,578
City of Coral Gables	730
City of North Miami Beach	420

[16] Beacon Council website:
https://www.beaconcouncil.com/data/economic-overview/top-employers/

Figure 4: Commercial and Industrial Facilities by Municipality

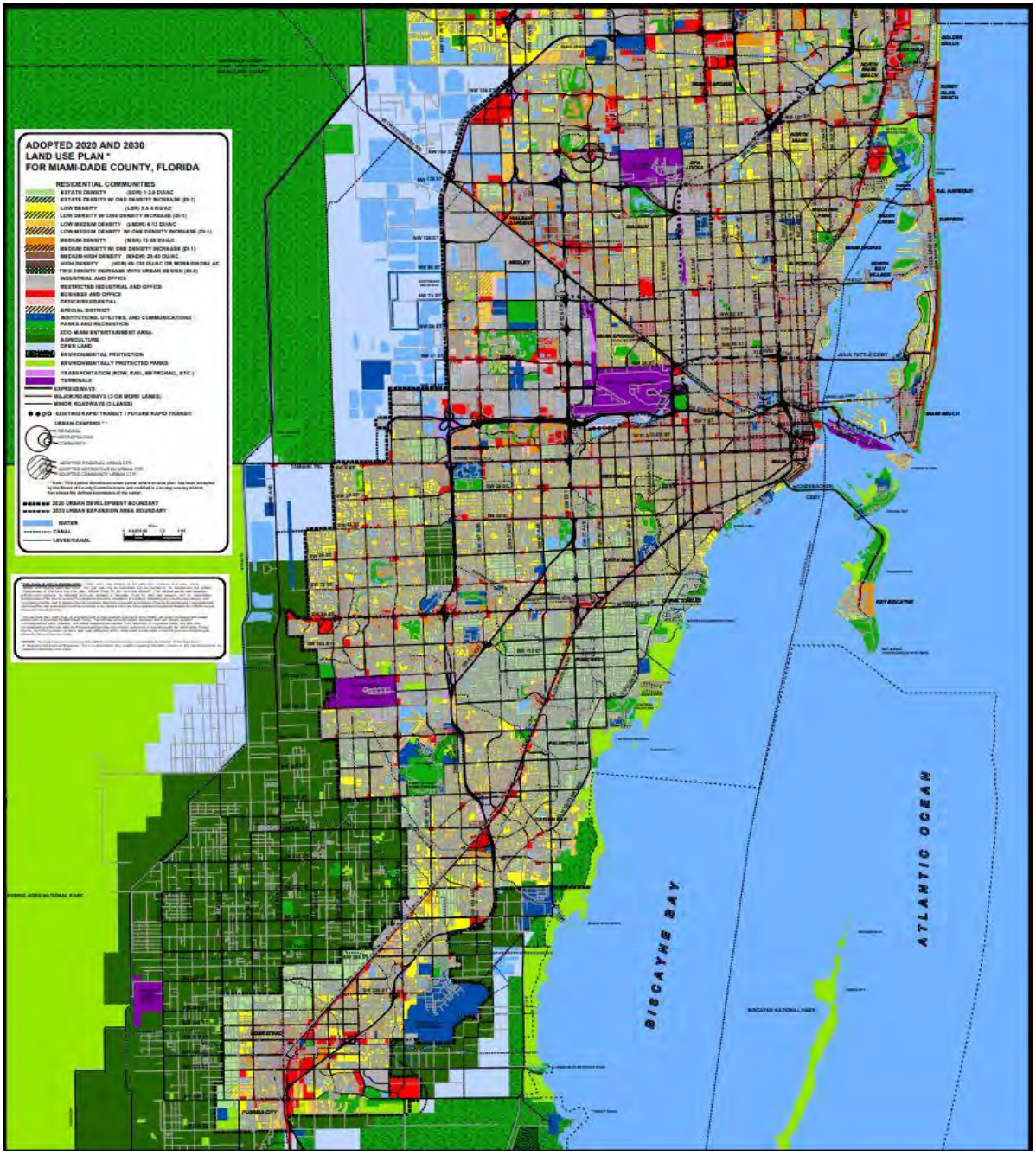
	COMMERCIAL		INDUSTRIAL	
JURISDICTION	R	BLDG VALUE	Count	BLDG VALUE
AVENTURA	234	$285,980,200	6	$13,857,021
BAL HARBOUR	4	$2,093,721		
BAY HARBOR ISLANDS	96	$18,740,096		
BISCAYNE PARK				
CORAL GABLES	1,285	$1,107,930,132	1	$73,244
CUTLER BAY	104	$101,894,369	854	$947,336,883
DORAL	371	$686,722,762	1	$1,295,212
EL PORTAL	6	$1,190,843	39	$17,525,002
FLORIDA CITY	105	$83,185,403		
GOLDEN BEACH				
HIALEAH	1,523	$ 632,094,967	1,648	$532,423,721
HIALEAH GARDENS	138	$71,043,365	202	$56,490,291
HOMESTEAD	496	$200,732,181	124	$39,222,406
INDIAN CREEK VILLAGE				
KEY BISCAYNE	105	$33,405,802		
MEDLEY	51	$15,213,276	455	$608,452,267
MIAMI	6,631	$3,263,786,483	1,383	$325,959,732
MIAMI BEACH	1,071	$970,746,572	11	$1,756,701
MIAMI GARDENS	400	$460,628,947	255	$308,073,693
MIAMI LAKES	150	$191,668,579	234	$97,165,268
MIAMI SHORES	74	$31,482,577	1	$84,384
MIAMI SPRINGS	136	$35,818,047	8	$2,711,847
NORTH BAY VILLAGE	15	$9,606,542	2	$4,402,072
NORTH MIAMI	594	$226,549,678	105	$42,136,211
NORTH MIAMI BEACH	497	$276,625,328	56	$15,192,672
OPA-LOCKA	169	$29,847,763	341	$139,268,372
PALMETTO BAY	246	$147,116,876	1	$1,540,548
PINECREST	145	$117,256,833	1	$185,510
SOUTH MIAMI	549	$93,321,471	33	$2,517,742
SUNNY ISLES BEACH	33	$31,771,205		
SURFSIDE	46	$11,062,703		
SWEETWATER	136	$365,640,700	56	$60,361,364
UNINCORPORATED MIAMI-DADE	5,130	$3,618,674,874	2,751	$2,075,401,210
VIRGINIA GARDENS	23	$25,527,254	3	$5,937,275
WEST MIAMI	95	$18,580,328	29	$362,563
Totals	**20,658**	**13,165,939,877**	8,608	$ 5,302,144,749

Figure 5: Residential and Other Structures by Municipality

	RESIDENTIAL		OTHER	
JURISDICTION	COUNT	BLDG VALUE	Count	BLDG VALUE
AVENTURA	24,433	$40,077,779	604	$16,111,300
BAL HARBOUR	3,530	$7,817,227	400	$2,713,839
BAY HARBOR ISLANDS	2,641	$4,632,700	108	$930,567
BISCAYNE PARK	1,207	$2,216,422	7	$27,556
CORAL GABLES	16,919	$4,277,349,220	474	$464,893,182
CUTLER BAY	13,532	$1,417,756,760	782	$111,172,820
DORAL	17,366	$1,627,776,013	514	$629,799,128
EL PORTAL	755	$81,625,819	6	$5,363,491
FLORIDA CITY	2,030	$96,121,151	98	$81,485,679
GOLDEN BEACH	349	$230,372,538	6	$836,173
HIALEAH	49,622	$3,205,866,586	2,451	$717,381,935
HIALEAH GARDENS	5,647	$375,181,636	54	$215,935,394
HOMESTEAD	17,031	$989,626,448	857	$368,912,797
INDIAN CREEK VILLAGE	32	$135,218,524	6	$5,148,996
KEY BISCAYNE	6,532	$780,754,604	419	$32,380,038
MEDLEY	74	$3,832,240	50	$23,856,290
MIAMI	98,407	$6,764,052,101	8,344	$3,664,217,872
MIAMI BEACH	46,120	$2,979,606,039	7,748	$1,147,149,903
MIAMI GARDENS	28,674	$2,138,130,155	307	$328,810,224
MIAMI LAKES	8,838	$1,255,028,443	172	$214,547,633
MIAMI SHORES	3,768	$531,019,167	44	$94,778,292
MIAMI SPRINGS	3,953	$526,199,792	81	$159,940,660
NORTH BAY VILLAGE	3,435	$78,001,468	413	$6,562,912
NORTH MIAMI	14,793	$1,092,360,712	529	$246,477,793
NORTH MIAMI BEACH	12,044	$745,290,290	679	$113,048,594
OPA-LOCKA	2,898	$188,308,792	146	$104,312,231
PALMETTO BAY	7,916	$1,553,502,217	248	$90,024,289
PINECREST	6,063	$1,833,813,872	42	$84,894,313
SOUTH MIAMI	3,660	$526,044,958	82	$121,909,220
SUNNY ISLES BEACH	15,698	$137,520,139	2,379	$20,127,377
SURFSIDE	3,122	$215,784,636	270	$10,227,544
SWEETWATER	3,478	$243,832,215	318	$82,690,698
UNINCORPORATED MIAMI-DADE	311,682	$28,338,300,470	14,862	$5,325,890,876
VIRGINIA GARDENS	621	$63,387,736	6	$6,796,096
WEST MIAMI	1,585	$180,806,673	19	$9,595,918
Totals	735,173	$63,493,468,471	45,361	$14,866,211,711

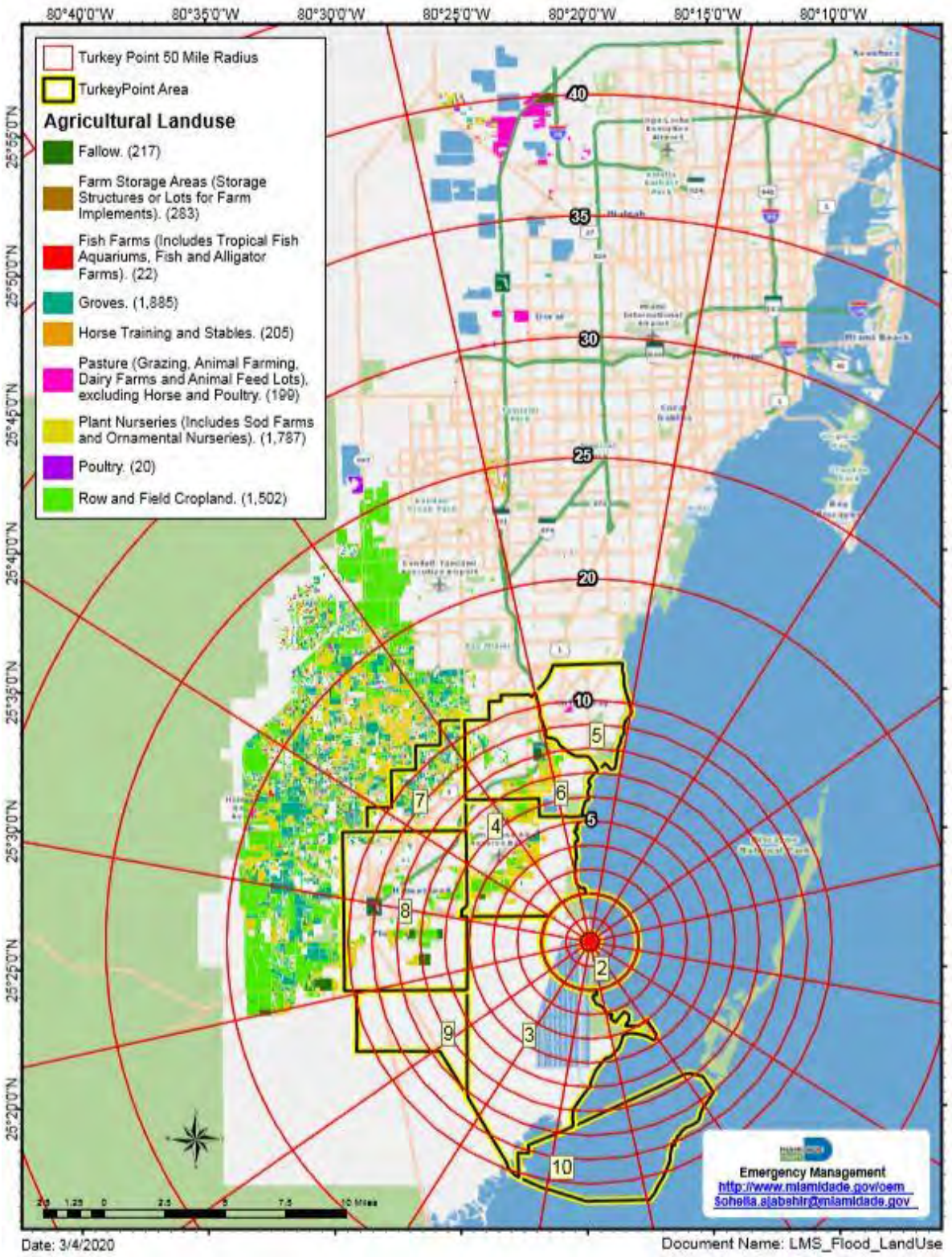
Appendix K: Maps

Map 1: Miami-Dade Comprehensive Development Master Plan 2020-2030 Land Use[17]



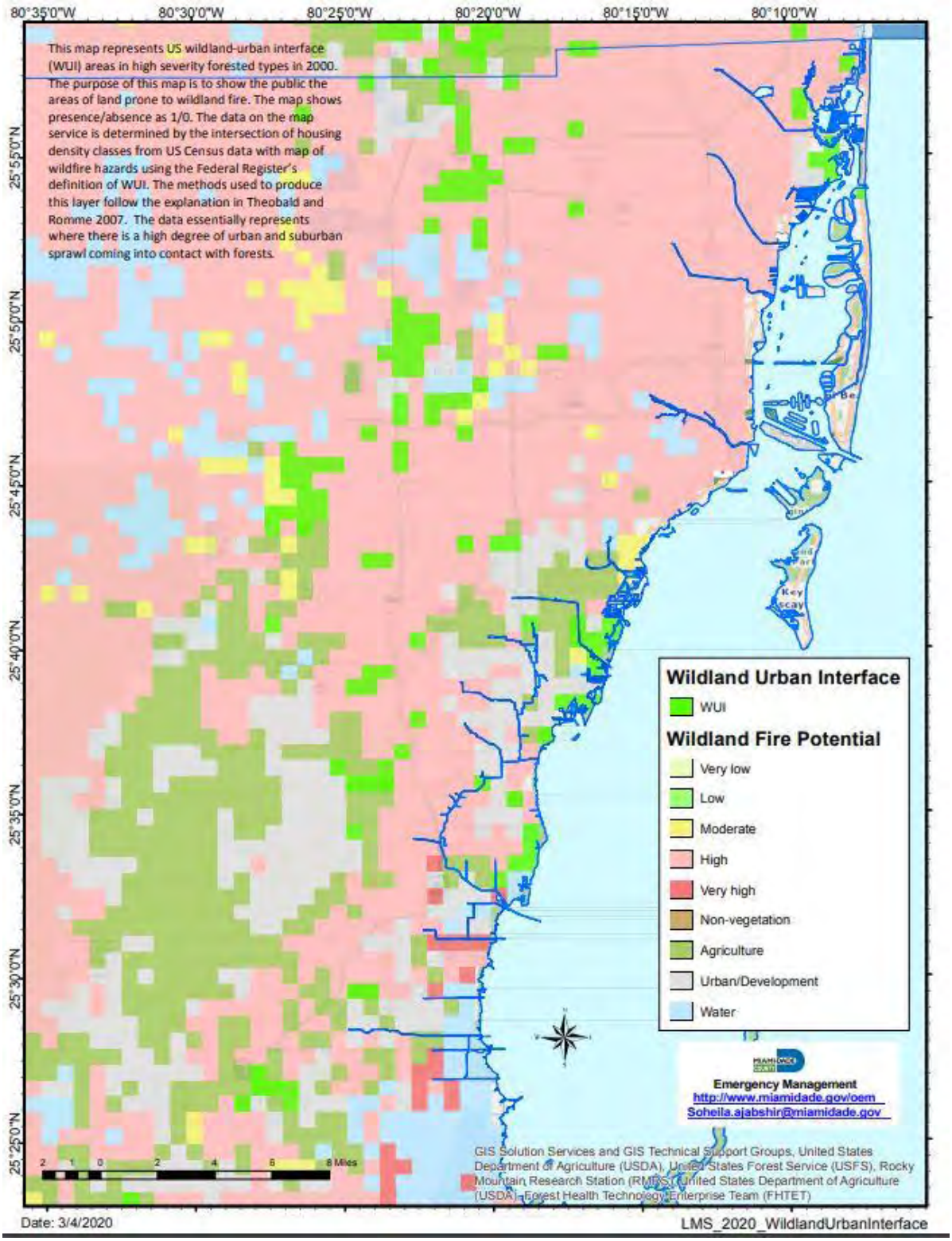
[17] EMAP 4.4.3

Map 2: Land Use within Turkey Point Nuclear Power Plant 50-Ingestion Pathway[18]

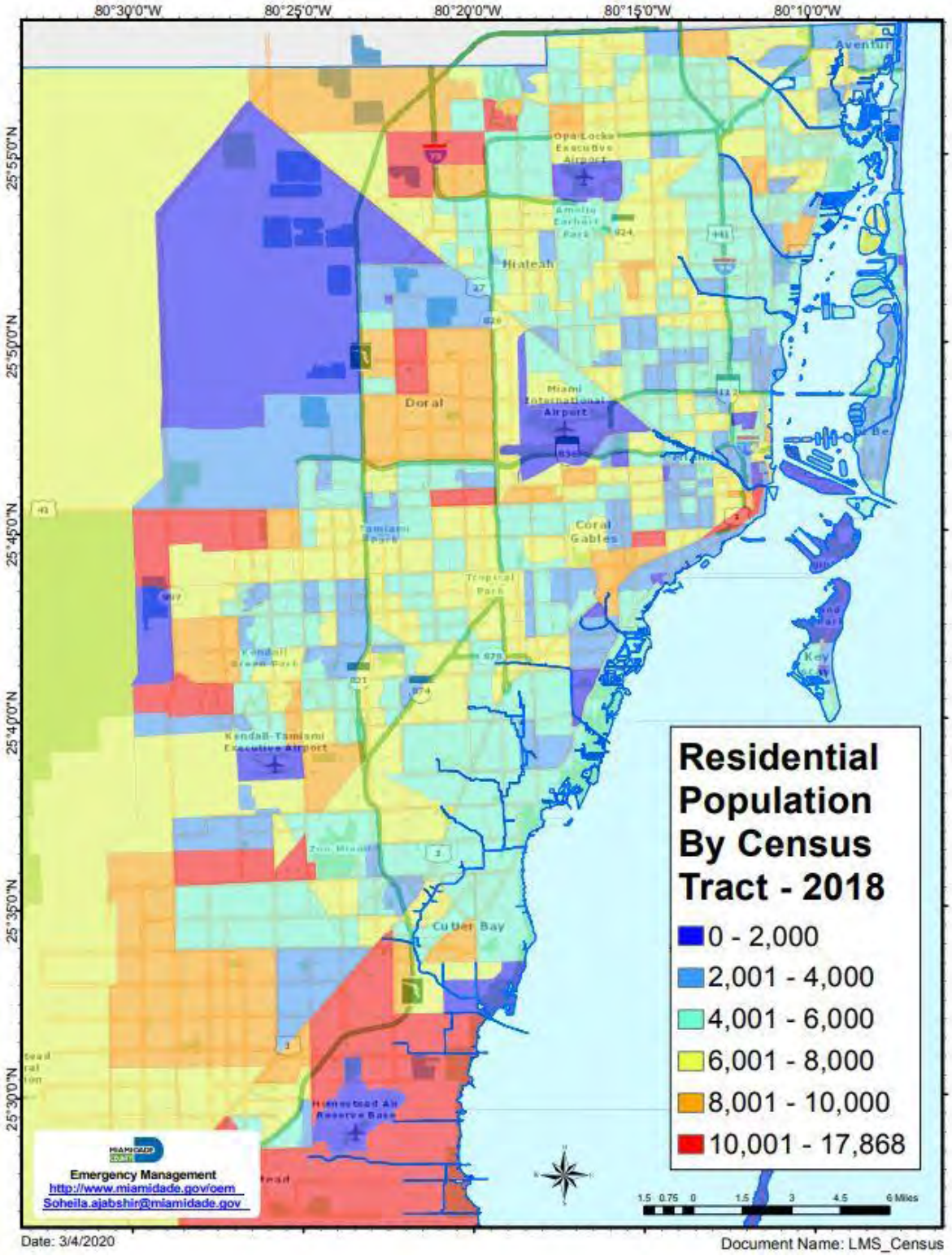


[18] EMAP

Map 3: Map of Miami-Dade Flammable Natural Areas



Map 4: Miami-Dade 2010 Census Block Data



MIAMI-DADE COUNTY

LMS

LOCAL MITIGATION STRATEGY

Whole Community
Hazard Mitigation
Part 6: Completed Projects

July 2020

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What is Hazard Mitigation?

"Hazard Mitigation means any action taken to reduce or eliminate the long-term risk to human life and property from natural or manmade hazards."

Why Mitigation?
Miami-Dade County, in fact, all of South Florida, is vulnerable to disasters of all types affecting every part of our community; no one is immune. We've suffered hurricanes, tornadoes, severe flooding, lightening, wildfires, plane crashes, hard freezes, droughts, citrus canker, mass migration and more. Interested?

Want some details? How about this:

- Hurricane Andrew in 1992 – DR 955 – $30,000,000,000
- Storm-of-the-Century in 1993 – DR 982 – $50,000,000
- Tropical Storm Gordon in 1994 – USDA-FSA – $90,000,000
- The Ground Hog Day storms in 1998 – DR 1204 – $50,000,000
- Hurricane Georges in 1998 – ER 3131 – $12,500,000
- Hurricane Irene in 1999 – DR 1306 – $800,000,000
- The No-Name Storm in 2000 – DR 1345 – $500,000,000
- Tornadoes in 2003 – DR 1460 – $15,000,000
- Hurricanes Frances in 2004 – DR 1545 – $33,000,000
- Hurricane Jeanne in 2004 – DR 1561 – $10,400,000
- Hurricane Katrina in 2005 – DR 1602 – $500,000,000
- Hurricane Wilma in 2005 – DR 1609 – $4,000,000,000

That is just a portion of projects that have been embarked upon to make our community more resilient. In 1998 a decision was made to do something about it and the Local Mitigation Strategy was born. Now, it's time to show you what your Local Mitigation Strategy Working Group has been up to.

Mitigation in Miami-Dade

Mitigation is not new to Miami-Dade County or to its municipalities and other organizations. Mitigation, as we know it now, began for us during the recovery period following Hurricane Andrew. FEMA, the Federal Emergency Management Agency, introduced Public Assistance Enhancements, what we call 406 mitigation (from Section 406 of the Stafford Act), which is mitigation that is performed during the repair or rehabilitation of a facility damaged by the disaster event, in this case, Hurricane Andrew. 406 mitigation continued during the recovery effort following each of the disaster declarations issued since Hurricane Andrew. To protect those facilities that were not impacted by the event, the Hazard Mitigation Grant Program, or 404 Mitigation, is available as a major source of funding. Of course, there are many other sources of mitigation funding that are discussed in the Local Mitigation Strategy document itself.

In 1998, the State of Florida sponsored the program called the Local Mitigation Strategy (LMS) and provided funding to each county in the State to develop, as the name implies, a strategy to mitigate damages from a Local perspective. The concept is to bring together all the parties within a County to work together to make their communities safe from disasters.

In Miami-Dade County, we have truly made this work. Our municipalities, our county departments, our colleges and universities, our schools, our outreach organizations, our faith-based community and our private sector companies have all joined together in the Miami-Dade LMS Working Group and made the Local Mitigation Strategy a reality.

The purpose of this supplement to the Local Mitigation Strategy is to document all the fine work that has been accomplished in Miami-Dade County through the efforts of the LMS Working Group.[1]

[1] EMAP 4.4.4

406 Mitigation

Floating Docks

Protected Electric

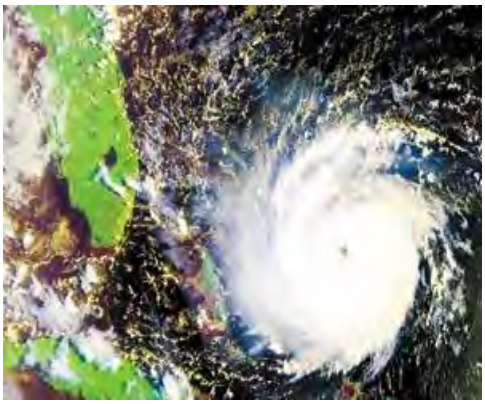
Stronger Towers

Stabilized Banks

Canal Cleaning & Shaping

PA Enhancements in Miami-Dade

Windstorm Mitigation



One of the major causes of damage in South Florida is windstorm: hurricanes, tornadoes and severe thunderstorms. We have been impacted by Hurricane Andrew in 1992, Storm-of-the-Century in 1993, Tropical Storm Gordon in 1994, The Ground Hog Day tornadoes in 1998, Hurricane Georges in 1998, Hurricane Irene in 1999, the "No-Name" storm of 2000 and more tornadoes in 2003, Hurricanes Frances and Jeanne in 2004 and most recently, Hurricanes Katrina and Wilma in 2005.

It has been a primary goal of the Miami-Dade Local Mitigation Strategy Working Group to mitigate against windstorm whenever and wherever possible. The principle cause of damage in a windstorm is from flying debris that shatters the windows and allows high winds to breech the building envelope, which, in turn, can cause the roof to fail. The most effective, cost beneficial measure to accomplish this is the installation of window protection. Window protection carries one of the highest benefit-to-cost ratios of any mitigation measure. Window protection includes storm panels, accordion shutters, roll-down shutters, passive perforated metal plates, laminated glass, Lexan and other heavy glass. Although very popular, the use of plywood is not recommended because of the difficulty putting it up in a hurry and storing it.

This windstorm mitigation has many faces within the LMS program. We have developed the residential shuttering program that installs free hurricane panels on the homes of low-income elderly citizens in our community. We have provided window protection to several organizations that shelter the homeless thereby no longer requiring them to go to a general population shelter during a storm. We have protected county buildings, municipal buildings, university buildings, public school buildings and so on and so forth with the ultimate goal of having every building in Miami-Dade County protected.

The following are examples of wind storm protection completed since the Local Mitigation Strategy Working Group was formed in 1998.

Academic Institutions

Miami Christian School

One of five buildings protected by perforated steel window coverings through Hazard Mitigation Grant Program for total of $230,000. These grants were awarded under FEMA DR-1545, DR-1561 and DR 1609

American High School: Schools Retrofit as Hurricane Evacuation Centers

American Senior High School, a part of Miami-Dade County Public Schools

American High School, above, was retrofit to serve as a hurricane evacuation center serving the public during a hurricane evacuation. Other schools also retrofitted were Barbara Goleman Senior High, Citrus Grove Elementary, Miami Springs Senior High, Southridge Senior High, Sunset Senior High, North Miami Middle School, South Miami Senior High and Southwood Middle School. The combined total cost of the retrofit was $3,612,000 and was funded by the Hazard Mitigation Grant Program through FEMA-1306-DR-FL, Hurricane Irene.

Miami Springs H.S.

Miami Southridge H.S.

North Miami Middle

Florida International University

The third floor of the FIU Biscayne Campus library in North Miami has been hardened for use as a hurricane shelter at a cost of $366,000 and funded by the Hazard Mitigation Grant Program through FEMA-1204-DR-FL, the February 1998 Ground Hog Day tornadoes. Note: This was the first project completed following the formation of the Local Mitigation Strategy.

Johnson & Wales University

Located in North Miami, Florida, this university has an on-campus hurricane shelter created to house the university's residential students during a storm. The shelter, centered on the university library and containing a gourmet kitchen, cost $33,000 and was funded by the Hazard Mitigation Grant Program through FEMA-1204-DR-FL.

University of Miami

The University's Richter Library, above, is one of twelve campus buildings protected by perforated metal panels at a combined total cost of $1,040,000 and funded by the Hazard Mitigation Grant Program through FEMA-1300-DR-FL.

University of Miami

Alumni House

Cuban American Studies

Educational Research

Behavioral Medicine

Nursing

Dining Hall

Perforated Steel @ $1,040,000

Florida International University

The student dormitories at the University Park campus have steel wire mesh window protection installed that is hinged and opens out at the center. The total cost is $1,900,000 funded by the Hazard Mitigation Grant Program through FEMA-1300-DR-FL.

St. Thomas University

Kennedy Hall, the university's main administration building, is protected by roll-down shutters throughout. This building houses all the university's important records and the cost of $300,000 was funded by the Hazard Mitigation Grant Program through FEMA-1345-DR-FL, the No-Name storm of the year 2000.

St. Thomas University

Cassia Dormitory, above, along with Donnellen Hall and the cafeteria have window protection at a cost of $313,000 through FEMA-1602-DR-FL.

The Cafeteria

Donnellen Hall

University of Miami

The University's Performing Arts Center, above, is one of three medical campus buildings protected by perforated metal panels at a combined total cost of $3,618,000 and funded by the FEMA Pre-Disaster Mitigation Grant Program of 2003.

Mailman Center for Child Development

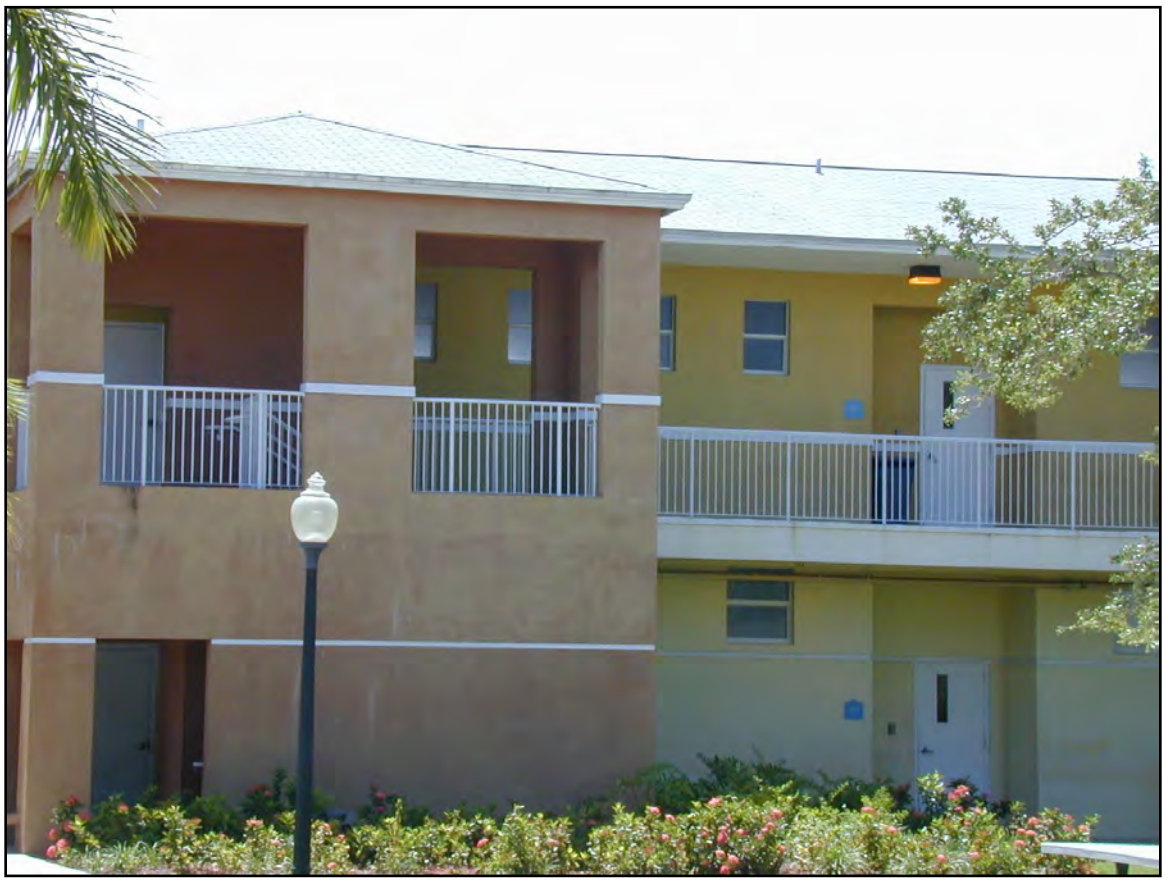
Rosenstiel Medical Sciences

University of Miami

The University's Rosenstiel School of Marine and Atmospheric Science including the Aplysia Rearing Facility, CIMAS Building, Doherty Marine Science Center, Grosvenor – East, Grosvenor – South, RSMA Science & Administration Building is protected by heavy duty accordion shutters at a total cost of $466,900 and funded by the FEMA Pre-Disaster Mitigation Grant Program of 2004-2005.

Homeless Shelters

Community Partnership for the Homeless, Inc.



This downtown Miami homeless shelter houses over 500 individuals plus staff and is protected by heavy-duty hurricane glass installed throughout at a cost $99,000 and funded by the Hazard Mitigation Grant Program through FEMA-1204-DR-FL.

Miami Rescue Mission

This homeless shelter is located in downtown Miami. The men's dormitory (above) and women's dormitory (below) are protected by at a cost of $158,000 and funded by the Hazard Mitigation Grant Program through FEMA-1300-DR-FL.

Miami-Dade County Government

Miami-Dade Police Department

The Miami-Dade Police Northwest District Station has a reinforced roof at a cost of $103,000 and funded by the Hazard Mitigation Grant Program through FEMA-1539-DR-FL

Miami-Dade Police Department

The Miami-Dade Police Training Bureau building was hardened at a cost of $102,000 funded by the Hazard Mitigation Grant Program through FEMA-1545-DR-FL

Miami-Dade Police Department

The Hammocks District Station and Northside District Station have hardened roofs at a cost of $318,000 and funded through the FEMA Pre-Disaster Mitigation Program 0f 2004-5. This station also received $90,000 for window protection through the State's Residential Construction Mitigation Program.

Northside District Station

A Protected AC System

Ground Water Intake

Ground Water Return

This air handler at the Miami-Dade Information Technology Department building has accordion shutters installed to protect it from flying debris during a storm. The shutters are closed just before the arrival of tropical storm force winds and reopened as soon as the winds subside. The system is also protected from possible loss of the county water supply by allowing the system to draw directly from ground water for cooling then immediately returning the water back to ground. Total cost: $220,000

Port of Miami

Terminal H at the Port of Miami has windstorm protection provided by passive, perforated metal panels costing $395,000 and funded by the Hazard Mitigation Grant Program through FEMA-1609-DR-FL, Hurricane Wilma.

Municipalities

City of Sweetwater

The city hall, which also houses the city's Police Department, has windstorm protection provided by passive, perforated metal panels costing $130,000 and funded by the Hazard Mitigation Grant Program through FEMA-1300-DR-FL, Hurricane Floyd.

City of North Miami Beach

The North Miami Beach City Hall is one of seven municipal buildings in the city of North Miami Beach with window protection installed at a cost of $70,000 and funded by the Hazard Mitigation Grant Program through FEMA-1345-DR-FL.

Solid Waste Facility

Washington Park

Allen Park Center

City of Miami Springs

The Senior Citizen's Activity Center in the city of Miami Springs was outfitted with accordion shutters at a cost of $17,000 and funded by the Hazard Mitigation Grant Program through FEMA-1345-FL-DR.

City of Miami

Install Shutters on the city's GSA Property Maintenance Building for $22,000 through the Hazard Mitigation Grant Program through FEMA-1345-DR-FL.

City of Miami

Retrofit the city's GSA Fleet Maintenance Garage for $565,000 through the Pre-Disaster Mitigation Program of 2003.

Village of Pinecrest

The municipal building in the village of Pinecrest was hardened to withstand the strongest of hurricanes at a cost of $342,000 and funded by the Hazard Mitigation Grant Program through FEMA-1345-FL-DR.

Hospitals

Miami Children's Hospital

Miami Children's Hospital is the only licensed specialty hospital exclusively for children in South Florida. The entire main building was encapsulated to provide protection against the most severe windstorm. $5,000,000 of the encapsulation cost was funded by the Hazard Mitigation Grant Program through FEMA-1345-DR-FL.

Baptist Health South Florida

Doctor's Hospital in Coral Gables has a wind retrofit at a cost of $2,027,000 and funded by the Hazard Mitigation Grant Program through FEMA-1545-DR-FL

Jackson Health System

The Highlands Professional Building with steel screen through the Hazard Mitigation Grant Program for $487,000 by FEMA 1602-DR-FL.

Jackson Memorial Hospital

The Ambulatory Care Center at Jackson Memorial Hospital is protected by perforated steel window coverings for a total of $716,000 through the Pre-Disaster Mitigation Program of 2004/5.

The Public Health Trust

Central Building
$222,000

Rehabilitation Annex
$395,000

South Wing
$414,000

West Wing
$526,000

Institute Building
$394,000

Rehabilitation Building
$551,000

Window protection through the Pre-Disaster Mitigation Program

Citrus Health Network

This medium sized mental health hospital is located just off the Palmetto Expressway in Hialeah, Florida. Accordion shutters have been installed throughout at a cost of $127,000 and funded by the Hazard Mitigation Grant Program through FEMA-1204-DR-FL. Additionally, the hospital telephone system has had a ground fault system installed to protect against lightning strikes.

Low Income Housing

Hialeah Housing Authority

Ashley Plaza public housing has steel screen window protection at a cost of $314,400 and funded by the Hazard Mitigation Grant Program through FEMA-1609-DR-FL.

The Residential Shuttering Program

House #1

House #1000

The Residential Shuttering Program installs aluminum storm panels on the homes of low-income elderly residents of Miami-Dade County and its municipalities. Pictured above left is house number 1 completed in January 2002. On August 27, 2004, panels were installed on house number 1,000. Also, in this program exterior doors that open in are reinforced as added protection to the building envelope. This project is funded in excess of $2,000,000 through the Residential Construction Mitigation Program, the Hazard Mitigation Grant Program and appropriations by the Miami-Dade County Board of County Commissioners. The Miami-Dade County Community Action Agency is the lead agency for this program.

community Action
Helping People. Changing Lives.

MIAMI-DADE COUNTY

The Shuttering Committee

Other Projects: The CHARLEE Project

This program provides group homes for troubled youth. This is the Kendallwood House, one of four such homes with accordion shutters installed for $75,000 provided by the Hazard Mitigation Grant Program through FEMA-1345-DR-FL.

Shenandoah House

Bayshore House

Pine Acres House

Flood Mitigation

The hydrological characteristics of South Florida are unique. Because it is so flat, we will never have huge volumes of water racing down the hillside destroying everything in its path. Flood damage here is much more subtle. We have just the opposite problem; the lack of slope means rainwater does not rapidly run off but must be absorbed into the ground. So, when the ground is saturated and the lakes and canals are full, there is nowhere for the rainfall to go hence, we flood.

The main substrate in South Florida is oolitic limestone that is extremely porous; in layman's terms, like a giant sponge and, like a sponge, works best when it's damp. Neither a totally dry sponge nor a sopping wet sponge works; the damp sponge is what absorbs water. This is why one of the major stormwater management methods in South Florida is the use of ground recharge systems more commonly referred to as French drains.

In 1998, the Quality Neighborhoods Improvement Program (QNIP) bond issue was passed by the voters of Miami-Dade that includes, among other things, approximately $50 million for stormwater drainage projects throughout the county. The county funded mitigation measure was used as the main Local cost match for the ensuing C-4 Basin Initiative.

Additionally, appropriations by the state legislature for stormwater drainage projects within Miami-Dade County municipal boundaries has averaged $10 million to $15 million annually for fiscal years 2001 thru 2004. These are primarily ground recharge systems with outfalls to various primary and secondary conveyance canals or to nearby lakes.

At the same time as the above noted projects are going on, major cleaning and shaping of the secondary canal system is underway under the supervision of the county's Department of Environmental Resources Management and is funded by "406 Mitigation" tied to Hurricane Irene and the No-Name Storm of the year 2000.

The C-4 Basin Initiative

In October of 1999, Hurricane Irene passed over Miami-Dade County causing severe flooding. Then, in October of 2000, one year later, the No-Name storm hit once more causing severe flooding. The governor of Florida tasked the Local Mitigation Strategy Working Group, acting as the *Governor's South Florida Flood Task Force*, to find a solution to the flooding problems. A committee was formed, and the South Florida Water Management District was chosen as the lead agency in the effort. Other organizations on the committee were the Miami Dade Office of Emergency Management, Miami-Dade Department of Environment Resources Management, the Florida Division of Emergency Management, the U.S. Army Corps of Engineers, URS Corporation, PBS&J and the municipalities along the waterway.

An analysis was made of the entire county looking at such things as lane-miles of damage to roads, populations of the various hydrological basins, and flood damage claims filed with insurance companies, FEMA and the Small Business Administration. The results of the analysis pointed to the C-4 or Tamiami Canal basin as the place to start.

The major components of the initiative are large pumps installed downstream of the flooded area to move outflow against an incoming tide; an emergency detention basin upstream of the flooded area to divert outflow before it enters the area; dredging and shaping of the canal between the basin and the pump to improve overall flow and pumps on the adjacent Miami River to keep the C-4 outflow from overwhelming the river discharge. Other components of the initiative include drainage projects in the C-4 basin municipalities and unincorporated areas of the County.

The Tamiami Canal (C-4) Forward Pump

The forward pump on the C-4 or Tamiami Canal at Structure S25B is designed to push water flow downstream against the incoming tide thus allowing the system to continuously drain. It is actually three 54" pumps that together pump 600 cfi (cubic feet per second), which equals 4,500 gallons per second. This pump is the first element in the C-4 Basin Initiative and was constructed at a cost of $3,400,000 through the Hazard Mitigation Grant Program funded by FEMA-1345-DR-FL, the October 2000 "No-Name" storm.

The Miami River Forward Pump

The forward pump at S-26 on the Miami River (C-6) is designed to counter the effects of the forward pump on the C-4 and prevent the C-4 Canal outflow from overwhelming the river thus causing flooding up-river. This pump, which also moves 600 cfi, is the second element in the C-4 Basin Initiative and was constructed at a cost of $5,200,000 through the Hazard Mitigation Grant Program funded by FEMA-1345-DR-FL.

The Emergency Detention Basin

Pictured is the main pump station at the C-4 emergency detention basin (EDB). The EDB is made up of two reservoirs of nearly 500 acres each, which allows for approximately 4,000 acre/feet of water to be diverted from the C-4, which, in turn, creates increased holding capacity in the downstream section of the canal. The EDB is one more element in the C-4 Basin Initiative costing $5,500,000 from the Hazard Mitigation Grant Program, FEMA-1345-DR-FL.

The EDB Supply Canal

The supply canal is the link between the emergency detention basin and the C-4 Canal. The supply canal and the access bridge were built at a cost of $3,700,000 and were funded by the Hazard Mitigation Grant Program from FEMA-1345-DR-FL. An item of interest is that the bend in the supply canal at the point it enters the C-4 is to avoid an ancient Indian midden and burial ground.

The Miccosukee Tribe of Indians of Florida

The Miccosukee Indian Reservation is located in the C-4 Basin but upstream of the initiative improvements. To compensate, these large trailer mounted pumps were purchased at a cost of $100,000 and, when needed, are placed in strategic locations to reduce flooding. Funding is through the Hazard Mitigation Grant Program from FEMA-1345-DR-FL.

The Sweetwater Berm

In the mid-1980's, the widening of U.S. 41, the Tamiami Trail, raised the elevation of the south bank of the C-4 or Tamiami Canal, which, in turn, caused an uneven distribution of floodwaters. This berm was constructed to bring the north bank back even with the south bank. A linear park with benches, a gazebo and a vitae course was added to enhance the project. This is another element in the C-4 Basin Initiative and was constructed at a cost of $967,000 through the Hazard Mitigation Grant Program funded by FEMA-1345-DR-FL.

Storm Water Control

Most of the time, in Miami-Dade County, when you see these curb cuts what you have is a ground water recharge system, more commonly called a French drain. The photos below show you what's underground. In 1998, Miami-Dade County passed a $70 million bond issue named QNIP, the Quality Neighborhoods Improvement Program, most of which was to relieve neighborhood flooding. Many QNIP dollars were used as project or global match for the C-4 Basin Initiative.

Uninstalled Curb Cuts

Catch Basins

Perforated Pipe

A Manhole

Other Mitigation Measures

While window protection for windstorm and flood protection account for the bulk of the mitigation dollars spent in Miami-Dade County, they are by no means the only mitigation measures that are considered.

It should be noted that many projects are sponsored by agencies other than FEMA. There are dune restoration projects and flood related studies in progress in Miami-Dade County that are funded though the NOAA Coastal Impact Assistance Program. Mitigation measures along the Intercoastal Waterway have been funded through the Florida Inland Navigation District. Wildfire mitigation through controlled or prescribed burns is sponsored by The Nature Conservancy, Florida Division of Forestry and the National Park Service.

Proper Tree Trimming

Local Mitigation Strategy partners Miami-Dade County Cooperative Extension Service and the University of Florida's Institute of Food and Agricultural Sciences sponsor annual training classes for arborists and park and public works specialists in the proper way to prune trees for hurricane survival. Held annually since the year 2000, this program is presented in cooperation with the Miami-Dade Office of Emergency Management and the Local Mitigation Strategy Working Group.

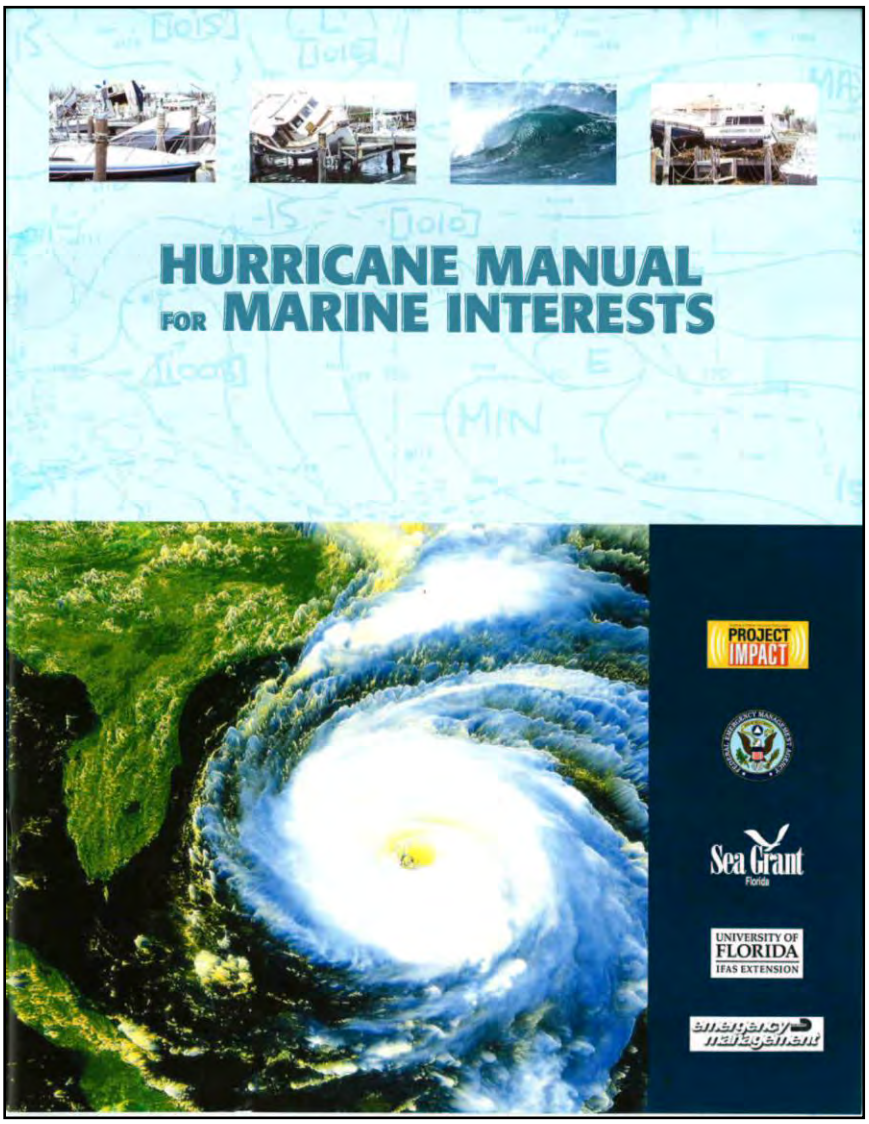
Before

After

Miami River

Community Benefit Issue Request (CBIR) from FY 2005, FY 2006 and FY2007 was used to dredge the Miami River shipping channel. $6,800,000 was funded for the Federal channel and $5,200,000 for the non-Federal or that part of the river to either side of the Federal channel.

Hurricane Manual for Boaters



This *Hurricane Manual for Marine Interests* was developed through the Florida Sea Grant program, a member of the Local Mitigation Strategy Working Group. It explains the proper ways to prepare boats for hurricanes and teaches marine safety for before, during and after a storm. The manual was funded through FEMA's Project Impact.

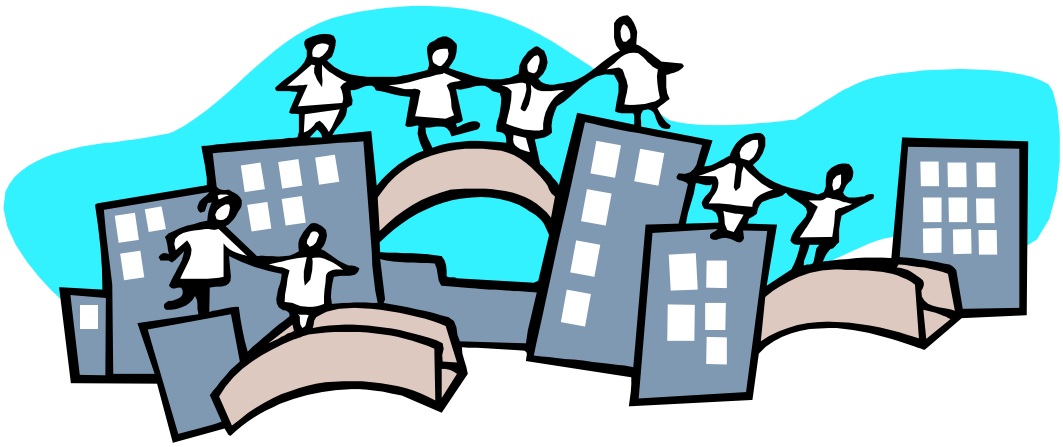
Sea Grant Florida

Building a Disaster Resistant Community
PROJECT IMPACT

Terrorism Mitigation

The terrorism mitigation committee of the Local Mitigation Strategy concluded that the best way to fight terrorism is through the education of our children. This game, Home Free USA, was developed as a way to get the kid's attention. It's based on the Federal security color chart and asks the student different questions about terrorism. Correct answers advance the player until he or she is "Home Free." They are then taught what terrorism is, what it is not, and to be aware of terrorism without living in fear of it. Initially, a two-week social studies module has been devised and successfully tested in several schools.

Partnerships



The Local Mitigation Strategy of Miami-Dade County promotes partnerships and works with many other agencies and organizations to promote mitigation activities. The members of the LMS Working Group come from our municipalities, our county departments, our colleges and universities, our public and private schools, our service organizations, our faith based community and our private sector companies and corporations. There are, on average, over one hundred people and over sixty organizations represented at any given meeting of the Local Mitigation Strategy Working Group.

In some of the partnerships, the Local Mitigation Strategy is directly involved in coordinating efforts or funding measures or inter-organizational liaison and other such activities. In other cases, such as the National Flood Insurance Program's Community Rating System or the High Velocity Hurricane Zone section of the Florida Building Code, the LMS supports the effort but is not directly involved in the activities.

Disaster Resistant Universities

In 2001, the Federal Emergency Management Agency initiated the Disaster Resistant Universities (DRU) program and the University of Miami (above) was one of the charter members in the program and hosted the first DRU conference. In 2004, Florida International University entered into the program, as well. The program encourages colleges and universities nationwide to become active participants in hazard mitigation. In Miami-Dade County, the University of Miami and FIU are joined by St. Thomas University, Miami Dade College, Florida Atlantic University, Florida Memorial University, Johnson & Wales University, Barry University and the University of Florida as active participants in the Local Mitigation Strategy.

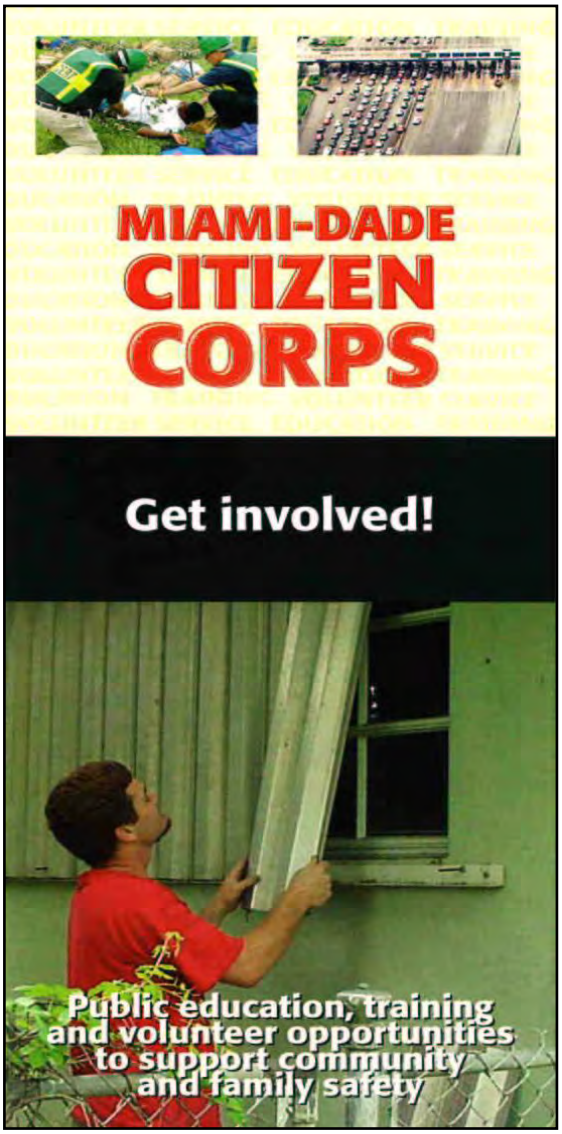
Alternate Spring Break

This program gives college students a way to spend their spring break doing service to the community. In Miami-Dade County, The American Red Cross of Greater Miami and the Keys, AmeriCorps, the Community Action Agency and the Miami-Dade Office of Emergency Management, all partners in the Local Mitigation Strategy, have brought the students here to install hurricane shutters on the homes of low-income elderly residents.

American Red Cross
Together, we can save a life

MIAMI-DADE COUNTY
EMERGENCY MANAGEMENT & HOMELAND SECURITY

Miami-Dade Citizen Corps



citizen corps
Learn more and join today!
CERT
COMMUNITY EMERGENCY
medical reserve corps
VIPS
Volunteers in Police Service
WARNING
THIS AREA PROTECTED BY CITIZENS' CRIME WATCH

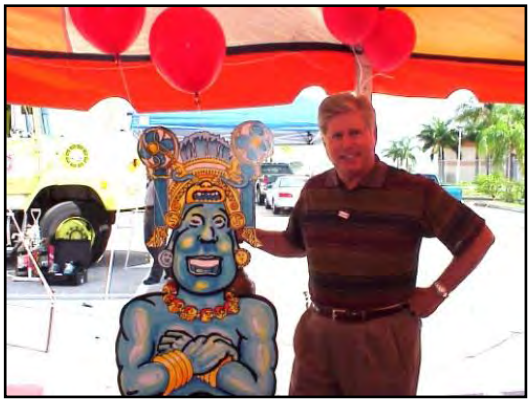
The Local Mitigation Strategy works to develop the Miami-Dade Citizen Corps and all its components. While some components are more fully developed than others, all will help put Miami-Dade in the forefront of the Citizen Corps national effort. The Citizen Corps brochure pictured above was funded by the Local Mitigation Strategy and Project Impact.

Miami-Dade CERT Teams

The Local Mitigation Strategy works with the Miami-Dade Community Emergency Response Teams and provided the funding to purchase equipment for low-income teams and to print the CERT brochure. Miami-Dade's CERT program is a national leader with close to 1,500 team members trained.

Hurricane Expo

The Home Depot and
Miami-Dade Fire Rescue helps



Insurance Commissioner
Tom Gallagher helps

Miami-Dade Fire Rescue
Air Rescue helps

Sponsored By
Federal Alliance for Safe Homes
The Home Depot
Miami-Dade
Office of Emergency Management

*Storm*Ready County

Jim Lushine, left, of the National Weather Service's (NWS) Miami Forecast Office presents the *Storm*Ready County sign to Frank Reddish, the LMS coordinator and Chuck Lanza, director of Miami-Dade Emergency Management. The NOAA and the National Weather Service have set down certain standards that must be met for a community to earn the right to call itself a *Storm* Ready Community.

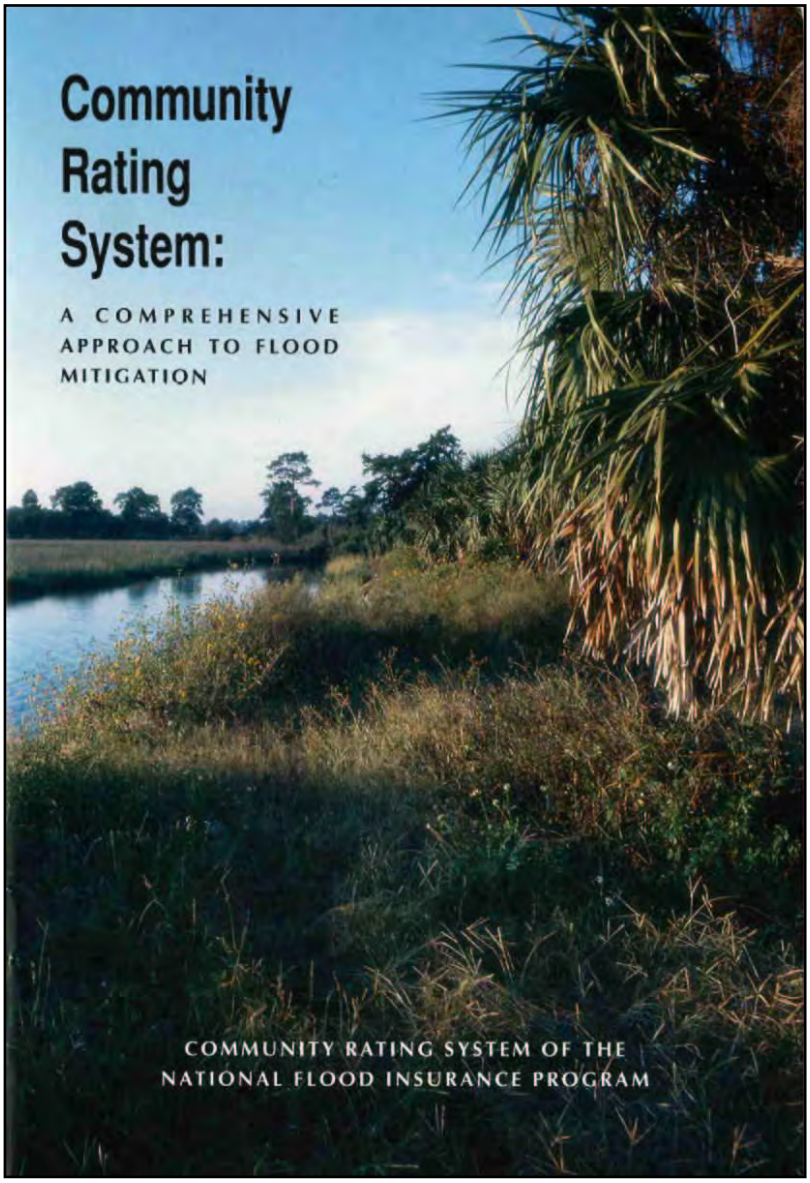
In 2008, Rob Molleda, left, of the NWS Miami Forecast Office, with LMS coordinator Frank Reddish and Emergency Management director Doug Bass, extends *Storm* Ready status for Miami-Dade County through the year 2011. Miami-Dade County was re-designated a *Storm* Ready Community in 2011-2013.

Miami-Dade was renewed as a Storm Ready Community again in 2014.

National Flood Insurance Program

Miami-Dade County has a CRS rating of 5 and strives to have every municipality within the county take part in the

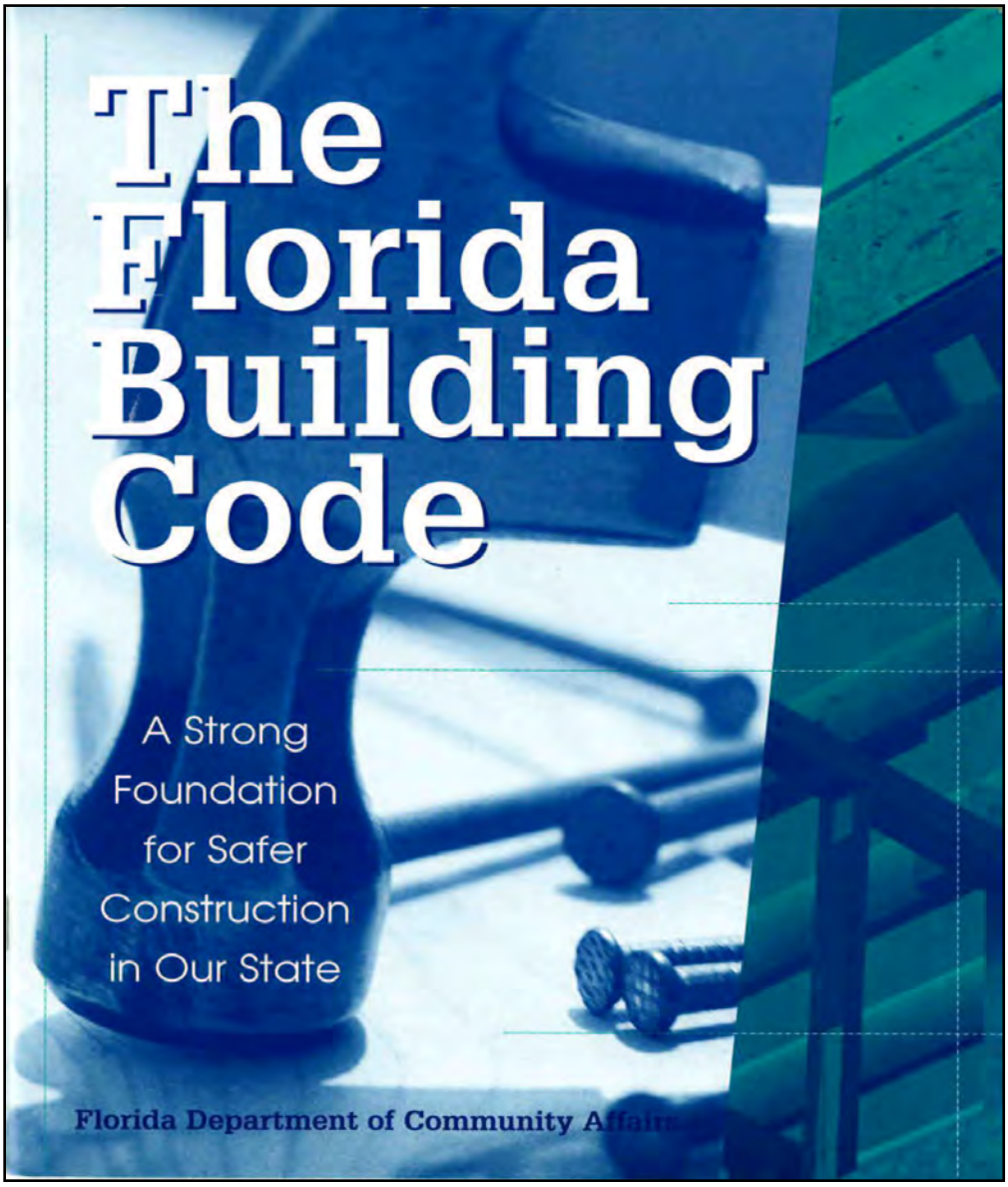
Community Rating System



The Local Mitigation Strategy and the
Department of Environment Resources Management

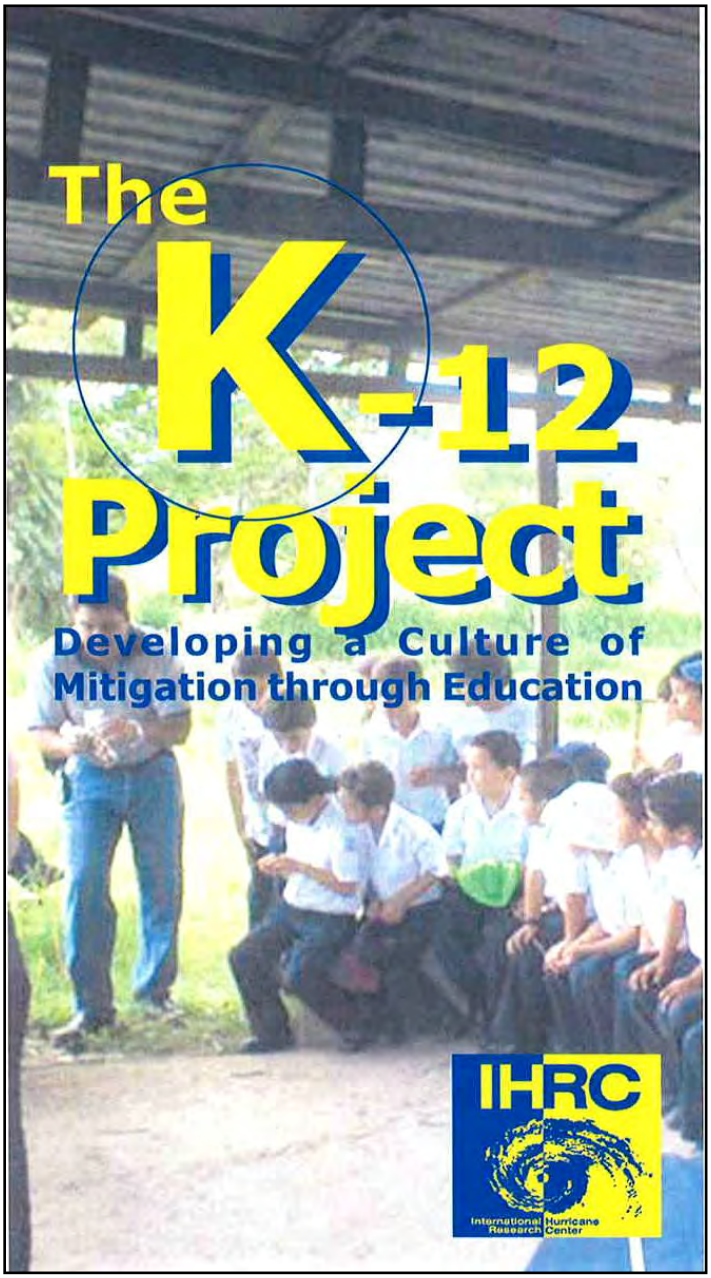
BE FLOOD ALERT
NATIONAL FLOOD INSURANCE PROGRAM

The Florida Building Code



The strong elements of the *South Florida Building Code* were retained in the new *Florida Building Code* as the "High Velocity Hurricane Zone" section of the code. Miami-Dade Building Department and the Miami-Dade Building Code Compliance Office (BCCO) led the effort to keep these strict standards in our county. For this effort, the Miami-Dade Building Code Compliance Office was awarded the national award for mitigation at the National Hurricane Conference in New Orleans in 2003. BCCO is a long-standing partner in the Local Mitigation Strategy.

International Hurricane Research Center



The International Hurricane Research Center at Florida International University is a charter member of the Local Mitigation Strategy Working Group. The K-12 Project is designed to take the concept of mitigation to schoolchildren. The program consists of a series of workshops for teachers as well as mitigation expositions in schools.

Save a Life!

Miami-Dade County has many lakes and canals and at least once a week a vehicle plunges into one, often costing lives. The life-saving tool pictured above combines a seat belt cutter, a flashlight and a center punch to break the vehicle window and escape. These devises are distributed by the Miami-Dade Office of Emergency Management and were funded through the Miami-Dade Local Mitigation Strategy and Project Impact.

The Ring Shank Nail

Professor Ricardo Alvarez and his research and development team at Florida International University recognized that the ring shank nail combined the lift resistance of screws with the shear strength of regular nails. Wind testing confirmed this and now use of the ring shank nail is included in the Florida Building Code and is required for roof installations throughout the High Velocity Hurricane Zone. Mr. Alvarez and FIU are charter members of the Miami-Dade Local Mitigation Strategy Working Group.

Completed Projects 2015-2019

2015 Projects

Local Mitigation Strategy Project Status Reported 01/2015-12/31/2015			
Completed Projects			**Funding Source**
Aventura	NE 29 Place Phase 1 drainage work	$425,000.00	FDEP
Cutler Bay	Caribbean Boulevard JPA project reduce flooding and increase traffic flow	$11,173,054.00	CITT funds
Cutler Bay	SW 212 Street Drainage Improvements from SW 87 Ave to SW 85 Ave	$850,000.00	TAP & FL Leg. Approp. Grant
Emergency Management	Arnold Hall South Engineering Study	$50,000.00	State Shelter Retrofit
Emergency Management	Reilly Coliseum Engineering Study	$50,000.00	State Shelter Retrofit
Emergency Management	Edwards Hall Engineering Study	$50,000.00	State Shelter Retrofit
Emergency Management	Arnold and Edwards Connector Hall Engineering Study	$50,000.00	State Shelter Retrofit
Emergency Management	Arnold Hall North Engineering Study	$50,000.00	State Shelter Retrofit
Florida City	Generator for Underground Drainage in Friedland Manor	$904,7398.82	CDBG-DR and City Funds
Homestead	EOC equipment to support activations	$450,000.00	CIF
Homestead	Land acquisition for storm water drainage	$3,000,000.00	CIP
Homestead	Retrofit of City Hall and EOC to Category 5 hurricanes.	$3,958,500.00	Hazard Mitigation Grant Program (HMGP) (, EOC Grant, General Fund
Homestead	Emergency generators for EOC	$58,382.00	New City Hall Building fund
Key Biscayne	Erosion Control Implementation	$10,000.00	Public Works General fund
Key Biscayne	Stormwater outfall rehabilitation on Harbor Drive	$150,000.00	Stormwater Utility and grant
Miami	Training Center and back up EOC Elevator refurbishment	$150,000.00	PDM & PA
Miami	Brennan Channel marker replacement	$65,000.00	HMGP, PDM
Miami Dade College	Hialeah Campus installation of hurricane shutters/window protection Building 1000.	$250,000.00	HMGP

Local Mitigation Strategy Project Status Reported 01/2015-12/31/2015			
Completed Projects			**Funding Source**
Mount Sinai	Purchase twelve synchronized generators to protect patient power supply	$5,000,000.00	Grants and Loans for Public Works and Development Facilities, Federal match to state funding
Mount Sinai	Relocation of generators for energy facility into hurricane rated enclosure above storm surge	$8,994,838.00	State DEM
Mount Sinai	Provide hurricane rated structures to protect power equipment and ensure connection to central energy plant	$7,351,169.00	HMGP
Seaport	Construction of New Seawall - Area 2	$9,600,000.00	FDOT
Seaport	Storm Bollards	$70,115.00	Seaport Funds
Seaport	Concrete Panels	$619,858.00	Seaport Funds
Sweetwater	Stormwater Improvements Phase IIB North Project	$1,600,000.00	US EPA, Miami Dade GOB
University of Miami	Hospital wind mitigation and roof tie downs	$4,100,000.00	PDM
Completed Total	**# of Projects: 26**	**$58,960,540.00**	

Under Construction			Funding Source
Bal Harbour	IT Enhancements to hardware, software and security.	$170,800.00	CIF
Biscayne Park	New Municipal/Public Safety Building	$856,000.00	DEO
Coral Gables	Fire Station #3 Hurricane shutters	$88,000.00	CIP
Cutler Bay	Reduction of Floating Debris	$60,000.00	Budgeted annually
Cutler Bay	Portable Traffic Control Signs	$200,000.00	Grant
Cutler Bay	Flood Zone Data GIS System	$140,000.00	Stormwater Utility Funds
Cutler Bay	Municipal AM Emergency Radio Broadcast Station	$85,000.00	Grant
Cutler Bay	Removal of Australian Pines and other Exotics	$100,000.00	F.Y. 2019-2020 Budget
Cutler Bay	Emergency Portable Air Conditioner Units	$120,000.00	Grant
El Portal	Village of El Portal Stormwater Improvements	$10,000,000.00	Emergency Operations Flood and Post Flood Response, FMA
Hialeah	Roadway/Stormwater Improvements (SE 4 ST to HIA DR from 6-8 AVE)	$151,469.00	City CIFs
Hialeah Gardens	Central District Drainage Improvements	$2,500,000.00	Flood Control Projects, RFC, HMGP
Homestead	Upgrade OCB's (Oil Circuit Breakers) with VCB's (Vacuum Circuit Breakers)	$150,000.00	CIP
Homestead	Improve Transportation Infrastructure	$2,000,000.00	Miami-Dade County Roads and State of Florida Roads
Homestead	Wastewater Infiltration/Inflow	$2,400,000.00	CIF
Homestead	Sidewalks/ Roadway Improvements	$200,000.00	CIP
Homestead	Improvements to Existing Buildings	$500,000.00	CIP
Homestead	New Sewer Mains	$2,000,000.00	CIF
Homestead	Sewer lines in the Northwest Neighborhood and the West Industrial Area	$3,300,000.00	CIFs
Homestead	Installation of storm shutters and/or Impact Resistant Windows at different locations	$1,000,000.00	CIF
Homestead	Police Station Security/Hardening	$50,000.00	Bond Issue for New Police Station Building

Under Construction continued			Funding Source
Homestead	City Hall Security Enhancement	$60,000.00	New City Hall building fund
Homestead	Customer Service & Finance Security Enhancement	$65,000.00	New City Hall Building Fund
Jackson	Wind Retrofit Project at RTC	$8,589,588.00	HMGP Grant
Key Biscayne	Traffic Signage & Pavement Marking Improvements Master plan	$40,000.00	CIF
Key Biscayne	Comprehensive Review of Local Laws and Regulations	$5,000.00	Stormwater Utility Fund
Miami Beach	Venetian Islands Drainage Improvements	$9,100,000.00	Grant Applied For
Miami Beach	Drainage Hot Spots	Unknown	Grant
Miami Beach	Venetian Islands – Neighborhood Improvements	Unknown	Grant
Miami Beach	Sunset Islands 3 & 4 – Neighborhood Improvements	Unknown	Grant
Miami Beach	Lower North Bay Road – Neighborhood Improvements	$14,000,000.00	City of Miami Beach
Miami Beach	Citywide Dune Restoration & Enhancement Project	$400,000.00	Beach Erosion Control Projects, Flood Control Projects
Miami Gardens	Create GIS Layer for Storm Sewer Infrastructure	$100,000.00	Unknown
Miami Springs	Removal of Australian Pines	$14,000.00	City Budget
Mount Sinai	Code Plus Construction Enhancements Surgical Tower	$6,500,000.00	FEMA
North Miami	Flood Prevention and Mitigation: Drainage Basin13	$600,000.00	City Funds
North Miami	Sanitary Sewer Backup	$700,000.00	Unknown
North Miami	Surge Resistance and Flood Mitigation at Keystone Point and Sans Souci	$500,000.00	Unknown
North Miami Beach	NE 172nd Drainage Improvement	$17,916.92	CIP
North Miami Beach	Install Additional Storm Water Basins or Increase Existing Basins	$60,000.00	CIP
North Miami Beach	Construct Storm Water System that may include Injection Wells in Areas Prone to Flooding	$120,000.00	CIP
North Miami Beach	Clean and Improve Drainage Systems	$428,400.00	CIP
North Miami Beach	Eastern Shores Drainage Repair/Replacement	$450,000.00	CIP
Palmetto Bay	Flood Zone Data Maintenance: GIS System	$100,000.00	General Funds
Palmetto Bay	Localized Drainage Improvements	$900,000.00	CIP

Under Construction continued			Funding Source
Public Housing and Community Development	Haley Sofge Towers	$1,000,000.00	Mitigation Grant, CIP
Public Housing and Community Development	Haley Sofge Towers	$2,056,321.00	Mitigation Grant, CIP
Sweetwater	South Florida Water Management District Flood Protection Berm	$1,000,000.00	SFWMD
West Miami	Impact Resistant Windows for City Hall	$50,000.00	CDBG
Under Construction Total	**# of Projects: 50**	**$ 60,732,894.92**	

Funded - Not Yet Started			
MD Public Works	SW 157 AVE Canal Interconnect	Unknown	CIP
Aventura	Stormwater Drainage Projects	Unknown	CIP
Coral Gables	Basin Inflow and Infiltration Upgrade	$1,179,793.00	FDEP Grant
Cutler Bay	Preventive Pruning of Existing Town Tree Inventory	$285,000.00	Budgeted F.Y. 2016 - 2017
Cutler Bay	Debris Removal	$400,000.00	Unknown
Cutler Bay	Storm Water Outfalls	$500,000.00	Stormwater Utility Fund
Doral	Installation of Transfer Switch at Morgan Levy Park for Emergency Power	$50,000.00	PDM, City General Fund
Doral	Stormwater Improvements 5-Year CIP: Year 2	$1,017,150.00	FDOT Grant
Doral	NW 33 St. from NW 82 Ave. to NW 79 Ave. Roadway Improvements	$1,600,000.00	HMGP
Hialeah	Roadway Reconstruction (W 8-10 Ave from W 31-33 Street)	$2,190,724.00	CDBG
Homestead	New Sewer Mains: To upgrade sewer main/lines to eliminate raw sewage from leaking into the water table.	$2,000,000.00	CIF
Jackson	JMH Campus Wide Roof Replacement	$2,500,000.00	Jackson's Bond Referendum 11/05/2013
Jackson	Utility/Energy Center at JMH	$5,290,000.00	CIP
Jackson	Emergency Switchgear Replacements at JNMC	$6,950,000.00	GOB 2005 & Jackson's Bond Referendum 11/05/2013
Jackson	Volt Oil Switch Replacements	$7,350,000.00	Internal Funding
Key Biscayne	Coastal Dune Vegetation	$10,000.00	CIF
Key Biscayne	New Stormwater Outfall Construction	$210,000.00	Private Funding
Key Biscayne	Drainage Improvements on Fernwood Road & Hampton Road	$80,000.00	Stormwater Utility Fund Capital Expenditures
Key Biscayne	Flap Gates at Outfalls (Backflow Prevention)	$750,000.00	Stormwater Utility Capital Expenditures
MD Public Works	NW 19 Avenue and NW 84 Street	$120,000.00	HMGP, Storm Water Utility Fees (SWU)
MD Public Works	NW 39 Street and NW 25 Avenue	$130,000.00	Internal Funding
MD Public Works	NE 6 AVE& NE 185 Street; NE Miami CT, from NE 196-198 ST; NW 22 AVE & NW 175 ST; North DR & NE 14 AVE	$835,000.00	Stormwater Utility Capital Expenditures

Funded - Not Yet Started			
MD Public Works	Seaboard Acres Pump Station	$1,500,000.00	FDOT -
MD Public Works	Larchmont Gardens Pump Station	$1,671,841.00	Other Internal Funding
MD Public Works	NE 149 Street, from NE 10 Ave to NE 14 Ave	$340,000.00	
Mount Sinai	Code Plus Construction Energy Center Facility Protect Redundant Power Supply	$250,000.00	Internal Funding
Mount Sinai	Code Plus Construction Enhancements New Medical Office Tower	$3,750,000.00	Private and bond funding
Mount Sinai	Elevate Seawall	$8,000,000.00	DOH and USACE Section 14
North Miami Beach	Dead End Eliminations	$42,000.00	CIP
North Miami Beach	Drainage in Alleyways	$50,000.00	CIP
North Miami Beach	Leak Detection Services	$50,000.00	CIP
North Miami Beach	Storm Water Pump Replacement Program	$50,000.00	CIP
North Miami Beach	Force Main Installations and Lift Stations Rehabilitations	$125,000.00	CIP
North Miami Beach	Pump Replacements	$165,000.00	CIP
North Miami Beach	Inflow and Infiltration Prevention	$250,000.00	CIP
North Miami Beach	Fire Flow Improvements	$320,000.00	CIP
North Miami Beach	Trenchless Pipe Replacements	$325,000.00	CIP
North Miami Beach	Roadway Improvements	$327,000.00	CIP
North Miami Beach	Storm Water Improvement City-Wide	$336,885.00	CIP
North Miami Beach	Aerial Pipe Crossings	$350,000.00	CIP
Pinecrest	Purchase of Portable Two-Way Radios	$110,000.00	Internal Funding
Virginia Gardens	VG - NW 40 street Stormwater Improvement Project	$697,000.00	Grants, FDOT
Virginia Gardens	VG - 66 avenue storm drain, ADA, and road widening project	$650,000.00	State of Florida legislation
Funded - Not Yet Started	**# of Projects: 43**	**$ 51,281,944.00**	
Total Projects	**129**	**$ 170,975,378.92**	

2016 Projects

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
Cutler Bay	SW 216th Street and SW 97th Ave Traffic Circle	$204,486.00	Budgeted
Homestead	New Sewer Mains	$2,000,000.00	CIP
Homestead	Installation of storm shutters and/or Impact Resistant Windows at different locations	$1,000,000.00	CIP
Homestead	Customer Service & Finance Security Enhancement	$65,000.00	New City Hall Build. Fund
Homestead	Portable mobile pumps	$500,000.00	CIP
Homestead	Storm water telemetry system	$900,000.00	CIP
Homestead	City Hall Security Enhancement	$60,000.00	New City Hall Build. Fund
Homestead	Secure three (3) existing water tanks from structural damage	$600,000.00	CIP
Jackson	JMH Campus Wide Roof Replacement	$2,500,000.00	Bond Referendum
Key Biscayne	Traffic Signage & Pavement Marking Improvements Master plan	$40,000.00	CIP
Key Biscayne	Village K-8 Center Stormwater Pump Station	$350,000.00	HMGP, Stormwater Utility Fund
Miami	Training Center Elevator Refurbishment	$150,000.00	PDM, Public Assistance Program
Miami Beach	Lower North Bay Road – Neighborhood Improvements	$14,000,000.00	City of Miami Beach
Miami Lakes	Lake Martha Drainage Improvements	$1,260,000.00	Grants Storm Utility and Transportation Funds
Palmetto Bay	Drainage Improvements for Sub-Basin # 6	$490,000.00	Public Works and Economic Development Program, Stormwater Utility
Palmetto Bay	Drainage Improvements for Sub-Basin # 3	$250,000.00	PWIP, Stormwater Utility, Grants
Palmetto Bay	Localized Drainage Improvements	$900,000.00	Stormwater Utility/Grant
Palmetto Bay	Back-Up Generators and Transfer Switches	$75,000.00	Special Rev. Funds
M-D Public Works	SW 82 Ave from Flagler to SW 2 St	$109,000.00	SWU
M-D Public Works	Miller Road Drainage Retrofit	$368,063.00	SWU
M-D Public Works	NE 146 St between NE 12 Ave and NE 14 Ave	$216,880.91	SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	Starlight Development, Ph. I Drainage Improvement (NW 207 Dr - NW 206 Ter from NW 44 Ct - 47 Ave)	$682,280.00	QNIP/SWU
M-D Public Works	Repetitive Loss Area - Arch Creek	$4,528,519.02	HMGP/QNIP
M-D Public Works	Drainage Improvement Project Multiple Sites - NW 69 Street from NW 32 Avenue to NW 35 Ave; NW 75 Street and NW 16 Ave ;SW 116 Ave and SW 185 Street ;SW 115 Ave & SW 185 St	$250,000.00	Unknown
M-D Public Works	NW 185-191 St & NW 44-47 Ave (King's Gardens) [MP 8020, 8023, 623]	$722,381.00	QNIP/SWU
M-D Public Works	NPDES OUTFALL (53-41-12-NE001C)	$386,747.00	QNIP/SWU
M-D Public Works	NW 178 Street to NW 176 Street from NW 82 Avenue to NW 78 Avenue Drainage Improvement Project (Norman and Jean Beach Park ROW Drainage	$650,000.00	SWU
M-D Public Works	NPDES OUTFALL North Miami Ave from NE 91 St to Little River Canal	$141,923.00	QNIP/SWU
M-D Public Works	NW 178 Terrace from NW 47 Avenue to NW 48 Court Drainage Improvement Project	$116,275.00	SWU
M-D Public Works	NW 191 St from NW 2 -9 Ave Drainage Improvement	$401,695.00	QNIP/SWU
M-D Public Works	NW 20 St. from NW 33 -37 Ave	$401,695.00	QNIP/SWU
M-D Public Works	NW 20 Street and NW 15 Avenue	$146,519.41	SWU
M-D Public Works	NW 27-32 Ave & NW 191-199 St	$229,694.00	QNIP/SWU
M-D Public Works	NW 35 Avenue from NW 73 Street to NW 74 Street Drainage Improvement Project.	$126,228.00	SWU
M-D Public Works	NW 46 St to NW 53 St from NW 17-24 Ave (Allapatah, Phase II) [9060,9123]	$873,000.00	QNIP/SWU
M-D Public Works	NW 46 St to NW 54 St from NW 32 Ave to NW 35 Ave [624,7081,7080]	$245,129.00	QNIP/SWU
M-D Public Works	NW 53 Terrace from NW 69 Avenue to NW 72 Avenue	$247,989.99	SWU
M-D Public Works	Oleta River - NE 183 Terrace from NE 23 Court to NE 24 Avenue	$183,326.00	SWU
M-D Public Works	Palm Springs North, Phase I	$435,739.00	QNIP/SWU
M-D Public Works	Palm Springs North, Phase II	$340,423.00	QNIP/SWU
M-D Public Works	Palm Springs North, Phase III	$261,205.00	QNIP/SWU
M-D Public Works	Pump Stations Improvement Service Contract (various pump stations sites)	$500,000.00	SWU
M-D Public Works	PWD Project No. 20070696)	$2,981,645.00	RIF
M-D Public Works	PWD Project No. 20090089 JPA with Town of Cutler Bay PTP	$519,794.00	JPA with Town of Cutler Bay PTP
M-D Public Works	Queen's Park Drainage Improvements, NW 114 St & NW 19 Ave	$48,894.00	QNIP/SWU
M-D Public Works	Rucks Park Pump Station Improvements (NE 138 St & NE 4 Ave) [S:\ 4030, 610]	$540,000.00	QNIP/SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	S.W. 82nd Avenue between S.W. 48th Street & S.W. 56th Street Drainage Improvement	$65,877.00	SWU
M-D Public Works	San Mateo, Phase I (NW 67 - 74 Ave from NW 169 Ter - 167 St) [8060] [780]	$546,000.00	QNIP/SWU
M-D Public Works	San Mateo, Phase II (NW 82 - 87 Ave from NW 170 - 171 ST) [8060]	$441,000.00	QNIP/SWU
M-D Public Works	San Mateo, Phase III (NW 78 - 82 Ave from NW 170 - NW 171 ST) [8060]	$626,100.00	QNIP/SWU
M-D Public Works	San Sebastian Drainage Improvement Project - SW 42 Street to SW 47 Street between SW 132 Avenue to SW 133 Avenue	$911,000.00	QNIP/SWU/GOB
M-D Public Works	San Sebastian Phase I Drainage Improvement Project - SW 42 Street to SW 47 Street between SW 132 Ave - SW 133 Ave	$286,000.00	QNIP/SWU
M-D Public Works	San Simeon Way from NE 215 ST to NE 205 ST	$729,145.00	SWU
M-D Public Works	Seaboard Acres Ditch Enclosure (NE 4 Ave from NE 141 St & 142 St)	$350,000.00	QNIP/SWU
M-D Public Works	Serena Lakes and Stonewood Area: SW 137 CT from SW 181 ST to SW 181 TER	$50,731.00	QNIP/SWU
M-D Public Works	Serena Lakes and Stonewood Area: SW 138 PL-138 CT from SW 180 ST to SW 184 ST	$133,241.00	QNIP/SWU
M-D Public Works	Serena Lakes and Stonewood Area: SW 139 PL-139 Path from SW 180 ST to 184 ST	$262,078.00	QNIP/SWU
M-D Public Works	Serena Lakes and Stonewood Area: SW 144 PL from SW 172 ST to Cul de Sac (Additional Site)	$29,175.00	QNIP/SWU
M-D Public Works	Serena Lakes and Stonewood Area: SW 168 ST from SW 141 CT to SW 143 Pl (Site 9)	$122,278.00	QNIP/SWU
-D Public Works	Serena Lakes, SW 137 - 142 Ave & SW 180 - 172 St.	$1,628,829.00	SWU
M-D Public Works	South Miami Ave from SW 21 Rd to SW 25 Rd	$495,429.00	SWU
M-D Public Works	South Miami, Phase 1-C / Phase 2 (SW 62 Ave - SW 74 Ave from SW 40 St - SW 50 St) [3081,3086]	$846,726.00	QNIP/SWU
M-D Public Works	Starlight Development, Ph. 2 Drainage Improvement (NW 207 Dr - 200 St from NW 39 Ct - 44 Ct) [S:\ 615,6005,6020, 6000]	$687,654.00	QNIP/SWU
M-D Public Works	Streamland Gardens Drainage Improvement Project (NW 32 AV & NW 24 ST RD)	$195,431.73	SWU
M-D Public Works	Sunshine Industrial Park Drainage Improvement Project (NW 159 Drive between NW 8 Ave to NW 12 Ave)	$600,000.00	SWU
M-D Public Works	SW 100 Avenue and SW 30 Street Drainage Improvement Project (10010 SW 30 Street)	$50,000.00	SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	SW 100 Terrace and SW 117 Avenue Drainage Improvement Project (11624 SW 100 Terrace)	$100,000.00	SWU
M-D Public Works	SW 122nd Avenue & SW 10th Street {340}	Unknown	SWU
M-D Public Works	SW 128 ST FROM SW 122 AVE TO THE CUL-DE-SAC	$177,214.00	SWU
M-D Public Works	SW 94 Avenue between SW 8 Street to SW 15 St.	$312,150.95	SWU
M-D Public Works	SW 95 Street and SW 112 Avenue	$50,000.00	SWU
M-D Public Works	SW 129 Ave - 135 Ave & SW 256 St - 268 St (Meadowood/Cedar Creek Phase II)	$308,900.00	QNIP/SWU
M-D Public Works	SW 134 Avenue and SW 26 Street (Matos)	$30,000.00	SWU
M-D Public Works	SW 137 Ave between SW 56 St and SW 72 St	$592,190.21	ARRA/SWU
M-D Public Works	SW 139 Ave from SW 8 to SW 42 St [9070]	$1,795,000.00	SWU/QNIP
M-D Public Works	SW 176 Terr and SW 142 Ct (14242 SW 176 Terr)	$100,000.00	SWU
M-D Public Works	SW 2 St & SW 136 Pl	$57,810.00	QNIP/SWU
M-D Public Works	SW 21 Street between SW 67 Avenue and SW 71 Avenue (7036-38 SW 21 St)	$82,829.91	SWU
M-D Public Works	SW 252 Ter - 256 St & SW 124 Ave - SW 127 Ave (Meadowood/Cedar Creek Phase III)	$554,716.41	QNIP/SWU
M-D Public Works	SW 260 ST from SW 139 Ave to SW 139 CT	$372,560.00	Unknown
M-D Public Works	SW 34 St and SW 89 CT	$83,561.00	SWU
M-D Public Works	SW 60 STREET & SW 70 AVENUE (6015 SW 70 AVENUE)	$120,000.00	SWU
M-D Public Works	SW 64 St & SW 67 Ave {5095}	$85,050.00	SWU
M-D Public Works	SW 70 Avenue to SW 71 Avenue from SW 12 Street to SW 13 Street – Drainage Improvement	$319,748.00	GOB
M-D Public Works	SW 12 Street and SW 73 Place Drainage Improvement Project	$110,400.00	SWU
M-D Public Works	SW 73 Avenue and SW 12 Street	$59,053.00	SWU
M-D Public Works	SW 74 Avenue from SW 42 Street to Rail Road Crossing	$322,317.86	SWU
M-D Public Works	SW 76 Avenue from SW 10 Street to SW 12 Street	$111,705.00	GOB/SWU
M-D Public Works	SW 82 Street from SW 76 Ave to SW 74 Ave	$11,500.00	SWU
M-D Public Works	SW 87 AVE & SW 200 ST	$163,000.00	SWU
M-D Public Works	SW 89 Avenue and SW 131 Street - Drainage Improvement Project	$278,034.00	GOB 77456
M-D Public Works	SW 97 Ct & SW 1 St	$18,859.00	QNIP/SWU
M-D Public Works	Swale Blocks at NE 172 ST & NE 10 AVE	$70,000.00	SWU
M-D Public Works	N.W. 17th Avenue between N.W. 29th Street & N.W. 35th Street Drainage Improvement Project	$60,920.54	PTP/SWU
M-D Public Works	NE 15 court between NE 205 st & NE 199 St	$326,569.28	SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	NE 171 Street and NE 11 Court Drainage Improvement Project	$125,000.00	SWU
M-D Public Works	NE 147 St from NE 12 - 14 Ave	$120,000.00	QNIP/SWU
M-D Public Works	NE 131 Lane and NE 16 Avenue	$150,000.00	SWU
M-D Public Works	NW 27 Avenue and NW 21 Street Drainage Improvement Project	$193,587.00	SWU
M-D Public Works	NW 12 Avenue from NW 186 St to NW 195 St Drainage Improvement	$223,225.00	QNIP/SWU
M-D Public Works	NW 10 Ave from NW 103 ST-NW 100 ST	$69,260.08	SWU
M-D Public Works	NPDES OUTFALL NW 22 Ave from NW 124 St - 139 St	$664,196.00	QNIP/SWU
M-D Public Works	North Miami Avenue from NE 87 St. to 105 St.	$157,785.32	WO# 1
M-D Public Works	New Little River Drainage Improvement Project	$482,816.23	QNIP/SWU
M-D Public Works	NE 89th Street & Bayshore Drive	$340,308.91	SWU
M-D Public Works	NE 88 Terr from Biscayne Blvd to east end of road	$55,000.00	SWU
M-D Public Works	NE 5 Court and NE 147 Street (14730 NE 5 Court)	$15,000.00	SWU
M-D Public Works	NE 5 Avenue from NE 143 Street to NE 145 Street Drainage Improvement Project.	$120,000.00	SWU
M-D Public Works	NE 2nd Avenue between NE 116th Street and NE 117th Street Drainage Improvement Project	$195,125.24	SWU
M-D Public Works	Palm Springs North, Phase IV (NW 170 St - 181 Terr from NW 75 Pl - 79 Ave	$122,598.00	QNIP/SWU
M-D Public Works	Oak Brooke - SW 160 Street - SW 180 Street between SW 102 - SW 112 Avenue	$2,074,318.42	SWU
M-D Public Works	NW 46 Street to NW 52 Street from NW 35 Ave to NW 37 Ave	$903,329.00	QNIP/SWU
M-D Public Works	NW 109 Street from NW 11 Avenue to NW 10 Avenue	$159,000.00	SWU
M-D Public Works	NW 93 Street and Little River Boulevard Drainage Improvement Project	$166,764.65	SWU
M-D Public Works	NW 67 Street from NW 32 Ave to NW 33 Ave	$190,000.00	SWU
M-D Public Works	NW 65 St W/O NW 18 Ave	$34,000.00	SWU
M-D Public Works	NW 143 Street from NW 7-17 Ave	$261,251.00	QNIP/SWU
M-D Public Works	NW 82 Avenue from West Flagler Street to NW 3 Street MIDWAY ADDITION Phase I	$325,000.00	SWU
M-D Public Works	OCL1-103, C-8 Basin Project (NW 22 Ave from SR 9 to N. Burlington St)	$145,200.00	QNIP/SWU
M-D Public Works	NW 99 Street from NW 21 Avenue to NW 22 Avenue Drainage Improvement Project	$93,492.00	SWU
M-D Public Works	NW 117 St From NW 12 Ave to NW 14 Ave Drainage Improvements	$120,000.00	SWU
M-D Public Works	NE 214 Street and NE 20 Court	$100,000.00	SWU PTP

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	NE 208 Terr. & NE 26 Ave. Drainage Improvement	$106,268.00	QNIP/SWU
M-D Public Works	NE 201 Street and NE 25 Avenue Drainage Improvement Project	$30,000.00	SWU
M-D Public Works	SW 128 ST from SW 127 Ave and SW 125 Ave	$15,000.00	SWU
M-D Public Works	NE 18 PL from NE 211th Terrace to NE 214th Terrace	$623,891.52	SWU
M-D Public Works	SW 31 Street from SW 65 Avenue to SW 67 Avenue Drainage Improvement Project	$124,281.00	SWU
M-D Public Works	SW 160 Terr from SW 139 Ave to SW 140 Ct,	$95,000.00	SWU
M-D Public Works	SW 288-296 St & SW 152-157 Ave (Leisure City, Phase I & Phase II)	$984,854.00	QNIP/SWU
M-D Public Works	SW 27 Avenue from US-1 to Bayshore Drive (Phases I & II)	$4,039,657.00	PTP
M-D Public Works	NW 96 ST FROM NW 13 AVE TO NW 14 AVE	$119,660.00	SWU
M-D Public Works	NW 95 Street from NW 2nd Avenue to NW 6th Avenue	$540,357.00	SWU
M-D Public Works	NW 95 Terr Between NW 13 Ave to NW 14 Ave	$64,579.24	SWU
M-D Public Works	NW 78 Ave to NW 84 Ave from NW 7 ST to NW 10 Midway Pump Station	$4,965,866.25	GOB/SWU
M-D Public Works	NW 82 Avenue from NW 3 Street to NW 7 Street (Midway Add. Phase II) and NW 3 Street from NW 82 Avenue to NW 84 Avenue (Midway Add. Phase III)	$598,306.00	SWU / QNIP
M-D Public Works	NW 41 St to NW 54 St from NW 19-24 Ave (Allapatah, Phase I)	$2,973,676.50	QNIP/SWU
M-D Public Works	NW 65 St E/O NW 18 Ave	$42,000.00	SWU
M-D Public Works	NW 64 St from NW 21 Ave to NW 20 Ave	$44,000.00	SWU
M-D Public Works	NW 50 St from NW 69 Ave to NW 72 Ave	$100,000.00	SWU
M-D Public Works	NW 101 ST from NW 23 AVE to NW 22 AVE	$112,529.41	SWU
M-D Public Works	NW 105 Terrace from NW 11 Avenue to NW 12 Avenue	$80,000.00	SWU
M-D Public Works	NW 105 Street and NW 19	$104,978.33	SWU
M-D Public Works	NW 106 Street from NW 12 Ave to NW 10 Ave	$270,366.00	GOB/SWU
M-D Public Works	NE 110 Street from NE 2 to NE 3 Ave Drainage Improvement Project	$60,920.54	SWU
M-D Public Works	Telemetry Network Installation including 28 Satellite Canal Level Recorders and Rain Gauges	$1,100,000.00	GOB/SWU
M-D Public Works	The Tropics Drainage Improvements (NW 35 Ave - NW 36 Ave from NW 97 St - NW 101 St)	$98,382.00	QNIP/SWU
M-D Public Works	Tropical Estates Phase 3- SW 99 Ct to SW 102 Ave from SW 52 Terr to SW 55 St	$330,000.00	SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	Tropical Estates Phase 4 SW 98 Avenue to SW 102 Avenue from SW 48 Street to SW 51 Terrace	$229,120.00	SWU
M-D Public Works	Tropical Estates Sub. Phase 1 & 2 - SW 56 Street to SW 49 Street from SW 97 Ave to SW 98 Court	$438,927.00	SWU
M-D Public Works	Twin Lakes (CC7-N-10, Project 9), Phase I / Twin Lakes, Phase 2 (NW 99 St - NW 102 St NW 12 – 14 Ave - NW 14 Ave	$460,857.00	QNIP/SWU
M-D Public Works	West Miami Lakes, Phase II [3065B]	$306,158.00	QNIP/SWU
M-D Public Works	Wynona Park Drainage Improvement (NW 7 - 8 St from NW 72 - 76 Ave) [602]	$327,683.00	QNIP/SWU
M-D Public Works	Highland Lakes Blvd., Ph. III	$609,331.00	QNIP/SWU
M-D Public Works	Highland Lakes, Ph. I-A, I-B-1& I-B-2	$561,597.00	QNIP/SWU
M-D Public Works	J. G. Head Farms, SW 26 - 40 St. & SW 127 - 132 Ave	$746,709.00	QNIP/SWU
M-D Public Works	JG Head Farms Phase II C	$1,350,180.00	GOB/SWU
M-D Public Works	Miami River Outfall Retrofit, Basin 21	$2,600,000.00	QNIP/SWU
M-D Public Works	Country Lake Manors, Sec. 2 Drainage Improvement (NW 200 St - NW 201 Ln from NW 57 Ct - NW 58 Pl)	$317,505.00	QNIP/SWU
M-D Public Works	CRS RL-6 Drainage Improvement	$182,477.76	SWU
M-D Public Works	Coral Gables Waterway Canal, Phase II, III, IV, V, VI & VII. Agreement 2.	Unknown	SWU
M-D Public Works	Larchmont Backflow Preventors	$82,000.00	QNIP/SWU
M-D Public Works	Country Walk (Basin 3) [5071 B, 614, 5071A]	$565,582.00	SWU
M-D Public Works	Country Walk (Basin 5) [5073a, 5073]	$981,869.00	SWU
M-D Public Works	Country Walk Site 1 (SW 152 Ct from SW 150 St - 151 Ter)	$123,300.00	SWU
M-D Public Works	Country Walk (Basin 6) [641, 5074]	$1,154,809.00	SWU
M-D Public Works	Ives Dairy Rd. & NW 199 St Pollution Control Structure	$61,000.00	SWU
M-D Public Works	Coral Way & Granada	$30,000.00	SWU
M-D Public Works	193 Polygon 221A Coral Gables Waterway Canal, Phase VIII, IX, X, XI & XII, XIII, XIV, XV,XVI.	$6,533,000.00	SWU/NRCS Grant
M-D Public Works	HIGHLAND LAKES PHASE 4	$263,225.00	QNIP/SWU
M-D Public Works	Country Walk (Basin 7) [641, 5074]	$1,154,809.00	SWU
M-D Public Works	Highland Lakes, Ph. II	$171,866.00	QNIP/SWU
M-D Public Works	Kendall Point Drainage Improvement (SW 86 Ave - SW 83 Ave from SW 87 St - SW 84 St)	$676,979.00	QNIP/SWU
M-D Public Works	Melrose St	$130,000.00	QNIP/SWU
M-D Public Works	Leisure City Phase I	$29,300.00	SWU
M-D Public Works	LAKES OF ACADIA	$141,784.71	SWU
M-D Public Works	Country Walk (Basin 2)	$565,582.00	SWU
M-D Public Works	Coral Gables Loop Phase 1 & 2	$800,000.00	SWU/NRCS/ SFWMD
M-D Public Works	Broadmor Manor (NW 102 Street from NW 22 Avenue to NW 24 Avenue)	$120,965.40	SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	Biltmore Park	$695,000.00	SWU
M-D Public Works	Belen Phase IIIA	$1,600,000.00	SWU
M-D Public Works	Belen Phase I	$1,328,614.00	SWU
M-D Public Works	Bel-Aire Drainage Improvements (SW 184 - 190 St from SW 82 - 97 Ave)	$1,337,000.00	QNIP/SWU
M-D Public Works	Basin 4	$877,200.00	SWU
M-D Public Works	234 Polygon 280A American Homes Drainage Improvement (SW 152 St - SW 157 St from SW 144 Ct -Black Creek Canal) [1011] QNIP/SWU SW 144 Ave & SW 154 Terr C1-C-12 C-1	$562,029.00	QNIP/SWU
M-D Public Works	Meadow Wood Phase 4A	$701,583.00	QNIP/SWU
M-D Public Works	Miami River Outfall Retrofit, Basin 23, Ph. 1 & 2	$842,873.00	QNIP/SWU
M-D Public Works	Belen Phase III	$2,600,000.00	SWU
M-D Public Works	Carol City Canal Culvert at NW 39 Ave and NW 199 ST.	$755,734.00	QNIP/SWU
M-D Public Works	Coral Way to Bird Road SW 67 Ave to SW 72 Ave	$102,785.00	SWU
M-D Public Works	Drainage Improvement Project Multiple Sites (SW 118 Ave and SW 10 ST)	$41,382.00	SWU
M-D Public Works	Driveway approach reconstruction near NW 52 Avenue and NW 190 Street	$5,000.00	SWU
M-D Public Works	Brownsville Site 2, 3125 NW 48 TERR	$93,501.00	QNIP/SWU
M-D Public Works	Brownsville Site No. 5, 4500 NW 33 Ave	$75,000.00	QNIP/SWU
M-D Public Works	Blue Lagoon from NW 57 Ave to NW 62 Ave Drainage Improvements	$432,584.00	SWU
M-D Public Works	Arch Creek Estates Drainage Improvements (NE 142 - 149 St from NE 14 - 18 Ave)	$4,720,000.00	QNIP/SWU
M-D Public Works	NW 22 CT FROM NW 128 ST TO EAST GOLF DR.	$32,191.00	SWU
M-D Public Works	Lawrence Waterway @ NW 7 St / 18 Ave.	$73,063.00	QNIP/SWU
M-D Public Works	Miller Dr. from SW 132 AVE to SW 134 PL	$200,000.00	SWU
M-D Public Works	Brownsville Site No. 6, 3295 NW 43 Terr	$69,000.00	QNIP/SWU
M-D Public Works	13200 block of SW 6 ST	$19,000.00	QNIP/SWU
M-D Public Works	Brownsville Site 1,	$79,283.00	QNIP/SWU
M-D Public Works	Mini-Warehouses Drainage Improvement	$59,569.00	QNIP/SWU
M-D Public Works	High Pines Phase II	$2,300,000.00	SWU
M-D Public Works	Drainage Retrofit of Arterial Roadways Project	$800,000.00	SWU
M-D Public Works	Drainage Improvement Project Multiple Sites	$222,860.00	SWU
M-D Public Works	Drainage Improvement Project for NW 97 Ave	$327,813.97	SWU
M-D Public Works	CRS# RL-1 Munne Subdivision	$1,524,555.00	SWU

Local Mitigation Strategy Project Status Reported 01/2016-12/31/2016			
Completed Projects		**Cost**	**Funding Source**
M-D Public Works	CRS# RL-1 Lormar Subdivision	$736,570.64	SWU
M-D Public Works	Country Walk Site 3 (SW 144 St - SW 148 Ter from SW 152 Ave - 153 Pl)	$432,674.00	SWU
M-D Public Works	Country Walk Basin 1 (SW 150 St-151 Ter from SW 144 Ct-151 Ave)	$1,074,689.00	SWU
M-D Public Works	Coral Way Homesites (SW 80 Avenue from SW 30 Street to SW 28 Street and SW 30 Street from SW 81 Avenue to SW 79 Court)	$1,029,202.00	SWU
M-D Public Works	Coral Way Drainage Retrofit - SW 26 Street Between SW 119 Avenue to Florida Turnpike	$246,736.00	SWU
M-D Public Works	Central Miami Drainage Improvement Project -(SW 38 ST FROM SW 75 AV TO S. LAKE DR. between SW 73 CT FROM SW 38 ST TO SW 39 ST)	$203,520.00	SWU
M-D Public Works	C802-204, C-8 Basin Project (NW 22 Ave from SR 9 to Biscayne Canal)	$400,000.00	QNIP/SWU
M-D Public Works	Brickell Area Drainage Improvement Project (South Miami Avenue b/t SE 14th to SE 10st St & SW 2nd Avenue b/t SW 11st to SW 9th St.)	$542,894.92	SWU
M-D Public Works	Belen Conveyance	$3,070,344.00	SWU
M-D Public Works	12800 block of SW 87 Ave	$10,446.00	QNIP/SWU
M-D Public Works	SW 94 Terrace from SW 122 Avenue to End of cul-de-sac	$60,800.00	SWU
M-D Public Works	Dadeland Park Subdivision Drainage Improvement Project - SW 81 Street to SW 83 Street from SW 79 Avenue to SW 87 Avenue (Includes SW 89 Avenue from SW 85 Street to SW 88 Street (Snapper Creek Park)	$600,000.00	SWU
St. Thomas University	Replacement of wood electric power pole	$5,000.00	Self-funded
Sweetwater	South Florida Water Management District Flood Protection Berm	$1,000,000.00	SFWMD
Virginia Gardens	VG - 66 avenue storm drain, ADA, and road widening project	$650,000.00	State of FL
Vizcaya Museum and Gardens	Emergency Structural Repairs	$4,500,000.00	Capital Fund/Bond
Completed Total	**# of Projects: 223**	**$ 117,848,514.33**	

Under Construction		Cost	Funding Source
Aventura	NE 191st ST Improvements	$711,962.00	City/grant
Aventura	NE 29 PL Phase II South	$721,000.00	City
Aventura	NE 213th ST Sea Wall Restoration	$1,387,000.00	City/Grant
Bal Harbour	IT Enhancements	$170,800.00	CIP
Bay Harbor	Rehabilitation of the Broad Causeway Bridges	$13,000,000.00	CIP, State funding
Coral Gables	Fire Station #3 Hurricane shutters	$88,000.00	CIP
Coral Gables	Basin Inflow and Infiltration Upgrade	$1,179,793.00	FDEP Grant Storm Sewer
Cutler Bay	Drainage Improvements - Manta Drive	$488,600.00	Stormwater Utility Funds
Cutler Bay	Reduction of Floating Debris	$60,000.00	City budget
Cutler Bay	Canal Cleaning and Shaping Town wide	$750,000.00	City Budget
Cutler Bay	Flood Zone Data GIS System	$140,000.00	Stormwater Utility
Cutler Bay	Town Hall/EOC HVAC System	$610,000.00	Unknown
Cutler Bay	Town Hall/EOC Hardening Project (Mechanical HVAC System)	$228,000.00	Unknown
Cutler Bay	Portable Traffic Control Signs	$200,000.00	Unknown
Cutler Bay	Emergency Portable Air Conditioner Units	$120,000.00	Unknown
Cutler Bay	Municipal AM Emergency Radio Broadcast Station	$85,000.00	Unknown
Cutler Bay	Removal of Australian Pines and other Exotics	$100,000.00	City Budget
Cutler Bay	Drainage Improvements - Manta Drive	$488,600.00	Stormwater Utility
Doral	Stormwater Improvements 5-Year CIP: Year 3	$1,265,749.00	HMGP, PDM, Stormwater Fee – Secured
Doral	Stormwater Improvements 5-Year CIP: Year 2	$1,017,150.00	FDOT Grant
Doral	Stormwater Improvements 5-Year CIP: Year 1	$1,800,000.00	FDEP and CIP State Grant
Doral	Stormwater Improvements 5-Year CIP: Year 3	$1,265,749.00	Stormwater Fee
El Portal	Village of El Portal Stormwater Improvements	$10,000,000.00	Emergency Operations Flood and Post Flood Response/FMA
Hialeah	Roadway/Stormwater Improvements (SE 4 ST to HIA DR from 6-8 AVE)	$151,469.00	City CIFs
Hialeah Gardens	Central District Drainage Improvements	$2,500,000.00	Flood Control Projects, RFC, HMGP

Under Construction		Cost	Funding Source
Homestead	Sewer lines in the Northwest Neighborhood and the West Industrial Area	$3,300,000.00	CIP
Homestead	Police Station Security/Hardening	$50,000.00	Bond Issue for New Police Station Building
Homestead	Upgrade OCB's (Oil Circuit Breakers) with VCB's (Vacuum Circuit Breakers)	$150,000.00	CIP
Homestead	Improvements to Existing Buildings	$500,000.00	CIP
Homestead	Sidewalks/ Roadway Improvements	$200,000.00	CIP
Homestead	Improve Transportation Infrastructure	$2,000,000.00	State/County Roads
Homestead	Wastewater Infiltration/Inflow	$2,400,000.00	CIP
Key Biscayne	Flap Gates at Outfalls (Backflow Prevention)	$750,000.00	Stormwater Utility/ Capital Expenditures
Medley	Flood Mitigation Area South	$2,300,000.00	State, County & Town
Medley	Medley Public Services Facilities Strengthening	$800,000.00	Town Budget
Medley	Drainage Improvements Phase III	$270,000.00	Town Budget
Medley	Drainage Improvements Phase I	$150,000.00	Town Budget
Medley	Drainage Improvements Phase II	$450,000.00	Town Budget
Medley	Tobie Wilson Park Flood Proofing & Strengthening	$800,000.00	Town Budget
Medley	Town Hall Building Strengthening	$800,000.00	Town Budget
Miami	Acquire Portable Pumps and Generators	$70,000.00	PDM
Miami Beach	Citywide Water Infrastructure Improvements	$55,000,000.00	HMGP
Miami Beach	Citywide Dune Restoration & Enhancement Project	$400,000.00	Beach Erosion/Flood Control Projects
Miami Beach	Citywide Wastewater Infrastructure Improvements	42,250,000.00	HMGP
Miami Beach	Drainage Hot Spots	Unknown	Unknown
Miami Beach	Flood Proofing Sewer and Pump Stations	$2,340,000.00	Flood Control Projects
Miami Beach	Central Bayshore – Neighborhood Improvements (34th Street South)	Unknown	Unknown
Miami Beach	Palm & Hibiscus Islands – Neighborhood Improvements	Unknown	Unknown
Miami Beach	Venetian Islands – Neighborhood Improvements (Phase 2)	Unknown	Unknown
Miami Beach	Sunset Islands 3 & 4 – Neighborhood Improvements	Unknown	Unknown
Miami Beach	West Avenue Neighborhood Drainage Improvements	$15,900,000.00	Flood Control Projects

Under Construction		Cost	Funding Source
Miami Beach	Sunset Harbor Pump Station Upgrades / Drainage Improvements	$800,000.00	Flood Control Projects
Miami Beach	Purchase of a Safeboat for Miami Beach Police Dept. Marine Patrol	Unknown	Unknown
Miami Beach	Storage Tank Refurbishment Project	Unknown	Unknown
Miami Gardens	Create GIS Layer for Storm Sewer Infrastructure	$100,000.00	Unsecured
Miami Springs	Engineering Study to determine sites of canal bank restoration	$2,000,000.00	DEP of Water Prot. Assis
Miami Springs	Removal of Australian Pines	$14,000.00	City Budget
Mount Sinai	Mitigate the Impact of Storm Surge	$3,000,000.00	DEP
Mount Sinai	Protect the Energy Center Facility Chillers	$2,000,000.00	Self-funded
Mount Sinai	Code Plus Construction Enhancements Surgical Tower	$6,500,000.00	FEMA
North Miami	Sanitary Sewer Backup	$700,000.00	Unknown
North Miami	Surge Resistance and Flood Mitigation at Keystone Point and Sans Souci	$500,000.00	Unknown
North Miami	Flood Prevention and Mitigation: Drainage Basin13	$500,000.00	City Funds
North Miami Beach	Install Additional Storm Water Basins or Increase Existing Basins	$60,000.00	CIP
North Miami Beach	NE 172nd Street Drainage Improvement	$1,791,692.00	CIP
North Miami Beach	Clean and Improve Drainage Systems	$428,400.00	CIP
North Miami Beach	Eastern Shores Drainage Repair/Replacement	$450,000.00	CIP
North Miami Beach	Construct Storm Water System that may include Injection Wells in Areas Prone to Flooding	$120,000.00	CIP
North Miami Beach	Miami Industrial District Drainage and Roadway Improvement	$800,000.00	CIP
North Miami Beach	Renovation of Eastern Shores Outfall Pipes	$550,000.00	CIP
North Miami Beach	NE 172nd Drainage Improvement	$17,916.92	CIP
North Miami Beach	Clean and Improve the Drainage System	$428,000.00	CIP
Palmetto Bay	Drainage Improvements for Sub-Basin # 10	$1,000,000.00	SFWMD Grant Stormwater Utility
Palmetto Bay	Flood Zone Data Maintenance: GIS System	$100,000.00	General Funds
Palmetto Bay	Drainage Improvements - SW 87 AVE (from SW 168 ST to SW 184 ST)	$1,500,000.00	MD County Stormwater Utility

Under Construction		Cost	Funding Source
Palmetto Bay	Downtown Redevelopment	$12,440,000.00	County GOB Street Sign Bond General Funds
Public Housing & Community Development	Ward Tower	$1,920,400.00	Mitigation Grant, Capital Fund
Public Housing & Community Development	Haley Sofge Towers	$2,056,321.00	Mitigation Grant, Capital Fund
Public Housing & Community Development	Haley Sofge Towers	$1,000,000.00	Mitigation Grant, Capital Fund
Public Schools	SW 82 ST from SW 73 Ave to SW 76 Ave	$304,884.00	SWU
Public Schools	SW 165 Ave and SW 88 St	$66,000.00	SWU
M-D Public Works	SW 220 St bet SW 103 CT & SW 102 Ave (10298 SW 229 ST	$80,000.00	SWU
M-D Public Works	SW 207 Terrace from SW 124 Court to SW 126 Avenue Drainage Improvement Project	$275,000.00	SWU
M-D Public Works	PWD Project No. 20130240 SW 2 Street to SW 4Street from SW 82 Avenue and SW 87 Avenue	$295,825.00	SWU
M-D Public Works	SW 2 Street to SW 4 Street from SW 82 Avenue to SW 87 Avenue Drainage Improvement Project PWD Project No.20130240	$144,000.00	SWU
M-D Public Works	SW 176 Street from US-1 to SW 107 Avenue	$4,434,642.00	PTP
M-D Public Works	SW 157 Avenue from SW 88 Street to SW 91 Street	$213,519.00	SWU
M-D Public Works	SW 157 Avenue from SW 184 Street to SW 152 Street	$7,128,130.00	PTP
M-D Public Works	SW 152 Street and SW 82 Avenue Drainage Improvement Project	$220,000.00	SWU
M-D Public Works	SW 132 Avenue from SW 117 Terrace to SW 120 Street	$392,645.00	PTP
M-D Public Works	SW 104 Street from SW 157 Avenue to SW 142 Avenue	$505,335.00	SWU
M-D Public Works	Seaboard Acres Pump Station Retrofit	$3,317,350.00	SWU/GOB
M-D Public Works	PWD Project No. 20120157 WO#1) (GOB	$295,279.00	GOB
M-D Public Works	PWD Project No. 20040389 (PTP) (JPA with City of Miami)	$5,663,390.00	(PTP) (JPA with City of Miami)
M-D Public Works	PWD Project No. 20040386 (PTP) (JPA with City of Miami)	$4,702,799.00	PTP) (JPA with City of Miami)
M-D Public Works	Project No. 20120047 Town of Miami Lakes	$93,321.00	Unknown

M-D Public Works		Cost	Funding Source
	Old Cutler Road Bike Path (Phase II)	$1,131,821.00	PTP
M-D Public Works	NW 87 Avenue from NW 154 Street to NW 186 Street	$490,256.00	PTP
M-D Public Works	NW 74 Street from NW 87 Avenue to Palmetto Expressway	$5,802,503.00	PTP
M-D Public Works	NW 58 Street from NW 92 Avenue to NW 102 Avenue - Drainage Improvement Project	$1,075,000.00	GOB 77465
M-D Public Works	NW 37 Avenue from North River Drive to NW 79 Street	$14,855,900.00	PTP
M-D Public Works	NW 178 Street from NW 89 Avenue to NW 90 Court	$72,190.00	SWU
M-D Public Works	NE 18 Avenue from NE 191 Street to NE 199 Street (NE 18 Avenue & NE 199 Street)	$280,241.00	SWU
M-D Public Works	NE 167 Street & NE 14 Avenue	$50,000.00	SWU
M-D Public Works	NE 12 Ave & NE 169 Terrace	$128,302.00	SWU
M-D Public Works	Miller Drive & SW 133 PL	$223,000.00	GOB
M-D Public Works	Midway Addition (Phases V, VI & VII) Drainage Improvement Project	$867,050.00	GOB
M-D Public Works	Miami River Greenways	$510,359.00	GOB
M-D Public Works	Miami River Greenways	$1,193,721.00	GOB
M-D Public Works	Larchmont Pump Station Retrofit	$4,665,069.00	SWU GOB
M-D Public Works	Larchmont Pump Retrofit Station Phases 1 & 2	$3,300,000.00	SWU/GOB
M-D Public Works	Drainage Improvement PWD Project No. 20130156)	$632,910.00	GOB/SWU
M-D Public Works	Drainage Improvement PWD Project No. 20120161)	$189,372.00	QNIP
M-D Public Works	Arch Creek Phase IV- Pump Stations Improvements	$120,000.00	SWU
M-D Public Works	Drainage Improvement Project - SW 99 Ave & SW 101 St; SW 129 AVE & SW 116 ST	Unknown	SWU
South Miami	SW 64 Avenue Drainage Improvement Project	$115,230.00	Storm water People's Transportation Plan
South Miami	Citywide Drainage Improvements, Phase 6	$275,000.00	CIP
Vizcaya Museum and Gardens	Vizcaya Village Roof Replacement & Roof Structure Reinforcement	$2,500,000.00	General Obligation Bond
West Miami	Impact Resistant Windows for City Hall	$50,000.00	CDBG General Fund
Under Construction Total	**# of Projects: 122**	**$239,143,336.97**	

Funded Not Yet Started		Cost	Funding Source
Bal Harbour	Jetty Pedestrian walking surface repairs	$332,000.00	CIP
Bal Harbour	Sewall and Dock Repair BHV park	$55,000.00	CIP
Cutler Bay	Debris Removal	$400,000.00	Grants
Cutler Bay	Preventive Pruning of Existing Town Tree Inventory	$285,000.00	Town Budget F.Y. 2016-2017
Cutler Bay	Storm Water Outfalls	$500,000.00	Stormwater Utility Fund
Doral	NW 41 St. from NW 79 Ave. to NW 87 Ave. Roadway Improvements	$1,850,000.00	HMGP, PDM, General Fund. Private Dev. /Impact Fee Credit
Doral	Stormwater Improvements 5-Year CIP: Year 4	$1,047,694.00	City's Stormwater
Emergency Management	Barbara Goleman Senior Survey	Unknown	State Retrofit Funding
Florida City	Repair of Sewer Lines in Friedland Manor	$475,000.00	CDBG, Legislative Appropriation , City funds
Hialeah	Roadway Reconstruction (W 8-10 Ave from W 31-33 Street)	$2,190,724.00	CDBG
Homestead	New Sewer Mains: To upgrade sewer main/lines to eliminate raw sewage from leaking into the water table.	$2,000,000.00	CIP
Jackson	Volt Oil Switch Replacements	$7,350,000.00	Internal funding
Jackson	Emergency Switchgear Replacements at JNMC	$6,950,000.00	GOB 2005 & Jackson's Bond Referendum
Jackson	Utility/Energy Center at JMH	$5,290,000.00	GOB 2005 & Jackson's Bond Referendum
Key Biscayne	Reverse 911 Community Notification System	$105,000.00	CIF
Key Biscayne	Purchase of Emergency Vehicles	460,000.00	CIF
Key Biscayne	New Stormwater Outfall Construction	$210,000.00	Private funding.
Key Biscayne	Coastal Dune Vegetation	$10,000.00	CIF
Key Biscayne	Additional Training	$2,500.00	Fire Training Budget

Funded Not Yet Started		Cost	Funding Source
Miami	Station/Facility Apparatus Room Doors	$252,000.00	HMGP, PDM
Miami	Mitigation & Resiliency Initiative for Historic Neighborhoods in the City of Miami	$139,500.00	Grants
Miami	Watson Island Baywalk	$300,000.00	Emergency Streambank and Shoreline Protection PDM
Miami	Study to Reduce Erosion on Virginia Key Beach	$75,000.00	PDM, HMGP
Miami	Restoration of Native Species	$75,000.00	Public Assistance Program, PDM, HMGP
Miami	Property Maintenance Division Upgrades	$160,000.00	PDM
Miami	Hurricane Window Barriers for Park Recreation Buildings	$250,000.00	PDM
Miami	Fire Station Hardening	$144,000.00	PDM
Miami	Protect Vital City Records	$60,000.00	Public Assistance Program FMA
Miami	Communications Systems Generator	$60,000.00	PDM
Miami Beach	Indian Creek Drive 25th to 41st Street Drainage Improvements	$2,700,000.00	FDOT and Miami Beach
Miami Beach	Cultural and Historical Resources Hazard Mitigation Plan	Unknown	PDM/Interagency Flood Risk Management Project, FEMA and City of Miami Beach
Miami Gardens	Vista Verde Drainage and Roadway Improvement Project	$3,800,000.00	Stormwater, CDBG, CITT, FL Legislative Appropriations Grants
Miami Gardens	Culvert and Headwall Project	$400,000.00	Potential
Miami Gardens	NW 13 Avenue/Industrial Area Drainage Outfall Project	$230,000.00	Stormwater Funding
Miami Gardens	NW 11 Avenue Stormwater Drainage Project	$100,000.00	Stormwater Funds
Mount Sinai	Code Plus Construction Energy Center Facility Protect Redundant Power Supply	$250,000.00	Internal Funding

Funded Not Yet Started		Cost	Funding Source
North Miami Beach	Leak Detection Services	$50,000.00	CIP
North Miami Beach	Drainage in Alleyways	$50,000.00	CIP
North Miami Beach	Storm Water Pump Replacement Program	$50,000.00	CIP
North Miami Beach	Pump Replacements	$165,000.00	CIP
North Miami Beach	Force Main Installations and Lift Stations Rehabilitations	$125,000.00	CIP
North Miami Beach	Aerial Pipe Crossings	$350,000.00	CIP
North Miami Beach	Inflow and Infiltration Prevention	$250,000.00	CIP
North Miami Beach	Fire Flow Improvements	$320,000.00	CIP
North Miami Beach	Trenchless Pipe Replacements	$325,000.00	CIP
North Miami Beach	Roadway Improvements	$327,000.00	CIP
North Miami Beach	Storm Water Improvement City-Wide	$336,885.00	CIP
North Miami Beach	Dead End Eliminations	$42,000.00	CIP
Palmetto Bay	Localized Drainage Improvements Phase VI	$403,733.00	Stormwater Utility/Grants
Palmetto Bay	Sub-Basin 59/60	$1,100,000.00	SFWMD and Stormwater Utility Revenue
Palmetto Bay	Public Information and Educational Campaign	$16,500.00	Stormwater Utility Funding
Palmetto Bay	Repetitive Loss Retrofit	$313,570.00	HMGP, Pre-Disaster Funding Programs, FMA, Severe Repetitive Loss Program, RFC, Stormwater Utility Revenue
M-D Public Works	SW 92 AVE FROM SW 8 TER TO SW 12 ST ROADWAY DRAINAGE	$616,537.22	SWU FUNDING CAPITAL PROJECT
M-D Public Works	NW 76 ST FROM NW 36 AVE TO NW 37 AVE	$425,000.00	SWU
M-D Public Works	Seaboard Acres Pump Station	$1,500,000.00	Unknown

Funded Not Yet Started		Cost	Funding Source
M-D Public Works	Larchmont Gardens Pump Station	$1,671,841.00	Unknown
M-D Public Works	NE 6 AVE& NE 185 Street; NE Miami CT, from NE 196-198 ST; NW 22 AVE & NW 175 ST; North DR & NE 14 AVE	$835,000.00	Unknown
M-D Public Works	Belen Phase III B	$1,590,000.00	SWU
M-D Public Works	SW 157 AVE Canal Interconnect	Unknown	Capital
Virginia Gardens	VG - NW 40 street Stormwater Improvement Project	$697,000.00	Grants/FDOT
Funded - Not Yet Started	**# of Projects: 60**	**$ 49,683,484.22**	
Total Projects	**405**	**$ 406,675,335.50**	

2017 Projects

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 12/2017			
Completed Projects		**Costs**	**Funding**
Coral Gables	Basin Inflow and Infiltration Upgrade	$1,179,793.00	FDEP Grant Storm Sewer
Cutler Bay	Purchase Communications Emergency Equipment	$$65,000.00	budgeted
Cutler Bay	Development of Floodplain Management Plan	$120,000.00	Pre-Disaster Mitigation grant
Cutler Bay	Acquisition of Emergency Generators	$394,000.00	budgeted
Cutler Bay	Town Hall/EOC Installation of Transfer Switch for Emergency Power	$394,000.00	budgeted
Cutler Bay	Portable Traffic Light Signals	$140,000.00	budgeted
Cutler Bay	Purchase Computerized Equipment Storage for Vital Public Records	$75,000.00	budgeted
Cutler Bay	Satellite Phones	$55,000.00	Budgeted
Cutler Bay	SW 97th Ave Drainage Improvement	$291,494.00	Lennar Homes
Cutler Bay	Old Cutler Road JPA	$7,524,319.00	Miami Dade County, CITT, PTP
Cutler Bay	SW 216th Street and SW 97th Ave Traffic Circle	$204,486.00	budgeted
Doral	Stormwater Improvements 5-Year CIP: Year 3	$1,265,749.00	HMGP, Pre-Disaster Funding Programs, Stormwater Fee - Secured
Florida City	Repair of Sewer Lines in Friedland Manor	$475,000.00	CDBG, Legislative Approp., City funds
Homestead	New Sewer Mains	$2,000,000.00	CIP
Key Biscayne	Purchase of Emergency Vehicles	$60,000.00	CIP
Miami	NW 2nd Avenue (11th to I-395)	$2,000,000.00	PDM
Miami	SW 3rd Avenue Road Improvement Project	$1,450,000.00	FMA
Miami	Miami River Greenway (NW 10th Ave to NW 12th Ave)	$3,000,000.00	PDM
Miami	Englewood Storm Sewers Project -Phase III	$5,400,000.00	PDM, Public Assistance Program, HMGP
Miami	Grove Park Storm Sewers Project	$6,000,000.00	PDM, HMGP, Public Assistance Program
Miami	NW 14th Street Streetscape Project	$3,000,000.00	PDM
Miami	NE/NW 14th Street from NE 2ndAvenue to FEC Track; North Miami Avenue from NE/NW 15th Street to I-395 Right-of-way Line.	$4,000,000.00	PDM
Miami	Miami River Greenway SE 5th Street Extension	$2,200,000.00	FMA

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 12/2017			
Completed Projects		**Costs**	**Funding**
North Miami	Flood Prevention and Mitigation: Drainage Basin13	$600,000.00	City funds
North Miami	Security for City Hall	$62,750.00	Unknown
Palmetto Bay	Drainage Improvements for Sub-Basin # 10	$1,000,000.00	SFWMD Grant VPB - Stormwater Utility
Public Housing and Community Development	Stirrup Plaza	$450,000.00	Federal Funds
Projects reported as completed		**$51,259,591.00**	**27**

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 12/2017			
Projects Under Construction		**Cost**	**Funding**
Aventura	NE 29 PL Phase II South	$721,000.00	City funded project.
Coral Gables	Pump Station Cocoplum 1 Emergency Generator	$100,000.00	Sanitary Sewer Fund
Cutler Bay	Town Hall/EOC HVAC System	$610,000.00	Unknown
Cutler Bay	Town Hall/EOC Hardening Project (Mechanical HVAC System)	$228,000.00	Unknown
Cutler Bay	Reduction of Floating Debris	$60,000.00	budgeted, ongoing
Cutler Bay	Portable Traffic Control Signs	$200,000.00	Unknown
Cutler Bay	Flood Zone Data GIS System	$140,000.00	Stormwater Utility fund
Cutler Bay	Drainage Improvements - Manta Drive	$488,600.00	Stormwater Utility Funds; applied for FDOT Tap Grant.
Cutler Bay	Removal of Australian Pines and other Exotics	$100,000.00	Included in F.Y. 2019-2020 Budget
Cutler Bay	Municipal AM Emergency Radio Broadcast Station	$85,000.00	Unknown
Cutler Bay	Emergency Portable Air Conditioner Units	$120,000.00	Unknown
Cutler Bay	Canal Cleaning and Shaping Town wide	$750,000.00	budgeted annually, ongoing
Doral	Stormwater Improvements 5-Year CIP: Year 4	$1,047,694.00	HMGP, Pre-Disaster Funding Program, PDM Funded by City's Stormwater Fee
Florida City	Sealing the Palm Drive Canal between US 1 and SW 172 Ave	$7,100,000.00	City Funds, County Funds
Homestead	Wastewater Infiltration/Inflow	$2,400,000.00	CIF
Homestead	Improve Transportation Infrastructure	$2,000,000.00	Miami-Dade and State of Florida Roads
Homestead	Upgrade OCB's (Oil Circuit Breakers) with VCB's (Vacuum Circuit Breakers)	$150,000.00	CIP Plan
Homestead	Sidewalks/ Roadway Improvements	$200,000.00	CIP Plan
Homestead	Improvements to Existing Buildings	$500,000.00	CIP Plan
Homestead	Police Station Security/Hardening	$50,000.00	Bond Issue
Homestead	Sewer lines in the Northwest Neighborhood and the West Industrial Area	$3,300,000.00	CIFs
Homestead	Interchange Modification	$15,000,000.00	Funded by Toll and Concessions Revenue
Homestead	Improve Transportation Infrastructure	$2,000,000.00	Miami-Dade and State of Florida Roads

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 12/2017			
Projects Under Construction		**Cost**	**Funding**
Homestead	Upgrade OCB's (Oil Circuit Breakers) with VCB's (Vacuum Circuit Breakers)	$150,000.00	CIP Plan
Homestead	Sidewalks/ Roadway Improvements	$200,000.00	CIP Plan
Key Biscayne	Phase II Village K-8 Center Stormwater Pump Station	$350,000.00	HMGP, Stormwater Utility Fund
Key Biscayne	Comprehensive Review of Local Laws and Regulations	$5,000.00	Stormwater Utility Fund
Key Biscayne	Flap Gates at Outfalls (Backflow Prevention)	$750,000.00	Stormwater Utility Capital Expen.
Miami	Acquire Portable Pumps and Generators	$70,000.00	HMGP, PDM
Miami	Bird Avenue Road Improvement	$1,728,000.00	PDM
Miami Beach	Venetian Islands – Neighborhood Improvements (Phase 2)		Unknown
Miami Beach	Extensive Repairs to Seawalls & Creation of Living Shoreline	$3,787,000.00	City funds/Grant
Miami Beach	Citywide Water Infrastructure Improvements	$55,000,000.00	HMGP
Miami Dade College	Entrepreneurial Educational Center, Bldg. 1000	$148,720.00	HMGP Grant
Miami Gardens	Create GIS Layer for Storm Sewer Infrastructure	$100,000.00	Unknown
Mount Sinai	Protect the Energy Center Facility Chillers	$2,000,000.00	Self-funded
North Bay Village	GIS Conversion of Sanitary Sewer System	$28,200.00	Utility Fund
North Bay Village	Sanitary Sewer Rehabilitation	$3,900,000.00	State Revolving Loan Fund
North Bay Village	Water Main Rehabilitation	$4,400,000.00	State Revolving Loan Fund
North Bay Village	Water Meter and Service Line Replacement	$4,700,000.00	State Revolving Loan Fund
North Miami	Gravity Sewer Systems Improvements for Groundwater Infiltration Reduction	$6,000,000.00	Unknown
North Miami	Surge Resistance and Flood Mitigation at Keystone Point and Sans Souci	$500,000.00	Unknown
North Miami Beach	Clean and Improve Drainage Systems	$428,400.00	CIP
North Miami Beach	Eastern Shores Drainage Repair/Replacement	$450,000.00	CIP
North Miami Beach	NE 172nd Street Drainage Improvement	$1,791,692.00	CIP
Palmetto Bay	Downtown Redevelopment	$12,440,000.00	County GOB Street Sign Bond General Funds

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 12/2017			
Projects Under Construction		**Cost**	**Funding**
Palmetto Bay	Drainage Improvements - SW 87 AVE (from SW 168 ST to SW 184 ST)	$1,500,000.00	PWIP, Grants & Loans for Public Works & Development Facilities, Flood Control Projects, FMA, Stormwater Utility Revenue
Palmetto Bay	Flood Zone Data Maintenance: GIS System	$100,000.00	General Funds
Public Works and Waste Management	Midway Addition (Phases V, VI & VII) Drainage Improvement Project - Flagler Street to NW 7 Street from NW 87 Avenue to NW 79 Avenue PWD Project No. 20130249) (GOB 77452 Midway Addition Phases V VI VII	$867,050.00	GOB
Seaport	Cruise Berth 6 Stormwater Improv	$750,000.00	Unknown
South Miami	SW 64 Avenue Drainage Improvement Project	$115,230.00	Storm water Drain Trust Fund, People's Transportation Plan
Projects reported as Under Construction		**$ 138,260,470.00**	**48**

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 11/30/2017			
Projects Funded Not Yet Started		**Cost**	**Funding**
Coral Gables	Install Solar Panels at Youth Center	$472,000.00	Unknown
Cutler Bay	Preventive Pruning of Existing Town Tree Inventory	$285,000.00	Budgeted on F.Y. 2016 - 2017
Cutler Bay	Debris Removal	$400,000.00	Will apply for Grants as necessary
Cutler Bay	Storm Water Outfalls	$500,000.00	Stormwater Utility Fund
Doral	NW 41 St. from NW 79 Ave. to NW 87 Ave. Roadway Improvements	$1,850,000.00	HMGP, Pre-Disaster Funding Programs, General Fund. Private Developer/ Impact Fee Credit
Doral	Stormwater Improvements 5-Year CIP: Year 5	$1,435,908.00	HMGP, Stormwater fees.
Homestead	New Sewer Mains: To upgrade sewer main/lines to eliminate raw sewage from leaking into the water table.	$2,000,000.00	CIF
Key Biscayne	New Stormwater Outfall Construction	$210,000.00	Private funding.
Key Biscayne	Reverse 911 Community Notification System	$105,000.00	CIF
Key Biscayne	Community Center Generator	$75,000.00	CIF
Key Biscayne	Additional Training	$2,500.00	Fire Department Training Budget
Miami	Hurricane Window Barriers for Park Recreation Buildings	$250,000.00	PDM
Miami	Protect Vital City Records	$60,000.00	Public Assistance Program FMA
Miami	Study to Reduce Erosion on Virginia Key Beach	$75,000.00	PDM, HMGP
Miami	Property Maintenance Division Upgrades	$160,000.00	PDM
Miami	Fire Station Hardening	$144,000.00	PDM
Miami	Station/Facility Apparatus Room Doors	$252,000.00	HMGP, PDM
Miami	Watson Island Baywalk	$300,000.00	Emergency Streambank and Shoreline Protection PDM
Miami	Restoration of Native Species	$75,000.00	Public Assistance Program, PDM, HMGP

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 11/30/2017			
Projects Funded Not Yet Started		**Cost**	**Funding**
Miami	Communications Systems Generator	$60,000.00	PDM
Miami	Mitigation & Resiliency Initiative for Historic Neighborhoods in the City of Miami	$139,500.00	City of Miami LMS budget
Miami Beach	Cultural and Historical Resources Hazard Mitigation Plan	Unknown	FEMA and City
Miami Gardens	Vista Verde Drainage and Roadway Improvement Project	$3,800,000.00	Stormwater, CDBG, CITT/ State Legislative Appropriations Grants
Miami Lakes	Lake Sarah Drainage Improvements	$2,200,000.00	DEP and SFWMD
North Bay Village	Baywalk Plaza - Drainage Well	$200,000.00	Park Improvement Fund (Secured) FIND Grant (Secured)
North Bay Village	Stormwater Outfall Rehabilitation	$1,200,000.00	Stormwater Fund, State Revolving Fund Loan Program
North Bay Village	Deep Well Injection System Rehabilitation	$633,737.00	Stormwater Fund, Department of Envir Protection Grant
North Bay Village	Roadway Resurfacing	$1,500,000.00	Citizen Independent Transportation Trust, Local Capital Improve Gas Tax
North Miami Beach	Leak Detection Services	$50,000.00	CIP
North Miami Beach	Transmission Main Pipe Evaluation and Testing	$25,000.00	CIP
Palmetto Bay	Repetitive Loss Retrofit	$313,570.00	HMGP, Pre-Disaster Funding Programs, FMA, Severe Repetitive Loss Program, Stormwater Utility Revenue
Palmetto Bay	Localized Drainage Improvements Phase VI	$403,733.00	Stormwater Utility Revenue
Palmetto Bay	Public Information and Educational Campaign	$16,500.00	Stormwater Utility Funding
Palmetto Bay	Sub-Basin 59/60	$1,100,000.00	SFWMD/Stormwater Utility Revenue

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2017 to 11/30/2017			
Projects Funded Not Yet Started		**Cost**	**Funding**
Public Housing and Community Development	Liberty Square	$2,916,000.00	CAPITAL FUND
Public Housing and Comm. Dev.	Liberty Square	$3,240,000.00	CAPITAL FUND
Public Housing and Comm. Dev.	Liberty Square	$3,000,000.00	CAPITAL FUND
Virginia Gardens	VG - NW 40 street Stormwater Improvement Project	$697,000.00	FDOT
Projects reported as Funded but not yet started		**$30,109,076.00**	**38**

2018 Projects

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Completed Projects		**Cost**	**Funding Source**
Miami Dade College	Medical Center, bldg. 1000	$1,541,208.00	HMGP
Miami Dade College	Medical Center, bldg. 2000	$898,272.00	HMGP
Miami Dade College	Hialeah Campus, bldg. 2000	$41,000.00	HMGP
Miami Dade College	Wolfson Campus, bldg. 2000	$200,574.00	HMGP
Miami Dade College	North Campus, Bldg. 1000	$374,200.00	HMGP
Miami Dade College	Hialeah Campus, bldg. 1000	$451,730.00	HMGP
Jackson	Volt Oil Switch Replacements	$7,350,000.00	Internal funding
Jackson	Generator - Jackson Multispecialty Center at Jackson North	$250,000.00	Internal funding
Miami	SW 3rd Avenue Road Improvement Project	$1,450,000.00	FMA
Miami	Replacement of Channel Markers	$65,000.00	HMGP, PDM
Jackson	Emergency Switchgear Replacements at JNMC	$6,950,000.00	GOB 2005 & Jackson's Referendum
Miami	Training Center Elevator Refurbishment	$150,000.00	PDM, Public Assistance Program
Miami	Station/Facility Apparatus Room Doors	$252,000.00	HMGP, Public Assistance Program
Miami	77: S. Miami Ave and Side Street Drainage Improvements	$3,500,000.00	Public Assistance Program, HMGP, PDM
Miami Beach	Upgrading of Miami Beach Police Dept. Marine Patrol's two (2) 32' Contender boats	Unknown	Unknown
Cutler Bay	SW 216th Street and SW 97th Ave Traffic Circle	$204,486.00	Budgeted
Cutler Bay	SW 212th Street	$850,000.00	TAP, State of Florida Legislative Appropriations Grant
Cutler Bay	Caribbean Boulevard JPA Project	$11,173,054.00	CITT Funds
Cutler Bay	Old Cutler Road JPA	$7,524,319.00	Joint Participation agreement with Miami Dade County, CITT, PTP
Cutler Bay	SW 97th Ave Drainage Improvement	$291,494.00	Budgeted through Lennar Homes
Cutler Bay	Satellite Phones	$55,000.00	Budgeted
Cutler Bay	Purchase Computerized Equipment Storage for Vital Public Records	$75,000.00	Budgeted
Cutler Bay	Portable Traffic Light Signals	$140,000.00	Budgeted
Cutler Bay	Town Hall/EOC Installation of Transfer Switch for Emergency Power	$394,000.00	Budgeted
Cutler Bay	Acquisition of Emergency Generators	$394,000.00	Budgeted
Cutler Bay	Development of Floodplain Management Plan	$120,000.00	Pre-Disaster Mitigation Grant

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Completed Projects		**Cost**	**Funding Source**
Cutler Bay	Purchase Communications Emergency Equipment	$65,000.00	Budgeted
Miami Lakes	EOC Generator	$279,229.00	Potential mitigation grant
Mount Sinai	Medical Gas Tank Farm	$1,300,000.00	CDBG, Disaster Recovery Initiative, HMGP
Mount Sinai	Energy Center 2	$3,964,239.00	FEMA
Mount Sinai	Energy Center Facility	$250,000.00	Internal Funding
Mount Sinai	Greenspan Roof and Enclosures	$300,000.00	HMGP
Mount Sinai	Utility Bridge and Power Distribution	$7,351,169.00	HMGP
Mount Sinai	Energy Center 1	$8,994,838.00	State DEM
Mount Sinai	Protect the Power Supply	$5,000,000.00	Grant and Loans for Public Works & Development Facilities, Federal match to state funding
Key Biscayne	Flap Gates at Outfalls (Backflow Prevention)	$750,000.00	Stormwater Utility Capital Expenditures
Key Biscayne	Purchase of Emergency Vehicles	$60,000.00	CIFing
Golden Beach	Underground Placement of Utilities	$6,900,000.00	Secured
Golden Beach	Roadway/Streetscape Improvement	$2,987,310.00	Secured
Golden Beach	Emergency Generators	$50,000.00	Secured
Pinecrest	Hardening of Coral Pine Park Building	$50,000.00	Internal
Regulatory and Economic Resources	Lindgren Phase I and II PWD Project No. 20140198	$1,000,000.00	GOB
Regulatory and Economic Resources	Drainage Improvement Project (PWD Project No. 20130243) (GOB 77451)	$565,582	GOB 77451
Pinecrest	Purchase of Portable Two-Way Radios	$110,000.00	Internal
Regulatory and Economic Resources	SW 157 Avenue from SW 304 Street to SW 308 Street	$386,754.19	GOB
Regulatory and Economic Resources	SW 157 Avenue and SW 256 Street Drainage Improvement Project	$36,300.00	GOB
Regulatory and Economic Resources	SW 114 Street and SW 107 Avenue	$139,142.00	GOB
Regulatory and Economic Resources	SW 256 St to SW 264 St from SW 122 Ave to SW 127 Ave (Meadow Wood Area Phase 4B)	$660,000.00	QNIP/SWU
Regulatory and Economic Resources	Project (PWD Project No. 20130255) (GOB 77447)	$835,000.00	GOB
Regulatory and Economic Resources	NW 46 Street from NW 74 Avenue to NW 73 Avenue	$321,449.00	SWU
Regulatory and Economic Resources	SW 124 Ave and SW 218 St	$56,500.00	GOB
Regulatory and Economic Resources	PWD Project No. 20140199	$96,014.36	GOB

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Completed Projects		**Cost**	**Funding Source**
Regulatory and Economic Resources	SW 272 St and SW 128 Ave (Airbase Elementary)	$139,322.00	GOB
Regulatory and Economic Resources	SW 296 St and SW 162 Ave	$142,450.00	GOB
Regulatory and Economic Resources	SW 39 St from SW 75 Ave to SW 73 Ct	$155,687.41	GOB
Regulatory and Economic Resources	SW 5 St from SW 78 Ct to SW 78 Pl	$148,440.43	GOB
Regulatory and Economic Resources	SW 68 Ave and SW 13 Ter	$134,983.14	GOB
Regulatory and Economic Resources	SW 28 St to SW 28 St Rd and SW 76 Ave	$105,825.6	GOB
Regulatory and Economic Resources	NE 197 Street and NE 24 Court Drainage Improvement Project	$145,463.00	GOB
Regulatory and Economic Resources	ALLEY NE 167 St and NE 7 Ave	$83,832.00	GOB
Regulatory and Economic Resources	SW 24 ST to SW 12 ST from SW 82 AVE to Palmetto Expressway	$1,089,000.00	GOB
Regulatory and Economic Resources	"NW 72 Street from NW 8 Avenue to NW 10 Avenue Drainage Improvement Project"	$300,000.00	SWU
Regulatory and Economic Resources	NW 70 Avenue and NW 22 Street Drainage Improvement Project	$246,000.00	SWU
Regulatory and Economic Resources	Miller Drive & SW 133 PL	$223,000.00	GOB
Regulatory and Economic Resources	NW 32 Street & NW North River Drive	$150,000.00	SWU
Jackson	Wind Retrofit Project at JRSC	$601,281.00	HMGP
Jackson	JMH Campus Wide Roof Replacement	$2,500,000.00	Jackson's Bond Referendum
Jackson	Wind Retrofit Project at RTC	$8,589,588.00	HMGP
Libraries	South Miami repair roofing system	$250,000.00	G.O.B
(Select)	Jack Orr Plaza	$900,000.00	Mitigation Grant Capital Fund
(Select)	Stirrup Plaza	$450,000.00	Mitigation Grant Federal Funds
Public Housing and Community Development	Claude Pepper	$862,095.00	Mitigation Grant, Capital Fund
Public Housing and Community Development	Peters Plaza	$401,750.00	Mitigation Grant, Capital Fund
Public Housing and Community Development	Newberg	$1,923,900.00	Mitigation Grant, CDBG Community Development Block Grants/ Entitlement Grants
Public Housing and Community Development	Ward Tower	$1,920,400.00	Mitigation Grant, Capital Fund

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Completed Projects		**Cost**	**Funding Source**
Public Housing and Community Development	Haley Sofge Towers	$2,056,321.00	Mitigation Grant, Capital Fund
Public Housing and Community Development	Haley Sofge Towers	$1,000,000.00	Mitigation Grant, Capital Fund
Regulatory and Economic Resources	Repetitive Loss Area Study- Arch Creek	$4,528,519.02	HMGP/QNIP
Seaport	Concrete Panels	$619,858.00	Local seaport funds
Seaport	Construction of New Seawall - Area 2	$9,600,000.00	FDOT
Bal Harbour	City Hall Hurricane Update	$563,000.00	Miami-Dade County GOB
Bal Harbour	IT Enhancements	$170,800.00	CIPs General Fund
West Miami	Reconstruction /Raising of Public Works Motor Pool Building	$1,300,000.00	General Fund
Libraries	Edison Center install impact resistant windows	$175,000.00	GOB
Police	Miami-Dade Public Safety Institute - Replacement of existing office, classroom, and restroom trailers	$1,000,000.00	Unknown
Police	MDPD Headquarters Complex Security Hardening	$650,000.00	Unknown
Police	Police District Mitigation Project Kendall and Intracoastal District Stations	$600,000.00	Unknown
Regulatory and Economic Resources	Alley North of SW 81 Street from SW 67 Avenue to SW 69 Avenue Construction Project	$339,185.00	GOB
Regulatory and Economic Resources	Belen Phase III B	$1,590,000.00	SWU
Regulatory and Economic Resources	Drainage Improvement Project (PWD Project No. 20130258)	$340,000.00	HMGP
Regulatory and Economic Resources	C111 Extension North , from SW 387 ST to SW 388 ST, following slough path	$7,971,720.00	Grants
Regulatory and Economic Resources	SW 122nd Ave Secondary Canal Enhancement Project SOW - Guaval Canal	$4,500,000.00	Private Funds
Vizcaya Museum and Gardens	Emergency Structural Repairs	$4,500,000.00	Capital Fund Emergency/ Natural Disaster Funding Bond
Regulatory and Economic Resources	Wynona Park Drainage Improvement (NW 7 - 8 St from NW 72 - 76 Ave) [602]	$327,683.00	QNIP/SWU
Regulatory and Economic Resources	West Miami Lakes, Phase II [3065B]	$306,158.00	QNIP/SWU
Regulatory and Economic Resources	Twin Lakes (CC7-N-10, Project 9), Phase I / Twin Lakes, Phase 2 (NW 99 St - NW 102 St from NW 12 Ave -	$460,857.00	QNIP/SWU

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Completed Projects		**Cost**	**Funding Source**
	NW 14 Ave) [4015R, 630, 4009, 4008, 4010]		
Regulatory and Economic Resources	Tropical Estates Sub. Phase 1 & 2 - SW 56 Street to SW 49 Street from SW 97 Avenue to SW 98 Court	$438,927.00	SWU
Regulatory and Economic Resources	Tropical Estates Phase 4 SW 98 Avenue to SW 102 Avenue from SW 48 Street to SW 51 Terrace	$229,120.00	SWU
Regulatory and Economic Resources	Tropical Estates Phase 3- SW 99 Ct to SW 102 Ave from SW 52 Terr to SW 55 St	$330,000.00	SWU
Regulatory and Economic Resources	The Tropics Drainage Improvements (NW 35 Ave - NW 36 Ave from NW 97 St - NW 101 St) [5020A, 5020]	$98,382.00	QNIP/SWU
Regulatory and Economic Resources	Telemetry Network Installation including 28 Satellite Canal Level Recorders and Rain Gauges	$1,100,000.00	GOB/SWU
Regulatory and Economic Resources	SW 54 Ct from SW 74 St to SW 76 St	$87,700.00	Unk
Regulatory and Economic Resources	NW 22 Ave between NW 135 St and NW 151 St	$288,000.00	SWU
Regulatory and Economic Resources	55th Street Erosion Control Breakwater	$1,700,000.00	Unknown
Homestead	Drop-Off Site	$900,000.00	CIP Plan
Homestead	Motorsports Water Storage Tank Equipment	$500,000.00	CIP Plan
Homestead	Risk Management Plan	$60,000.00	HMGP
Homestead	Police Station Security/Hardening	$50,000.00	Bond Issue for New Police Station Building
Completed Total	**# of projects: 108**	**$157,048,111.20**	

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Under Construction		**Cost**	**Funding Source**
Miami	Update Stormwater Master Plan	$2,000,000.00	HMGP/Other
THER	Reduction of Floating Debris	$60,000.00	Budgeted
Cutler Bay	Town Hall/EOC Hardening Project (Mechanical HVAC System)	$228,000.00	Unknown Unknown
Cutler Bay	Town Hall/EOC HVAC System	$610,000.00	Unknown
Regulatory and Economic Resources	SW 82 Avenue from SW 8 Street to SW 9 Terrace Swale Blocks	$77,050.00	SWU
El Portal	Village of El Portal Stormwater Improvements	$10,000,000.00	Emergency Operations Flood Response and Post Flood Response, FMA
Regulatory and Economic Resources	PWD Project No. 20040386 (PTP) (JPA with City of Miami)	$4,702,799.00	PTP (JPA with City of Miami)
Regulatory and Economic Resources	PWD Project No. 20040389 (PTP) (JPA with City of Miami)	$5,663,390.00	PTP (JPA with City of Miami)
Regulatory and Economic Resources	Old Cutler Road Bike Path (Phase II) – Intersection of SW 136 Street and SW 63 Avenue to Cocoplum Circle/Cartagena Plaza PWD Project No. 20080191 (PTP)	$1,131,821.00	PTP
Regulatory and Economic Resources	Town Park Heights Drainage Improvement Project - SW 97 AVE TO SW 95 AVE FROM SW 9 TER TO SW 12 ST	$153,720.05	SWU
Homestead	Upgrade Substation Feeder Protection	$200,000.00	CIF
Homestead	Water Main Improvements	$2,000,000.00	CIF
Homestead	Sewer Pump Stations Upgrades	$1,500,000.00	CIP Plan
Homestead	Improve Transportation Infrastructure	$2,000,000.00	Miami-Dade County and State of Florida Roads
Miami	Bird Avenue Road Improvement	$1,728,000.00	PDM
North Bay Village	GIS Conversion of Sanitary Sewer System	$28,200.00	Utility Fund
Palmetto Bay	Downtown Redevelopment	$12,440,000.00	County GOB Street Sign Bond General Funds
Miami Beach	Sunset Islands 3 & 4 – Neighborhood Improvements	Unknown	Unknown
Medley	Drainage Improvements Phase III	$270,000.00	Town Budget
Hialeah Gardens	Central District Drainage Improvements	$2,500,000.00	Flood Control Projects, RFC, HMGP
Cutler Bay	Portable Traffic Control Signs	$200,000.00	Unknown
Mount Sinai	Protect the Energy Center Facility Chillers	$2,000,000.00	Self-Funded

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Under Construction		**Cost**	**Funding Source**
Regulatory and Economic Resources	NE 14 Avenue and NE 191 Street Drainage Improvement Project	$453,200.00	GOB
Miami Springs	Engineering Study to determine sites of canal bank restoration	$2,000,000.00	Department of Environmental Protection Division of Water Protection Assistance
Miami Gardens	Vista Verde Drainage and Roadway Improvement Project	$3,800,000.00	Stormwater, CDBG, CITT, and State Legislative Appropriations Grants
Miami Gardens	GIS Layer for Storm Sewer Infrastructure	$100,000.00	Unknown
Corrections and Rehabilitation	MWDC Window Replacement	$1,351,000.00	Project #2000000556
Regulatory and Economic Resources	SW 38 Street from SW 62 CT to SW 63 Ave	$57,268.00	SWU/GOB
Homestead	GIS that locates all city utilities	$5,000,000.00	CIP Plan
Homestead	Water and Wastewater Telemetry/RTUs	$1,000,000.00	CIF
Homestead	Wastewater Infiltration/Inflow	$2,400,000.00	CIF
Miami	Debris Management Plan	$6,825.00	Public Assistance Program, PDM, FEMA Hurricane Irma Funding
Cutler Bay	Drainage Improvements - Manta Drive	$488,600.00	Stormwater Utility Funds
Cutler Bay	Flood Zone Data GIS System	$140,000.00	Budget through Stormwater Utility fund
Mount Sinai	Relocate Operating Rooms	$16,500,000.00	Unknown
Mount Sinai	Surgical Tower	$6,500,000.00	FEMA
Mount Sinai	New Tower Storm Drainage Improvements	$3,000,000.00	Department of Environmental Protection
Golden Beach	Storm Water Drainage System Improvements	$4,635,000.00	Unknown
Libraries	North Central repair roofing system	$135,000.00	G.O.B. Secured
Regulatory and Economic Resources	SW 104 Street from SW 137 Avenue to SW Hammocks Boulevard	$313,827.00	OTHERS
Regulatory and Economic Resources	SW 176 Street from US-1 to SW 107 Avenue	$4,434,642.00	PTP
Regulatory and Economic Resources	SW 157 Avenue from SW 184 Street to SW 152 Street	$7,128,130.00	PTP
Regulatory and Economic Resources	SW 104 Street from SW 157 Avenue to SW 142 Avenue	$505,335.00	SWU
Regulatory and Economic Resources	PWD Project No. 20120157 WO#1) (GOB	$295,279.00	GOB

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Under Construction		**Cost**	**Funding Source**
Regulatory and Economic Resources	NW 87 Avenue from NW 154 Street to NW 186 Street Project No. 20110194 (PTP)	$490,256.00	PTP
Regulatory and Economic Resources	NW 58 Street from NW 92 Avenue to NW 102 Avenue - Drainage Improvement Project	$1,075,000.00	GOB 77465
Regulatory and Economic Resources	Miami River Greenways	$1,193,721.00	GOB
Regulatory and Economic Resources	SW 157 Avenue from SW 88 Street to SW 91 Street	$213,519.00	SWU
Regulatory and Economic Resources	NW 178 Street from NW 89 Avenue to NW 90 Court	$72,190.00	SWU
Regulatory and Economic Resources	Drainage Improvement PWD Project No. 20120161) (QNIP)	$189,372.00	QNIP
Regulatory and Economic Resources	Project No. 20060309 (JPA with City of Hialeah)	$3,300,000.00	JPA with City of Hialeah
Regulatory and Economic Resources	7250 SW 13 Street	$185,000.00	SWU
Regulatory and Economic Resources	Midway Addition (Phases V, VI & VII) Drainage Improvement Project - Flagler Street to NW 7 Street from NW 87 Avenue to NW 79 Avenue PWD Project No. 20130249) (GOB 77452 Midway Addition Phases V VI VII	$867,050.00	GOB
Homestead	Improvements to Existing Buildings	$500,000.00	CIP Plan
Miami Dade College	Entrepreneurial Edu Center, Bldg. 1000	$148,720.00	HMGP
Miami	Overtown Greenway Phase I	$3,000,000.00	PDM
Miami	Mary Brickell Village Drainage Improvements	$1,400,000.00	PDM
Cutler Bay	Canal Cleaning and Shaping Town wide	$750,000.00	Budgeted annually
Cutler Bay	Emergency Portable Air Conditioner Units	$120,000.00	Continue identifying and applying for new grant sources
Cutler Bay	Municipal AM Emergency Radio Broadcast Station	$85,000.00	Continue identifying and applying for new grant sources
Cutler Bay	Removal of Australian Pines and other Exotics	$100,000.00	Included in F.Y. 2019-2020 Budget.
Doral	Stormwater Improvements 5-Year CIP: Year 4	$1,047,694.00	HMGP, PDM
Key Biscayne	Comprehensive Review of Local Laws and Regulations	$5,000.00	Stormwater Utility Fund
Regulatory and Economic Resources	20130158Drainage Improvement Project - SW 99 Ave & SW 101 St; SW 129 AVE & SW 116 ST	Unknown	SWU
Miami Springs	Electronic Car Charging Stations	$30,000.00	City Budget Item

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Under Construction		**Cost**	**Funding Source**
Aviation	MIA South and Central Terminal Baggage Handling System Improvements	$324,210,000.00	TSA OTA, FDOT Grants, Future Financing
Police	MDPD Facilities Maintenance South Office Roof Replacement and Reinforcement	$257,000.00	Potential
Regulatory and Economic Resources	PWWM Project No. 20140177 NE 25 PL AND NE 187 ST	$18,998.00	SWU
Regulatory and Economic Resources	SW 207 Terrace from SW 124 Court to SW 126 Avenue Drainage Improvement Project	$275,000.00	SWU
Regulatory and Economic Resources	PWD Project No. 20130240 SW 2 Street to SW 4Street from SW 82 Avenue and SW 87 Avenue	$295,825.00	SWU
Regulatory and Economic Resources	SW 2 Street to SW 4 Street from SW 82 Avenue to SW 87 Avenue Drainage Improvement Project PWD Project No.20130240	$144,000.00	SWU
Regulatory and Economic Resources	SW 152 Street and SW 82 Avenue Drainage Improvement Project	$220,000.00	SWU
Regulatory and Economic Resources	SW 220 St bet SW 103 CT & SW 102 Ave (10298 SW 229 ST	$80,000.00	SWU
Regulatory and Economic Resources	SW 132 Avenue from SW 117 Terrace to SW 120 Street	$392,645.00	PTP
Regulatory and Economic Resources	Seaboard Acres Pump Station Retrofit	$3,317,350.00	SWU/GOB
Regulatory and Economic Resources	Project No. 20120047 Town of Miami Lakes	$93,321.00	Unknown
Regulatory and Economic Resources	NW 74 Street from NW 87 Avenue to Palmetto Expressway	$5,802,503.00	PTP
Regulatory and Economic Resources	NW 74 Street from NW 114 Avenue to NW 107 Avenue Project No. 20060443 (PTP)	$354,053.00	PTP
Regulatory and Economic Resources	NW 37 Avenue from North River Drive to NW 79 Street (PWD Project No. 20040330) (PTP)	$14,855,900.00	PTP
Regulatory and Economic Resources	NE 167 Street & NE 14 Avenue	$50,000.00	SWU
Regulatory and Economic Resources	NE 18 Avenue from NE 191 Street to NE 199 Street (NE 18 Avenue & NE 199 Street)	$280,241.00	SWU
Regulatory and Economic Resources	NE 12 Ave & NE 169 Terrace	$128,302.00	SWU
Regulatory and Economic Resources	Larchmont Pump Station Retrofit	$4,665,069.00	SWU GOB
Regulatory and Economic Resources	Larchmont Pump Retrofit Station Phases 1 & 2	$3,300,000.00	SWU/GOB
Regulatory and Economic Resources	Miami River Greenways	$510,359.00	GOB

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Under Construction		**Cost**	**Funding Source**
Regulatory and Economic Resources	Drainage Improvement PWD Project No. 20130156) (GOB/SWU)	$632,910.00	GOB/SWU
Regulatory and Economic Resources	Arch Creek Phase IV- Pump Stations Improvements	$120,000.00	SWU
Homestead	Installation of Automatic Circuit Reclosers in the Electric Distribution System	$4,500,000.00	CIF
Sweetwater	Stormwater Improvements Phase IIB North remaining	$620,000.00	CDBG, GOB, DEP, SFWMD
Total	**# of Projects: 89**	**$485,113,084.10**	

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Cutler Bay	Storm Water Outfalls	$500,000.00	Budgeted annually through Stormwater Utility Fund
Cutler Bay	Debris Removal	$400,000.00	Will apply for Grants as needed
Cutler Bay	Preventive Pruning of Existing Town Tree Inventory	$285,000.00	Budgeted on going for F.Y. 2016-2017
Miami Lakes	West Lakes Drainage Improvements Phase III	$1,950,000.00	Grants
Doral	Stormwater Improvements- NW 114 Ave (50 St-58 St)	$805,790.60	Stormwater Fees
Doral	Stormwater Improvements- NW 21 Street	$191,532.25	Stormwater Fee
Doral	Stormwater Improvements 5-Year CIP: Year 5	$1,435,908.00	HMGP, PDM
Key Biscayne	Community Center Generator	$75,000.00	CIF
Key Biscayne	Reverse 911 Community Notification System	$105,000.00	CIF
Key Biscayne	Hazard Mitigation involvement	$10,000.00	General Fund
Regulatory and Economic Resources	1851 NW 46 ST	$55,000.00	SWU
Regulatory and Economic Resources	SW 172 St and SW 142 Ct	$185,125.00	GOB
Regulatory and Economic Resources	Highland Oaks Ditch Improvements	$360,000.00	Grants
Regulatory and Economic Resources	NW 79 ST to NW 72 ST between E 11 AVE to NW 21 AVE	$11,770,000.00	Grants
Regulatory and Economic Resources	NE 171 St and NE 213 St between NE 15 Ave and NE 34 Ave	$1,800,000.00	SWU
Regulatory and Economic Resources	Secondary Canal improvements Planned Project General improvements, Dredging and Cross section GRAHAMS DAIRY CANAL NW 138 ST from NW 97 AVE TO NW 107 AVE	$575,934.00	SWU
Regulatory and Economic Resources	Ditch improvements Planned Project General improvements, Dredging and Cross section GRAHAMS DAIRY CANAL NW 138 ST FROM NW 107 AVE TO NW 117 AVE	$150,000.00	SWU
Regulatory and Economic Resources	NW 97 Ave canal improvements NW 97 Ave Between NW 138 St and NW 170 St	$3,600,000.00	SWU

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Regulatory and Economic Resources	Secondary Canal improvements Planned Project General improvements, Dredging and Cross section SW 42 ST from SW 167 Ave to SW 157 Ave	$786,000.00	SWU
Regulatory and Economic Resources	Flagler St to NW 7 St between Palmetto Expressway and NW 72 Ave (CNW-W-1), NW 6 St to SW 8 St between SW 127 Ave and FL Turnpike (CC4-N-10)	$1,800,000.00	Grants
Regulatory and Economic Resources	Arch Creek Pipe Replacement 42' PIPE	$350,898.7	SWU
Regulatory and Economic Resources	Biscayne Shores 109 & 110 Pump Station Retrofit	$1,114,593.27	SWU
Regulatory and Economic Resources	6350 NW 72 AVE NW 64 St from NW 72 Ave TO NW 74 Ave	$250,000.00	SWU
Regulatory and Economic Resources	NW 18 from NW 62 St to NW 71 St	$561,573.00	SWU
Regulatory and Economic Resources	NW 87 Terrace from NW 33 Avenue to NW 35 Avenue	$250,000.00	SWU
Regulatory and Economic Resources	NW 68 St from NW 33 AVE to NW 35 Ave	$240,000.00	SWU
Regulatory and Economic Resources	NW 1 AVE FROM NW 131 ST TO NW 135 ST	$291,000.00	SWU
Regulatory and Economic Resources	Drainage improvement NE 199 St & NE 15 Court	$282,635.39	SWU
Regulatory and Economic Resources	Roadway drainage NW 79 AVE from NW 199 St to 200 St	$152,304.00	SWU
Regulatory and Economic Resources	Roadway drainage improvement NE 5 PL FROM NE 143 ST TO NE 145 ST	$2,250,000.00	SWU
Regulatory and Economic Resources	Roadway Drainage general drainage improvements	$2,500,000	SWU
Regulatory and Economic Resources	NE 163 St to NE 79 St east NE 6 Ave	$900,000.00	Grants
Regulatory and Economic Resources	SW 152 Terr and SW 160 St between SW 126 Ave and S Dixie Hwy	$900,000.00	Grants

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Regulatory and Economic Resources	SW 152 St to SW 138 St, From SW 95 Ct to SW 117 Ave	$20,444,000.00	SWU
Regulatory and Economic Resources	From Bahama Drive to Grouper Drive From Holiday Road to Anchor Road	$1,500,000.00	Grants
Regulatory and Economic Resources	SW 72 St to SW 88 St between 107 Ave and 117 Ave	$450,000.00	Grants
Regulatory and Economic Resources	Flagler St to SW 8 St between SW 87 Ave and SW 92 Ave	$2,420,000.00	Grants
Regulatory and Economic Resources	NW 107 Ave Canal Improvements	$3,600,000.00	SWU
Regulatory and Economic Resources	19551 NW 57 PLACE	$330,473.00	SWU
Regulatory and Economic Resources	8150 SW 53 AVE	$250,000.00	SWU
Regulatory and Economic Resources	Roadway Drainage general drainage improvements mitigation of flood complaints	$326,618.00	SWU
Regulatory and Economic Resources	1930 NW 86 TER	$374,123.00	SWU
Public Housing and Community Development	Liberty Square	$3,000,000.00	Mitigation Grant
Public Housing and Community Development	Liberty Square	$3,240,000.00	Mitigation Grant
Public Housing and Community Development	Liberty Square	$2,916,000.00	Mitigation Grant
Miami Gardens	NW 13 Avenue/Industrial Area Drainage Outfall Project	$230,000.00	Stormwater Funding
Miami Gardens	NW 203 Street Culvert-Drainage Project	$570,000.00	Grants and Loans for Public Works & Development Facilities
Miami Gardens	Culvert and Headwall Project	$400,000.00	Potential
Animal Services	test	Unknown	test
Regulatory and Economic Resources	NW 44 St from NW 27 Ave to NW 29 Ave	$66,001.00	GOB

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Regulatory and Economic Resources	NW 5 Ave and NW 109 St	$265,674.41	GOB
Regulatory and Economic Resources	NW 18 Ave and NW 62 Ter	$141,558.00	CDB5
Regulatory and Economic Resources	NW 19 Ave and NW 83 St	$119,283.79	QNIP
Regulatory and Economic Resources	NW 24 Ave from NW 79 St to NW 78 St	$41,861.00	GOB
Regulatory and Economic Resources	1325 SW 103 Pl Westbrook Park	$52,618.90	GOB
Regulatory and Economic Resources	NW 7 St from NW 62 Ave to NW 65 Ave	$427,135.24	GOB
Regulatory and Economic Resources	NE 90 Street from NE 10 Court to N. Bayshore Drive	$377,144.80	GOB
Regulatory and Economic Resources	SW 97 Avenue to SW 94 Avenue from SW 8 Street to SW 14 Street	$329,852.00	QNIP
Regulatory and Economic Resources	SW 88 Court from SW 52 Street to SW 54 Street	$317,028.32	GOB
Regulatory and Economic Resources	10130 SW 91 Terrace	$25,000.00	SWU
Regulatory and Economic Resources	NE 144 St between NE 12 Ave and NE 14 Ave	$127,278.76	GOB
Regulatory and Economic Resources	NW 24 Avenue and NW 87 Terrace	$165,231.22	GOB
Regulatory and Economic Resources	NW 83 Street from NW 31 Avenue to NW 33 Avenue	$272,900.81	GOB
Regulatory and Economic Resources	NW 67 Avenue from NW 167 Street to NW 168 Street	$357,588.95	GOB
Regulatory and Economic Resources	SW 152 Avenue from SW 60 Terrace to SW 68 Lane	$378,578.00	GOB
Regulatory and Economic Resources	SW 92 Avenue and SW 42 Terrace (Blue Lakes Park) Swale Blocks	$73,945.00	GOB

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Regulatory and Economic Resources	SW 97 Avenue from West Flagler Street to SW 8 Street	$274,000.00	QNIP
Regulatory and Economic Resources	NE 10 Avenue from NE 147 Street to NE 164 Street	$336,496.00	GOB
Regulatory and Economic Resources	NE 151 Street from NE 18 Avenue to NE 20 Avenue	$277,062.00	GOB
Regulatory and Economic Resources	SW 10 Ter from SW 84 Ct to SW 86 Ct	$14,900.00	GOB
Regulatory and Economic Resources	SW 93 Ct from SW 51 St to SW 48 St	$55,000.00	GOB
Regulatory and Economic Resources	SW 122 St and SW 111 Ave (general area)	$211,140.00	GOB
Regulatory and Economic Resources	SW 131 St from SW 87 Ave to SW 89 Ave	$377,369.00	GOB
Regulatory and Economic Resources	SW 95 Ct and SW 5 Ln	$85,200.00	GOB
Regulatory and Economic Resources	SW 9 Ter from SW 42 Ave to SW 43 Ave	$155,437.00	GOB
Regulatory and Economic Resources	NE 214 St from NE 26 Ave to Dixie Hwy	$12,392.00	SWU
Regulatory and Economic Resources	NW 26 Ave and NW 68 St	$36,376.00	GOB
Regulatory and Economic Resources	NE 12 Avenue and NE 111 Street	$108,809	SWU
Regulatory and Economic Resources	NW 80 Avenue and NW 66 Street	$273,689.00	SWU
Regulatory and Economic Resources	NW 22 Avenue from NW 54 Street to NW 56 Street	$67,464.00	SWU
Regulatory and Economic Resources	South Biscayne River Dr from NW 5 Ave to NW 6 Ave	$38,396.00	SWU
Regulatory and Economic Resources	NW 110 St and NW 2 Ct	$23,293.00	SWU

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2018 to 12/20/2018			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Regulatory and Economic Resources	SW 144 Ave from SW 280 St to SW 284 St	$88,500.00	SWU
Regulatory and Economic Resources	NW 79 Ter from NW 25 Ave to NW 27 Ave	$50,255.00	SWU
Regulatory and Economic Resources	NE 149 Street and NE 8 Avenue	$1,000,000	SWU
Regulatory and Economic Resources	NE 10 Ave from NE 147 to NE 149 Street	$250,000	SWU
Regulatory and Economic Resources	Drainage Improvement Project (PWD Project No. 20090162) (SWU)	$488,000.00	SWU
Regulatory and Economic Resources	NW 18 Place to NW 17 Court from NW 133 Street to NW 134 Street	$291,000	SWU
Regulatory and Economic Resources	SW 127 Ter from SW 115 Ave to End of Cul-de-sac	$276,577.00	GOB
Regulatory and Economic Resources	NW 74 St to NW 58 St between NW 87 Ave and NW 77 Ct	$900,000.00	Grants
Regulatory and Economic Resources	SW 92 Avenue FROM SW 8 Terrace to SW 12 Street Roadway DRAINAGE	$616,537.22	SWU
Regulatory and Economic Resources	NW 76 ST FROM NW 36 Avenue to NW 37 Avenue	$425,000.00	SWU
Regulatory and Economic Resources	SW 157 AVE Canal Interconnect	Unknown	Capital
North Bay Village	Deep Well Injection System Rehabilitation	$633,737.00	Stormwater Fund, Department of Environmental Protection Grant
North Bay Village	Roadway Resurfacing	$1,500,000.00	State Revolving Fund Loan Program, Citizen Independent Transportation Trust, Local CIPs Gas Tax
Total	**# of Projects: 95**	**$89,339,817.63**	

2019 Projects

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2019 to 8/1/2019			
Completed Projects		**Cost**	**Funding Source**
Doral	Stormwater Improvements 5-Year CIP: Year 4	$1,047,694.00	City's Stormwater Fee
North Miami Beach	Establishment of Emergency Operations Center	$385,000.00	CIP Project
North Miami Beach	Drainage in Alleyways	$50,000.00	CIP Project
North Miami Beach	NE 161st Street Roadway and Drainage Improvements	$400,000.00	CIP Project
Libraries	North Central repair roofing system	$135,000.00	G.O.B.
Libraries	South Miami repair roofing system	$250,000.00	G.O.B.
Aventura	NE 29 PL Phase II South	$721,000.00	City funded project
Mount Sinai	Protect the Power Supply	$5,000,000.00	Grants and Loans for Public Works & Development Facilities, Federal match to state funding
Mount Sinai	New Tower Storm Drainage Improvements	$3,000,000.00	Department of Environmental Protection
Mount Sinai	Energy Center 1	$8,994,838.00	State funding
Mount Sinai	Utility Bridge and Power Distribution	$7,351,169.00	HMGP
Mount Sinai	Greenspan Roof and Enclosures	$300,000.00	HMGP
Mount Sinai	Surgical Tower	$6,500,000.00	FEMA
Mount Sinai	Energy Center Facility	$250,000.00	Internal Funding
Mount Sinai	Energy Center 2	$3,964,239.00	FEMA
Mount Sinai	Relocate Operating Rooms	$16,500,000.00	N/A
Mount Sinai	Medical Gas Tank Farm	$1,300,000.00	CDBG, Disaster Recovery Initiative, HMGP
Libraries	Edison Center install impact resistant windows	$175,000.00	GOB
North Miami	Embankment stabilization at Keystone Point Bridge #2	$2,100,000.00	This project will be shuffle ready project.
North Miami	Security for City Hall	$62,750.00	Unknown
North Miami	Global Positioning System	$18,000.00	Unknown
North Miami	Flood Prevention and Mitigation: Drainage Basin13	$600,000.00	City funds.
Miami Springs	Electronic Car Charging Stations	$30,000.00	City Budget
Miami Lakes	Lake Sarah Drainage Improvements	$2,200,000.00	DEP and SFWMD
Public Housing and Community Development	Ward Tower	$1,920,400.00	Mitigation Grant, CIF
Total	**# of projects: 25**	**$63,255,090**	

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2019 to 8/1/2019			
Projects Under Construction		**Cost**	**Funding Source**
North Miami Beach	Install Additional Storm Water Basins or Increase Existing Basins	$60,000.00	CIP
North Miami Beach	Proactive Hurricane Tree Trimming	$150,000.00	CIP
North Miami Beach	Clean and Improve Drainage Systems	$428,400.00	CIP
North Miami Beach	Stormwater Improvements City-wide	$340,000.00	CIP
North Miami Beach	Miami Industrial District Drainage & Roadway Improvements	$800,000.00	CIP
North Miami Beach	Install Additional Stormwater Basins	$60,000.00	CIP
North Miami Beach	Renovation of Eastern Shores Outfall pipes	Unknown	Stormwater Fund
Florida City	Sealing the Palm Drive Canal	$7,100,000.00	City and County funds
Mount Sinai	CCC & Blum Exterior Door Hardening	$153,000.00	CDGR-DR
Aviation	MIA South and Central Terminal Baggage Handling System Improvements	$324,210,000.00	Federal and State funds
Total	**# of Projects: 10**	**$333,301,400**	

Miami-Dade Local Mitigation Strategy Projects Reported from 01/2019 to 8/1/2019			
Projects Funded Not Yet Started		**Cost**	**Funding Source**
Doral	Stormwater Improvements - NW 21 Street	$191,532.25	Stormwater fee
Doral	Stormwater Improvements 5-Year CIP: Year 5	$1,435,908.00	Stormwater fee
Doral	Stormwater Improvements - NW 114 Ave (from 50 Street to 58 Street)	$805,790.60	HMGP, Stormwater fee
Fire Rescue	Structural Rehabilitation for Miami-Dade Fire Rescue Headquarters	$1,000,000.00	HMPG, PDM
Mount Sinai	CCC & Blum Exterior Door Hardening	$153,000.00	CDGR-DR
Vizcaya Museum and Gardens	Main House MEP System Flood proofing	$1,000,000.00	HMGP, General Obligation Bond
Total	**# of Projects: 6**	**$4,586,230**	

Acronyms

CDBG	Community Development Block Grant
CDBG-DR	Community Development Block Grant-Disaster Recovery
CIF	Capital Improvement Fund
CIP	Capital Improvement Project
DEO	Florida Department of Economic Opportunity
FEMA	Federal Emergency Management Agency
FDEM	Florida Division of Emergency Management
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FMA	Flood Mitigation Assistance Grant Program
EPA	U.S. Environmental Protection Agency
GOB	General Obligation Bond
HMGP	Hazard Mitigation Grant Program
JPA	Joint Participation Agreement
NRCS	U.S. Natural Resources Conservation Service
QNIP	Quality Neighborhood Improvement Program
PA	Public Assistance
PDM	Pre-Disaster Mitigation Grant Program
PTP	People's Transportation Plan
SFWMD	South Florida Water Management District
SWU	Stormwater Utility
WO	Work Order

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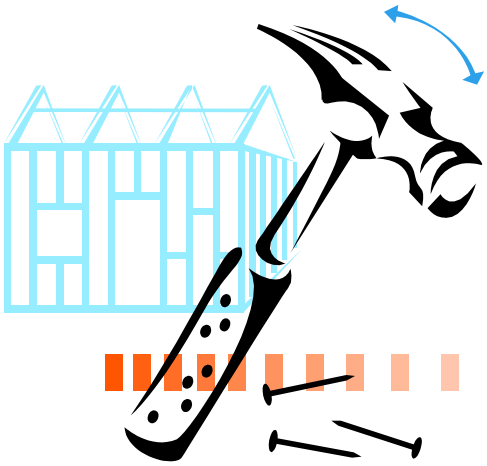

The
Local Mitigation Strategy

MIAMI-DADE COUNTY

Contact: LMS Coordinator (305) 468-5400
mdlms@miamidade.gov

Miami-Dade County, Florida Office of Emergency Management (OEM)

MIAMI-DADE COUNTY

LMS

LOCAL MITIGATION STRATEGY

Part 7: National Flood Insurance Program and Community Rating System

JULY 2020

Miami-Dade County
Office of Emergency Management
9300 NW 41st Street
Miami, FL 33178-2414
(305) 468-5400
www.miamidade.gov/oem

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INTRODUCTION

The National Flood Insurance Program (NFIP) was created to reduce the impact of flooding on public and private structures by:

- Providing affordable insurance to property owners, renters and businesses
- Encouraging communities to adopt and enforce floodplain management regulations

Table 1 shows the status of Miami-Dade County communities participating in NFIP as of July 15, 2020, per the FEMA Community Status Book Report. The current effective Flood Insurance Risk Maps (FIRM) for all communities in the County are dated September 11, 2009.

Table 1. Status of Miami-Dade County Communities Participating in NFIP[1]

Jurisdiction	Initial FIRM Identified	Entry Date	Additional Comments
Aventura	9/30/1972	10/22/1997	Adopted the Miami-Dade County (CID 120635) FIRM dated 3/2/1994 Panels 82 and 84.
Bal Harbour	9/29/1972	9/29/1972	
Bay Harbor Islands	9/29/1972	9/29/1972	
Biscayne Park	9/29/1972	9/29/1972	
Coral Gables	9/29/1972	9/29/1972	
Cutler Bay	3/2/1994	8/31/2006	
Doral	9/30/1972	5/12/2004	Use Miami-Dade County (CID 120635) Panels 75,160 and 170.
El Portal	9/29/1972	9/29/1972	
Florida City	9/29/1972	9/29/1972	
Golden Beach	9/29/1972	9/29/1972	
Hialeah	9/29/1972	9/29/1972	
Hialeah Gardens	9/29/1972	9/29/1972	
Homestead	9/29/1972	9/29/1972	
Indian Creek Village	9/29/1972	9/29/1972	
Key Biscayne	9/29/1972	9/29/1972	
Medley	9/29/1972	9/29/1972	
City of Miami	9/29/1972	9/29/1972	
Miami Beach	9/29/1972	9/29/1972	
Miami Gardens	9/30/1972	6/21/2004	Use Miami-Dade County (CID 120635) FIRM panels 80, 82, 83 & 90.
Miami Lakes	3/2/1994	7/17/2003	Use Miami-Dade County (CID 120635) FIRM panels 75, 80 & 90.
Miami Shores	9/29/1972	9/29/1972	
Miami Springs	9/29/1972	9/29/1972	
North Bay Village	9/29/1972	9/29/1972	
North Miami	9/29/1972	9/29/1972	

[1] FEMA Community Status Book Report (July 2020): https://www.fema.gov/cis/FL.pdf

Jurisdiction	Initial FIRM Identified	Entry Date	Additional Comments
North Miami Beach	9/29/1972	9/29/1972	
Opa-Locka	9/29/1972	9/29/1972	
Palmetto Bay	3/2/1994	2/2/2005	
Pinecrest	9/30/1972	10/13/1998	Adopted Miami Dade County (CID 120635) FIRM panels 260, 276 and 278. The initial FIRM date is 10/29/1972 for floodplain management purposes.
South Miami	9/29/1972	9/29/1972	
Sunny Isles Beach	3/02/1994	9/10/2003	Use Miami Dade County (CID 120635) FIRM panels 82 & 84. The initial FIRM date is 10/29/1972 for floodplain management purposes.
Surfside	9/29/1972	9/29/1972	
Sweetwater	7/17/1995	9/29/1972	
Virginia Gardens	7/17/1995	9/29/1972	
West Miami	7/17/1995	9/29/1972	
Unincorporated	9/30/1972	9/29/1972	

Miami-Dade County communities continue to participate in NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. These floodplain management practices allow homeowners, renters, and business owners within the community to purchase the federally supported flood insurance.

To maintain compliance with NFIP, Miami-Dade County municipalities are responsible, but not limited to the following:

- Accept, review, and maintain records of the elevation for all new construction and substantial improvements in structure within the Special Flood Hazard Areas
- Require permits and review all new construction, including substantial improvements, for compliance with the minimum standards under NFIP and the local floodplain management codes
- Require that all development proposals greater than 50 lots or 5 acres, whichever is less, include Base Flood Elevation (BFE) data
- Ensure that all new construction and substantial improvements in Flood Zones V and VE are adequately elevated so that the bottom of the lowest horizontal structural member of the lowest floor is elevated to at or above the BFE
- Require that all manufactured homes located in the Special Flood Hazard Areas are installed using methods and practices that minimize flood damage; including proper elevation and anchoring to resist flotation, collapse or lateral movement

Community Rating System

A voluntary incentive program was created by NFIP, called the Community Rating System (CRS) for communities participating in the NFIP. The Program recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, homeowners benefit from a significant discount on their flood insurance premium because, rates are discounted to reflect the reduced flood risk resulting from the community's actions to meet CRS goals. The three (3) CRS goals are:

- Reduce and avoid flood damage to insurable property
- Strengthen and support the insurance aspects of NFIP
- Encourage a comprehensive approach to floodplain management

CRS recognizes measures for flood protection and flood loss reduction through four (4) main activity categories: Public Information, Mapping and Regulation, Flood Damage Reduction, and Flood Preparedness. To participate in the CRS Program, a community (County or Municipality) must complete and submit an application to the Federal Emergency Management Agency (FEMA). The community's floodplain management efforts are reviewed by FEMA and they are assigned the appropriate CRS classification based on credit points earned for various activities. Classifications range from 1 to 10 and they determine the premium discount for eligible flood insurance policies. Refer to Table 2 for details on the CRS premium discounts organized by class and flood zone.[2]

Table 2. CRS Premium Discounts by Class and Flood Zone

Class	Discount	Class	Discount	Class	Discount
1	45%	1	10%	1	10%
2	40%	2	10%	2	10%
3	35%	3	10%	3	10%
4	30%	4	10%	4	10%
5	25%	5	10%	5	10%
6	20%	6	10%	6	10%
7	15%	7	5%	7	5%
8	10%	8	5%	8	5%
9	5%	9	5%	9	5%
10	---	10	---	10	---
Flood Zones: A, AE, A1-A30, V, V1 – V30, AO and AH.		*Flood Zones: AR/A, AR/AE, AR/A1 – A30, AR/AH and AR/AO.*		*Flood Zones: B, C, X, D, AR and A99*	

As of August 2019, 467 communities in Florida participate in the NFIP and 240 of these communities participate in the CRS Program. Unincorporated Miami-Dade County has a total of 122,414 flood insurance policies-in-force, ranking number one (1) in the State. Five (5) Miami-Dade County municipalities (City of Miami, Miami Beach, Aventura, Sunny Isles Beach and Hialeah) are on the top 50 Florida communities, with a total of 144,146 flood insurance policies-in-force. They all participate in the CRS Program.[3]

[2] April 2019 NFIP Flood Insurance Manual, Appendix F: Community Rating System: https://www.fema.gov/media-library-data/1559830308363-e690ed2aea6606fb81826904e4a7bd7f/app-f_crs_508_apr2019.pdf

[3] Florida CRS Map (October 2019): https://crsresources.org/files/100/maps/states/florida_crs_map_october_2019.pdf

Unincorporated Miami-Dade County participates in the CRS Program since October 2003, and has currently achieved a Class 5 Community rating, which guarantees a 25 percent discount on all flood insurance premiums within a flood zone and a 10 percent discount on policies outside of a flood zone. Furthermore, there are 23 communities in Miami-Dade County that participate in the CRS Program with rating ranging from Class 5 (25% discount) to Class 9 (5% discount), as depicted in Table 3.

Table 3. Community Rating System Communities in Miami-Dade County

Community	Rating	Community	Rating
Unincorporated Miami-Dade	5	**Miami Gardens**	6
Aventura	7	**Miami Lakes**	6
Bal Harbor	8	**Miami Shores**	8
Bay Harbour	7	**North Miami**	6
Coral Gables	7	**North Miami Beach**	8
Cutler Bay	5	**Opa-Locka**	8
Doral	7	**Palmetto Bay**	8
Golden Beach	10	**Pinecrest**	8
Homestead	9	**South Miami**	7
Key Biscayne	7	**Sunny Isles Beach**	7
City of Miami	7	**Surfside**	7
Miami Beach	5		

*As of May 1, 2019[4]

The Miami-Dade County Local Mitigation Strategy (LMS) supports the CRS communities and others who wish to become CRS communities and strives to help identify areas where uniform credit can be obtained, as per compliance with the CRS Coordinators Manual. The LMS Plan was expanded to include Part 7, in order to capture and compile information to support Miami-Dade County's CRS Communities, thoroughly address the current and future flood risks, and mitigation measures.

[4] Flood Insurance Manual (April 1, 2019), Appendix F: https://www.fema.gov/media-library/assets/documents/178743

Scope

The scope of the Miami-Dade County Local Mitigation Strategy (LMS) Part 7: NFIP and CRS (LMS-Part 7) is to identify the County's CRS activities. The CRS/Flood Sub-Committee will be responsible for supporting the development and review of this section of the LMS. LMS-Part 7 is meant to be supplementary to, and not replace, the responsibilities of the community's (County or Municipality) CRS Coordinator.

Planning Process

LMS-Part 1 states that the LMS is a compilation of initiatives that are identified and supported by the LMS Coordinator, LMS Co-Chair, LMS Steering Committee, LMS Working Group (LMSWG) and LMS Sub-Committees (LMSSC). Additionally, as illustrated in LMS-Part 4, Appendix B, a Whole Community Approach has been implemented into the LMS.

The LMSWG meets on a quarterly basis (March, June, September and December) and these meetings are open to the public. Meeting information is shared via email to the LMS Distribution List and it is advertised on the LMS webpage:
https://www.miamidade.gov/global/emergency/projects-that-protect.page.
The LMS Steering Committee and LMSSC meet on an as needed basis.

Meeting notes and attendance sheets are maintained in LMS-Part 5. The LMS Coordinator develops a monthly LMS Information Bulletin that is distributed to the LMSWG and posted on the LMS website.[5] The LMS Information Bulletin provides information on updates and changes to the LMS Program, training and outreach activities, information on new mitigation products, and information pertinent to the stakeholders.

The LMS undergoes a five-year update cycle for submittal to the Florida Division of Emergency Management (FDEM) and then FEMA for review and approval. Upon FEMA approval, the Plan is locally adopted by the Miami-Dade Board of County Commissioners (BCC). Since 1957, Miami-Dade County has a metropolitan form of government comprised of an unincorporated area and 34 municipalities, each with their own government providing services. The BCC is the governing body of unincorporated Miami-Dade, and has broad, regional powers to establish policies, through ordinances and resolutions, for Miami-Dade County services. These actions automatically include the municipalities in the County. A Municipality can opt-out of an ordinance or resolution through their own resolution. Therefore, when the BCC adopted the LMS in September 2015, all municipalities were included in the adoption; none opted out.

Local communities that wish to utilize the LMS as their Floodplain Management Plan for credit under the CRS Program must execute a Local adoption of the County's LMS Plan.

[5] CRS (2017 Edition) – 510 (Step 2)

ASSESSING THE HAZARD - FLOODING

Flooding is an overflowing of water onto land that is normally dry. It can occur as a result of prolonged rainfall over several days, intense rainfall over short period of time, failure of a water control structure or storm surge. Floods are the most common and widespread weather-related natural hazard. In the United States, floods kill more people each year than tornadoes, hurricanes or lightning.[6]

Table 4. Flood Types[7]

Type	Description
River Flooding	Occurs when water levels rise over the top of the river banks due to excessive rainfall over the same area for extended periods of time.
Coastal Flooding	Caused by higher than average high tide and worsened by heavy rainfall and onshore winds (i.e. wind blowing landwards from the ocean).
Storm Surge	An abnormal rise in water level on coastal areas, over and above the regular astronomical tide, cause by forces generated from a severe storm's wind, waves and low atmospheric pressure.
Inland Flooding	Occurs when moderate precipitation accumulates over several days, intense precipitation falls over a short period of time, a river overflows because of an ice or debris jam, or a water control structure fails.
Flash Flooding	Caused by heavy or excessive rainfall in a short period of time, generally less than six (6) hours. Flash floods are generally characterized by raging torrents after heavy rainfall that rip through river beds, urban streets or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. Additionally, flash floods can occur when a water control structure fails.

Miami-Dade County is highly vulnerable to flooding, as a result of heavy rainfall and storm surge, due to the County's unique geographical area. The County is surrounded by major bodies of water such as the Atlantic Ocean, Biscayne Park and the Everglades, and rivers, lakes, and canals. Additionally, Miami-Dade County has a relatively flat topography with a mean elevation of 11 feet and its underground water supply is just below the ground surface. As a result, during major rainfall events, rainwater has nowhere to drain and causes occasional flooding. Furthermore, studies are being conducted by the United States Army Corps of Engineers (USACE) to better understand the ongoing threat of sea level rise, its potential impacts and how Miami-Dade County communities are being impacted differently depending upon their geographic location and specific considerations.

For a more thorough flood hazard (flooding, storm surge and sea level rise) assessment, refer to the Hazard Identification & Vulnerability Assessment section on the LMS-Part 1. The aforementioned section was compiled based on the Miami-Dade County Threat and Hazard Identification and Risk Assessment (THIRA). The THIRA rates the County's hazard risks, determines community vulnerabilities and capabilities, and helps to better understand the potential adverse impacts of disasters and emergencies in the County. This document consists of three (3) volumes. Volume 3 is the County's hazard assessment and it contains hazard profiles for each to the hazards that have a potential risk in Miami-Dade County. Each hazard profile includes a description of the hazard, location of where the hazard is most likely to occur within

[6] The National Severe Storms Laboratory, Severe Weather 101-Floods: https://www.nssl.noaa.gov/education/svrwx101/floods/
[7] *Ibid*.

the County, the extent, previous occurrences, the vulnerability and hazard assessment. The THIRA is considered a public safety sensitive document therefore, access to the aforementioned sections will be provided to the Insurance Services Office, Inc. / CRS (ISO/CRS) Specialist by Miami-Dade OEM upon request.

Flooding Background and History in Miami-Dade County

Prior to urban development in Miami-Dade County, the land was frequently inundated for extended periods due to its flat topography, low land elevations, and the high groundwater table in the Biscayne Aquifer. The Biscayne Aquifer is the County's primary source of drinking water. To make land more suitable for urban development, various local governments and private entities initiated the construction of a canal system. A canal system was built to meet human needs by controlling the water levels and the movement of water from one place to another for water supply, flood control, drainage, navigation, and to provide water needed to sustain natural communities in lakes, rivers, wetlands and estuaries. The canal-based water management system in South Florida, developed over the past 100 years, is one of the largest and most complex civil projects in the world.[8]

The canal system that exists in Miami-Dade County today, utilizes gravity flow to move water to the east and ultimately to Biscayne Bay. However, the excavation required for the development of the canal system exposed the Biscayne Aquifer making it susceptible to saltwater intrusion. Saltwater intrusion refers to an influx of saltwater through various pathways into an aquifer. To mitigate this threat to the County water supply, salinity control structures were implemented in the primary and secondary canals throughout Miami-Dade County. For further information on saltwater intrusion in Miami-Dade County, refer to the Hazard Identification & Vulnerability Assessment section on the LMS-Part 1.

The initial canal system design, did not take into account the significant urban development that has occurred in the western portion of the County. The western part of the County is lower in elevation and more flood prone. The system relies on gravity flow canal structures to drain the water into Biscayne Bay; however, this is not adequate to drain storm surge water out to Biscayne Bay.

Presently, Miami-Dade County canal system consists of approximately 616 miles of canals. The canal system is divided into 360 miles of primary canals, 260 miles of secondary canals, 350 miles of smaller ditches under private jurisdiction, and 75 miles of coastal waterways. In general, the secondary canal system connects into the primary system, which empties into Biscayne Bay. The primary canals, which include most of the salinity control structures, are maintained and operated by the South Florida Water Management District (SFWMD). Miami-Dade Department of Transportation and Public Works (DTPW) maintains and controls the secondary canals. The private ditches discharge into the secondary and primary canals and the coastal ditches discharge directly into Biscayne Bay. The ability to move water in the secondary system is dependent on the available capacity of the primary system, which, in turn, is dependent in part on the proper operation of the salinity control structures. Figures 1 illustrates Miami-Dade County's canal system and figures 2 illustrates the location of Miami-Dade County canals within the drainage basins.

[8] Canals in South Florida: A Technical Support Document – Prepared by SFWMD: https://www.researchgate.net/publication/305316875_Canals_in_South_Florida_A_Technical_Support_Document

The LMS continues to work with the SFWMD, DTPW and other County and Municipal stakeholders for canal mitigation measures. Miami-Dade County is significantly reliant on the ability of the canals to provide drainage. As illustrated in Figure 3, drainage basins cross different jurisdictions, which demonstrates the importance of tracking drainage projects throughout Miami-Dade County to better collaborate on flood hazard mitigation with all jurisdictions.

Figure 1. Canals in Miami-Dade County

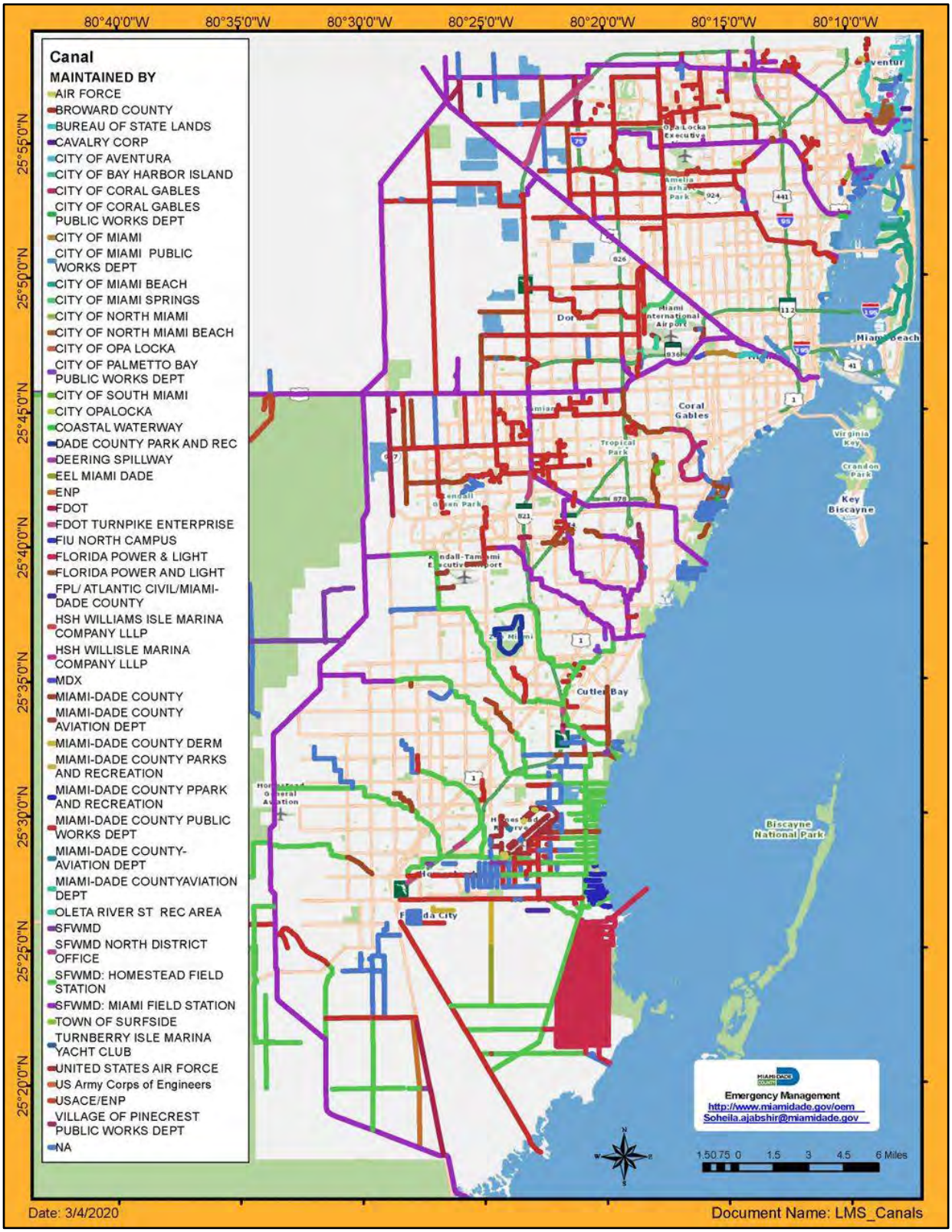


Figure 2. Canals and Canal Structures within Drainage Basins

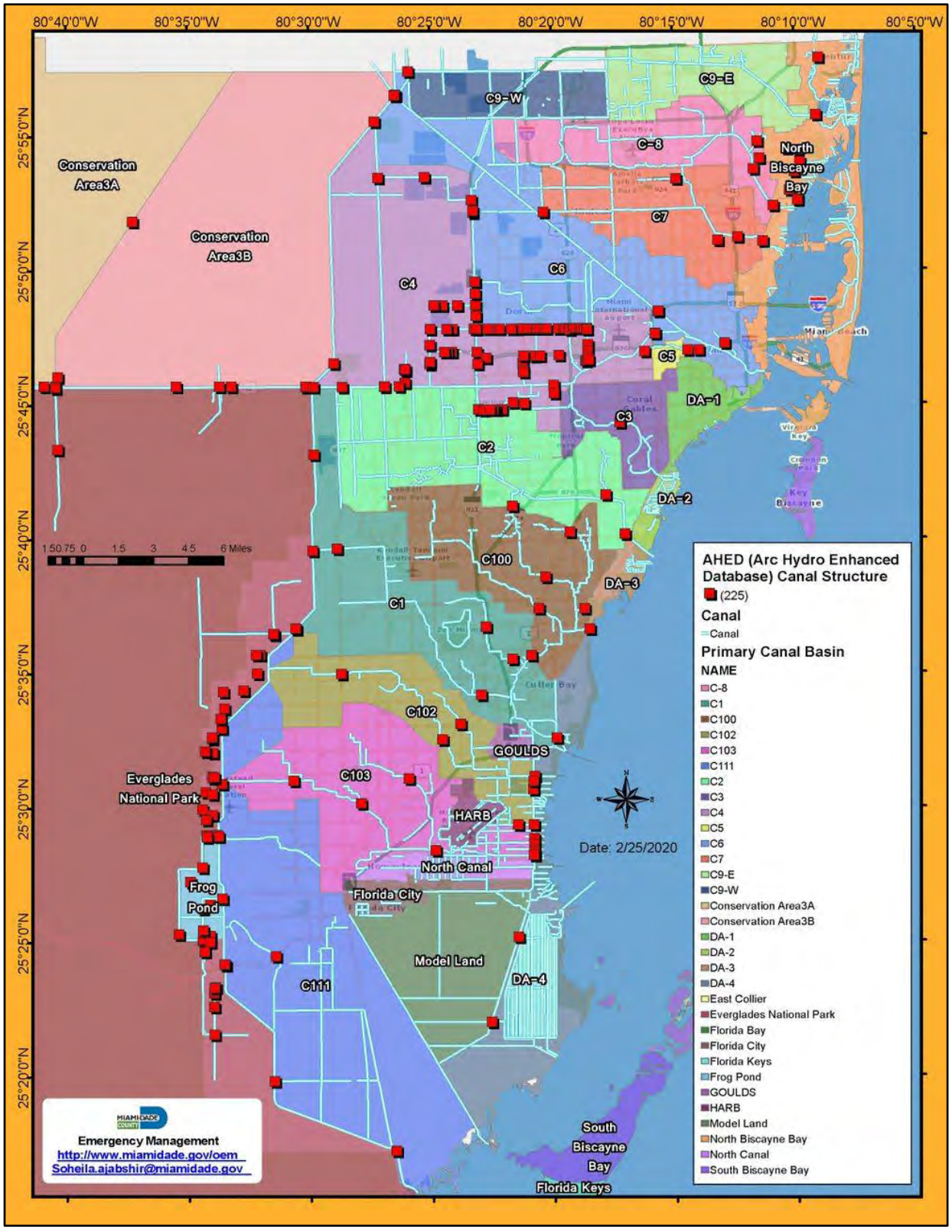
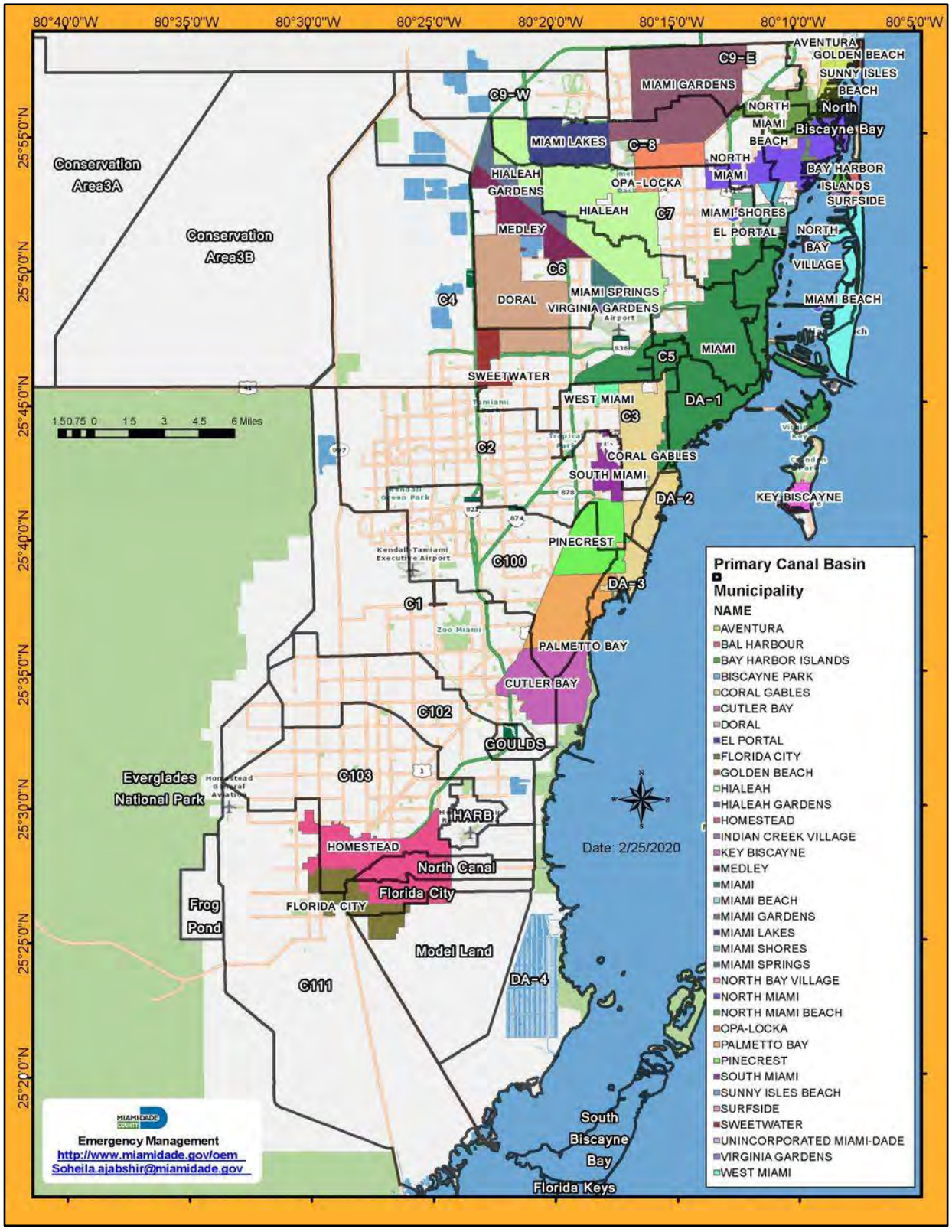


Figure 3. Municipal Boundaries in Relation to Drainage Basins



2019 Rainy Season[9]

South Florida's rainy season typically lasts an average of 155 days starting in mid-May and ending in mid-October. According to SFWMD, the season was mostly drier than normal for South Florida. The South Florida top ten rainfall sites listed on table 5, compiled by the National Weather Service (NWS) - Miami/South Florida Forecast Office, include six (6) Miami-Dade County sites (in blue). For Miami-Dade County, the Opa-Locka Airport and North Miami Beach sites, recorded the highest rainfall amounts with 48.40 inches of rainfall (9.50 inches above normal) and 46.14 inches of rainfall (4.33 inches above normal), respectively.

Table 5. Top 10 Rainfall Sites in South Florida in 2019 Rainy Season

Location	May 15 – October 15 Rainfall (inches)	Departure from Normal (inches)
Pembroke Pines/North Perry Airport	50.59	+10.34
Opa-Locka Airport	48.40	+9.59
Naples East/Golden Gate	47.68	+8.24
North Miami Beach	46.14	+4.33
Miami International Airport	45.10	+4.20
Hialeah	42.94	-3.12
The Redland	40.70	-1.03
West Kendall/Miami Executive Airport	39.95	-0.85
Marco Island	39.38	+1.77
Juno Beach	39.28	+2.26

The first two (2) weeks of May, before the start of the rainy season, rainfall amounts were higher than normal. Through the end of the month, a large high pressure area set-up over the southeast United States and very little rainfall was recorded. June and most of July was relatively normal. A wetter than normal pattern began in late July when a persistent low pressure moved over the southeast United States and eastern Gulf of Mexico. As a result, August was the wettest month of the season. On the other hand, September was abnormally dry as a result of a high pressure area over the southeast United States. Abnormally dry conditions persisted through the rest of the season and Miami recorded its second driest Fall Season on record with 11.38 inches below normal.

The South Florida dry season typically lasts from October into May with an average rainfall of 12-19 inches, lowest in the interior and western portions of south Florida.

[9] Winter/Dry Season 2019-2020 Outlook for South Florida by the Warning Coordination Meteorologist from the NWS – Miami/South Florida Forecast Office

Significant Flood Events

Hurricane Irene (October 1999) – Hurricane Irene was a typical October tropical cyclone that moved over the Florida Keys and southeast Florida. Tropical Depression 13 formed on October 13, 1999, in the northwestern Caribbean Sea and reached tropical storm status on the same day. The storm continued a general north-northeast track over Cuba and towards the Florida Keys. On October 15th, it reached hurricane strength over the Florida Straits and made landfall in Key West, Florida as a Category 1 hurricane. Hurricane Irene made its fourth landfall near Cape Sable, Florida and then moved across southeast Florida bringing tropical storm conditions and torrential rainfall. The hurricane produced 10 to 20 inches of rainfall throughout the region. On October 16th, the storm moved offshore near northern Palm Beach County.[10]

Although Hurricane Irene did not make a direct landfall in Miami-Dade County, the heavy rainfall severely impacted the County. In some areas, flooding lasted for about a week displacing hundreds of people and isolating thousands. Total losses were estimated near $600 million in southeast Florida. As a result of Hurricane Irene, the BCC created a Flood Management Task Force. The Task Force was charged with analyzing the current flood management system and its performance during Hurricane Irene as well as recommending solutions to protect residents from future flood impacts. After eight (8) months of meetings with affected residents, businesses, municipalities, and federal, state and local agencies, the Task Force issued a Final Report with 18 recommendations that could reduce future flood impacts in Miami-Dade County.[11]

Tropical Storm Leslie (October 2000) – Tropical Storm Leslie was a short-lived tropical storm that developed from Subtropical Depression One, off the east coast of Florida. Although, neither Tropical Storm Leslie nor Subtropical Depression One was responsible for the flood damage that occurred during this event. This event was later referred to as the "No Name" storm.

A tropical wave entered the eastern Caribbean Sea on September 27, 2000 and it remained disorganized as it moved north-northwest. On October 2nd, just south of western Cuba, the tropical disturbance was slightly better organized, and a mid-level circulation was visible in satellite imagery. The system began to move northward across western Cuba and the Florida Straits, and on October 3rd it entered the southeast Gulf of Mexico. As the disturbance moved north toward the west coast of Florida, it interacted with a stalled frontal boundary across southern Florida. The disturbance's interaction with the stalled frontal boundary resulted in a band of very heavy rainfall to become stationary across southeast Florida on October 3rd. On October 4th, the disturbance began to move northeastward over central Florida and moved offshore near Daytona Beach, Florida. At this time, the system became Subtropical Depression One and the storm was upgraded to Tropical Storm Leslie on October 5th.

This system was closely monitored by DTPW, SFWMD and Municipal Public Works, and the appropriate protective actions were taken to lower the canal water levels. Initially, 4 to 8 inches of rainfall was forecast for this system, but rainfall amounts exceeded the forecasts. Ultimately, the system produced 14 to 18 inches of rainfall over a linear area across the County. Rain gauges in South Miami recorded 17.50 inches, 15.79 inches in Sweetwater (NWS Forecast Office), and

[10] National Hurricane Center Tropical Cyclone Report for Hurricane Irene, October 13 – 19, 1999: http://www.nhc.noaa.gov/data/tcr/AL131999_Irene.pdf
[11] Miami-Dade County Flood Management Task Force – Report on Flood of October 3, 2000: https://www.miamidade.gov/environment/library/reports/flood-management.pdf

15.30 inches at the Miami International Airport.[12] Many of the same areas that were impacted by Hurricane Irene the prior year were affected by this system. As a result, the BCC reconvened the Miami-Dade County Flood Management Task Force to evaluate for the installation of supplemental pumps on some key coastal canal structures throughout Miami-Dade County.[13]

"After Hurricane Irene, the Miami-Dade Office of Emergency Management put together a Project Impact and Local Mitigation Strategy effort to coordinate work with the Federal Office of Emergency Management in order to obtain as much federal financial support as possible. The October 2000 flood, coming on the heels of the damage caused by Hurricane Irene, served to energize the participation by all levels of government in the mitigation process. The concerted effort by all participants, and the leadership shown by County staff, have resulted in the likely commitment of tens of millions of dollars for federal money to correct some of the County's flood control deficiencies."

– Miami-Dade County Flood Management Task Force, Report on Flood of October 3, 2000

Hurricane Katrina (August 2005) – The complex development of Hurricane Katrina involved the interaction of a tropical wave, the tropospheric remnants of Tropical Depression Ten and an upper tropospheric trough. On August 19, 2005, a tropical wave that emerged from Africa several days prior merged with the remnants of Tropical Depression Ten producing a large area of showers and thunderstorms north of Puerto Rico. This system was moving northwestward, passing north of Hispaniola and then consolidating just east of Turks and Caicos on August 22nd. Wind shear in the area decreased enough to allow the system to develop into Tropical Depression Twelve in the afternoon of August 23rd over the southeastern Bahamas. The tropical system continued to become better organized and it became Tropical Storm Katrina in the morning of August 24th. Initially, the storm was moving northwestward as it continued to strengthen. However, on August 25th, its interaction with a weakness in the lower tropospheric subtropical ridge over the northern Gulf of Mexico and southern United States, Tropical Storm Katrina began to move westward towards southern Florida. The evening of August 25th, less than two (2) hours before its center made landfall in southeastern coast of Florida, the system strengthened into a Category 1 hurricane. Hurricane Katrina made its first landfall in the United States as a Category 1 hurricane with maximum sustained winds of 81 mph near the border of Miami-Dade County and Broward County late evening on August 25th.

As Hurricane Katrina continued to move westward across southern Florida, the strongest winds and heaviest rainfall were located south and east of the eye, over Miami-Dade County. The storm remained over land for about six (6) hours and weakened into a tropical storm over mainland Monroe County. Once the storm reemerged into the Gulf of Mexico, north of Cape Sable, FL, it quickly regained its strength. Hurricane Katrina made its final landfall near the mouth of the Pearl River at the Louisiana/Mississippi border as Category 3 hurricane on August 29th. This is the costliest [14, 15]and one of the deadliest tropical cyclones on record.

Hurricane Katrina produced substantial rainfall over portions of southern Miami-Dade County. Rain gauges at the Homestead Air Reserve Base recorded 14.04 inches, 12.25 inches in Florida

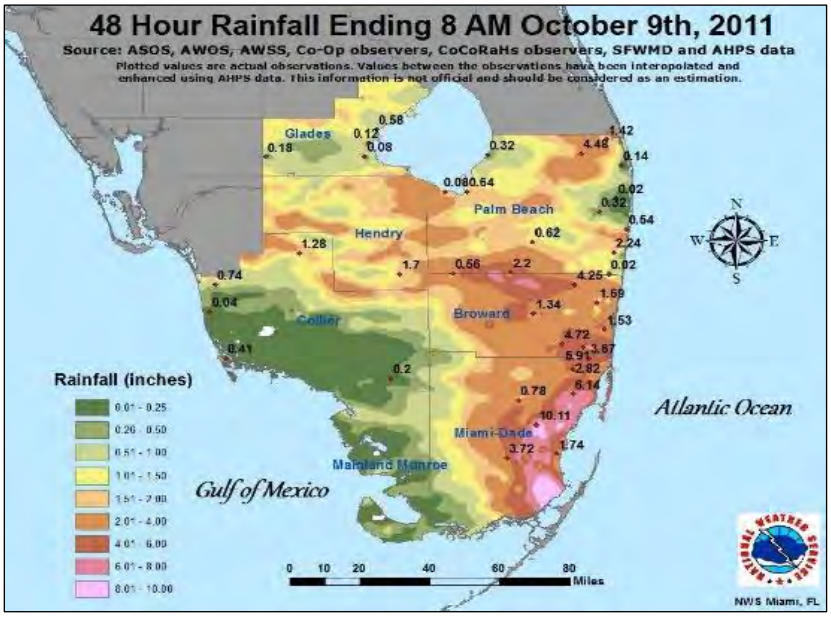
[12] National Hurricane Center Tropical Cyclone Report for Tropical Storm Leslie (Subtropical Depression One), October 4 – 7, 2000: http://www.nhc.noaa.gov/data/tcr/AL162000_Leslie.pdf
[13] Miami-Dade County Flood Management Task Force – Report on Flood of October 3, 2000: https://www.miamidade.gov/environment/library/reports/flood-management.pdf
[14] National Hurricane Center's Costliest U.S. Tropical Cyclones Tables: https://www.nhc.noaa.gov/news/UpdatedCostliest.pdf
[15] 2017 Hurricane Harvey tied with Hurricane Katrina as the costliest tropical cyclone on record.

City, and 11.13 inches Cutler Ridge. Rainfall amounts over northern Miami-Dade County were between 2 to 4 inches. Storm Surge was not an issue for Miami-Dade County during this storm. However, Hurricane Katrina served as a grim reminder that storm surge poses the greatest potential cause for loss of life in a single hurricane in the United States.

October 2011 – There were two (2) significant flood events in October 2011. During this month, Miami Beach recorded a total of 21.34 inches of rainfall breaking a 1952 record of 18.02 inches. The Miami International Airport recorded a total of 15.52 inches (9.19 inches above normal) making it the 11th wettest October on record.

The first flood event occurred between Friday, October 7, 2011 and Sunday, October 9th. The highest rainfall amounts were recorded over the Miami metropolitan area, with the highest occurring south of Kendall Drive. Figure 4 illustrates estimated rainfall amounts covering the period from Friday, October 7th through Sunday, October 9th. Areas in pink indicate rainfall totals between 8 and 10 inches. Rain gauges at the West Kendall/Tamiami Airport recorded 10.11 inches, 8.90 inches in Princeton and 7.40 inches at the Homestead Air Reserve Base.[16]

Figure 4. 48-Hour Rainfall Accumulation Map (October 7 – 9, 2011)



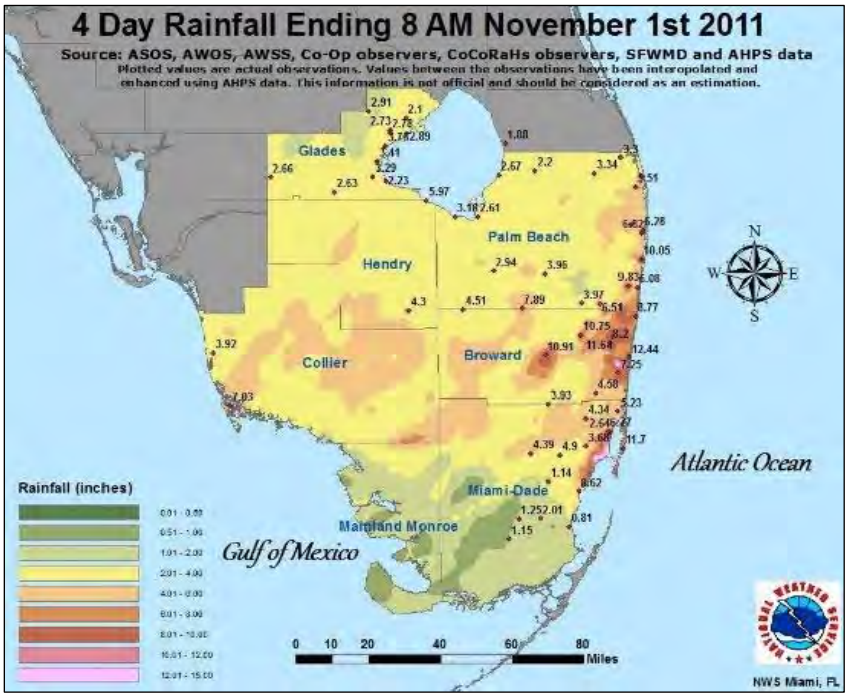
The second flood event occurred between Friday, October 28th and Monday, October 31st. A combination of high levels of atmospheric moisture in the Caribbean and the Gulf of Mexico, and a stalled frontal boundary produced heavy rainfall between October 28 and 31, 2011 (Friday – Monday). This resulted in significant to severe flooding throughout parts of South Florida. Late in the afternoon on October 29th, the front stalled over South Florida and bands of heavy rainfall developed in northern Miami-Dade County, from Miami Beach and Doral north to the Pompano Beach area (Broward County). These areas saw 3 to 7 inches of rainfall in only a few hours resulting in significant street flooding. The front remained nearly stationary over South Florida through October 30th, which resulted in the most significant rain event of the weekend.

[16] NWS – Miami/South Florida Forecast Office, Public Information Statement: https://www.weather.gov/media/mfl/news/RAIN_EVENT111009.pdf

Clusters of heavy rainfall and thunderstorms developed over Biscayne Bay during late afternoon and evening. It later drifted north over Key Biscayne, Cutler Bay and Palmetto Bay during the evening. At midnight on October 31st, the area of heaviest rainfall and thunderstorms was over Pinecrest, Coral Gables and Coconut Grove. In only a few hours, areas from Cutler Bay to Coconut Grove received 6 to 10 inches of rainfall resulting in severe street flooding and water intrusion in dozens of homes. Per SFWMD, isolated areas in Coconut Grove may have received over 12 inches of rainfall during this time. Rainfall continued throughout the evening.[17]

Figure 5 illustrates an estimate of rainfall amounts covering the period from Friday, October 28th through Tuesday, November 1st. Areas in pink indicate rainfall totals over 12 inches. The highest rainfall total recorded in Miami-Dade County was in Miami Beach with 11.70 inches.

Figure 5. 4-Day Rainfall Accumulation Map (October 28 – November 1, 2011)

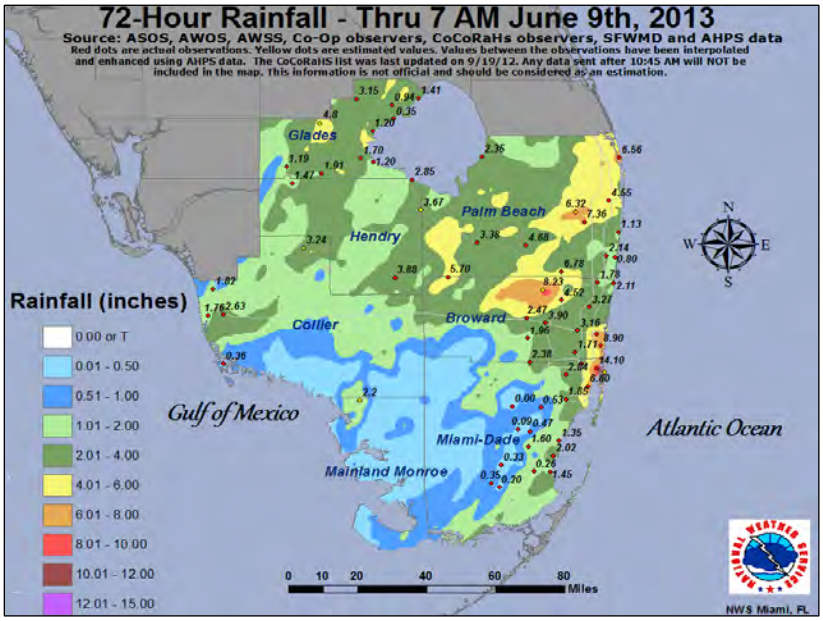


Tropical Storm Andrea (June 2013) – A trough developed north of a persistent cyclonic gyre located over the southeastern Mexico and northern Central America on June 2, 2013. On June 3rd, a broad area of low pressure formed over the southern Gulf of Mexico in response to a tropical wave entering the northwestern Caribbean Sea. Moderate vertical wind shear and dry air in the area hindered the development of the system as is moved northward. Atmospheric conditions became slightly conductive and Tropical Storm Andrea formed in the evening of June 5th several miles southwest of St. Petersburg, Florida. The storm initially began moving northward, but on June 6th it turned northeastward and made landfall along the northwestern Florida Peninsula. Tropical Storm Andrea continued to move across northeastern Florida and southeastern Georgia, and it became extratropical over northeastern South Carolina on June 7th.

[17] NWS Weather Forecast Office, Summary of Heavy Rainfall/Flood Event of October 28-31: https://nwas.org/ej/2012-EJ11/October2011HeavyRain.pdf

Although Tropical Storm Andrea did not make landfall in South Florida, convective rain bands well southeast of the center of the storm produced very heavy rainfall over southeastern Broward County and northeastern Miami-Dade County between June 6th and 7th. A 24-hour total of 13.94 inches was recorded at the SFWMD station in North Miami Beach, 11.71 inches at the FIU Biscayne Campus and 9.89 inches in North Miami/Keystone Point. This excessive rainfall resulted in widespread flash flooding that caused water to enter homes and roads to become impassible.[18, 19] Figure 6 illustrates an estimate of rainfall amounts covering the period from June 6th through June 9th.

Figure 6. 72-Hour Rainfall Accumulation Map (June 7 – 9, 2013)



October 2013 – An area of low pressure near the Yucatan Peninsula directed tropical moisture into South Florida that produced heavy rainfall in the Kendall area, near the Falls Shopping Mall, during the late afternoon and early evening of October 2, 2013. The slow-moving showers and thunderstorms produced rainfall amounts of 7 to 10 inches in just a few hours which resulted in an isolated area of flash flooding. Roads were impassible and The Falls Shopping Mall parking lot was completely under water. Additionally, water entered buildings and vehicles in the area.[20]

February 2015 – A stationary front over South Florida resulted in a strong thunderstorm that produced over 4 inches of rainfall over northeast Miami-Dade County.[21] As a result, significant flooding occurred in the Omni, Edgewater and Midtown areas, mainly along Biscayne Boulevard and North Miami Avenue, in the City of Miami. Multiple cars stalled and flooding was about one

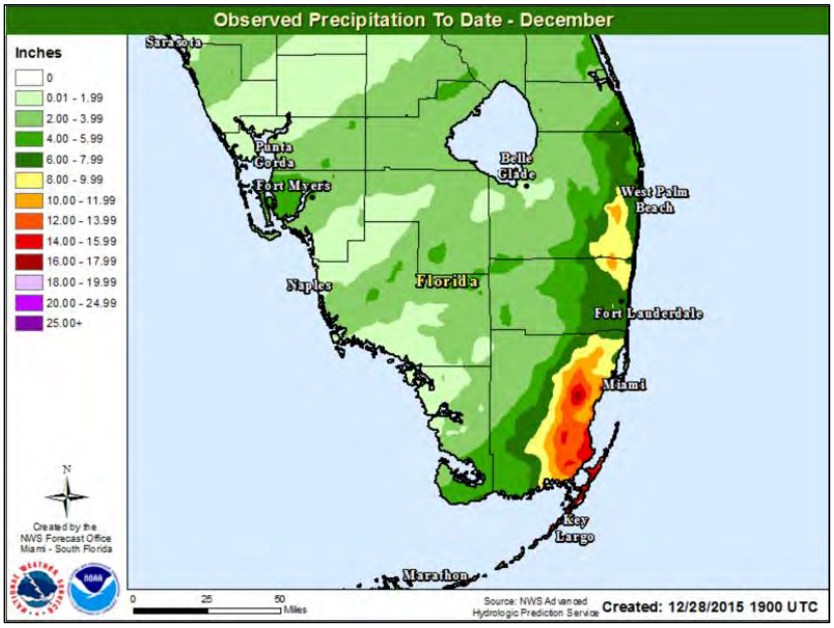
[18] National Hurricane Center Tropical Cyclone Report for Tropical Storm Andrea: https://www.nhc.noaa.gov/data/tcr/AL012013_Andrea.pdf
[19] NWS – Miami/South Florida Forecast Office, Tropical Storm Andrea (June 5 – 7, 2013): https://www.weather.gov/mfl/andrea
[20] NOAA's National Centers for Environmental Information Storm Events Database (Event Type: Flash Flood): https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=478777
[21] NWS – Miami/South Florida Forecast Office, South Florida Winter 2014-2015 Recap: https://www.weather.gov/media/mfl/news/Feb2015WinterSummary.pdf

(1) foot deep. Additionally, multiple businesses in the Miami Midtown Shops closed, because ground floors flooded.[22]

December 2015 – A cold front moved into South Florida on December 3, 2015. On December 4th and 5th, the front stalled over the upper Florida Keys and produce heavy rainfall throughout Miami-Dade County. However, southern Miami-Dade County was the hardest hit area and rainfall amounts recorded between December 5th and 6th were similar to totals observed during previous tropical systems. The Miami Executive Airport recorded 8.92 inches of rainfall and over 10 inches were recorded in West Kendall. The Homestead/Redland area recorded 6 to 8 inches of rainfall resulting in the severe flooding of agricultural fields. Farmers reported significant damage to fall and winter crops, ranging from rotting crops due continuous rainfall to total loss from completely flooded fields. Agricultural damage estimates were about 1 Million dollars with a 70% to 80% loss in crops. Other impacts included numerous road closures, stalled vehicles and Zoo Miami closed for several days due to flooding in the facility.[23]

Typically, December is the driest months in South Florida, but December 2015 had an unusual wet pattern. The Miami Executive Airport in West Kendall recorded 18.43 inches of rainfall, the wettest December on record since 1998; the Redland recorded 14.92 inches; the wettest December on record since 1942 and the Miami International Airport recording its second wettest December on record with 9.75 inches. Figure 7 illustrates observed rainfall amounts for the month of December.[24]

Figure 7. Observed Precipitation for December 2015



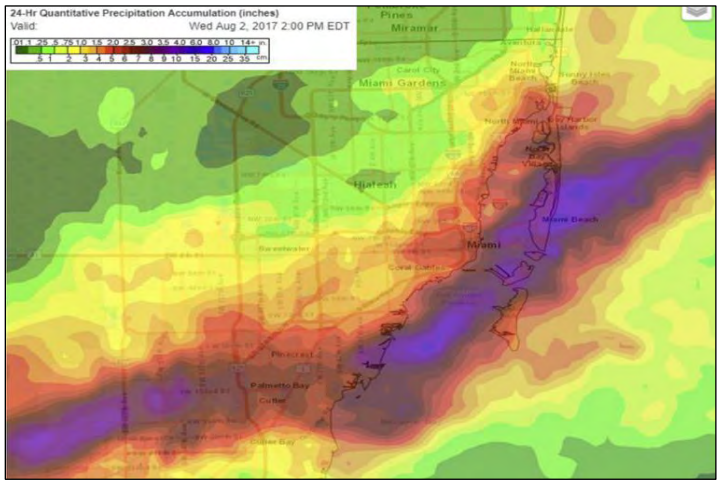
[22] NOAA's National Centers for Environmental Information Storm Events Database (Event Type: Flash Flood): https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=565140
[23] NOAA's National Centers for Environmental Information Storm Events Database (Event Type: Flood): https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=605707
[24] NWS – Miami/South Florida Forecast Office, 2015 South Florida Weather Year in Review: https://www.weather.gov/media/mfl/news/2015WeatherSummary.pdf

August 2017 – A surface low with enough organized deep convection formed within the post-frontal trough and a Tropical Depression developed on July 30, 2017. The system was centered west-northwest of St. Petersburg, Florida. The next day, on July 31st, the system strengthened into Tropical Storm Emily and made landfall near Longboat Key, Florida. Tropical Storm Emily moved over Central Florida and weakened into a Tropical Depression in the early hours of August 1st and moved offshore into the Atlantic Ocean. By August 2nd, the storm became post tropical and dissipated over the Atlantic Ocean.[25]

Tropical Storm Emily was a short-lived tropical storm and no direct impacts were reported in Miami-Dade County. However, the system left an elongated trough across South Florida on August 1st. A combination of the frontal boundary and daytime heating, a band of thunderstorms developed off the coast and moved west. At around 2 pm, the band of thunderstorms became nearly stationary over Miami Beach, Key Biscayne and Downtown Miami. A Flash Flood Warning was issued at 3:47pm until 9:45pm. Later in the afternoon, the same band of thunderstorms redeveloped over The Redlands, Kendall, Palmetto Bay, and Pinecrest area. Rainfall amounts in these areas ranged between 4 and 6 inches with isolated amounts between 7 and 8 inches. The rainfall rates of 2 to 4 inches an hour lasted 2 to 3 hours, around the same time as high tide which exacerbated the flooding.

Significant flooding was reported in Miami Beach and the Brickell area in the City of Miami. Vehicles were stalled in streets with up to 2 feet of water and several streets were closed due to deep standing water. In Miami Beach, 1 to 2 feet of water was reported throughout several streets in South Beach, including Purdy Avenue, West Avenue, Alton Road, Pennsylvania Avenue, Meridian Avenue, Collins Avenue, Washington Avenue and Indian Creek Drive. Water entered businesses, homes, apartment lobbies and parking garages. In Mary Brickell Village, more than 10 businesses and buildings had 1 to 4 inches of water inside their structures. Figure 8 illustrates the 24-hour rain total graphic from NWS Weather and Hazards Data Viewer for this event.[26,27]

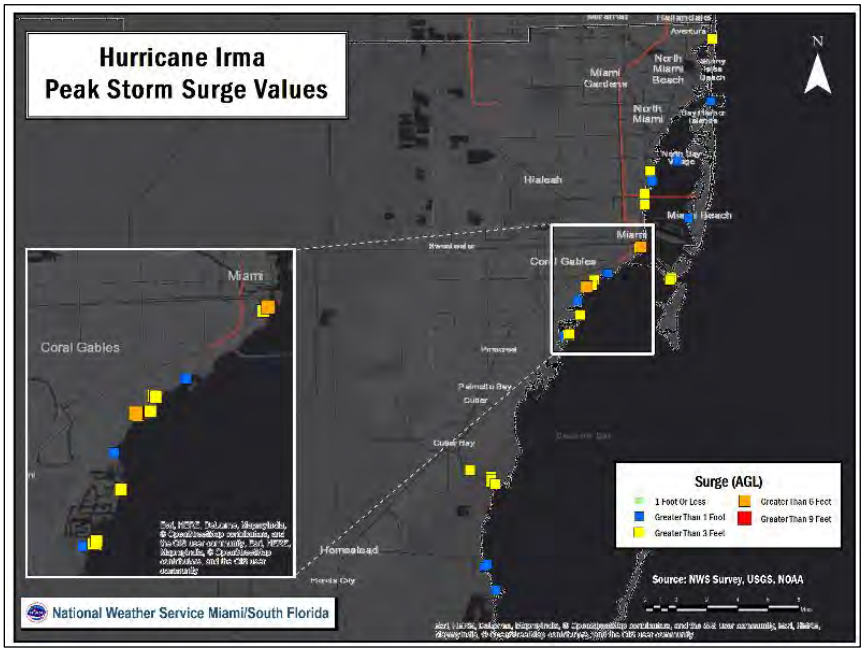
Figure 8. Rainfall Map from NWS Weather and Hazards Data Viewer



[25] NWS – Miami/South Florida Forecast Office, Tropical Storm Emily (July 13 – August 1, 2017): https://www.nhc.noaa.gov/data/tcr/AL062017_Emily.pdf
[26] NWS – Miami/South Florida Forecast Office, Preliminary Report on August 1, 2017 Miami and Miami Beach Flood Event: https://www.weather.gov/media/mfl/news/Flood_2017Aug1.pdf
[27] NOAA's National Centers for Environmental Information Storm Events Database (Event Type: Flash Flood): https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=718505

Hurricane Irma (September 2017) – Hurricane Irma made two landfalls in South Florida on September 10th. At 9:10 am, Category 4 Hurricane Irma made landfall in Cudjoe Key and at 3:35 pm in Marco Island as a Category 3. The center of Hurricane Irma moved into Central Florida and continued a northward trajectory over Florida. Rainfall amounts in Miami-Dade County were mainly between 6 and 10 inches. Storm surge of approximately 3 to 5 feet travelled 1 to 2 blocks inland along the Biscayne Bay shoreline from Homestead to Downtown Miami/Brickell. Isolated spots in Coconut Grove and Brickell surveyed storm surge inundation greater than six (6) feet. Storm surge inundation north of Downtown Miami had values of 2 to 3 feet and areas along the Atlantic oceanfront (Key Biscayne and Miami Beach) had inundation of 2 to 3 feet and confined to the immediate beachfront. Figure 9 illustrates peak storm surge values in Miami-Dade County.

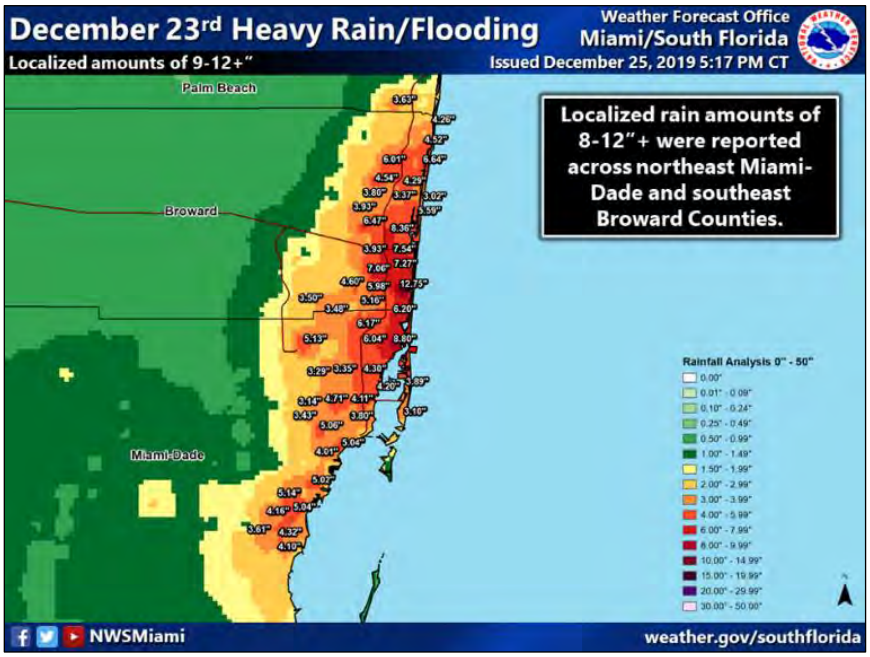
Figure 9. Hurricane Irma Peak Storm Surge Values



December 2019 - A strong cold front moved across the region behind a low pressure system that developed over the Gulf of Mexico. Ahead of the cold front, a strong line of storms crossed through South Florida and produced heavy rainfall and flooding across the east coast metro areas of northeast Miami-Dade County during the early morning hours of December 23, 2019. The highest rainfall amount was over 8 inches. Significant flooding was recorded from Aventura south and to the North Miami area. Multiple reports received of significant street and parking lot flooding, with reports of flooded parking garages and stalled vehicles, particularly in Aventura as well as along Biscayne Boulevard and NE 123rd Street. Flooding continued impacting several roads across the area into Monday afternoon and evening. Figure 10 illustrates observed rainfall amounts for December 23rd.[28, 29]

[28] NWS – Miami/South Florida Forecast Office, December 2019 South Florida Flooding: https://www.weather.gov/mfl/dec2019flooding
[29] NOAA's National Centers for Environmental Information Storm Events Database (Event Type: Flood): https://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=869837

Figure 10. December 23rd Rainfall Accumulation Map



Local flood events are documented by NWS Miami/South Florida Forecast Office at https://www.weather.gov/mfl/events_index and by NOAA's National Centers for Environmental Information Storm Events Database at https://www.ncdc.noaa.gov/stormevents/.

Flood Impacts

Flood impacts in a structure can range from wet carpets or floors, to damaged interiors leading to destruction of property. In addition, floods can potentially cause damage to infrastructure, such as washing out roads and bridges, or standing water can inhibit the movement of vehicular traffic. The agricultural community can significantly be impacted by floods when crop fields are flooded for an extended period of time or are being washed away.

Flood Regulations in Miami-Dade County

Pre-Flood Insurance Rate Map structures are those built before the effective date of the first FIRM for the community or prior to January 1, 1975 (whichever is later). This means structures built before detailed flood hazard data and flood elevations were provided to the community and usually before the community enacted a comprehensive floodplain management program and regulations.[30] Pre-FIRM buildings can be insured using "subsidized" rates to help residents afford flood insurance even though the structure was built without considering flood protection.[31]

Post-FIRM structures are new construction built after the effective date of the first FIRM for the community. Insurance rates for Post-FIRM buildings depend on the elevation of the lowest floor in relation to the BFE.

The CRS Sub-Committee identified major milestones for flood regulation in Miami-Dade County as depicted in Table 6.

Table 6. Major Flood Regulation Dates for Miami-Dade County (March 2020)

Color	Year	Description	% of housing stock
	Pre-1957	No special elevation requirements in effect.	21.49%
	1957-1973	General Countywide requirement of the highest of the County Flood Criteria maps (10-year event) (CFC), Back Of Sidewalk (BOS), or highest adjacent Crown Of Road (COR) + 8 inches for residential or 4 inches for commercial construction	23.35%
	1973-1992	First FIRM maps developed identifying flood areas. CFC still enforced.	26.95%
	1993-2008	Incorporated areas begin enforcing flood codes.	19.45%
	2009-2011	Updated FEMA Flood Maps	0.98%
	2012 - present	New Florida Building Code requiring free board for properties within Special Flood Hazard areas, following ASCE24 Table, to be elevated depending on the building category	4.50%

Figure 11 illustrates an overview of the residential construction in relation to the major milestones listed on Table 6. The data was for figure 11 was gathered from the Miami-Dade County Property Appraiser database, by looking at the year of construction. This information is meant to provide an overview on the structures' year of construction, but it does not provide information on the elevation. However, it provides an overview of the standard in place when the structure was built. Individual jurisdictional maps can be made available to all municipalities.

[30] Pre-FIRM Definition/Description (FEMA): https://www.fema.gov/pre-flood-insurance-rate-map-firm
[31] Miami-Dade County Regulatory and Economic Resources, Flood Insurance: https://www.miamidade.gov/environment/flood-insurance.asp

Table 7 illustrates the number of structures by the flood regulation milestones for each Municipality.

An Elevation Certificate is used to provide elevation information necessary to: [32]

- Ensure compliance with the community's floodplain management ordinances
- Determine the proper insurance premium rate
- Support a request for a Letter of Map Amendment (LOMA) to remove a building from the Special Flood Hazard Area

If a structure is located within a FEMA Flood Zone, an Elevation Certificate is needed. It is imperative that every homeowner has an Elevation Certificate because, in case of a disaster, it would demonstrate to County authorities that the structure is at or above the required elevation. Elevation Certificates are required for all new construction, substantial improvements to a structure, and for substantially damaged structures. Miami-Dade County has been collecting Elevation Certificates from developers since 1995 as a requirement for their building permit. However, a comprehensive database of Elevation Certificates for all structures in Miami-Dade County is not available, but the Miami-Dade County Regulatory and Economic Resources Department (RER) continues to gather this data.[33]

[32] NFIP Elevation Certificate and Instructions (FEMA): https://www.fema.gov/media-library/assets/documents/160
[33] Miami-Dade RER, Flood Protection – Elevation Certificates: https://www.miamidade.gov/environment/flood-elevation.asp

Figure 11. Miami-Dade County Residential Construction by Flood Regulation Milestones

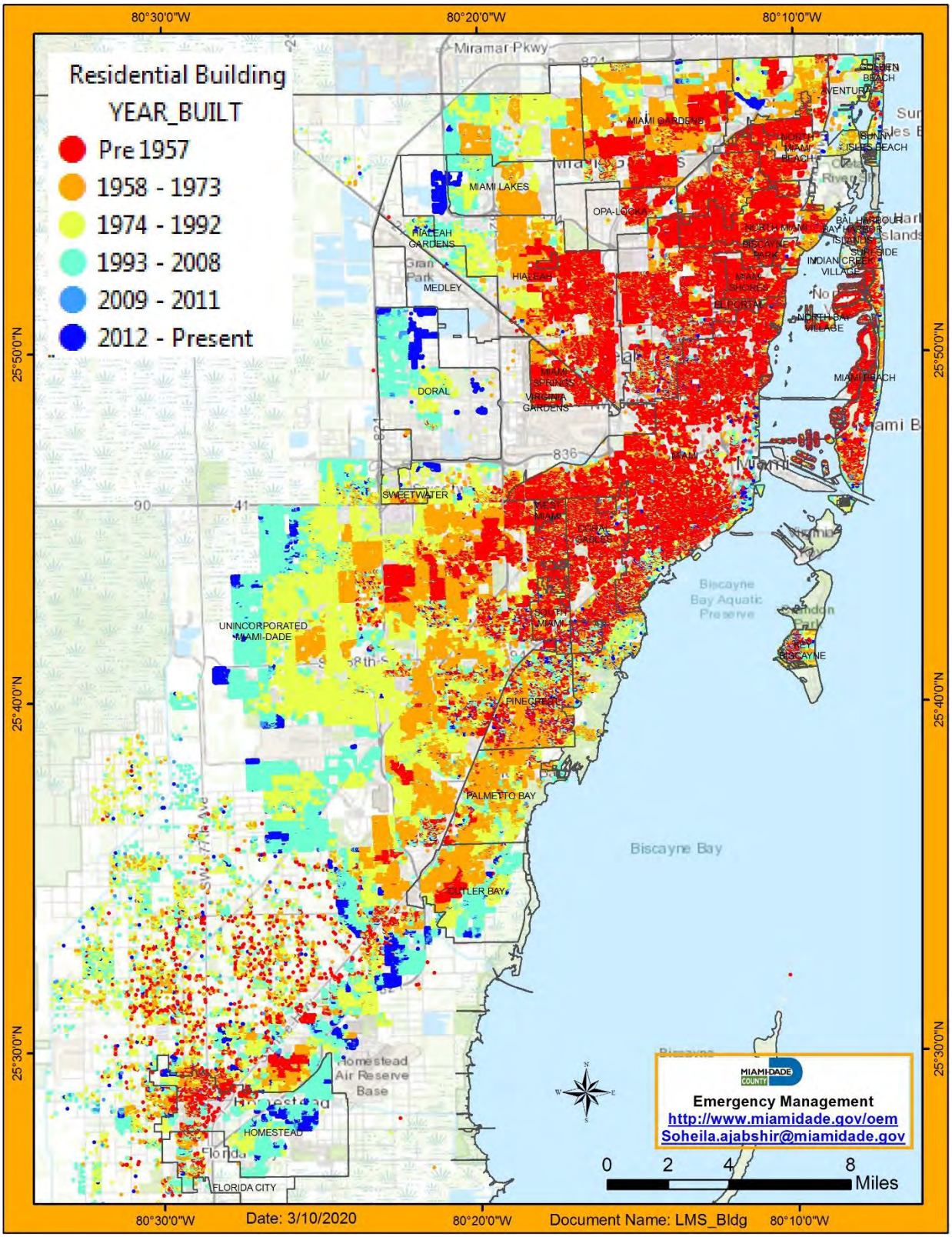


Table 7. Residential Structures by Flood Regulation Dates for Each Jurisdiction

Jurisdiction	Pre 1957	1957 – 1973	1974 – 1992	1993 – 2008	2009 – 2011	2012 – Present
Aventura	35	3,740	10,574	7,533	66	70
Bal Harbour	457	810	1135	598	8	5
Bay Harbor	708	1380	167	139	5	38
Biscayne Park	943	89	36	2	1	0
Coral Gables	7,943	4,252	1,987	3,650	217	571
Cutler Bay	1,307	4,132	2,853	4,647	286	200
Doral	20	843	4,112	10,926	749	1,278
El Portal	682	47	4	14	1	2
Florida City	316	484	265	1,018	26	14
Golden Beach	141	29	77	86	10	14
Hialeah Gardens	4	273	2,148	3,210	5	139
Hialeah	14,882	12,762	16,910	5,606	58	68
Homestead	1,399	989	2,969	11,261	280	226
Indian Creek Village	7	4	6	13	2	0
Key Biscayne	570	2,352	2,317	1,192	41	60
Medley	19	20	21	14	1	0
Miami Beach	12,384	17,229	6,305	9,847	435	236
Miami Gardens	9,125	12,970	4,389	2,295	187	119
Miami Lakes	12	2,866	2,717	3,240	8	288
Miami Shores	3,120	538	177	80	3	3
Miami Springs	2,808	818	248	71	7	9
Miami	457	810	1,135	598	8	1,592
North Bay Village	709	1,392	581	713	39	1
North Miami Beach	6,161	5023	1,270	159	12	11
North Miami	8,305	5,271	1,217	644	15	10
Opa-Locka	1,873	589	151	274	9	73
Palmetto Bay	348	4,452	2,152	965	12	13
Pinecrest	1,464	2,891	831	800	47	37
South Miami	1,929	743	541	565	16	15
Sunny Isles Beach	196	5,009	4,107	5,531	854	2
Surfside	1,144	714	644	616	3	268
Sweetwater	60	817	1,826	767	7	2
Virginia Gardens	435	128	50	8	0	0
West Miami	1,405	85	23	70	2	0
Unincorporated	41,310	75,601	120,150	70,366	1,689	3,625
TOTAL	**114,755**	**166,743**	**196,220**	**154,794**	**5,641**	**8,989**

Figure 12 illustrates the FEMA Flood Zones, also known as the FIRMs, which went into effect in 2009. Additionally, these maps can be accessed via an interactive web tool at gisweb.miamidade.gov/floodzone. FEMA is conducting an update to the Miami-Dade County FEMA Flood Zones and the publication of the preliminary maps is scheduled late 2020 with Public Outreach in January 2021.

Figure 13 illustrates the number of buildings that are within the Miami-Dade County FEMA Flood Zones based on 2019 data from the Miami-Dade County Property Appraiser. Table 8 provides a breakdown of the number of buildings within the FEMA Flood Zones, by jurisdiction.

Figure 12. Miami-Dade County FEMA Flood Zones (2009)

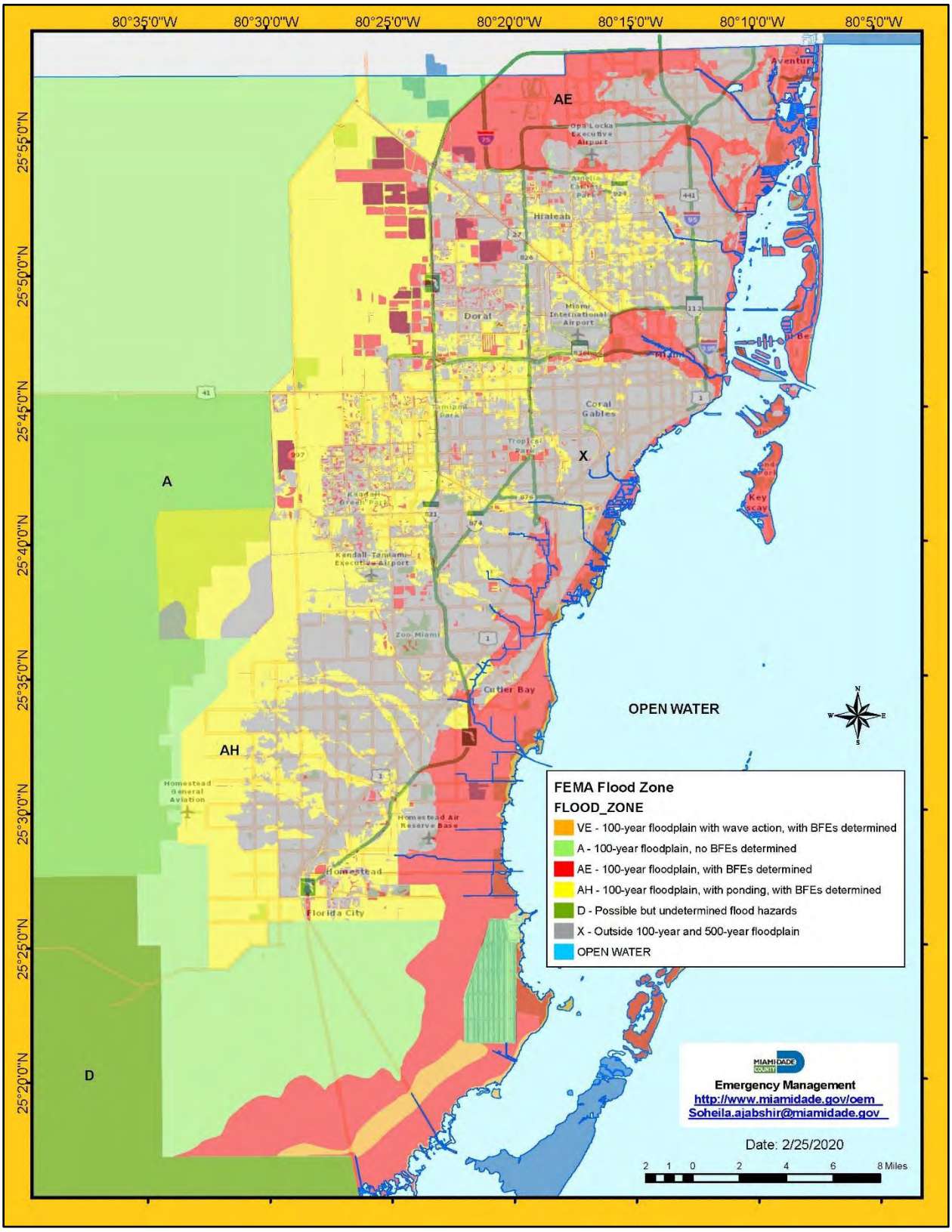


Figure 13. Buildings by FEMA Flood Zones

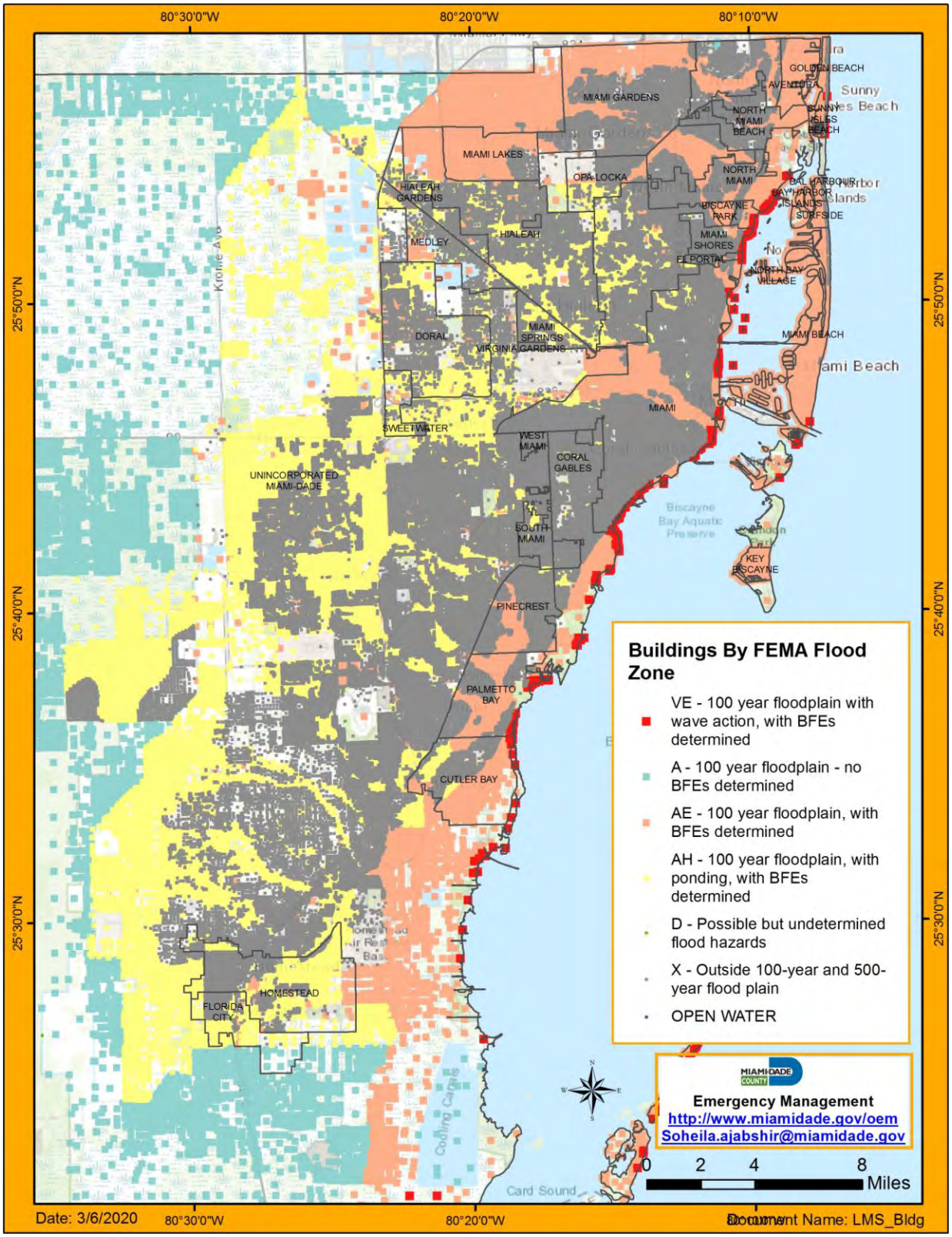


Table 8. Number of Buildings in FEMA Flood Zones for Each Jurisdiction (2019)

Jurisdiction	A	AE	AH	D	VE	X
Aventura		24,614				155
Bal Harbour		642				3,288
Bay Harbor		2,752				
Biscayne Park		1,123				92
Coral Gables		2,897	1,414		65	15,989
Cutler Bay		9,041	2,012			4,354
Doral		143	6,264			18,592
El Portal		15	116			760
Florida City	9	20	1,229			1,469
Golden Beach		267				139
Hialeah		3,078	21,623			40,990
Hialeah Gardens		8	404			6,019
Homestead		286	10,708			9,912
Indian Creek Village		51				20
Key Biscayne		7,317				
Medley		10	326			793
City of Miami		50,254	7,040		3,840	83,686
Miami Beach		52,498				3,848
Miami Gardens		13,729				20,326
Miami Lakes		8,926				1,343
Miami Shores		855			22	3,306
Miami Springs		48	2,384			2,546
North Bay Village		3,863				
North Miami		8,642			140	8,647
North Miami Beach		6,470				8,211
Opa-Locka		840	575			3,085
Palmetto Bay		4,874			45	3,916
Pinecrest		2,288	75			4,595
South Miami		1	824			3,991
Sunny Isles Beach		11,522			2	7,075
Surfside		1,587				2,014
Sweetwater		10	3,655			939
Virginia Gardens			132			597
West Miami						1,837
Unincorporated	859	50,569	113,255	1	97	212,371
TOTAL	**868**	**269,240**	**172,036**	**1**	**4,211**	**474,905**

Storm Surge

Storm surge is the abnormal rise in ocean water during a tropical cyclone (tropical storm or hurricane), measured as the height of the water above the normal predicted astronomical tide. This is primarily caused by the storm's winds pushing water onshore. The amplitude of the storm surge at any given location depends on the orientation of the coastline with the storm's track, intensity, size, forward speed and the local bathymetry.[34] Coastal areas are more likely to experience high velocity storm surge which can cause erosion and structural damage. Meanwhile, areas inland are more likely to experience rising water as storm surge pushes inland, and into canals and rivers. Storm surge is the greatest threat to life and property from a tropical cyclone.

OEM utilizes the National Hurricane Center (NHC) Sea, Lake and Overland Surges from Hurricanes (SLOSH) model[35] to estimate storm surge heights in Miami-Dade County. In order to assist Miami-Dade County residents to understand their risk to storm surge, OEM developed the Miami-Dade County Storm Surge Planning Zones. The Miami-Dade County Storm Surge Planning Zones are areas that could potentially be affected by storm surge of 1.5 feet (18 inches) or higher during a hurricane. Miami-Dade County utilizes a risk-based approach based on the direction, size, forward speed, and arrival at high or low tide, which play a crucial role in pinpointing where the storm surge for each storm is likely to impact. To identify Storm Surge Planning Zones, OEM analyses data from SLOSH's Maximum of Maximums (MOM) models which provides the worst-case scenario of high-water value at a particular location for each storm category. SLOSH MOMs are used nationwide for hurricane evacuation planning and to develop the nation's evacuation zones.[36]

Storm Surge Planning Zones are not evacuation zones and should be utilized for planning purposes by residents, visitors and stakeholders to determine their potential risk of storm surge. There are five (5) Storm Surge Planning Zones:

Zone A – is at greatest risk for storm surge of Category 1 and higher storms
Zone B – is at greatest risk for storm surge of Category 2 and higher storms
Zone C – is at greatest risk for storm surge of Category 3 and higher storms
Zone D – is at greatest risk for storm surge of Category 4 and higher storms
Zone E – is at greatest risk for storm surge of Category 5 storms

Figure 14 illustrates Miami-Dade County's Storm Surge Planning Zones map. Table 9 demonstrates the projected population [37] and clearance times based on revised evacuation modeling done by the South Florida Regional Planning Council (SFRPC) in December 2013. The revised data is based on additional evacuation center locations and revised Storm Surge Planning Zones provided to SFRPC by OEM. The time reflected here is based on the SLOSH MOM data models and it projects a maximum timeframe based upon compliance with evacuation orders.

[34] Ocean Facts, What is Storm Surge? (NOAA): https://oceanservice.noaa.gov/facts/stormsurge-stormtide.html
[35] NHC's SLOSH: https://www.nhc.noaa.gov/surge/slosh.php
[36] NHC SLOSH Storm Surge MOM: https://www.nhc.noaa.gov/surge/momOverview.php
[37] 2016 Population – Evacuation Clearance Times were revised in 2016

Figure 14. Storm Surge Planning Zones Map

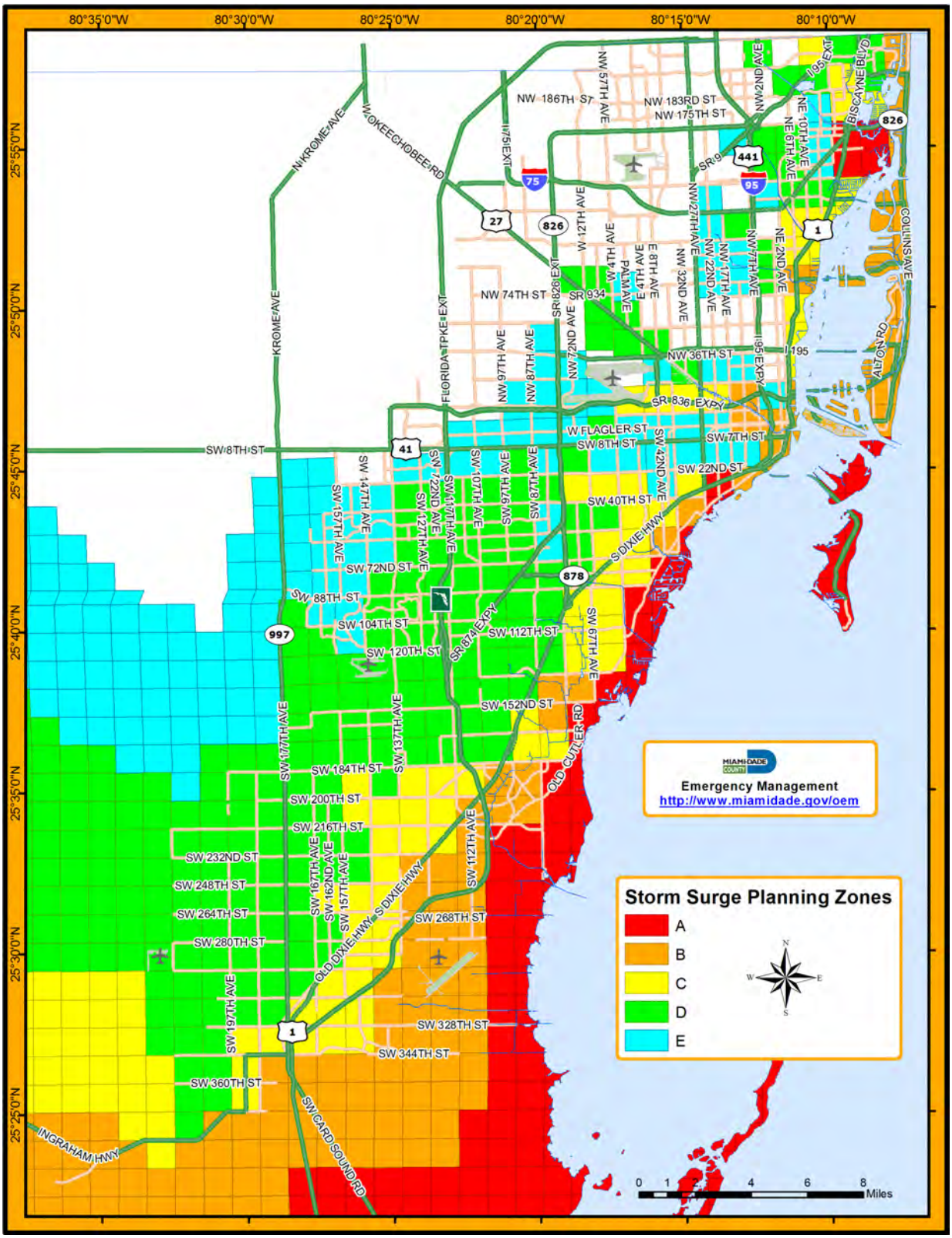


Table 9. Population and Evacuation Clearance Times for Storm Surge Planning Zones*

	Population[38]			In County Clearance Times[39] (hours)	Out of County Clearance Times (hours)
	Risk Area	Cumulative	Mobile Homes & Tourists		
A	68,317		103,238	26	26
B	354,068	422,385		28	28
C	302,039	724,424		37	37
D	631,399	1,355,823		56	56
E	495,629	1,851,452		73	73
TOTAL	1,851,452	1,954,690			

**Clearance times from Base Scenario provided by SFRPC and FDEM on 5/12/2016.*

Figure 15 illustrates the Miami-Dade County buildings by land use within the Storm Surge Planning Zones. Tables 10 and 11 provide a breakdown of the building types and the total building area (square feet) for each building type within the Storm Surge Planning Zones in each jurisdiction.

[38] 2010 Census Data

[39] In-county clearance times include out-of-county trips other counties that pass through evacuation zones in the evacuating County. Therefore, clearance times for Miami-Dade County in all level B and higher will reflect the out-of-county clearance time for Monroe County. Source: Regional Evacuation Transportation Analysis by SFRPC: http://www.sfrpc.com/sresp.htm

Figure 15. Buildings by Land Use Within Storm Surge Planning Zones

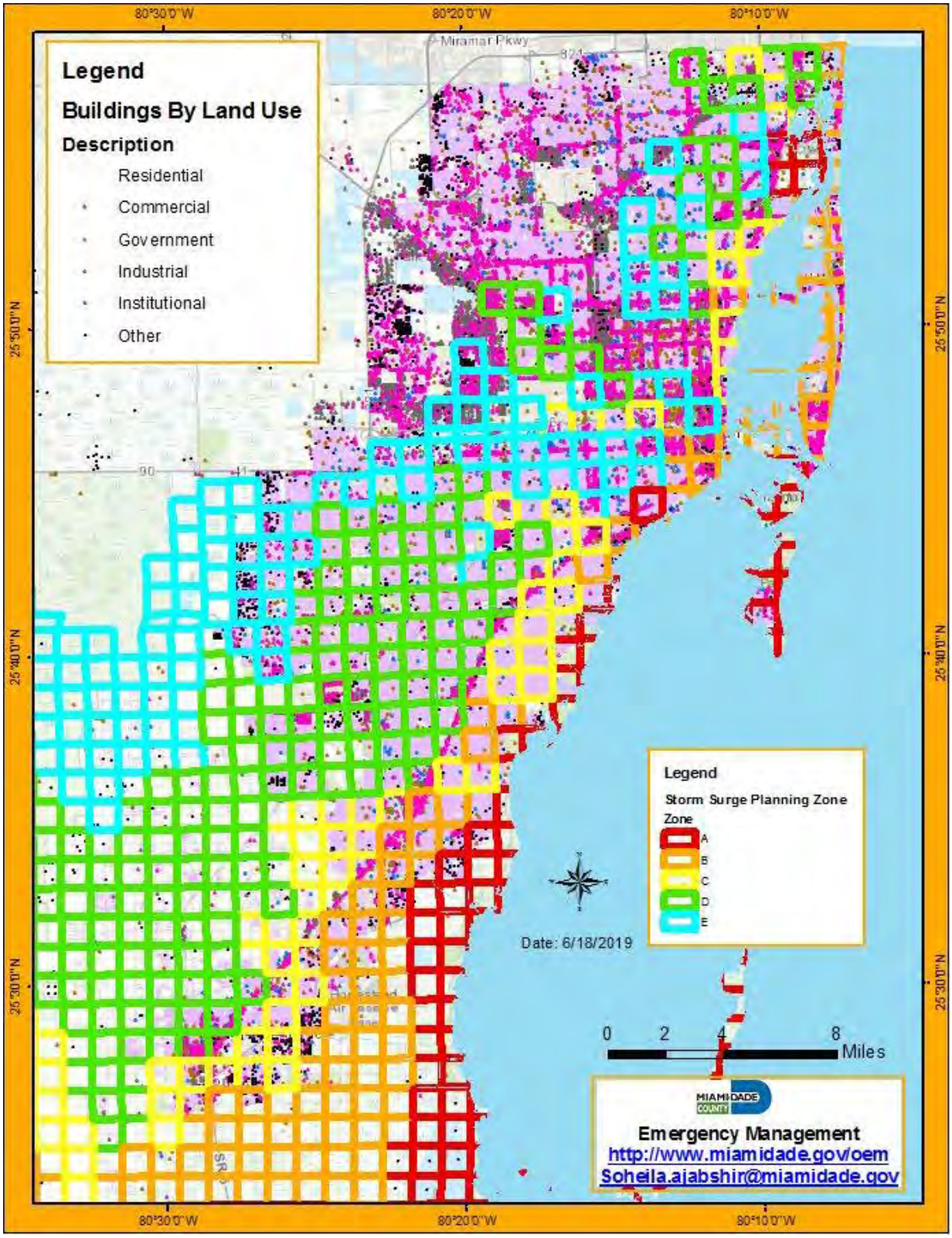


Table 10. Commercial and Industrial Facilities Within Storm Surge Planning Zones for Each Jurisdiction

Jurisdiction	Commercial		Industrial	
	Number of Buildings	Total Area (sq. ft.)	Number of Buildings	Total Area (sq. ft.)
Aventura	550	13,166,691	8	298,475
Bal Harbour	394	1,658,633	0	0
Bay Harbor Islands	103	664,325	0	0
Biscayne Park	0	0	0	0
Coral Gables	1,716	19,156,832	6	62,410
Cutler Bay	131	3,393,809	1	4,000
Doral	1,507	19,787,275	2,048	39,414,451
El Portal	11	41,253	1	35,777
Florida City	185	2,202,110	49	712,168
Golden Beach	0	0	0	
Hialeah	1,852	16,622,321	2,769	30,994,183
Hialeah Gardens	111	2,055,372	384	4,089,026
Homestead	640	5,110,437	204	1,374,518
Indian Creek Village	10	95,934	0	0
Key Biscayne	348	1,085,372	0	0
Medley	99	1,011,881	904	23,520,187
City of Miami	10,245	95,632,026	1,373	16,385,958
Miami Beach	6,352	30,988,354	15	217,650
Miami Gardens	437	7,693,989	515	12,507,800
Miami Lakes	456	4,605,825	174	6,487,657
Miami Shores	81	697,032	0	0
Miami Springs	191	2,624,973	9	93,150
North Bay Village	75	401,248	1	106,944
North Miami	688	5,462,042	124	2,358,690
North Miami Beach	556	5,273,613	74	990,693
Opa-Locka	219	831,091	680	7,900,011
Palmetto Bay	277	2,990,799	1	56,131
Pinecrest	159	2,157,620	6	16,211
South Miami	647	3,889,185	28	144,236
Sunny Isles Beach	2,299	3,307,366	1	56,279
Surfside	149	1,283,622	0	0
Sweetwater	620	3,966,773	363	3,009,111
Virginia Gardens	24	661,551	2	125,007
West Miami	100	520,240	2	10,935
Unincorporated	7,644	84,231,171	8,533	101,198,244
TOTAL	**38,876**	**343,270,765**	**18,275**	**211,642,621**

Table 11. Residential and Other Structures Within Storm Surge Planning Zones for Each Jurisdiction

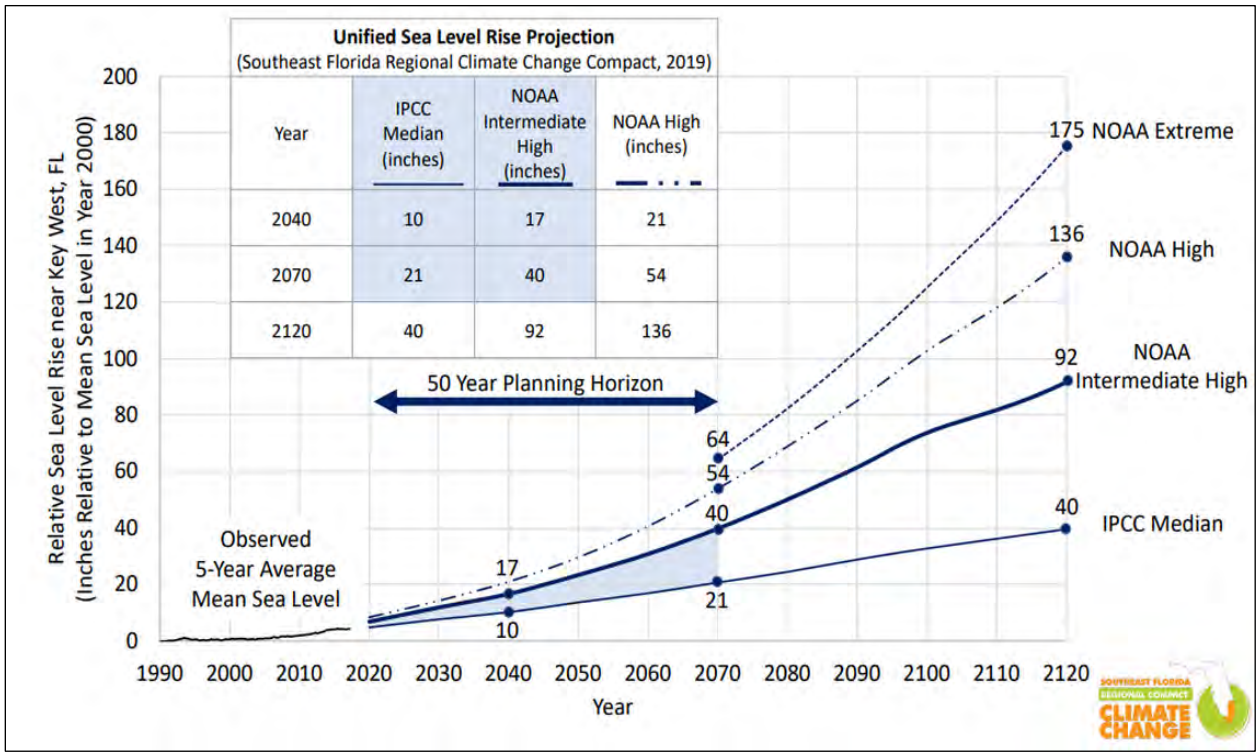
Jurisdiction	Residential		Other Structures	
	Number of Buildings	Total Area (sq. ft.)	Number of Buildings	Total Area (sq. ft.)
Aventura	24,433	40,077,779	46	2,646,134
Bal Harbour	3,530	7,817,227	6	1,055,206
Bay Harbor Islands	2,641	4,632,700	5	266,242
Biscayne Park	1,207	2,216,422	7	27,556
Coral Gables	18,398	48,645,372	311	9,395,643
Cutler Bay	15,148	30,666,505	121	1,614,728
Doral	21,299	47,644,906	140	4,482,052
El Portal	873	1,476,122	5	145,101
Florida City	2,327	4,751,097	163	964,999
Golden Beach	399	2,040,313	4	9,889
Hialeah	60,419	90,114,157	639	10,919,937
Hialeah Gardens	5,889	8,753,126	39	1,328,179
Homestead	19,707	37,785,681	317	3,917,077
Indian Creek Village	59	454,161	2	5,339
Key Biscayne	6,935	15,103,642	30	406,138
Medley	109	113,811	17	197,432
City of Miami	130,661	224,452,107	2,480	53,518,521
Miami Beach	49,646	72,803,391	278	8,420,819
Miami Gardens	32,598	53,622,580	449	7,433,666
Miami Lakes	9,546	22,226,808	86	1,277,680
Miami Shores	4,025	8,290,366	77	1,526,834
Miami Springs	4,691	8,697,842	85	947,992
North Bay Village	3,795	5,602,394	12	150,652
North Miami	16,293	29,148,481	319	4,152,616
North Miami Beach	13,903	21,866,386	145	1,966,375
Opa-Locka	3,378	6,108,934	222	4,904,946
Palmetto Bay	8,432	24,606,134	110	1,239,733
Pinecrest	6,674	24,438,701	76	1,206,556
South Miami	4.035	9,082,609	88	1,809,346
Sunny Isles Beach	16,347	27,511,257	33	1,122,319
Surfside	3,436	6,418,520	11	149,856
Sweetwater	3,585	6,441,572	35	1,035,351
Virginia Gardens	693	1,135,994	10	159,642
West Miami	1,715	4,015,137	18	215,623
Unincorporated	351,510	653,757,837	4,986	70,345,434
TOTAL	**844,305**	**1,552,520,071**	**11,372**	**198,965,613**

Climate Change and Sea Level Rise

There are a number of factors influencing sea level rise; such as, thermal expansion as a result of increasing sea surface temperatures and the melting of land ice due to the Earth's increase average of surface temperatures. Miami-Dade County is located in geographical area surrounded by major bodies of water – the Atlantic Ocean, Biscayne Bay, and rivers, lakes and canals. Figure 16 illustrates the anticipated range of sea level rise for Southeast Florida from 2000 to 2120. The graph and table demonstrate the projected rise of sea level above the 2000 mean sea level by 2040 (short term), by 2070 (medium term) and by 2120 (long term). These projections are intended to assist local and regional decision-makers to plan and make decisions about sea level rise and associated vulnerabilities.[40] Impacts associated to sea level rise in Miami-Dade County include:

- Coastal erosion
- Exacerbated storm surge
- Increased frequency of coastal flooding (i.e. tidal flooding)
- Urban flooding
- Saltwater intrusion
- Infrastructure impacts

Figure 16. Regional Unified Sea Level Rise Projections for Southeast Florida (2019)



[40] Southeast Florida Regional Climate Compact, Unified Sea Level Rise Projection Southeast Florida (2019 Update): https://southeastfloridaclimatecompact.org/wp-content/uploads/2020/04/Sea-Level-Rise-Projection-Guidance-Report_FINAL_02212020.pdf

In July 2013, the BCC implemented the Sea Level Rise Task Force to explore the implications of sea level rise on Miami-Dade County's environment, economy, communities and policies. The Sea Level Rise Task Force presented seven (7) recommendations to the BCC which became six (6) resolutions and were passed unanimously in January 2015. Subsequently, RER's Office of Sustainability became the Office of Resilience.[41] The Office of Resilience continues to work on strengthening the County's infrastructure, plan for more resilient communities, enhance natural protections and promote economic resilience through policies and task forces. Further details on Miami-Dade County's efforts to identify and develop mitigation and adaptation strategies to prepare for sea level rise, go to: https://www.miamidade.gov/global/economy/resilience/sea-level-rise-flooding.page.

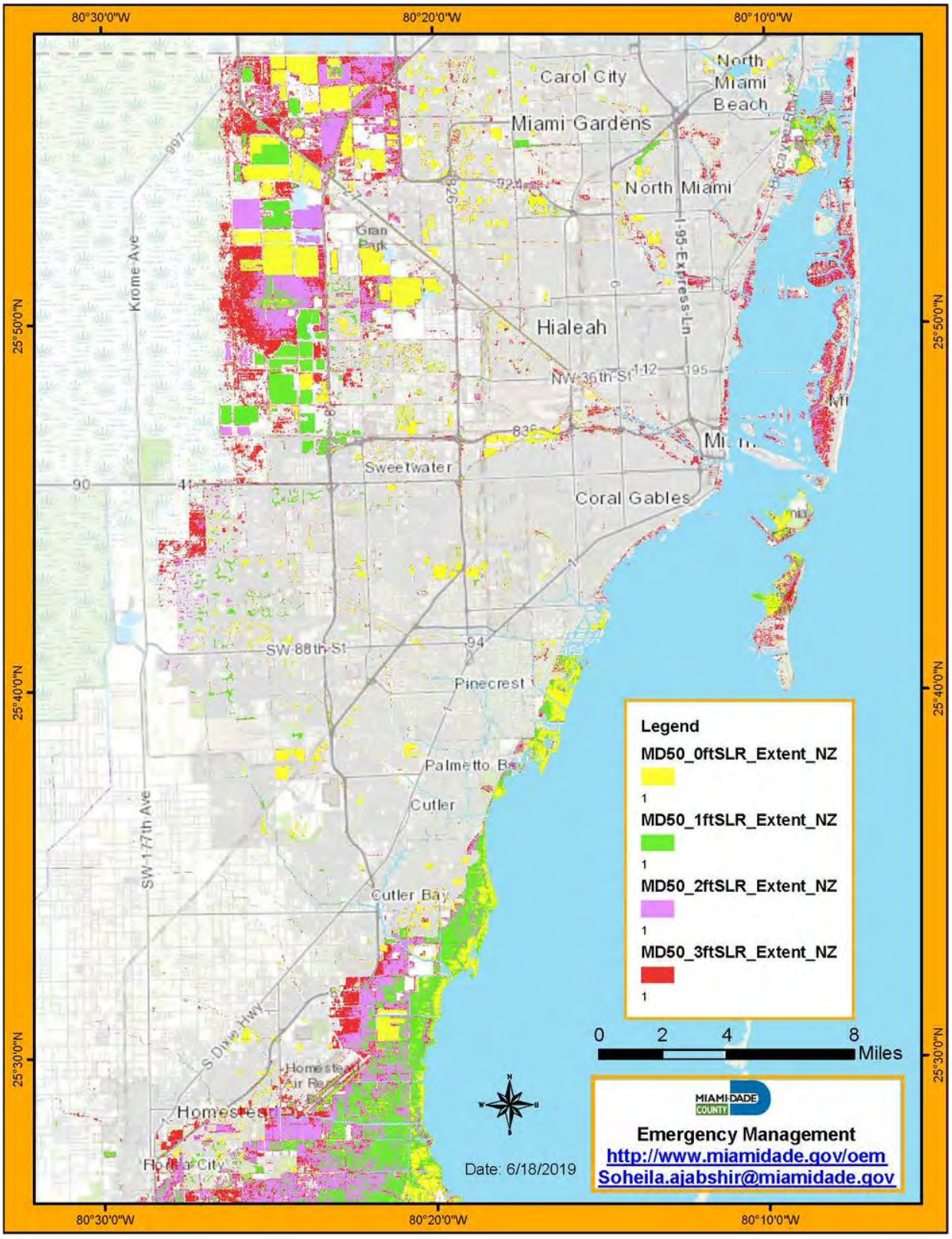
Miami-Dade County has incorporated climate change and sea level rise in a number of planning efforts through mitigation and adaptation.

- Miami-Dade County Comprehensive Development Master Plan (CDMP) incorporated climate change considerations and language in several of the CDMP Elements in October 2013. This implementation will form a foundation for Miami-Dade County to incorporate these considerations into existing capital investments and infrastructure planning processes.
- In 2010, Miami-Dade County partnered with Broward, Monroe and Palm Beach Counties to form the Southeast Florida Regional Climate Change Compact as a way to coordinate mitigation and adaptation efforts for the region.
- Resilient Greater Miami & the Beaches (GM&B), a collaboration between Miami-Dade County, City of Miami, and Miami Beach was selected to join 100 Resilient Cities in 2016. A local multi-jurisdictional partnership to create an inclusive resilience strategy.
- In 2019, GM&B released the Resilient305 Strategy, a living document that addresses resilience challenges prioritized through intergovernmental and community collaboration.[42]

Figure 17 illustrates the potential impacts of sea level rise in Miami-Dade County. This map was developed utilizing data collected for the Southeast Florida Regional Climate Change Compact.

[41] Miami-Dade County Sea Level Rise Report Executive Summary: https://www.miamidade.gov/green/library/sea-level-rise-executive-summary.pdf
[42] Resilient305 Strategy: https://resilient305.com/our-future/

Figure 17. Potential Sea Level Rise Impacts in Miami-Dade County



REPETITIVE LOSSES

For CRS purposes, a repetitive loss property is an insurable structure which has had two (2) or more claims of more than $1,000 paid by NFIP within a ten-year period, since 1978. A Severe Repetitive Loss (SRL) property is an NFIP-insured residential structure that meets at least one (1) of the following criteria since 1978, as defined under the Flood Insurance Reform Act of 2004:

- 1-4 family properties that had four (4) or more separate claims of more than $5,000 each; or
- Two (2) to three (3) claims that cumulatively exceeds the market value of the building

Non-residential structures that meet the same criteria as for 1-4 family properties are considered SRL properties, for CRS purposes.[43]

At least two (2) of the reference claims must have occurred within any ten-year period and must be greater than 10 days apart. Therefore, multiple losses in the same location, within ten days of each other, are counted as one (1) with the payment amounts added together. Repetitive loss designation remains with a structure regardless of ownership changes. Additionally, the designation remains in the community's list even if the insurance policy lapsed, has been terminated or the structure's risk has been mitigated.[44,45]

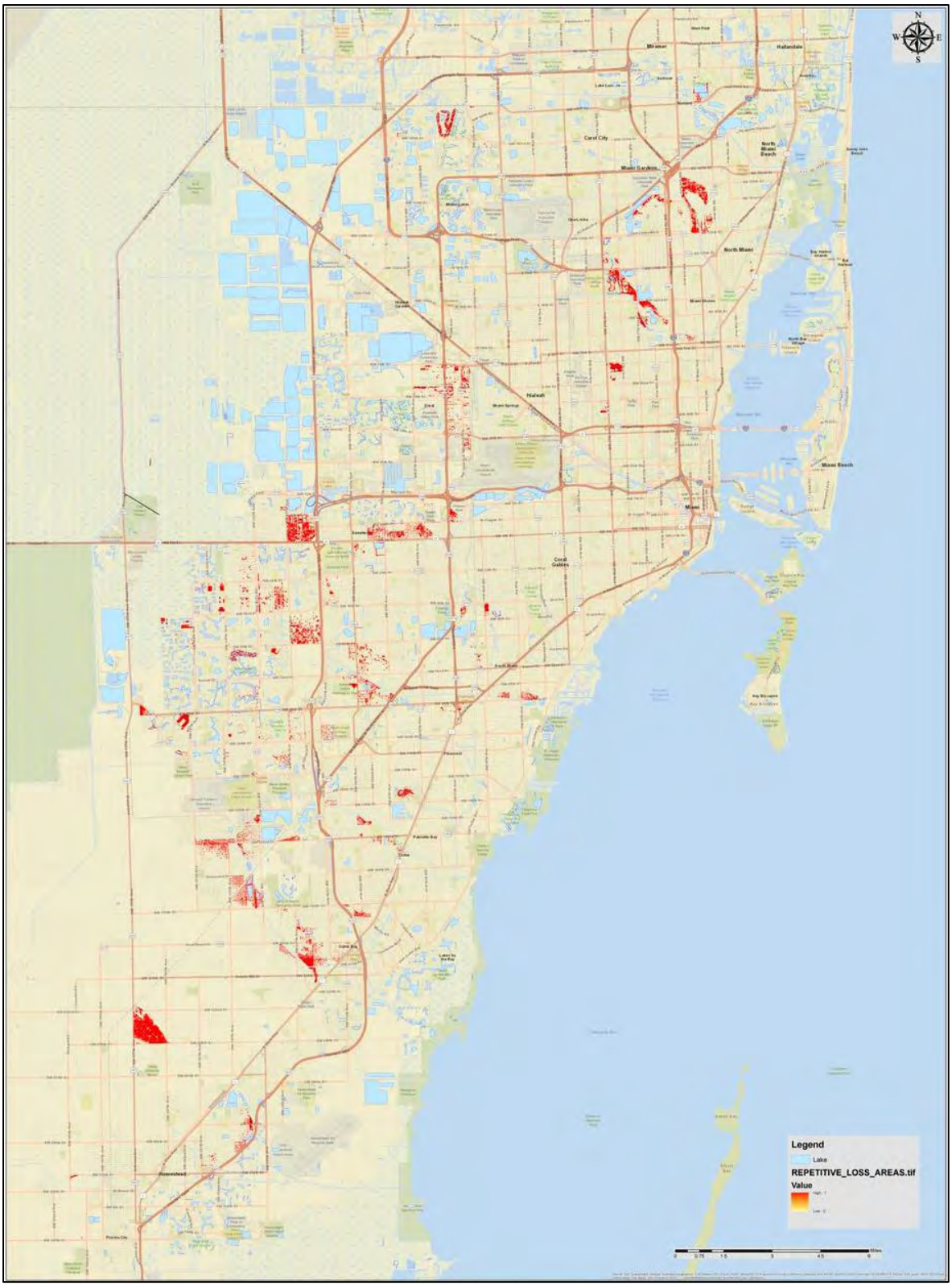
A repetitive loss area is a portion(s) of a community that includes buildings on FEMA's list of repetitive losses and also any nearby properties that are subject to the same or similar flooding conditions.[46] In Miami-Dade County, mitigation activities in repetitive loss areas are prioritized based on the number of claims placed in each neighborhood. Additionally, drainage capital improvement projects are prioritized in areas with most repetitive losses, flood complaints and low-lying areas with flood protection levels of service below the threshold identified in the CDMP. Figure 18 illustrates the Repetitive Loss Areas of within Unincorporated Miami-Dade County.[47]

In order to participate in the CRS Program, a jurisdiction must maintain and update its repetitive loss data. This data will assist a jurisdiction to better identify its repetitive flood problems and appropriate mitigation measures. FEMA produces a list of repetitive loss properties for communities that participate in the CRS Program, on a yearly basis and a jurisdiction can obtain it by contacting the ISO/CRS Specialist for the State of Florida. However, communities are required to provide updates to their ISO/CRS Specialist when preparing for a repetitive loss area analysis.

The State ISO/CRS Specialist contact information can be obtained via the following link: https://crsresources.org/100-2.

[43] 2017 CRS Coordinator's Manual: https://crsresources.org/manual/
[44] Developing a Repetitive Loss Area Analysis for Credit Under Activity 510 (Floodplain Management Planning) for the Community Rating System (2017): https://crsresources.org/files/500/rlaa-guide-2017.pdf
[45] FEMA Guidance for Severe Repetitive Loss Properties: https://www.fema.gov/pdf/nfip/manual201205/content/20_srl.pdf
[46] Mapping Repetitive Loss Areas for CRS Handout: https://crsresources.org/files/500/mapping_repetitive_loss_areas.pdf
[47] Miami-Dade RER, Repetitive Losses: https://miamidade.gov/environment/repetitive-losses.asp

Figure 18. Miami-Dade County Repetitive Loss Areas (Unincorporated Miami-Dade)[48]



[48] Miami-Dade County Stormwater Master Plan (2019), Map Revision 8/9/2019

Table 12. 2019 Changes in Repetitive Loss (RL) and Severe Repetitive Loss (SRL) Properties

Jurisdiction	# of RL properties removed	# of RL properties added	# of SRL properties removed	# of SRL properties added
Aventura	9	6	0	0
Doral	0	0	0	0
Medley	0	0	0	0
City of Miami	0	11	0	0
Miami Gardens	0	0	0	0
Miami Lakes	0	0	0	0
Miami Shores Village	0	0	0	0
South Miami	0	0	0	0
Sweetwater	0	0	0	0
Unincorporated	0	0	0	0

Miami-Dade County is working with the Federal Emergency Management Agency to sign the Information Sharing Access Agreement. These agreement will allow the County to report on the types and numbers (residential, commercial and institutional) of repetitive loss and severe repetitive loss properties.

FLOOD THREAT RECOGNITION SYSTEM[49]

Miami-Dade OEM relies on automated flood warning systems that provide early notice of a flood for all locations within Miami-Dade County. Systems are able to provide flood warnings 24-hours a day, seven (7) days a week. These flood warning systems provide information such as timing and potential of an oncoming flood for the County. Miami-Dade County uses a series of different systems operated by NWS, DTPW, SFWMD, and the United States Geological Survey (USGS).

As stated previously in this Plan, the SLOSH models are utilized for coastal areas and Miami-Dade OEM utilized SLOSH MOM models to develop the County's Storm Surge Planning Zones. These zones indicate areas that are potentially at risk for storm surge and may be designated as evacuation areas. Miami-Dade County utilizes the following flood warning systems to monitor rainfall amounts and receive flood warnings on a daily basis.

National Weather Service (NWS) Miami/South Florida Weather Forecast Office

Miami-Dade OEM receives flood, flash flood, and urban and small stream watches and warnings from the NWS Office via e-mail, phone, text, and the Emergency Management Network (EMNet), during significant weather events that may result in flooding throughout the County. Weekly webinars are scheduled by NWS for weather briefings to Miami-Dade OEM and Municipal partners. Additional weather briefings are added in the event that a significant rain event is forecast or ongoing.

Miami-Dade Department of Transportation and Public Works (DTPW)

DTPW maintains a number of rain gauges throughout Miami-Dade County that collect breakpoint and rain total information over a 24-hour period. This data allows Miami-Dade County and its municipalities to track and identify the areas with the most significant rainfall, in real-time.

South Florida Water Management District (SFWMD)

SFWMD tracks rainfall and canal stage data in real-time. This real-time data is considered provisional until it undergoes the SFWMD's Quality Assurance and Quality Control (QA/QC) process and subsequently posted on DBHYDRO as "Archived." DBHYDRO is SFWMD's corporate environmental database that stores hydrologic, meteorological, hydrogeological and water quality data. The provisional (real-time) data is available via the following link: www.sfwmd.gov/portal/page/portal/levelthree/live%20data.

United States Geological Survey (USGS)

USGS has WaterWatch, a website that displays maps, graphs, and tables describing real-time, recent and past stream conditions.

[49] CRS Activity 610 (Flood Warning and Response) Element – Flood Threat Recognition System

Florida Interoperable Picture Processing for Emergency Response (FLIPPER)

This is a geographic information system (GIS) map-based platform. Through FLIPPER, the County and its municipalities can assess the risk of their facilities from potential storm surge, determine overall elevation of the land surrounding their facilities and determine the proximity to canal structures and which drainage basin they are in. FLIPPER has a number of integrated data layers including, but not limited to the following:

- Hydrology (canal structures, canal by type, canal maintained by, primary canal basing, ground elevation)
- FEMA Flood Zone (to the parcel level)
- Storm Surge Planning Zones
- Active Hurricane Information
- Live Weather Radar

Determination of a Significant Rain Event

Communities can utilize the National Oceanic and Atmospheric Administration (NOAA) Hydrometeorological Design Studies Center's Precipitation Frequency Data Server (PFDS) to determine if a particular incident should be considered a significant event. The PFDS is a point-and-click web portal for precipitation frequency estimates and supplementary products. The web portal can be accessed via the following link: hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=fl. After a location is selected, the precipitation frequency (PF) and confidence limits estimates are displayed in different formats (i.e. tables and graphs). [50] Figure 21 illustrates the PF in a table format (PF Tabular) for the Miami International Airport station. The numbers in parenthesis are the PF estimates at the lower and upper bounds of the 90% confidence interval. However, there is a 5% probability that the PF estimates will be greater than the upper bound or less than the lower bound.

Figure 19. Significant Rain Event Chart

NOAA Atlas 14, Volume 9, Version 2 MIAMI INTL AP
Station ID: 08-5663
Location name: Miami, Florida, USA*
Latitude: 25.7906°, Longitude: -80.3164°
Elevation:
Elevation (station metadata): 29 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.580 (0.475-0.717)	0.663 (0.542-0.820)	0.799 (0.651-0.991)	0.913 (0.739-1.14)	1.07 (0.836-1.37)	1.19 (0.909-1.55)	1.31 (0.966-1.75)	1.43 (1.01-1.97)	1.60 (1.08-2.25)	1.72 (1.14-2.47)
10-min	0.849 (0.695-1.05)	0.971 (0.794-1.20)	1.17 (0.954-1.45)	1.34 (1.08-1.67)	1.57 (1.22-2.01)	1.74 (1.33-2.27)	1.92 (1.42-2.56)	2.10 (1.48-2.88)	2.34 (1.59-3.30)	2.52 (1.67-3.61)
15-min	1.03 (0.847-1.28)	1.18 (0.968-1.47)	1.43 (1.16-1.77)	1.63 (1.32-2.03)	1.91 (1.49-2.45)	2.13 (1.62-2.77)	2.34 (1.73-3.12)	2.56 (1.81-3.51)	2.85 (1.94-4.02)	3.07 (2.03-4.41)
30-min	1.58 (1.29-1.95)	1.82 (1.48-2.25)	2.20 (1.80-2.73)	2.53 (2.05-3.15)	2.97 (2.32-3.81)	3.31 (2.53-4.31)	3.65 (2.69-4.87)	4.00 (2.82-5.48)	4.46 (3.02-6.28)	4.80 (3.17-6.89)
60-min	2.09 (1.71-2.58)	2.39 (1.96-2.96)	2.92 (2.38-3.63)	3.39 (2.75-4.22)	4.07 (3.20-5.28)	4.63 (3.55-6.08)	5.22 (3.86-7.01)	5.84 (4.14-8.06)	6.71 (4.57-9.52)	7.40 (4.89-10.6)
2-hr	2.60 (2.14-3.19)	2.97 (2.44-3.66)	3.64 (2.98-4.49)	4.25 (3.46-5.26)	5.17 (4.11-6.70)	5.95 (4.60-7.79)	6.78 (5.06-9.09)	7.69 (5.49-10.6)	8.97 (6.15-12.7)	10.0 (6.66-14.3)
3-hr	2.89 (2.38-3.53)	3.29 (2.71-4.03)	4.06 (3.33-4.98)	4.78 (3.90-5.90)	5.92 (4.74-7.69)	6.90 (5.37-9.05)	7.98 (5.98-10.7)	9.16 (6.58-12.6)	10.9 (7.51-15.4)	12.3 (8.20-17.4)
6-hr	3.40 (2.81-4.13)	3.91 (3.24-4.76)	4.90 (4.04-5.97)	5.86 (4.80-7.18)	7.38 (5.96-9.58)	8.72 (6.83-11.4)	10.2 (7.71-13.7)	11.9 (8.58-16.3)	14.3 (9.91-20.0)	16.2 (10.9-22.9)
12-hr	3.97 (3.30-4.79)	4.66 (3.88-5.63)	5.95 (4.93-7.21)	7.18 (5.92-8.74)	9.11 (7.37-11.7)	10.8 (8.47-14.0)	12.6 (9.56-16.7)	14.6 (10.6-19.9)	17.5 (12.2-24.4)	19.9 (13.5-27.9)
24-hr	4.64 (3.88-5.57)	5.51 (4.60-6.61)	7.09 (5.90-8.53)	8.57 (7.09-10.4)	10.8 (8.80-13.8)	12.8 (10.1-16.4)	14.9 (11.4-19.6)	17.2 (12.6-23.2)	20.5 (14.4-28.4)	23.2 (15.8-32.3)
2-day	5.46 (4.59-6.51)	6.43 (5.40-7.67)	8.20 (6.87-9.81)	9.85 (8.20-11.8)	12.4 (10.1-15.6)	14.5 (11.5-18.5)	16.8 (12.9-22.0)	19.4 (14.3-26.0)	23.0 (16.3-31.6)	26.0 (17.8-35.9)
3-day	6.06 (5.11-7.20)	7.07 (5.96-8.40)	8.91 (7.47-10.6)	10.6 (8.84-12.7)	13.2 (10.8-16.6)	15.4 (12.2-19.5)	17.7 (13.6-23.1)	20.3 (15.0-27.1)	24.0 (17.0-32.9)	27.0 (18.6-37.2)
4-day	6.61 (5.58-7.82)	7.61 (6.42-9.01)	9.43 (7.93-11.2)	11.1 (9.29-13.3)	13.7 (11.2-17.1)	15.9 (12.7-20.1)	18.2 (14.1-23.6)	20.8 (15.4-27.7)	24.5 (17.4-33.4)	27.5 (19.0-37.8)
7-day	8.07 (6.85-9.51)	8.97 (7.60-10.6)	10.6 (8.98-12.6)	12.2 (10.3-14.5)	14.7 (12.1-18.3)	16.8 (13.5-21.2)	19.2 (14.8-24.7)	21.7 (16.2-28.7)	25.4 (18.2-34.5)	28.5 (19.8-38.9)
10-day	9.32 (7.92-10.9)	10.2 (8.68-12.0)	11.9 (10.1-14.0)	13.5 (11.4-16.0)	16.0 (13.2-19.8)	18.1 (14.6-22.7)	20.4 (15.9-26.2)	23.0 (17.2-30.3)	26.7 (19.2-36.1)	29.7 (20.7-40.5)
20-day	12.6 (10.8-14.7)	14.0 (12.0-16.3)	16.4 (13.9-19.1)	18.4 (15.6-21.6)	21.3 (17.5-25.9)	23.7 (19.0-29.1)	26.1 (20.3-32.9)	28.6 (21.4-37.1)	32.1 (23.1-42.8)	34.9 (24.4-47.2)
30-day	15.4 (13.2-17.9)	17.3 (14.8-20.1)	20.3 (17.3-23.6)	22.8 (19.3-26.6)	26.1 (21.4-31.4)	28.7 (23.1-35.0)	31.2 (24.3-39.1)	33.8 (25.3-43.4)	37.1 (26.7-49.1)	39.6 (27.9-53.3)
45-day	19.1 (16.4-22.1)	21.5 (18.4-24.9)	25.2 (21.6-29.3)	28.2 (24.0-32.9)	32.1 (26.3-38.2)	34.9 (28.1-42.2)	37.6 (29.3-46.6)	40.2 (30.1-51.2)	43.3 (31.3-56.9)	45.6 (32.2-61.1)
60-day	22.4 (19.3-25.8)	25.1 (21.6-29.0)	29.4 (25.2-34.0)	32.7 (27.9-38.0)	37.0 (30.3-43.8)	40.0 (32.2-48.1)	42.8 (33.3-52.8)	45.4 (34.0-57.6)	48.5 (35.0-63.3)	50.5 (35.8-67.6)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
Please refer to NOAA Atlas 14 document for more information.

[50] Section 5 of the NOAA Atlas 14: https://www.nws.noaa.gov/oh/hdsc/PF_documents/NA14_Sec5_PFDS.pdf

MIAMI-DADE COMPREHENSIVE DEVELOPMENT MASTER PLAN[51]

Miami-Dade County Regulatory and Economic Resources Department (RER) – Planning Bureau Division provides services related to sound growth management, historic preservation, urban planning, sustainability planning, and transportation development through the Comprehensive Development Master Plan (CDMP) and related activities.

The CDMP provides general objectives and policies that address the where and how Miami-Dade County will approach the development or conservation of land and natural resources during the next 10-20 years. Furthermore, it addresses the delivery of County services to accomplish the Plan's objectives. Miami-Dade County is comprised of approximately 2,000 square miles of land and over 420 square miles have been developed for urban use. The CDMP establishes the broad parameters for government to conduct detailed land use planning and zoning activities, functional planning and programming of infrastructure and services. Additionally, it establishes minimum standards, or Level of Service (LOS) standards for the delivery of certain County services and facilities including roadways/traffic, mass transit, parks, water, sewer, solid waste, and drainage.

The CDMP establishes a growth policy that encourages development:

1. At a rate commensurate with projected population and economic growth
2. In a contiguous pattern centered around a network of high-intensity urban centers well-connected by multi-modal intra-urban transportation facilities
3. In locations which optimize efficiency in public service delivery and conservation of valuable natural resources

CDMP Elements

Chapter 163 of the Florida Statutes requires each local government to adopt a comprehensive plan and sets the minimum criteria including the identification of the required elements of a comprehensive plan. The Miami-Dade County CDMP is comprised of 12 Elements preceded by a Statement of Legislative Intent. The first nine (9) elements listed below, are required by Chapter 163 and the remaining Elements are optional and included in the CDMP at the discretion of the County.

Statement of Legislative Intent
I. Land Use Element
II. Transportation Element
III. Housing Element
IV. Conversation, Aquifer Recharge and Drainage Element
V. Water, Sewer and Solid Waste Element
VI. Recreation and Open Space Element
VII. Coastal Management Element
VIII. Intergovernmental Coordination Element
IX. Capital Improvements Element
X. Educational Element
XI. Economic Element
XII. Community Health and Design Element

[51] CDMP - TOC, Introduction & Statement of Legislative Intent (2013): https://www.miamidade.gov/planning/library/reports/planning-documents/cdmp/table-of-contents.pdf

The documents for the aforementioned CDMP Elements can be accessed via the following link: miamidade.gov/planning/cdmp-adopted.asp.

A major review and update of the CDMP is done every seven (7) years, a process known as the Evaluation Appraisal Report (EAR). The EAR includes an evaluation of the County's progress in implementing goals, objectives, policies, maps and text to the CDMP. It also recommends changes. There is also a tri-annual CDMP amendment process for periodic review of the development capacity of the urban area.

Each CDMP Element contains Adopted Components and Support Components that have not been adopted, but provide background information. The current report only contains the CDMP components that have been adopted as a County policy. The Support Components are contained in separate documents. The Support Components and the EARs include background data and analyses, inventories of existing conditions, methodology projections or other estimates of future conditions, and summaries of applicable state, regional and preexisting County plan policies.

The CDMP addresses Unincorporated Miami-Dade and the 34 municipalities. However, Chapter 163 of the Florida Statutes, requires each Municipality to adopt their own plans for areas within their jurisdictions.

Further details and additional CDMP documents can be accessed via the following link: miamidade.gov/planning/cdmp.asp.

CRITICAL FACILITIES PLANNING[52]

The critical facilities inventory is managed by Miami-Dade OEM and Miami-Dade Information Technology Department. The facilities included in this inventory have been deemed critical by the state and federal government. This is updated annually. The list cannot be made public due to the sensitive information it contains. However, the list can be provided to the ISO/CRS Specialist by Miami-Dade OEM upon request.

The list of critical facilities includes the phone number(s) of the operators for all public and private critical facilities affected by flooding. Warning and notifications to these facilities are facilitated by the OEM distribution lists for all response and recovery agencies and organizations. Therefore, they receive all emergency information and distribute to their organizations and jurisdictions through their own processes.

[52] CRS Activity 610 (Flood Warning and Response) Element – Critical Facilities Planning

FLOOD PUBLIC INFORMATION ACTIVITIES

Flood protection information, at the local level, is readily available online to assist Miami-Dade County residents to understand their residence's flood risk. The flood protection webpage is maintained regularly by Miami-Dade RER and it can be accessed via the following link: www.miamidade.gov/environment/flood-protection.asp. Miami-Dade RER includes information on the following:

- Elevation Certificates
- Flood & Drainage Complaints
- Flood Insurance
- Flood Zone Maps
- Property Sale Disclosure
- How to protect your property
- Stormwater Utility

FEMA Flood Zones

The FEMA Flood Maps can be accessed on Miami-Dade RER's webpage, via the Environment tab through the Flood Protection tab. Miami-Dade County has an interactive web tool for the Flood Zone Maps, where homeowners can enter their address for more detailed information on their Special Flood Hazard Areas or flood zones. Once the property address is entered, it will zoom to the location on the map and display an information panel to the right side of the screen. The user is able to view the elevation of each FEMA Flood Zone within the address entered and the appropriate contact information for the Municipality is provided.

The FEMA Flood Zone Maps interactive web tool is available via the following link: gisweb.miamidade.gov/floodzone.

Property Sale Disclosure

The Miami-Dade County Code requires that any purchase of improved real estate in a Special Flood Hazard or Coastal High Hazard Area (also known as Flood Zones) include a full disclosure to the buyer stating that the property lies in either of the aforementioned zones. If the structure is substantially damaged or improved, it may be required to be raised to the current required flood elevation.

The seller of any improved real estate located in Unincorporated Miami-Dade County shall include in the contract, or a rider to the contract, the following disclosure in a bold font no less than a 10-point font size:

"THIS HOME OR STRUCTURE IS LOCATED IN A SPECIAL FLOOD HAZARD AREA. IF THIS HOME OR STRUCTURE IS BELOW THE APPLICABLE FLOOD ELEVATION LEVEL AND IS SUBSTANTIALLY DAMAGED OR SUBSTANTIALLY IMPROVED, AS DEFINED IN CHAPTER 11C OF THE METROPOLITAN MIAMI-DADE COUNTY CODE, IT MAY, AMONG OTHER THINGS, BE REQUIRED TO BE RAISED TO THE APPLICABLE FLOOD ELEVATION LEVEL."

The Unincorporated Miami-Dade County Flood Zone Disclosure Form can be accessed via the following link: miamidade.gov/environment/library/forms/flood-disclosure.pdf. For further details, please refer to Chapter 11-C of the Code of Miami-Dade County.

COMMUNITY PREPAREDNESS

Increasing the community's flood preparedness and awareness is achieved through different avenues, such as, public education, the countywide distribution of the official Hurricane Readiness Guide, social media, and community outreach events throughout the year. In addition to Miami-Dade County's efforts, municipalities conduct their own, or in partnership with the County, public information and community outreach activities to promote flood education, preparedness and mitigation.

Miami-Dade County Hurricane Webpage

The Miami-Dade County official hurricane preparedness webpage includes information for every resident to be aware of before, during and after a hurricane or any other emergency. Emergency planning information included on the webpage includes the following:

- Emergency Kits and Checklists
- Emergency Evacuation
- Evacuation Assistance for residents with accessibility issues
- Pet Preparedness
- Hurricane Readiness Guide
- Tree Preparation prior to the hurricane season
- Shelter-in-Place
- Storm Surge Planning Zones
- And more

The hurricane preparedness webpage can be accessed via the following link: miamidade.gov/hurricane.

Know Your Zone

Miami-Dade County residents are encouraged to know if their residence is within a Storm Surge Planning Zone prior to a storm making landfall. The Storm Surge Planning Zone section of the County's hurricane webpage provides information on storm surge's threat to life and property, a description of each of the planning zones, and an FAQ in English, Spanish and Haitian Creole. Additionally, residents can locate if their home or business is within a Planning Zone by entering the address into the Storm Surge Planning Zone Finder (Know Your Zone application). The Know Your Zone application can be accessed via the following link: https://mdc.maps.arcgis.com/apps/webappviewer/index.html?id=4919c85a439f40c68d7b3c81c3f44b58.

StormReady Community[53]

NWS created the StormReady® Program to encourage communities to take a proactive approach on improvising hazardous weather operations and strengthen local safety programs. To receive this recognition the County or Municipality must establish a 24-hour warning point and Emergency Operations Center, have more than one way to receive severe weather warning and forecasts to alert citizens, have a system that monitors weather conditions locally, promote public readiness, and develop a formal hazardous weather plan.

[53] CRS Activity 610 (Flood Warning and Response) Element – StormReady Community

Miami-Dade County has been a StormReady® Community since 2002 and was awarded this status again in September 2019. Other StormReady® Communities in Miami-Dade County include Doral, Homestead, Miami Beach, North Miami, Florida International University, Miami-Dade College, St. Thomas University and University of Miami.

#HurricaneStrong

#HurricaneStrong is part of the National Hurricane Resilience Initiative created in 2016 to improve hurricane preparedness, mitigation, and overall readiness through increased public awareness and engagement. The initiative consists of a partnership between FEMA, NOAA, The Weather Channel and the Federal Alliance for Safe Homes (FLASH), which is the country's leading consumer advocate for strengthening homes and safeguarding families from natural and manmade disasters.

The #HurricaneStrong initiative follows five (5) key messages to promote and elevate hurricane resilience:

- Personal safety
- Family Preparedness
- Financial Security
- Damage Prevention
- Community Service

In May 2018, Miami-Dade County was selected as the second County in the nation to receive this designation of a #HurricaneStrong community. This was a result of the County's profound commitment to a more resilient community by continuously improving the County's ability to recover after a disaster.

Weather-Ready Nation Ambassador

The Weather-Ready Nation (WRN) Ambassador is NOAA's initiative to strengthen partnerships with local, state, federal and private organizations toward building a more resilient community in the face of increasing vulnerability to extreme weather events. WRN Ambassadors will promote and encourage preparedness and mitigation activities by encouraging the community to be "weather-ready" and promoting Weather-Ready Nation key messages through outreach activities.

The Miami-Dade LMS and OEM were named WRN Ambassadors on October 2014 and March 2016, respectively.

Ready MDC App

Ready Miami-Dade County (ReadyMDC) is a free local hurricane preparedness and decision-making support mobile application available to Miami-Dade County residents and visitors. ReadyMDC provides users with access to various local preparedness resources and materials, such as the Miami-Dade County Hurricane Readiness Guide and Storm Surge Planning Zones online education page. Real-time information is available before, during and after a storm or hurricane.

Information includes:

- Evacuation Order
- Emergency Evacuation Bus Pick-Up Sites
- Know Your Zone
- Open Evacuation Centers
- Important Evacuation Information
- Direct Contact with Miami-Dade County's 311 Contact Center
- Safety Tips
- Phone numbers, websites and social media

The Ready MDC App provides real-time information relevant to recovery relief efforts. This application is available for Android and iOS devices.

Miami-Dade Alerts

Miami-Dade Alerts is a free service that enables County residents and visitors to receive emergency texts and/or emails regarding public safety issues, recommended public protected actions, or other emergency information. Additionally, this service provides weather advisory notifications issued by NWS (e.g. tornado, tropical storm and hurricane warnings) or any other emergency which may require protective actions.

Residents and visitors who live or work in Miami-Dade County can register for this service online at miamidade.gov/alerts.

Social Media

A large number of the population utilizes social media as a source of news and information. Therefore, Miami-Dade OEM manages social media government pages on Facebook and Twitter. OEM provides information on regionally adopted preparedness messages, informs the public on events being monitored (emerging or occurring), and provides insight on OEM programmatic areas.

Facebook.com/MiamiDadeCountyEM

Twitter.com/MiamiDadeEM

Table 13 outlines several community outreach activities performed by different Miami-Dade County agencies throughout the year. Additionally, please refer to Appendix A for samples of the public information materials provided.

Table 12. Community Outreach Activities

Activity	Frequency	Topics/Actions	Audience
RER's *Do You Know Your Flood Zone?* Brochure Mailout	Annual	The brochure is mailed out via the Stormwater Utility Bill and it is available online. The topics included in the brochure include: • General Flood Information • FEMA Flood Zone Maps • Flood Protection • Flood Insurance • Elevation Certificates • Building Permit Requirement(s) • Repetitive Losses	Over 43,000 Households (mailed) Countywide (online)
Flood Protection on RER's Website www.miamidade.gov/environment/flood-protection.asp	Continuous	The webpage is updated regularly with the most current information on the following topics: • Elevation Certificates • Repetitive Losses • Flood and Drainage Complaints Form • Flood Insurance • Flood Zone Maps/Flood Risk Maps • Coastal Flooding • Real Estate and Insurance Agents • Property Sale Disclosure • Protect Your Property • Stormwater Utility	Countywide
Miami-Dade County Official Hurricane Readiness Guide	Annual	The official Hurricane Readiness Guide contains important information for every resident to be aware of before, during and after a hurricane or any other emergency. The Guide includes information on the Storm Surge Planning Zones, what to do in preparation to a hurricane threatening Miami-Dade County, what to do when an evacuation order is given, available County services and more. The Hurricane Readiness Guide is available in English, Spanish and Haitian Creole.	Mailed to every residential address in Miami-Dade County (1 Million households) and distributed during outreach events, to County Commissioners' offices, County departments, Municipal governments, private businesses, public sector partners and not-for-profit organizations

Activity	Frequency	Topics/Actions	Audience
Bring Your Kid(s) to Work Day	Annual	On a designated date every year, Miami-Dade Fire Rescue and OEM Employees bring their kids to work to experience a day at work with their parents. The kids are brought in to the EOC for OEM Staff to discuss Miami-Dade County's natural hazards, hurricane and disaster preparedness.	MDFR and OEM Employees
StormZone	Annual	StormZone is a school-based multidisciplinary science and social studies education program that teaches students about the science of severe natural disasters. Students that are part of this program, participate in an interactive exercise at the Miami-Dade EOC in which they learn about hurricane and disaster preparedness.	Approximately 60 students (5th and 6th Grade) from Miami-Dade Public Schools
County Mayor's Hurricane Preparedness Press Conference	Annual	The Miami-Dade County Mayor conducts a Hurricane Preparedness Press Conference at the beginning of each Atlantic Hurricane Season. The Press Conference is broadcasted via the Miami-Dade County TV Channel, webpage and Social Media pages.	Countywide
Youth Fair	Annual	OEM has a booth/table at the Youth Fair staffed with OEM Staff to provide information on hurricane and disaster preparedness to attendees. Staff facilitates discussions on hurricane and disaster preparedness with attendees and reading material is provided for adults and kids to take home.	Approximately 2,000 attendees
Emergency and Evacuation Assistance Program (EEAP) Call Down	Semi-Annually	Call down is conducted by calling all active EEAP registrants to update their records and provide them information on hurricane preparedness.	4,200 EEAP Clients
Hurricane Preparedness Events/Community Outreach Presentations by OEM	Over 100 events throughout the Year	Throughout the year, OEM continuously participates in a number of local events hosted by municipalities, hospitals, schools, businesses, and non-for-profit, community and faith-based organizations. These events provide an opportunity to directly engage with residents and provide essential information on hurricane and disaster preparedness, and mitigation measures for the hurricane season and other Miami-Dade County hazards (e.g. flooding). These presentations are conducted in English, Spanish and Haitian Creole to better engage and educate the community.	17,736 *(in 2019)*

Activity	Frequency	Topics/Actions	Audience
Residential Healthcare Facility (RHCF) CEMP Workshop	Annual	This workshop is conducted to educate RHCF owners and administrators in developing RHCF CEMP with an all-hazards approach to insure the residents' life safety. The workshop serves an opportunity to provide emergency and disaster preparedness information.	All Hospitals, Group Homes, Nursing Homes, Assisted Living Facilities, Adult Day Cares, Ambulatory Surgical Centers and Intermediate Care Centers within Miami-Dade County

EMERGENCY WARNING DISSEMINATION[54]

In accordance with the Miami-Dade County CEMP, OEM provides flood warnings as early as it is practical in an effort to provide as much advance notice as possible. For tropical cyclones, notifications begin approximately five (5) days prior to the anticipated arrival of the storm. When the Miami-Dade EOC is activated, ESF 14 (Public Information) is responsible for the dissemination of emergency information to all media outlets and the public.

In order to expedite the dissemination of information, Miami-Dade County developed pre-scripted messages and message templates for staff to quickly issue appropriate flood advisories. These will provide guidance and can be modified, as needed, to fit the specific emergency or incident. ESF 14 contains pre-scripted messages that are disseminated to the public. Additionally, the OEM Severe Weather Standard Operating Procedures (SOP) has pre-scripted messages for the Duty Officer to disseminate to Miami-Dade OEM Staff and OEM partner agencies. Municipal emergency management, colleges and universities are part of OEM's distributions lists; therefore, they receive all emergency notifications and disseminate it to the residents and students within their jurisdiction through their own processes.

Messaging on flood advisories in Miami-Dade County via the Emergency Alert System (EAS) through all channel/stations, is done by NWS – Miami/South Florida Forecast Office. NWS utilizes pre-scripted draft messages for all types of flood advisories. The pre-scripted messages include the type of advisory, time the advisory expires, the reason the advisory was issued and location(s) that will experience flooding as a result of the weather system. Additionally, NWS has several pre-scripted messages with precautionary/preparedness statements that they can choose from when preparing the advisory for issuance.

Miami-Dade County uses a cable override system for the public notification of emergency warnings. A Florida EAS Plan is prepared by the State Emergency Communications Committee in conjunction with FDEM and is based on recommendation from the state and County emergency management officials, NWS, and the broadcast industry and cable operators. The purpose of this Plan is to put in place a system that can be utilized by emergency officials to announce or transmit an emergency alert to the potentially impacted population. The Florida EAS Operational Plan can be accessed via the following link: fab.org/wp-content/uploads/2014/01/State-of-Florida-EAS-Plan-Revised-2.27.27v3.pdf. The EAS is tested monthly and the schedule can be accessed via the following link: fab.org/eas-test-schedule/.

There are additional forms of public notification that are utilized to send emergency alerts in the event that an emergency or event requires protective action(s). When emergency protective action(s) are issued, an EAS and/or Wireless Emergency Alert (WEA) message can be disseminated via OEM's Integrated Public Alert Warning System (IPAWS) compliant software systems EMnet or WebEOC. Simultaneously, OEM would also disseminate messages through Miami-Dade Alerts and social media (i.e. Facebook and Twitter). When an emergency notification to a specific geographic area is required, the VESTA Alert Notification System can be utilized. A brief description of each system is below.

- **IPAWS** is a national warning system used to notify the public of emergency situations which may require protective actions. It is designed to warn the public of local weather emergencies, such as flooding. The primary method utilized for developing and

[54] CRS Activity 610 (Flood Warning and Response) Element – Emergency Warning Dissemination

disseminating an IPAWS message is through the EMnet system, located in the supervisor platform of the Miami-Dade Fire Rescue (MDFR) Dispatch Center Headquarters. In the event EMnet is not operational, the fax request methodology or the WebEOC IPAWS messaging system will be utilized as the backup methods to disseminate information to the public.

- **Communicator NXT** is a notification system used to send emergency text messages. The system has the capability of sending voice alerts and email messages as well, but the primary use is emergency mass text messaging. Communicator NXT is used to send Miami-Dade Alerts to the public who subscribe for the service.
- **VESTA Alert Notification System** is another emergency notification system utilized to assist OEM in geographically delivering critical information to area(s) affected by a life-threatening hazard. While the system has the capability to send text messages and emails, the primary use is for mass emergency voice alerts.
- **Social Media** is utilized to disseminate emergency information, such as protective actions and general emergency information before, during and after an incident. During a Miami-Dade EOC activation, the Social Media Unit Leader of the EOC Planning Section is responsible for the collection, evaluation, and posting of public information through all of the County's social media platforms. Additionally, Miami-Dade OEM uses social media to promote personal preparedness awareness in the community, severe weather advisories, safety tips, among other topics.

Along with the aforementioned public information systems, many of Miami-Dade County buildings have NOAA Weather Radios to provide notification of flood and severe weather watches and warnings. Some of these buildings include the Fire Alarm Office, EOC, OEM offices, County executive offices, Miami International Airport (Air Traffic Control Tower), hospitals, healthcare centers, educational facilities and fire stations, among others.

Additionally, Miami-Dade County disseminates press releases with emergency information and general preparedness information for all types of incidents. During a countywide emergency (e.g. hurricane), the Miami-Dade County utilizes the miamidade.gov/emergency webpage to provide residents and visitors with the most accurate information, including updates to County services during a particular emergency. This webpage provides updates on:

- Evacuation Orders
- Schools
- Waste Collection
- Animal Services
- Parks
- Seaports
- Libraries
- Museums
- Correction and Rehabilitation Facilities
- Government Offices and Courthouse
- Transit
- Airports
- Streets, Expressways, Tolls and Bridges
- Beaches and Marinas
- Curfews

- Open/closed Shelters
- Water and Sewer
- Hospital and Clinics

When necessary, in-person notifications of protective measures orders are conducted by law enforcement (County and Municipal). This is used to supplement information disseminated via means of mass communication. In-person communication by law enforcement include:

- Door-to-door communication – individually notifying residents within a specific geographic region
- Vehicle Public Address System – communication of evacuation orders via the public address system in police vehicles, also known as route alerting

FLOOD RESPONSE OPERATIONS[55]

The Miami-Dade CEMP and Protective Measures Plan identify flood response roles and responsibilities for all our County stakeholders. The clearance times illustrated on Table 8, dictate the time needed to implement response activities which includes hurricane evacuation operations.

Miami-Dade County's CEMP establishes the framework that the County and its municipalities utilize to address all types of hazards. The CEMP outlines the basic strategies, assumptions, operational goals and objectives, and mechanisms through which Miami-Dade County will mobilize resources and conduct activities to guide and support emergency management efforts through preparedness, response, recovery and mitigation. Additionally, it includes the roles and responsibilities of the local government, state and federal agencies, and other stakeholders.

The Miami-Dade CEMP was adopted by the BCC on November 7, 2017 by Resolution R-983-13 and by FDEM on July 17, 2017. Volume I of the CEMP can be accessed via the following link: miamidade.gov/fire/library/OEM/CEMP.pdf. Volume II, III and IV can be obtained by contacting Miami-Dade OEM.

Miami-Dade OEM Protective Measures Plan focuses on an all-hazards approach to respond to all types of emergencies. It provides contingencies to lessen the exposure of people to hazards related to the incident through protective measures such as evacuation, shelter-in-place, isolation/quarantine and restricted entry/repopulation. The Plan provides a decision-making process that defines which protective measure is best for the current conditions of each incident and an implementation process. This Plan can be found of Volume III of the CEMP. Figures 21 and 22 are part of the OEM Protective Measures Plan. Figure 21 illustrates the protective measures decision matrix for evacuations, sheltering-in-place, and isolation/quarantine. Figure 22 illustrates the protective measures decision matrix for restricted entry/repopulation.

[55] CRS Activity 610 (Flood Warning and Response) Element – Flood Response Operations

Community Information and Reporting

Miami-Dade County operates the 311 Contact Center which provides a fast, simple, and convenient way for residents to obtain accurate information on local government services throughout an emergency and non-emergency situation. Additionally, the 311 Contact Center can be utilized to report neighborhood problems such as building code violations, roadways issues (e.g. pothole, damaged sidewalk), water and sewer issues (e.g. clogged drains) canal issues, flooding reports, among others. The 311 Contact Center can be reached via:

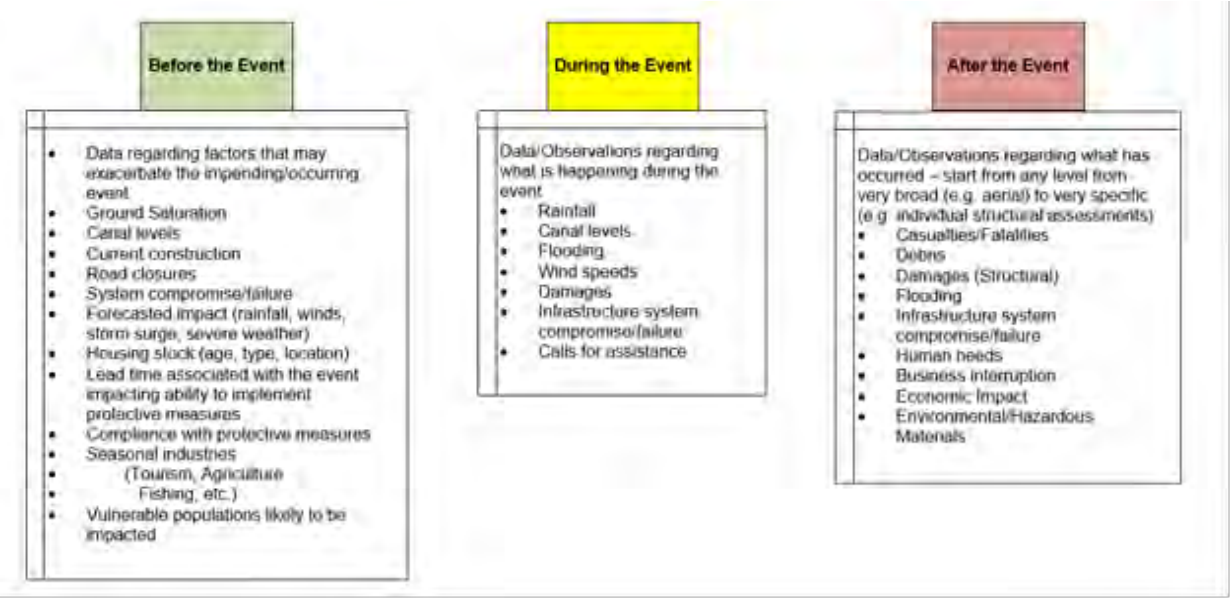
- Phone, by dialing 311 or (305) 468-5900
- Online at miamidade.gov/311direct/#/categorylist
- Twitter at twitter.com/miamidade311
- 311Direct Mobile App
- Email at 311@miamidade.gov

Further information on Miami-Dade County's 311 Contact Center can be accessed via the following link: miamidade.gov/global/311.page.

Hazard Impact Assessment

Hazard impact assessments of potential and actual impacts are conducted by gathering data before, during and after an incident. Details of this process are outlined on OEM's Hazard Impact Assessment Plan (HIAP) which can be found in Volume III of the CEMP. Figure 19 provides an overview of how hazard impact assessments will be conducted by Miami-Dade County agencies and municipalities.

Figure 20. Impact Assessments Before, During and After an Incident



Damage Assessment Software

In order to standardize how damages are reported, Miami-Dade County created the Snapshot Damage Assessment (Neighborhood Damage Assessment Form) after Hurricane Andrew. The system provides four (4) basic levels of structural damage and two (2) levels of flooding that are helpful for reporting impacts to residential structures. Currently, this system is used for public reporting.

In 2013, Miami-Dade OEM implemented a more robust damage assessment tool for our partner agencies and municipalities, called ARM360. ARM360 became the County's official damage assessment software. ARM360 is a comprehensive system where information can be collected on impact areas, incidents, initial damage assessments and detailed structural assessments. The software has been designed for assessment data to be gathered via a tablet or laptop on the field, subsequently, the data is synchronized and viewed on the ARM360 Viewer at the agency and Municipal Emergency Operations Centers (EOC). ARM360 can be utilized for countywide incidents (e.g. hurricane) or local incidents (e.g. tornado). Miami-Dade OEM, in conjunction with local building officials, developed a guide and training on reporting flood and structural damage for mobile/manufactured homes, residential structures, and mid and high-rise structures. Furthermore, a training component was established to complement the system and provide uniform training for personnel who conduct on-field assessments, and personnel who may be working in the EOC and generating damage assessment reports within their jurisdiction.

Special Needs Evacuation Assistance

Miami-Dade OEM maintains and manages the Emergency and Evacuation Assistance Program (EEAP) for residents with functional and access needs. This program offers specialized transportation for individuals that live at home and are in need of assistance during an evacuation, are electrically-dependent and require sheltering in a Medical Management Facility (MMF) and/or would like to receive a wellness call after an incident or disaster.

Eligible EEAP applicants will be assigned to an evacuation center (Medical Evacuation Center or MMF) appropriate for the level of care required due to their medical condition(s). When any incident, such as a hurricane or flood, requires evacuation of Miami-Dade County's vulnerable population, the Evacuation Support Unit (ESU) is activated. The ESU is responsible for:

- Coordinating the call down of registrants prior to an evacuation order
- Verifying the evacuation status
- Appropriate facility and transportation assignment
- Transportation for the evacuation and repopulation
- Wellness Checks
- Demobilization of assets and facilities when they are no longer needed

Residents with functional and access needs should register for the EEAP prior to an emergency to ensure the appropriate assistance will be provided, when needed. Applications go through a review process by the OEM Vulnerable Populations Coordinator and the Florida Department of Health (FDOH) in Miami-Dade County. Subsequently, applications are entered into the EEAP database, which utilizes GIS, to manage registrants throughout the year and during an emergency evacuation. In order to maintain EEAP client information up-to-date, a call-down is conducted twice a year by calling all active EEAP registrants to update/confirm their records.

Further information on the EEAP can be accessed via the following link: miamidade.gov/global/service.page?Mduid_service=ser1539637068904426.

Figure 21. Protective Measure Decision-Making Matrix (Evacuation, Shelter-in-Place and Isolation/Quarantine)

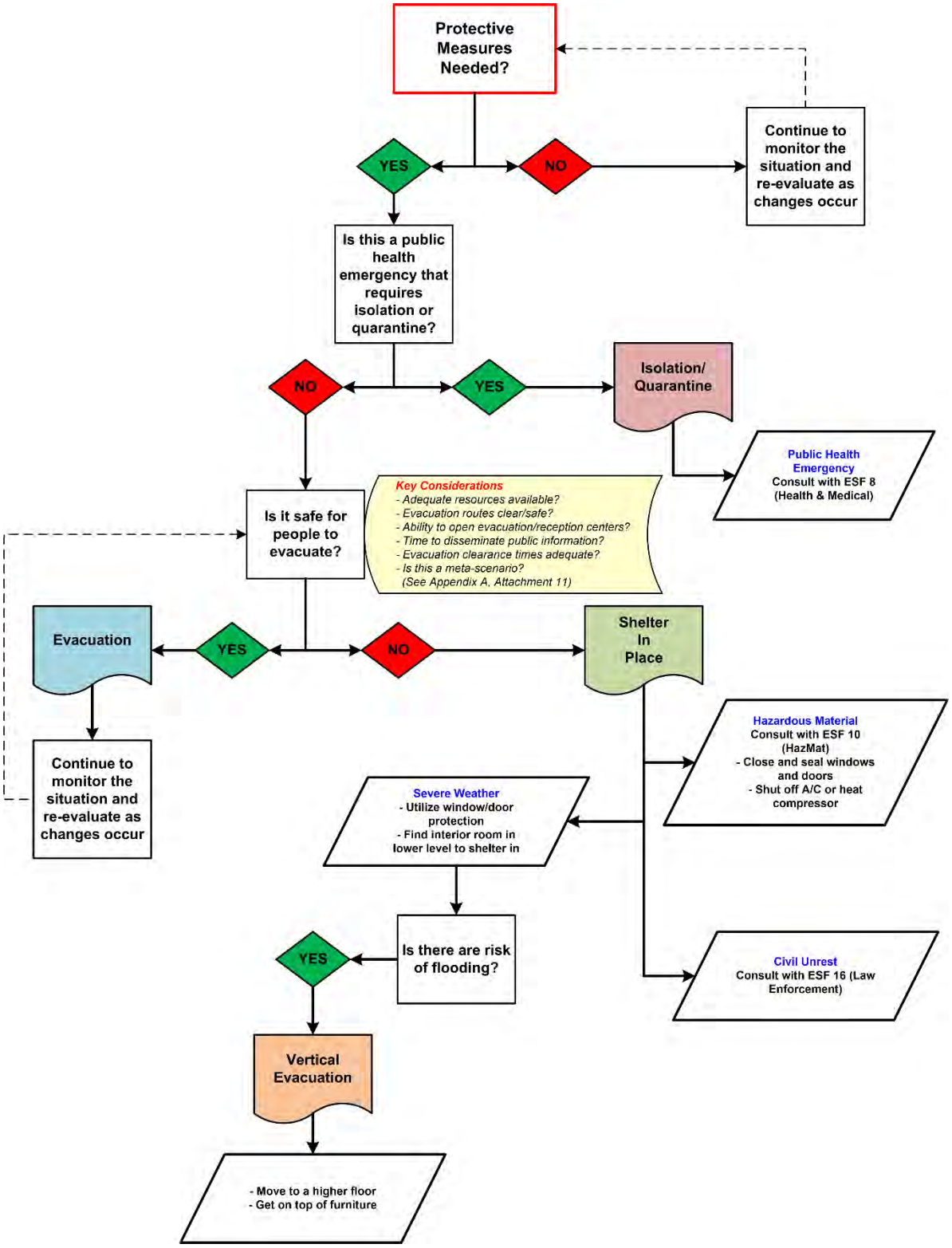
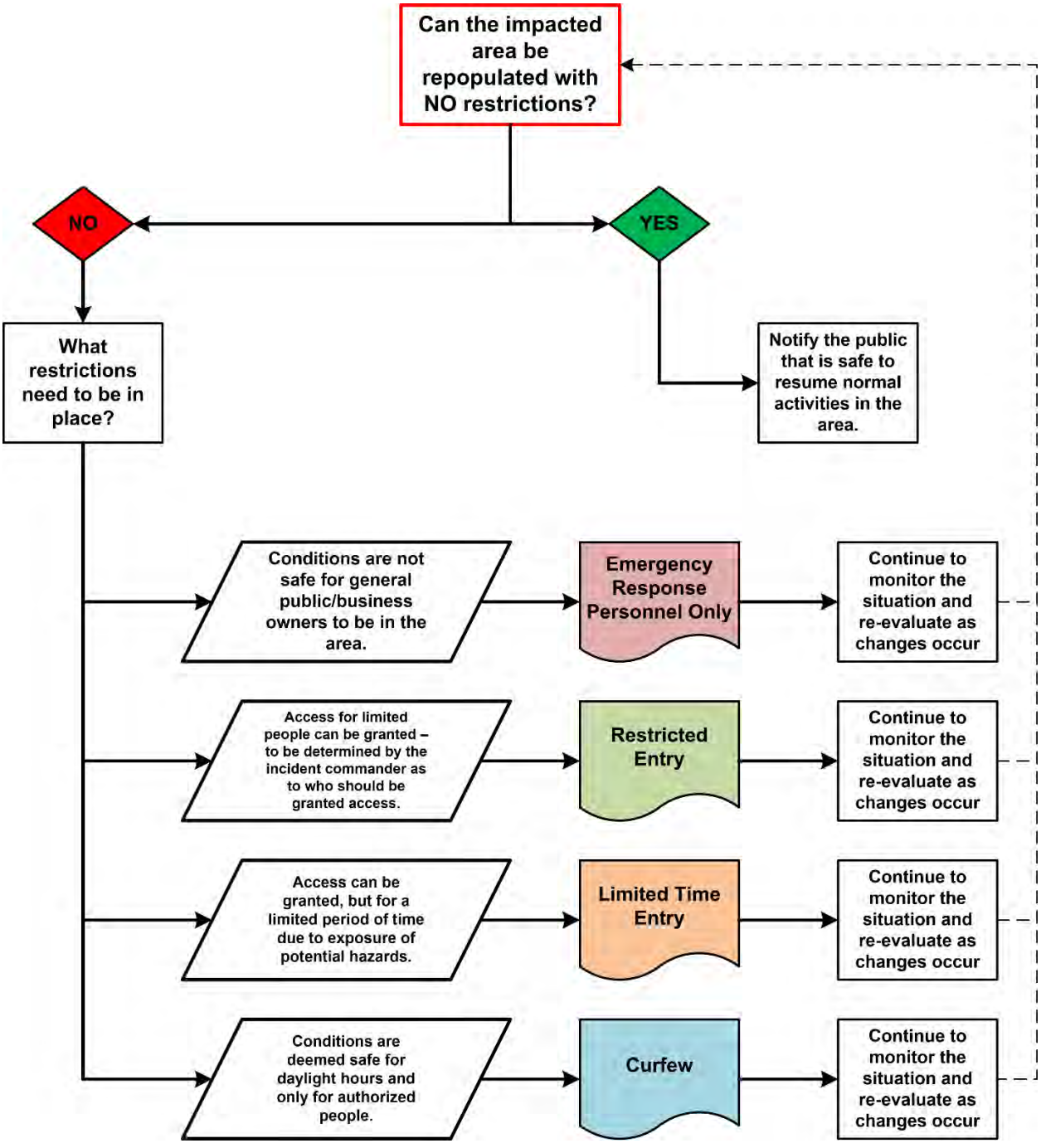


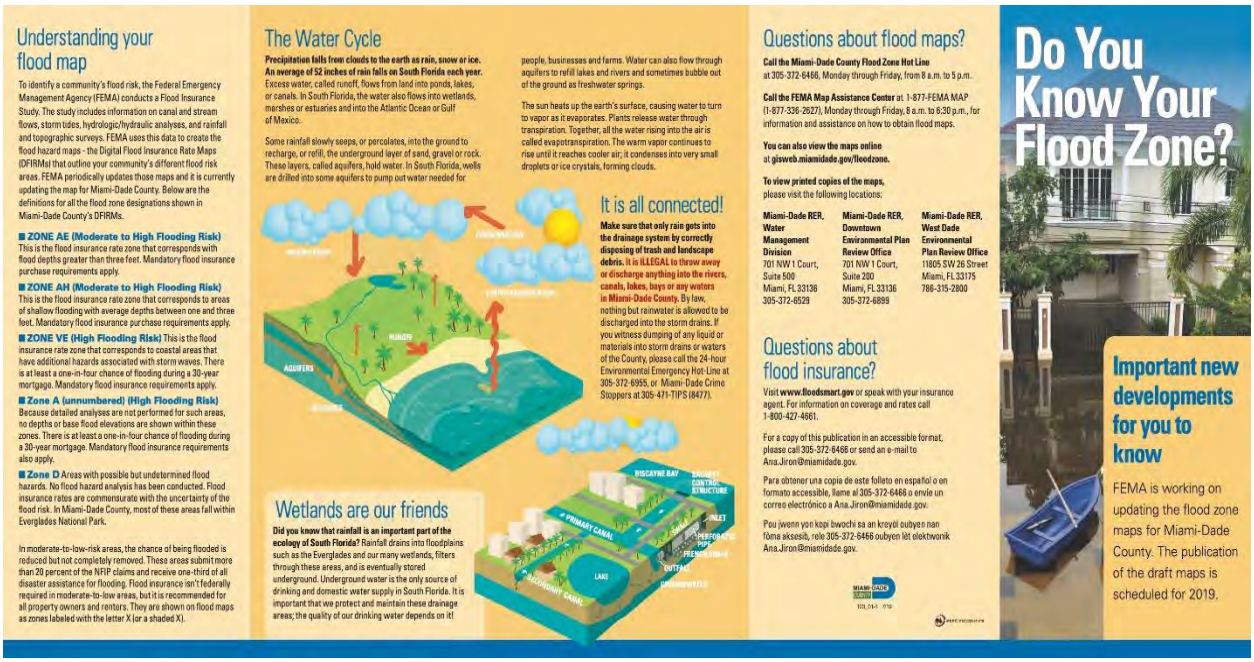
Figure 22. Protective Measure Decision-Making Matrix (Repopulation/Restricted Entry)



APPENDICES

Appendix A: Do You Know Your Flood Zone? Brochure

Available Online: www.miamidade.gov/environment/flood-maps.asp
Available in English, Spanish and Haitian Creole



Understanding your flood map

To identify a community's flood risk, the Federal Emergency Management Agency (FEMA) conducts a Flood Insurance Study. The study includes information on canal and stream flows, storm tides, hydrologic/hydraulic analyses, and rainfall and topographic surveys. FEMA uses this data to create the flood hazard maps - the Digital Flood Insurance Rate Maps (DFIRMs) that outline your community's different flood risk areas. FEMA periodically updates those maps and it is currently updating the map for Miami-Dade County. Below are the definitions for all the flood zone designations shown in Miami-Dade County's DFIRMs.

- **ZONE AE (Moderate to High Flooding Risk)** This is the flood insurance rate zone that corresponds with flood depths greater than three feet. Mandatory flood insurance purchase requirements apply.
- **ZONE AH (Moderate to High Flooding Risk)** This is the flood insurance rate zone that corresponds to areas of shallow flooding with average depths between one and three feet. Mandatory flood insurance purchase requirements apply.
- **ZONE VE (High Flooding Risk)** This is the flood insurance rate zone that corresponds to coastal areas that have additional hazards associated with storm waves. There is at least a one-in-four chance of flooding during a 30-year mortgage. Mandatory flood insurance requirements apply.
- **Zone A (unnumbered) (High Flooding Risk)** Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones. There is at least a one-in-four chance of flooding during a 30-year mortgage. Mandatory flood insurance requirements also apply.
- **Zone D** Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk. In Miami-Dade County, most of these areas fall within Everglades National Park.

In moderate-to-low-risk areas, the chance of being flooded is reduced but not completely removed. These areas submit more than 20 percent of the NFIP claims and receive one-third of all disaster assistance for flooding. Flood insurance isn't federally required in moderate-to-low areas, but it is recommended for all property owners and renters. They are shown on flood maps as zones labeled with the letter X (or a shaded X).

The Water Cycle

Precipitation falls from clouds to the earth as rain, snow or ice. An average of 52 inches of rain falls on South Florida each year. Excess water, called runoff, flows from land into ponds, lakes, or canals. In South Florida, the water also flows into wetlands, marshes or estuaries and into the Atlantic Ocean or Gulf of Mexico.

Some rainfall slowly seeps, or percolates, into the ground to recharge, or refill, the underground layer of sand, gravel or rock. These layers, called aquifers, hold water. In South Florida, wells are drilled into some aquifers to pump out water needed for people, businesses and farms. Water can also flow through aquifers to refill lakes and rivers and sometimes bubble out of the ground as freshwater springs.

The sun heats up the earth's surface, causing water to turn to vapor as it evaporates. Plants release water through transpiration. Together, all the water rising into the air is called evapotranspiration. The warm vapor continues to rise until it reaches cooler air; it condenses into very small droplets or ice crystals, forming clouds.

It is all connected!

Make sure that only rain gets into the drainage system by correctly disposing of trash and landscape debris. It is ILLEGAL to throw away or discharge anything into the rivers, canals, lakes, bays or any waters in Miami-Dade County. By law, nothing but rainwater is allowed to be discharged into the storm drains. If you witness dumping of any liquid or materials into storm drains or waters of the County, please call the 24-hour Environmental Emergency Hot-Line at 305-372-6955, or Miami-Dade Crime Stoppers at 305-471-TIPS (8477).

Wetlands are our friends

Did you know that rainfall is an important part of the ecology of South Florida? Rainfall drains into floodplains such as the Everglades and our many wetlands, filters through these areas, and is eventually stored underground. Underground water is the only source of drinking and domestic water supply in South Florida. It is important that we protect and maintain these drainage areas; the quality of our drinking water depends on it!

Questions about flood maps?

Call the Miami-Dade County Flood Zone Hot Line at 305-372-6466, Monday through Friday, from 8 a.m. to 5 p.m.

Call the FEMA Map Assistance Center at 1-877-FEMA MAP (1-877-336-2627), Monday through Friday, 8 a.m. to 6:30 p.m., for information and assistance on how to obtain flood maps.

You can also view the maps online at **giswed.miamidade.gov/floodzone.**

To view printed copies of the maps, please visit the following locations:

Miami-Dade RER, Water Management Division	Miami-Dade RER, Downtown Environmental Plan Review Office	Miami-Dade RER, West Dade Environmental Plan Review Office
701 NW 1 Court, Suite 500 Miami, FL 33136 305-372-6529	701 NW 1 Court, Suite 200 Miami, FL 33136 305-372-6899	11805 SW 26 Street Miami, FL 33175 786-315-2800

Questions about flood insurance?

Visit **www.floodsmart.gov** or speak with your insurance agent. For information on coverage and rates call 1-800-427-4661.

For a copy of this publication in an accessible format, please call 305-372-6466 or send an e-mail to Ana.Jiron@miamidade.gov.

Para obtener una copia de este folleto en español o en formato accesible, llame al 305-372-6466 o envíe un correo electrónico a Ana.Jiron@miamidade.gov.

Pou jwenn yon kopi biwochi sa an kreyòl ouben nan fòma aksesib, rele 305-372-6466 oubyen lèt elektwonik Ana.Jiron@miamidade.gov.

Do You Know Your Flood Zone?

Important new developments for you to know

FEMA is working on updating the flood zone maps for Miami-Dade County. The publication of the draft maps is scheduled for 2019.

Why do floods occur?

Because Miami-Dade County is located in a unique geographical area, it is particularly susceptible to flooding from major rain events and storm surge. The County is surrounded by major water bodies, the Atlantic Ocean, Biscayne Bay, and many rivers, lakes and canals. Miami-Dade County lies close to sea level and its underground water supply is just below the ground surface. Therefore, major rain events sometimes leave rainwater nowhere to drain, causing occasional flooding in some areas of the County.

Know your flood risk

If you are not sure where your property is located on the map, please call Miami-Dade County's 311 Contact Center or Flood Zone Hotline at 305-372-6466 and your exact flood zone designation will be confirmed.

You can also find the flood zone for your property, using the website: **giswed.miamidade.gov/floodzone.**

You can also visit the FEMA Map Service Center Website to download a copy of the maps at **msc.fema.gov.**

The Stormwater Utility Section also provides flood protection assistance to citizens, in the form of site visits and advice on how to protect your property from flooding. Please call Miami-Dade County's 311 Contact Center or 305-372-6688 to report any unusual flooding in your area or to request a site visit for your property.

Additional floodplain information

The hotline also provides additional information about your flood risk, such as location of coastal high hazard areas, flood depths at your property, historical flood maps, newly mapped flood prone areas, special rules for building in the floodplain, and future sea level vulnerability.

For information about natural conservation areas, and other protected areas, visit our Environmental Considerations tool at **www.miamidade.gov/environment/environmental-gis.asp** or call the Flood Zone Hotline.

Get an Elevation Certificate

Once you have determined that your house lies in a flood zone, an Elevation Certificate can then tell you how high your house was built in relation to that flood zone. These Certificates are required for all new construction, as well as for construction projects that involve making substantial improvements to a structure. An Elevation Certificate is an important document that every homeowner should have, and in case of a disaster, would demonstrate to County authorities that your house is at or above the required elevation. If the Certificate shows that your house is lower than the required elevation, then the so-called "50% rule" would apply to your house. This rule means that if your house is in a flood zone and is damaged and/or improved to an amount greater than 50% of its market value, it will have to be raised to meet the current elevation requirement. Miami-Dade County has kept records of these Certificates on file since the County began participating in the Community Rating System (CRS). For more information about the 50% rule or Elevation Certificates, please call Miami-Dade County's 311 Contact Center or the Flood Zone Hotline at 305-372-6466.

Insure your home

Flood insurance is required for any federally backed mortgage in a Special Flood Hazard Area. PLEASE NOTE: when purchasing flood insurance, the policy does not go into effect until 30 days after purchase. Please visit **www.floodsmart.gov** for the most current information on flood insurance premiums and to locate a flood insurance agent in your area.

Because of Miami-Dade County's rating under the National Flood Insurance Program's (NFIP) Community Rating System, Miami-Dade County policy holders who live in a flood zone have enjoyed a 25 % discount on their flood insurance premiums since October 1, 2003. A 10% discount on flood insurance is also available for those who live outside of flood zones, except on preferred risk policies.

Protect your home

There are things you can do to minimize or eliminate property damage before a flood event occurs. Grading your property, elevating and securing electrical appliances, placing all low-lying electrical fixtures on separate electrical circuits, and using flood-resistant materials on exterior surfaces are some ways you can help yourself. Under emergency conditions, sand bags can be used to protect structures from flood waters, and elevating or covering furniture and valuables can help minimize damage.

Retrofitting your home

All construction in Miami-Dade County requires the issuance of building permits prior to construction. Building permits are obtained after submittal and approval of building plans. An important part of the review process is the requirement that structures be built high enough and use proper design to protect against flood damage. If you plan to construct an addition to your house, build a new house, or for any other type of development, call Miami-Dade County's Department of Regulatory and Economic Resources (RER) at 786-315-2000 for information on how to obtain the necessary permits. If you see construction taking place in Miami-Dade County without the proper permits, please call the Miami-Dade County's 311 Contact Center or the Code Enforcement Office at 786-315-2424 to report it. To obtain information on how to select a contractor to repair your home after a flood or other natural disaster, or to conduct a search to find out if a complaint has been filed on a contractor working in Miami-Dade County, please visit **www.miamidade.gov/building/contractor-inquiry-search.asp.**

If you live in a condo

If you live in a condominium, private community with an association, or if your place of business is located in a commercial property such as a warehouse or shopping mall, then you should become familiar with the drainage system in your private community and/or place of business. Specifically, you should be aware of the location, condition and operation of the on-site drainage system that your homeowner's association or place of business is responsible for maintaining. It is also a good idea to develop a list of important contact persons/phone numbers associated with the maintenance of the drainage system BEFORE an emergency arises.

Be aware

When an Emergency Flood Warning Notice is issued for your area, take safety precautions immediately:

- Do not walk or drive through flowing or standing water. Unseen obstructions or hazards may harm you or your vehicle. Also, sewage from overflowing sewer lines may be present in the water.
- Avoid downed power lines and electrical wires. These lines can cause shock and electrocution.
- Turn off the power in your house. This should include electrical power as well as all propane gas tanks and lines.
- Watch your step in flooded areas. Slip-and-fall accidents are common in wet, slippery areas.
- Be alert for small animals that are flushed out by flooding conditions. Under stress, animals may react by biting when disturbed.
- Be aware of gas leaks in the house. Do not smoke, nor use candles or open flames, until you are sure no leaks exist; ventilate enclosed areas if you think gas is present.

For more information, please visit the Red Cross website at **www.redcross.org/get-help/how-to-prepare-for-emergencies/types-of-emergencies/flood.html.**

Repetitive losses

A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. Currently there are over 122,000 RL properties nationwide. To find out more about repetitive loss properties, visit our website at: **www.miamidade.gov/environment/repetitive-losses.asp.**

Weather warnings / watches.

The National Weather Service monitors local weather conditions. If flooding from rain is anticipated, the Service will broadcast Flood Warning Notices through television, radio and wire services. These notices are intended to make you aware and help you prepare for possible flooding. If an Emergency Flood Warning Notice is issued, the National Weather Service will broadcast this warning through the Emergency Alert System, and through TV and radio stations. For more information visit **www.miamidade.gov/fire/alerts-and-notifications.asp.**

Your opinion counts

Miami-Dade County is constantly updating its Floodplain Management Plan. To reduce street flooding, the County's Stormwater Utility is in the process of identifying, prioritizing and implementing local drainage projects throughout the County. We would like to hear from you to be sure we are meeting your needs. Please see the following questions and respond by calling our Flood Complaints Hotline, from 8 a.m. to 5 p.m., Monday through Friday, at 305-372-6688.

We would like to know:

Do you have flooding problems in your neighborhood or at your place of business? If so, have you notified the County, and if you did, was our response satisfactory?

Have you noticed the drainage improvements being constructed by Miami-Dade County? Have they helped reduce flooding in your local community?

Appendix B: 2020 Hurricane Readiness Guide

Available Online: www.miamidade.gov/hurricane/library/guide-to-hurricane-readiness.pdf
The Guide is fully translated in English, Spanish and Haitian Creole

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TO LEARN MORE, VISIT MIAMIDADE.GOV/HURRICANE.

PARA MÁS INFORMACIÓN, VISITE MIAMIDADE.GOV/HURRICANE.

POU PLIS ENFÒMASYON, VIZITE MIAMIDADE.GOV/HURRICANE.

Language Legend

Español

Kreyòl

BEFORE

FLOODING, TORNADOES AND STORM SURGE

FLOODING

Flooding is a major threat during a hurricane or tropical storm. Whether you live on the coast or inland, they can produce widespread, torrential rain that may result in deadly and destructive floods.

TORNADOES

Hurricanes and tropical storms can also produce tornadoes. Usually, these tornadoes are relatively weak and short-lived, but they pose a significant threat to life and property.

STORM SURGE

During a hurricane, storm surge is the greatest threat to life and property. It is an abnormal rise of water generated by a hurricane. Storm surge can travel several miles inland, especially along bays and canals, and can reach heights well over 20 feet.

If you live in a high-rise building and choose to shelter-in-place, stay on floors just above flood water or storm surge, but not higher than the 10th floor. Hurricanes bring dangerous winds and the higher up you go in a building, the stronger the wind speed.

KNOW YOUR ZONE

All Miami-Dade County residents should know which Storm Surge Planning Zone they live in. To determine your zone, go to **miamidade.gov/hurricane**, find the Storm Surge Planning Zone section, then enter your address. You can also download the Ready Miami-Dade mobile app or call 311.

A Storm Surge Planning Zone is an area that could be affected by a storm surge of 1 ½ feet or higher during a hurricane. These planning zones are not to be confused with your flood zone.

Upon identification of a threat, each zone (or portions of a zone) will be evacuated depending on the hurricane's track and projected storm surge, independent of the hurricane's category.

Know Your Zone

- Zone A is at greatest risk for storm surge from a Category 1 hurricane and higher.
- Zone B is at risk for storm surge from a Category 2 hurricane and higher.
- Zone C is at risk for storm surge from a Category 3 hurricane and higher.
- Zone D is at risk for storm surge from a Category 4 hurricane and higher.
- Zone E is at risk for storm surge from a Category 5 hurricane.

To view Storm Surge Planning Zones please refer to the map at the end of this Hurricane Guide.

6

Appendix C: News Release Samples

https://www.miamidade.gov/releases/2020-05-29-mayor-hurricane-presser.asp

Media Contact:

Patty Abril
patricia.abril@miamidade.gov

Miami-Dade County Mayor Carlos A. Gimenez to hold annual hurricane season press conference

MIAMI (May 29, 2020) — Miami-Dade County Mayor Carlos A. Gimenez will hold the annual hurricane preparedness press conference Monday, June 1, 2020, at 2 p.m., at the Miami-Dade County Emergency Operations Center, located at Miami-Dade Fire Rescue Headquarters, 9300 NW 41 St., Doral, Florida.

Mayor Gimenez will remind residents of the importance of being ready to protect themselves, their families and their property before, during and after a storm, as well as the additional challenges the community faces during hurricane season as a result of the COVID-19 pandemic.

Television stations are asked to work together to arrange for a pool camera, so as to establish a good shot for everyone and maintain social distancing. Media should continue to observe the social distancing guidelines of six feet of separation, and everyone should be wearing facial coverings.

Who:	Miami-Dade County Mayor Carlos A. Gimenez, Members of the Board of County Commissioners, Director of Emergency Management Frank Rollason
What:	Hurricane Preparedness Press Conference
When:	June 01, 2020 — 02:00 p.m.
Where:	Miami-Dade County Emergency Operations Center, located at Miami-Dade Fire Rescue Headquarters, 9300 NW 41 St., Doral, Florida

# # #

To request materials in accessible format, sign language interpreters, and/or any accommodation to participate in any County-sponsored program or meeting, please call Office of Communications, 305-375-1545 or email, comminfo@miamidade.gov, five days in advance to initiate your request. TTY users may also call 711 (Florida Relay Service).

Office of the Mayor
111 NW 1st Street, Suite 2910
Miami, FL 33128

https://www.miamidade.gov/fire/releases/2019-08-28-ready-dorian-advisory-1.asp

MIAMI-DADE COUNTY miamidade.gov

NEWS RELEASE

For Immediate Release:
August 28, 2019

Media Contact:
Erika Benitez
eocpio@miamidade.gov

Residents advised to be in the "Ready" phase for Hurricane Dorian

Miami-Dade Office of Emergency Management (OEM) is closely monitoring the movement of Hurricane Dorian. At this time, all Miami-Dade County services continue normal operations.

While Miami-Dade County is not in immediate danger, all residents and businesses should check their disaster kits, review their hurricane plans and remain alert to new information and instruction about the developing storm. Specifically, residents are urged to:

- Make sure that emergency equipment, such as hurricane shutters and battery-powered radios, are in good working order;
- Ensure that sufficient emergency supplies (e.g., non-perishable food and water) are on hand for each person in the home to last at least three days;
- Obtain and store materials necessary to properly secure your home;
- Secure yard and construction debris so they do not pose a hazard during a storm;
- Take tree trimmings to a local trash & recycling center;
- Find out if you live in an evacuation zone; and
- If you live in a surge planning zone determine, in advance, where you will stay, how you will get there, and what supplies you will take if you are ordered to evacuate. Also, plan your departure time so ample time is allowed to get to a safe area. Miami-Dade surge planning zone maps are available on the website www.miamidade.gov/oem.

The 3-1-1 Contact Center hours of operation are Monday through Friday from 7 a.m. to 7 p.m. and Saturday 8 a.m. to 5 p.m. Closed on Sundays and holidays. To reach the 3-1-1 Contact Center, residents can dial 3-1-1 in Miami-Dade or (305) 468-5900 outside of Miami-Dade County, TDD: (305) 468-5402. Specialists are taking calls in English, Spanish, and Creole. Residents can access disaster-related information 24 hours a day on the OEM web site located at www.miamidade.gov/oem.

OEM is committed to working with its partners and the community to lessen the impact of disasters and potentially catastrophic incidents. OEM accomplishes its mission through planning, response, and coordination of information and resources.

It is the policy of Miami-Dade County to comply with all of the requirements of the Americans with Disabilities Act. The facility is accessible. For sign language interpreters, assistive listening devices or materials in an accessible format, please call in advance 305-468-5400.

###

OEM
9300 N.W. 41str Street Miami, Florida 33178
(786) 331-5000

Appendix D: Emergency and Evacuation Assistance Program

Information available online:
https://www.miamidade.gov/global/service.page?Mduid_service=ser1470238193996672

MIAMI-DADE COUNTY *Delivering Excellence Every Day*

Miami-Dade County
Office of Emergency Management
9300 NW 41 St, Doral, FL 33178

We Need Your Assistance!
VOLUNTEERS NEEDED

The Office of Emergency Management (OEM) works year-round to prepare for any type of disaster or emergency. As we prepare, we would like to invite you to participate in an important upcoming event.

On **Saturday, March 16th, 2019,** OEM will be conducting a call-down of the **Emergency and Evacuation Assistance Program (EEAP)** registry and the **Community Emergency Response Team (CERT)** database.

Emergency and Evacuation Assistance Program (EEAP) provides evacuation support to individuals with functional and access needs. The program is targeted towards residents of Miami-Dade County who need specialized transportation assistance or have medical needs that prevent them from evacuating on their own.

The **Community Emergency Response Team (CERT)** Program enables community citizens to prepare themselves for hazards that may impact their community in any major disaster or event and to provide assistance in their neighborhood.

Please join us in making calls to update information for the EEAP and CERT registries. We need your support in being part of the solution and helping the community!

Date: **Saturday, March 16th, 2019**
Time: **8:00 a.m. to 5:00 p.m.** *(or anytime between these hours, minimum 4 hours)*
Location: **Miami-Dade County Emergency Operations Center**
9300 NW 41 Street, Doral, Florida 33178

Lunch will be provided.

We need ***English, Spanish and Haitian Creole speaking volunteers*** to help us place phone calls and update registrant's information.

3 options to RSVP as a volunteer:

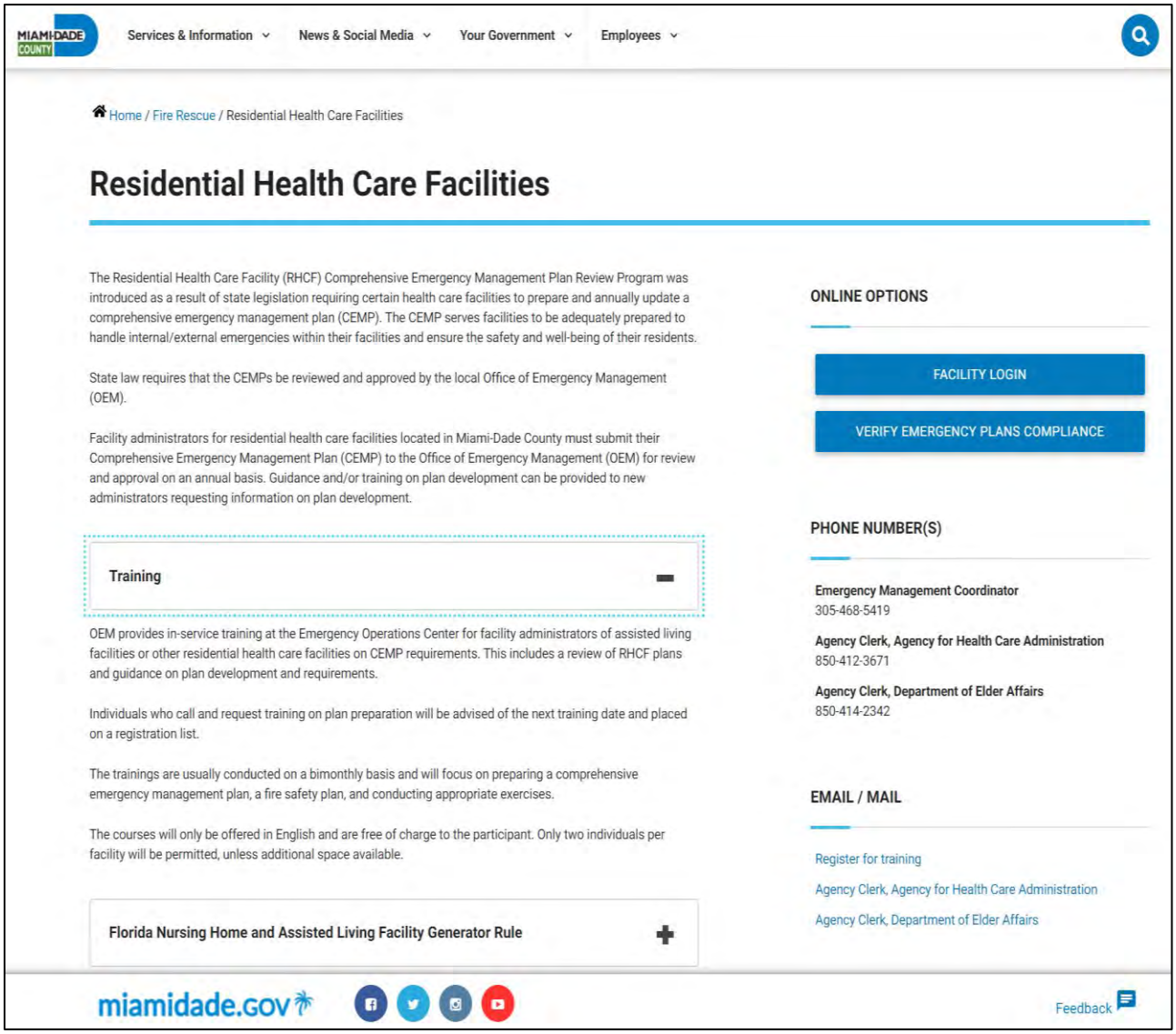
1. Use Eventbrite registration: **https://calldown2019march.eventbrite.com**
2. E-mail [redacted]:[redacted]**@miamidade.gov**
   Specify in your email:
   - What hours are you available to participate (start and end time)?
   - What languages do you speak (English, Spanish or Haitian Creole)?
3. Call or text us at 305-[redacted]

If you need any accommodations, please let us know.

Your participation is greatly appreciated!
Thank you for your support!

Appendix E: Residential Health Care Facility (RHCF) Requirements

Information available online:
https://www.miamidade.gov/global/service.page?Mduid_service=ser1539637068904426



Appendix F: Acronyms

BCC	Miami-Dade Board of County Commissioners
BFE	Base Flood Elevation
BOS	Back of Sidewalk
CDMP	Comprehensive Development Master Plan
CEMP	Comprehensive Emergency Management Plan
CFC	County Flood Criteria
COR	Crown of Road
CRS	Community Rating System
DTPW	Miami-Dade Department of Transportation and Public Works
EAR	Evaluation Appraisal Report
EAS	Emergency Alert System
EEAP	Emergency and Evacuation Assistance Program
EMNet	Emergency Management Network
EOC	Emergency Operations Center
ESU	Emergency Support Unit
FDEM	Florida Division of Emergency Management
FDOH	Florida Department of Health
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FLASH	Federal Alliance for Safe Homes
FLIPPER	Florida Interoperable Picture Processing for Emergency Response
GIS	Geographic Information System
GM&B	Greater Miami & the Beaches
HIAP	Hazard Impact Assessment Plan
IPAWS	Integrated Public Alert Warning System
ISO/CRS	Insurance Services Office, Inc. /Community Rating System
LMS	Local Mitigation Strategy
LMSSC	Local Mitigation Strategy Sub-Committees
LMSWG	Local Mitigation Strategy Working Group
LOMA	Letter of Map Amendment
LOS	Level of Service
MDFR	Miami-Dade Fire Rescue
MOM	Maximum of Maximums
NFIP	National Flood Insurance Program
NHC	National Hurricane Center
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PF	Precipitation Frequency
PFDS	Precipitation Frequency Data Server
QA/QC	Quality Assurance and Quality Control
RER	Miami-Dade County Regulatory and Economic Resources
RHCF	Residential Healthcare Facility
SFRPC	South Florida Regional Planning Council
SFWMD	South Florida Water Management District
SLOSH	Sea, Lake and Overland Surges from Hurricanes
SOP	Standard Operating Procedures
SRL	Severe Repetitive Loss
THIRA	Threat and Hazard Identification and Risk Assessment
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WEA	Wireless Emergency Alert
WRN	Weather-Ready Nation

MEMORANDUM

(Revised)

TO: Honorable Chairwoman Audrey M. Edmonson and Members, Board of County Commissioners

DATE: October 6, 2020

FROM: Abigail Price-Williams County Attorney

SUBJECT: Agenda Item No. 8(E)(1)

Please note any items checked.

_____ **"3-Day Rule" for committees applicable if raised**

_____ **6 weeks required between first reading and public hearing**

_____ **4 weeks notification to municipal officials required prior to public hearing**

_____ **Decreases revenues or increases expenditures without balancing budget**

_____ **Budget required**

_____ **Statement of fiscal impact required**

_____ **Statement of social equity required**

_____ **Ordinance creating a new board requires detailed County Mayor's report for public hearing**

_____ **No committee review**

_____ **Applicable legislation requires more than a majority vote (i.e., 2/3's present ____, 2/3 membership ____, 3/5's ____, unanimous ____, CDMP 7 vote requirement per 2-116.1(3)(h) or (4)(c) ____, CDMP 2/3 vote requirement per 2-116.1(3)(h) or (4)(c) ____, or CDMP 9 vote requirement per 2-116.1(4)(c)(2) ____) to approve**

_____ **Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 8(E)(1)
10-6-20

RESOLUTION NO. R-945-20

RESOLUTION APPROVING THE LOCAL MITIGATION STRATEGY REGARDING MITIGATION OF THE EFFECTS OF NATURAL DISASTERS AND AUTHORIZING THE COUNTY MAYOR OR THE COUNTY MAYOR'S DESIGNEE TO: (1) IMPLEMENT THE LOCAL MITIGATION STRATEGY FOR THE NEXT FIVE YEARS (2020 – 2025); (2) PRIORITIZE HAZARD MITIGATION GRANT PROJECTS; (3) REVISE AND AMEND THE LOCAL MITIGATION STRATEGY; (4) APPLY FOR, RECEIVE AND EXPEND FUNDS FROM THE STATE OF FLORIDA AND THE FEDERAL GOVERNMENT; AND (5) AWARD SUB-GRANTS FOR VARIOUS MITIGATION PROJECTS PURSUANT TO THE LOCAL MITIGATION STRATEGY

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board hereby approves the Local Mitigation Strategy regarding mitigation of the effects of natural disasters and authorizes the County Mayor or County Mayor's designee to: (1) implement the Local Mitigation Strategy for the next five years (2020-2025), in substantially the form attached hereto and made a part hereof; (2) prioritize hazard mitigation grant projects; (3) revise and amend the Local Mitigation Strategy, as may be necessary; and (4) apply for, receive, and expend funds under various state and federal mitigation projects pursuant to the Local Mitigation Strategy; and (5) award sub-grants for various mitigation projects pursuant to the Local Mitigation Strategy.

The foregoing resolution was offered by Commissioner **Rebeca Sosa** , who moved its adoption. The motion was seconded by Commissioner **José "Pepe" Diaz** and upon being put to a vote, the vote was as follows:

Audrey M. Edmonson, Chairwoman	**aye**		
Rebeca Sosa, Vice Chairwoman	**aye**		
Esteban L. Bovo, Jr.	**aye**	Daniella Levine Cava	**aye**
Jose "Pepe" Diaz	**aye**	Sally A. Heyman	**aye**
Eileen Higgins	**aye**	Barbara J. Jordan	**aye**
Joe A. Martinez	**aye**	Jean Monestime	**aye**
Dennis C. Moss	**absent**	Sen. Javier D. Souto	**aye**
Xavier L. Suarez	**aye**		

The Chairperson thereupon declared this resolution duly passed and adopted this 6th day of October, 2020. This resolution shall become effective upon the earlier of (1) 10 days after the date of its adoption unless vetoed by the County Mayor, and if vetoed, shall become effective only upon an override by this Board, or (2) approval by the County Mayor of this resolution and the filing of this approval with the Clerk of the Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By: **Melissa Adames**
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency. GKS

Gerald K. Sanchez