

Local Mitigation Strategy



Whole Community Hazard Mitigation Part 6: Completed Projects



November 2014

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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.

406 Mitigation



Floating Docks



Protected Electric



Stronger Towers



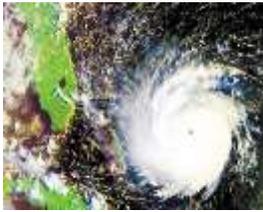
Stabilized Banks



Canal Cleaning & Shaping

Or, 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 breach 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.
Middle**



North Miami

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 Donnellan Hall and the cafeteria have window protection at a cost of \$313,000 through FEMA-1602-DR-FL



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
Sciences**



**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.



Unincorporated Miami-Dade County

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 Of 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



This air handler at the Miami-Dade Information Technologies 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



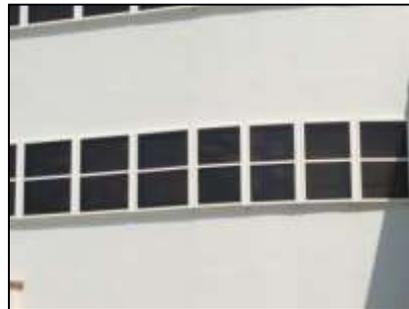
Doctor's Hospital in Coral Gables has a wind retrofit at a cost of \$2,027,000 and funded by the Hazard Mitigation Grant Program through FEMA-1545-DR-FL



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



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.



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.



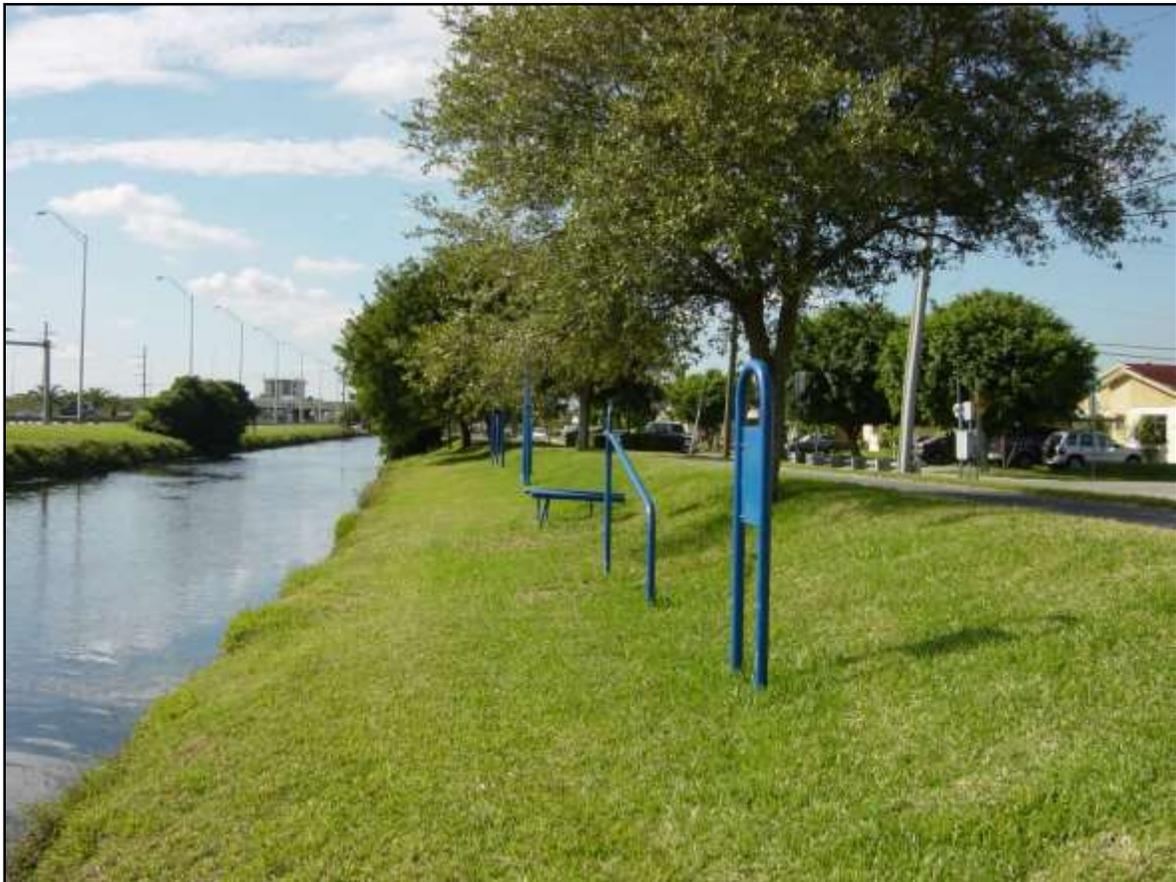
The Miccosukee Tribe of Indians of Florida



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 through 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

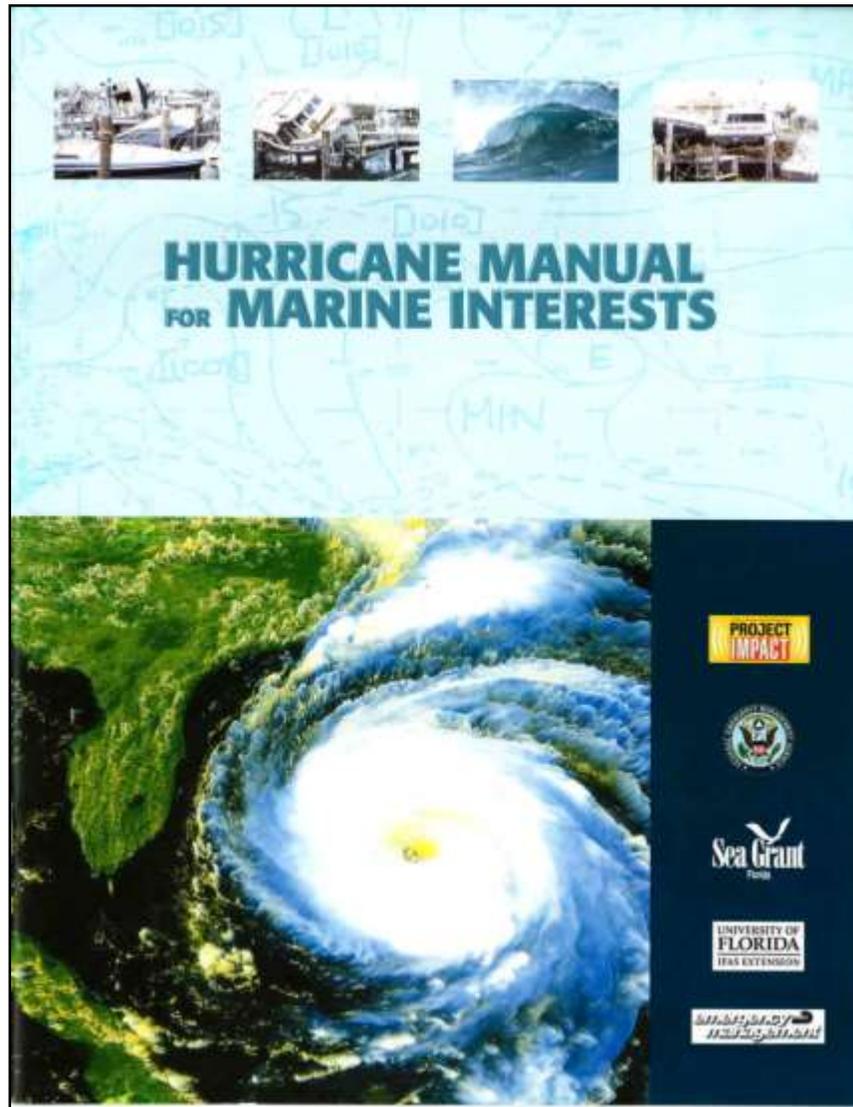
Miami River



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.



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.

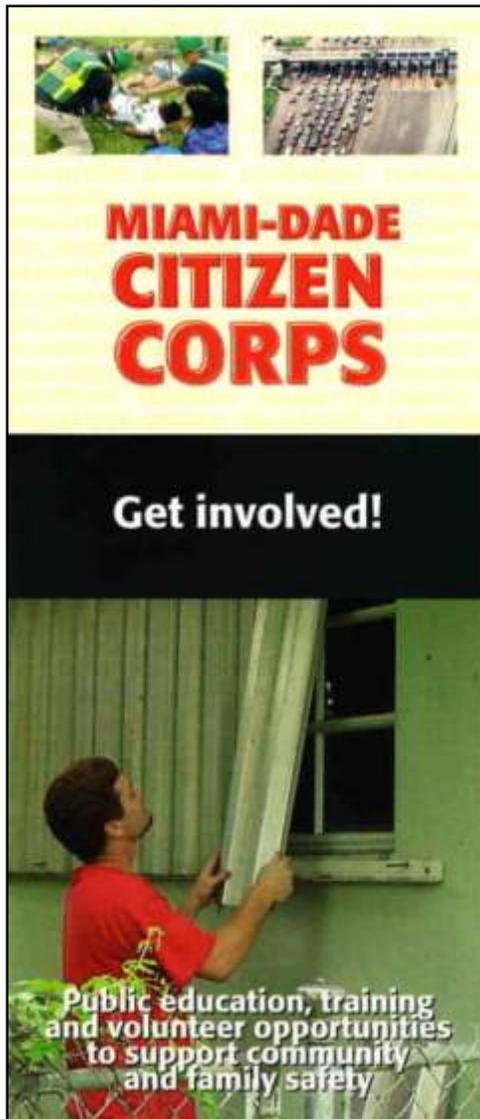


Alternate Spring Break

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.



Miami-Dade Citizen Corps



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 help



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

StormReady County



Jim Lushine, left, of the National Weather Service's (NWS) Miami Forecast Office presents the *StormReady* 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 *StormReady* Community.



In 2008, Rob Molleda, left, of the NWS Miami Forecast Office, with LMS coordinator Frank Reddish and Emergency Management director Doug Bass, extends *StormReady* status for Miami-Dade County through the year 2011. Miami-Dade County was re-designated a *StormReady* Community in 2011-2013.

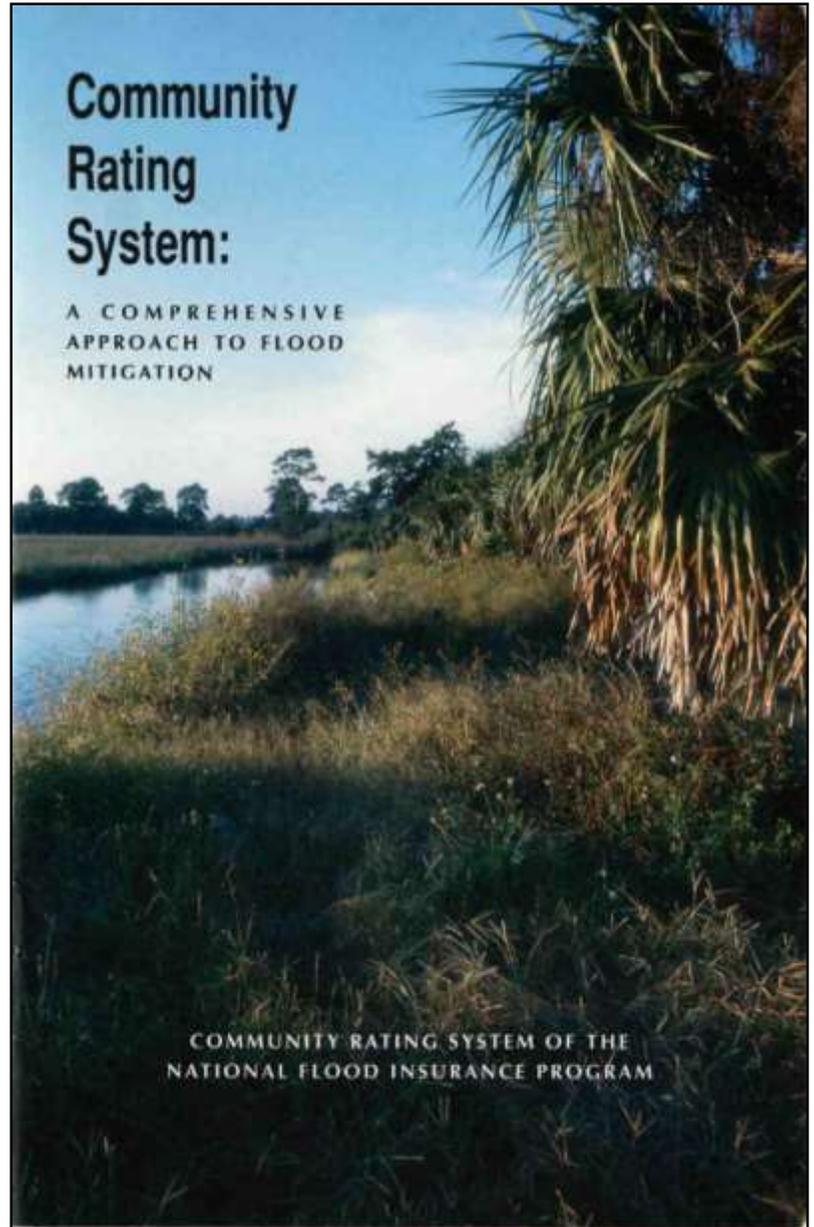
Miami-Dade was renewed as a *StormReady* Community again in 2014.



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

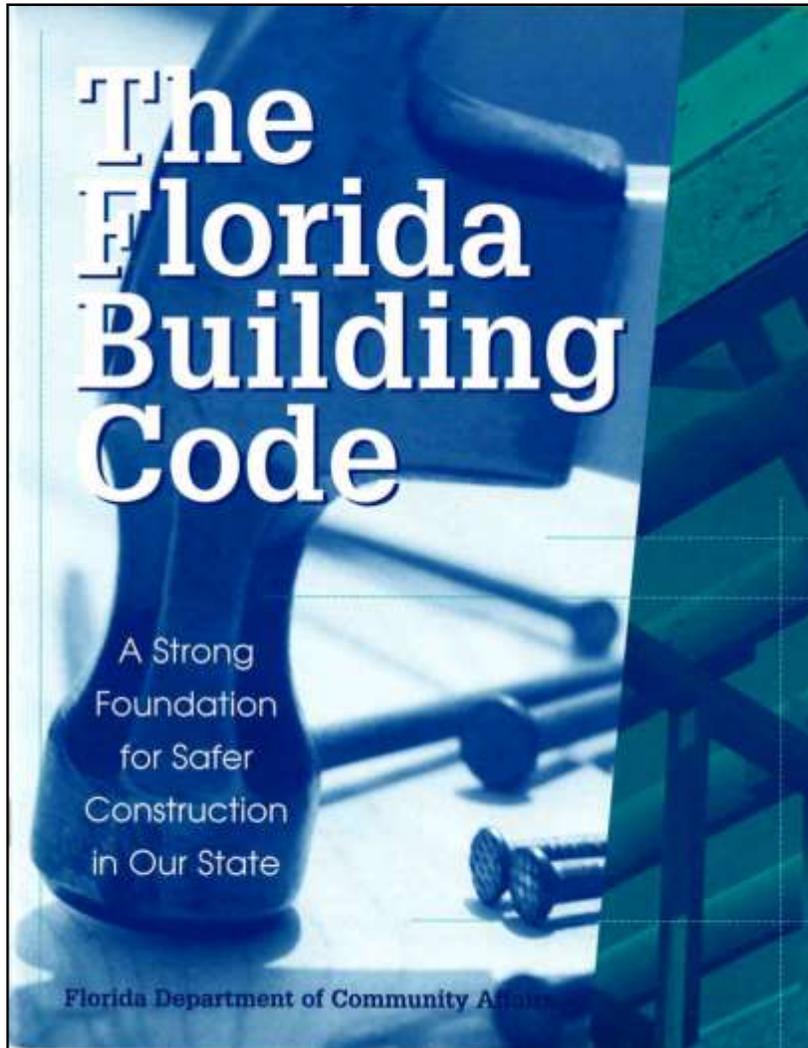
Community Rating System



The Local Mitigation Strategy and the Department of Environment Resources Management

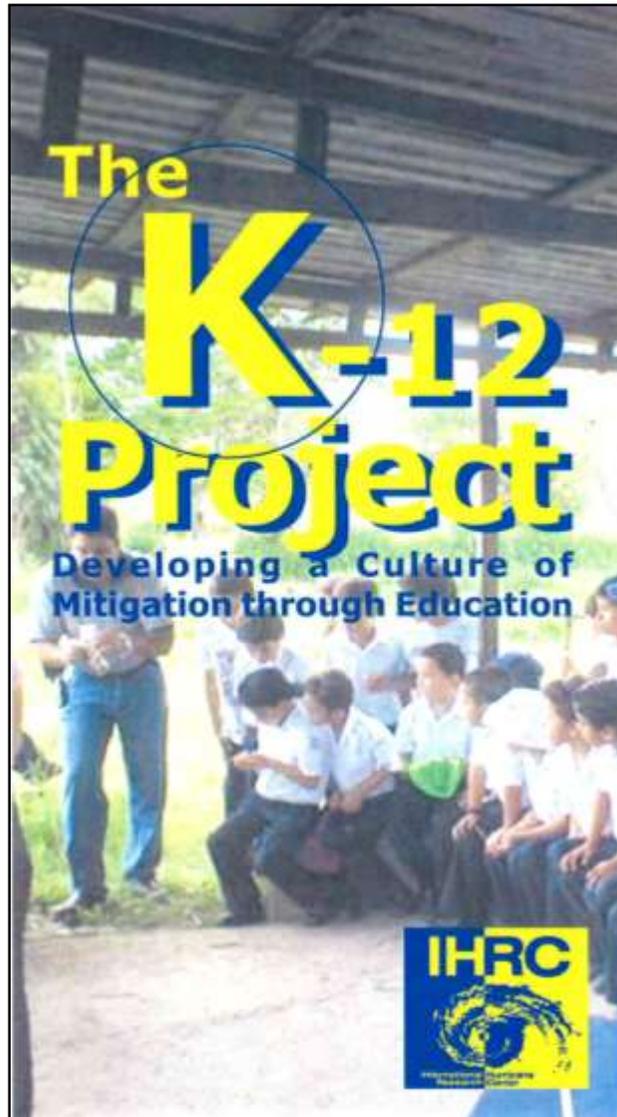


The Florida Building code



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 devices 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.

2013 Projects Reported as Completed

In 2013 Miami-Dade LMS began tracking projects utilizing a new online system. In order to transition the list all projects that were in the 2012 Project list were transitioned to a spreadsheet and all stakeholders were asked to review, update and provide additional information. The result was an increased number of projects being reported as completed, even though some of them may have been done in previous years.

The list provided here is of projects that were reported as completed by December 2013. The LMS Chair will continue to work on the archiving process and also try to identify more historical projects.

Local Mitigation Strategy Project Status Reported 2013	
Completed Projects	
Florida International University – Public Safety Code Plus Building Construction	750,000.00
Housing Authority of City of Miami Beach - Windstorm Protection for Rebecca Towers South	755,640.00
Housing Authority of City of Miami Beach - Housing Authority of City of Miami Beach North	755,640.00
Housing Authority of City of Miami Beach - Shutter 211 Collins	150,000.00
Housing Authority of City of Miami Beach - Replace Generator, Rebecca Towers South	100,000.00
Housing Authority of City of Miami Beach - Replace Generator, Rebecca Towers North	100,000.00
Miami Dade College – North Campus Building 1000 – Hurricane Shutters	374,200.00
Miami Dade College – Wolfson Campus Building 2000 – Hurricane Protection	200,000.00
Miami Dade Libraries – South Miami Repair Roofing System	250,000.00
Miami Dade Public Housing and Community Development – Claude Pepper- Wind Mitigation	1,013,336.00
Miami Dade Public Housing and Community Development –Peters Plaza - Wind Mitigation	401,751.00
Miami Dade Public Housing and Community Development – Kline Nunn – Wind Mitigation	1,051,693.00
Miami Dade Public Housing and Community Development –Newberg - Wind Mitigation	1,000,000.00
University of Miami - Multiple Building Gables – Wind Mitigation	1,000,000.00
University of Miami - Multiple Building Medical – Wind Mitigation	2,900,000.00
University of Miami - Marine Campus SLAB – Wind Mitigation	302,000.00
University of Miami – Multiple Building Medical – Wind Mitigation	2,950,000.00
University of Miami - Multiple Building Marine - Wind Mitigation	466,900.00
University of Miami - Multiple Building Gables - Wind Mitigation	1,800,000.00
University of Miami – Bascom Palmer Eye Institute – Wind Mitigation	3,400,000.00

Local Mitigation Strategy Project Status Reported 2013	
Cutler Bay – Town Hall EOC Installation of Transfer Switch for Emergency Power	210,000.00
Cutler Bay – Acquisition of Emergency Generators Town Hall	394,000.00
Cutler Bay – Acquisition of Emergency Generators – Police Department	
Cutler Bay – Acquisition of Emergency Generators - Traffic Signals	
Key Biscayne - Stormwater Master Plan Update	150,000.00
Key Biscayne – Ocean Lane Drive – Drainage Wells	465,000.00
Miami Springs - Stormwater Master Plan	2,300,000.00
Miami Springs – Basin 14 – Drainage	654,480.00
Miami Springs – Basin 13 – Drainage	91,125.00
Miami Springs - Basin 19B – Drainage	364,500.00
Miami Springs – Basin 9 – Drainage	457,313.00
Miami Springs – Basin 25 – Drainage	747,225.00
Miami Springs - Shutters for Municipal Buildings	30,000.00
Miami Springs – Emergency Generator for Senior Center	350,000.00
Miami Springs – Storm Sewer Cleaning Program Improvements	350,000.00
Miami Gardens – Drainage Improvements NW 38 Court	121,000.00
Miami Gardens – Drainage Improvement NW 7 Ave Improvements new roads, drainage and median	5,200,000.00
Miami Gardens – Drainage Improvement NW 27 Ave and 207 Street	634,885.00
Miami Gardens – Venetian Gardens Drainage and Road Improvement NW 161 - 164 Street and 37-38 Place	315,800.00
Miami Gardens Secondary Canal Bank Stabilization and Sediment Removal Carol City Canals A and B, Real Site Canal and NW 17 Avenue Canal	1,300,000.00
Miami Gardens – Vista Verde Phase IA Area from NW 38-39 Avenue and NW 40 Ave Rd to NW 207 Street	670,885.70
Miami Gardens – Emergency Broadcast System	271,000.00
Miami Gardens - NW 191-193 Streets, 9 th Ave – 10 th Place – Drainage	233,752.00
Miami Gardens – NW 158-159 Street and NW 28 Place – 29 Court – Drainage	145,329.00
Miami Gardens – NW 194 Street and 21 Ave – Drainage	350,000.00
Miami Gardens – NW 175 Street and 12 Ave – Drainage	113,200.00
Miami Gardens – NW 38 Place and NW 208-209 Streets – Drainage	150,977.00
Miami Gardens - Bunche Park Neighborhood Revitalization Project	325,000.00
Miami Gardens – King’s Garden Phases I and II – Drainage	480,000.00
Miami Gardens – NW 171 Terrace from NW 44 Avenue to 45 Court –Drainage	225,000.00
Miami Gardens – Golden Glades Elementary School Swale Restoration	32,098.60
Miami Gardens – NW 17 Avenue and 194 Street Swale Restoration	3,500.00
Miami Gardens – NW 159 Drive and 12 Ave, East Swale Restoration	2,758.00

Local Mitigation Strategy Project Status Reported 2013	
Miami Gardens - 441 From County Line South 100 feet – Drainage	68,700.00
Miami Gardens – NW 211 Street and 29 Court/30 Avenue, Inlets and Swale Restoration	30,000.00
Miami Gardens – NW 38 Court and 185 Street, Inlets and Swale Restoration	20,000.00
Miami Gardens – NW 167 and Palmetto East Ramp Road at NW 12 Avenue – Drainage and road improvements	366,070.00
Palmetto Bay -0 Drainage Improvements for Sub-Basin #10	790,000.00
Under Construction	
Jackson - Wind Retrofit Project at RTC	8,589,588.00
Jackson - Wind Retrofit Project at JRSC	601,281.00
Miami –Dade Public Works and Waste Management - Beach and Dune Restoration and Maintenance	3,200,000.00
Miami –Dade Public Works and Waste Management – 32 nd Street Breakwater Rehabilitation and Stabilization	800,000.00
Miami –Dade Public Works and Waste Management – 55 th Street Erosion Control Breakwater	1,700,000.00
Miami Dade College – Medical Center Building 1000 – Hurricane Shutters	200,000.00
Miami Dade College – Medical Center Building 2000 – Hurricane Protection	263,000.00
Miami Dade College – Hialeah Campus Building 1000 – Hurricane Protection	250,000.00
University of Miami - U of M Hospital – Wind Mitigation	4,100,000.00
Key Biscayne – Stormwater Outfall Rehabilitation -	50,000.00
Miami Lakes – Downtown Area Drainage Improvements	1,000,000.00
Miami Springs - Removal of Australian Pines – Wind Mitigation	14,000.00
El Portal – Stormwater Improvements	5,000,000.00
Palmetto Bay – Localized Drainage Improvements	900,000.00
Funded - Not Yet Started	
Jackson – Tank Farm Enclosure at JMH	498,420.99
Miami Dade Public Housing and Community Development – Haley Sofge Towers – Hurricane Shutters – Phase 1	1,000,000.00
Miami Dade Public Housing and Community Development – Haley Sofge Towers – Hurricane Shutters – Phase 2	1,000,000.00
Miami Dade Public Housing and Community Development – Ward Towers	1,000,000.00
Florida City – Rehabilitation of Friendland Manor Drainage System	192,000.00
Key Biscayne – Flap Gates at Outfalls – Drainage	626,700.00
Key Biscayne – Drainage Improvements on Fernwood Road and Hampton Road	465,275.00
Pinecrest – Purchase of Portable Two – Way Radios – Communications Redundancy	110,000.00

Local Mitigation Strategy Project Status Reported 2013	
Pinecrest – Improvements to Pinecrest Gardens Banyan Bowl – Structural	50,000.00
Pinecrest – Improvements to Pinecrest Gardens Lower Garden - Dredging	30,000.00
Total Projects	
82 Projects	\$69,775,023.29

2014 Projects Reported as Completed

Local Mitigation Strategy Project Status Reported 12/2013-11/2014		
Completed Projects		
Baptist Health	South Miami Hospital Structure Enhancement	7,000,000.00
Cutler Bay	Old Cutler Road JPA	7,524,319.00
Cutler Bay	SW 216th Street and SW 97th Ave Traffic Circle	204,486.00
Cutler Bay	SW 97th Ave Drainage Improvement	291,494.00
Cutler Bay	Development of Floodplain Management Plan	120,000.00
Jackson	Wind Retrofit Project at JRSC	601,281.00
Key Biscayne	Village Hall Courtyard Improvement Demonstration Project	16,500.00
Miami Beach	Belle Island Outfall Replacement	374,000.00
Miami Beach	Sunset Islands I & II Drainage Improvements	1,916,000.00
Miami Beach	Star Island Drainage Improvements	703,000.00
Miami Beach	South Point II Drainage Improvements	2,000,000.00
Miami Beach	City Center - Historic District Drainage Improvements	2,800,000.00
Miami Beach	Parkview Canal Seawall Revetment	1,800,000.00
Miami Beach	Biscayne Point Drainage Improvements	6,600,000.00
Miami Beach	Lake Pancoast Area Drainage Improvements	1,600,000.00
Miami Beach	Regional Communication/Command Van	500,000.00
Miami Gardens	Drainage Improvement 151-159 Street and 27-32 Ave	258,500.00
Miami Gardens	NW 171 Terrace from NW 44 Avenue to 45 Court	225,000.00
Miami Gardens	Drainage Improvement NW 9 Ave., along NW 183- 185 Dr. to NW 7th Ave	17,000.00
Miami Gardens	NW 178 Drive and 42-47 Avenues Outfall repairs and restoration	102,000.00
Miami Gardens	Correct Stormwater Utility Fees for Commercial Properties	0.00
Miami Gardens	Vista Verde Phase 1b area along NW 39 Aven from 207-209 St	425,000.00
Miami Gardens	Bridge Replacement	930,000.00
Miami Lakes	Downtown Area Drainage Improvements	1,000,000.00
Miami Lakes	NW 154th Street Widening from 83rd to 89th Avenues	1,700,000.00
North Miami Beach	NE 161 Street Drainage Improvement	350,000.00
North Miami	Embankment stabilization at Keystone Point Bridge #2	1,800,000.00
North Miami	Global Positioning System	12,000.00
North Miami	Security for City Hall	62,750.00
Pinecrest	Improvements to Pinecrest Gardens Banyan Bowl	50,000.00

Local Mitigation Strategy Project Status Reported 12/2013-11/2014		
Pinecrest	Improvements to Pinecrest Gardens Lower Garden	30,000.00
Pinecrest	Improvements to Pinecrest Gardens Generator	5,000.00
Public Housing and Community Development	Newberg	1,923,900.00
Public Housing and Community Development	Claude Pepper	862,095.00
Under Construction		
El Portal	Village of El Portal Stormwater Improvements	5,000,000.00
Coral Gables	Fire Station #3 Hurricane shutters	88,000.00
Coral Gables	Fire Station #3 Hurricane shutters	88,000.00
Cutler Bay	Caribbean Boulevard JPA Project and Gap 1	11,173,054.00
Cutler Bay	Flood Zone Data GIS System	140,000.00
Cutler Bay	Caribbean Boulevard Bridge Project	TBD
Cutler Bay	SW 212th Street	390,000.00
Homestead	Sidewalks/ Roadway Improvements	200,000.00
Homestead	Upgrade OCB's (Oil Circuit Breakers) with VCB's (Vacuum Circuit Breakers)	200,000.00
Jackson	Wind Retrofit Project at RTC	8,589,588.00
Key Biscayne	Traffic Signage & Pavement Marking Improvements Master plan	40,000.00
Key Biscayne	Stormwater outfall Rehabilitation	50,000.00
Key Biscayne	Comprehensive Review of Local Laws and Regulations	5,000.00
Miami Dade College	Hialeah Campus, bldg 1000	250,000.00
Miami Dade College	Medical Cntr, bldg 2000	263,000.00
Miami Dade College	Medical Cntr, bldg 1000	200,000.00
Miami Gardens	Create GIS Layer for Storm Sewer Infrastructure	100,000.00
Miami Springs	Removal of Australian Pines	14,000.00
Miami Springs	Purchase and Install a Radio Repeater System	45,000.00
Mount Sinai	Protect Critical Services	2,000,000.00
North Miami	Sanitary Sewer Backup	700,000.00
North Miami	Flood Prevention and Mitigation: Drainage Basin13	500,000.00
North Miami	Surge Resistance and Flood Mitigation at Keystone Point and Sans Souci	500,000.00

Local Mitigation Strategy Project Status Reported 12/2013-11/2014		
North Miami Beach	Install Additional Storm Water Basins or Increase Existing Basins	60,000.00
North Miami Beach	Construct Storm Water System that may include Injection Wells in Areas Prone to Flooding	120,000.00
North Miami Beach	Clean and Improve Drainage Systems	428,400.00
North Miami Beach	Miami Industrial District Drainage and Roadway Improvement	800,000.00
North Miami Beach	Eastern Shores Drainage Repair/Replacement	450,000.00
North Miami Beach	Renovation of Eastern Shores Outfall Pipes	550,000.00
North Miami Beach	NE 172nd Street Drainage Improvement	1,791,692.00
Palmetto Bay	Flood Zone Data Maintenance: GIS System	100,000.00
Palmetto Bay	Localized Drainage Improvements	900,000.00
Public Works and Waste Management	55th Street Erosion Control Breakwater	1,700,000.00
Public Works and Waste Management	32nd Street Breakwater Rehabilitation and Stabilization	800,000.00
Public Works and Waste Management	Beach and Dune Restoration and Maintenance	3,200,000.00
Seaport	Construction of New Seawall - Area 2	8,276,607.00
University of Miami	U of Miami Hospital	4,100,000.00
Funded - Not Yet Started		
Doral	Installation of Transfer Switch for Emergency Power	50,000.00
Florida City	Rehabilitation of Friendland Manor Drainage System	192,000.00
Key Biscayne	Coastal Dune Vegetation	10,000.00
Key Biscayne	Flap Gates at Outfalls	626,700.00
Key Biscayne	Drainage Improvements on Fernwood Road & Hampton Road	465,275.00
Key Biscayne	New Stormwater Outfall Construction	210,000.00
Mount Sinai	Code Plus Construction Enhancements New Medical Office Tower	3,750,000.00
Mount Sinai	Protect the Power Supply	5,000,000.00
Mount Sinai	Code Plus Construction Energy Center Facility Protect Redundant Power Supply	250,000.00

Local Mitigation Strategy Project Status Reported 12/2013-11/2014		
North Miami Beach	Dead End Eliminations	42,000.00
North Miami Beach	Drainage in Alleyways	50,000.00
North Miami Beach	Leak Detection Services	50,000.00
North Miami Beach	Storm Water Pump Replacement Program	50,000.00
North Miami Beach	Force Main Installations and Lift Stations Rehabilitations	125,000.00
North Miami Beach	Pump Replacements	165,000.00
North Miami Beach	Inflow and Infiltration Prevention	250,000.00
North Miami Beach	Fire Flow Improvements	320,000.00
North Miami Beach	Trenchless Pipe Replacements	325,000.00
North Miami Beach	Roadway Improvements	327,000.00
North Miami Beach	Storm Water Improvement City-Wide	336,885.00
North Miami Beach	Aerial Pipe Crossings	350,000.00
Pinecrest	Purchase of Portable Two-Way Radios	110,000.00
Public Housing and Community Development	Dante Fascell	422,800.00
Public Housing and Community Development	Haley Sofge Towers	2,056,321.00
Public Housing and Community Development	Ward Tower	1,920,400.00
Public Works and Waste Management	SW 157 AVE Canal Interconnect	1,003,311.98
Public Works and Waste Management	NE 149 Street, from NE 10 Ave to NE 14 Ave	340,000.00
Public Works and Waste Management	Larchmont Gardens Pump Station	1,671,841.00

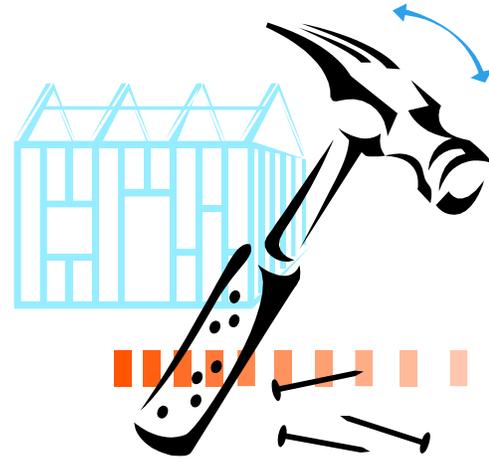
Local Mitigation Strategy Project Status Reported 12/2013-11/2014		
Public Works and Waste Management	NE 6 AVE& NE 185 Street; NE Miami CT, from NE 196-198 ST; NW 22 AVE & NW 175 ST; North DR & NE 14 AVE	835,000.00
Public Works and Waste Management	Seaboard Acres Pump Station	1,500,000.00
Public Works and Waste Management	NW 19 Avenue and NW 84 Street	120,000.00
Public Works and Waste Management	NW 39 Street and NW 25 Avenue	130,000.00
Total Projects	104	\$ 76,866,874.98

Partners
make it happen!



We're still at it so there's more to come!

The
Local Mitigation Strategy



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