City of South Miami

Stormwater Management Master Plan

Technical Memorandum #1
Data Collection and Evaluation

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1.0 INTRODUCTION

1.1 General Background

The City of South Miami (City) is located within Miami-Dade County and has a total area of approximately 2.3 square miles, with 2.1 square miles being contiguous. The City's residential, commercial/industrial, and transportation land uses account for approximately 92% of the City's total area. With the exception of some small vacant areas scattered throughout, the City is basically built out to these existing land uses - **Table 1-1**.

Table 1-1 – Basin and Watershed Areas within the City of South Miami

Land Use	% of City
Residential	56.3%
Transportation	24.0%
Commercial/Industrial	11.7%
Parks	3.3%
Water	2.4%
Vacant/Other	2.3%
Total	**100.0%**

With regards to topography, the main portion of the City lies in an area with higher topographic elevations along the eastern and western limits of the City, with a low topographic "valley" bordering a secondary canal system made up of the Broad, Ludlam Glades, and Twin Lakes Canals. These canals discharge into the C-2 Canal, otherwise known as the Snapper Creek Canal, which is a primary canal within Miami-Dade County. The C-2 Canal also collects runoff from areas west of the City which also eventually discharges into Biscayne Bay - see **Figure 1-1**. These low lying areas within the City are prone to flooding, evidenced by their inclusion in FEMA Flood Zone AE, which is defined as areas inundated by the 100-year flood.

To compound the storm water management challenges brought upon by the City's land use and topographic attributes, the vast majority of the City lies within a much larger hydrologic watershed known as the C-2 Basin. This watershed extends westward to other highly urbanized areas with their own topographic and stormwater management challenges. These urban areas are also connected to the C-2 Canal and rely heavily on this canal's conveyance capacity to relieve flooding during critical storm events.

For the purposes of water quality, water retention/detention, exfiltration, and infiltration provide the most cost-effective methods for treating stormwater runoff. On the other hand, the impact of flooding is realized by residents, business owners, and the municipal staff in charge of controlling flooding. In the end, the City not only has a responsibility to the residents and business owners to help protect their investments and livelihoods, but also a responsibility to the environment and the future.

The City's highly urbanized areas and low topographic elevations, as well as the environmentally sensitive receiving water bodies, create a challenge when it comes to

stormwater and floodplain management. For these reasons, a sound Stormwater Management Master Plan (SWMMP) will help the City in making critical water management decisions and set a solid basis and framework for managing stormwater runoff in ways that minimize both environmental and social impacts and efficiently utilize the City's budgetary allowances.

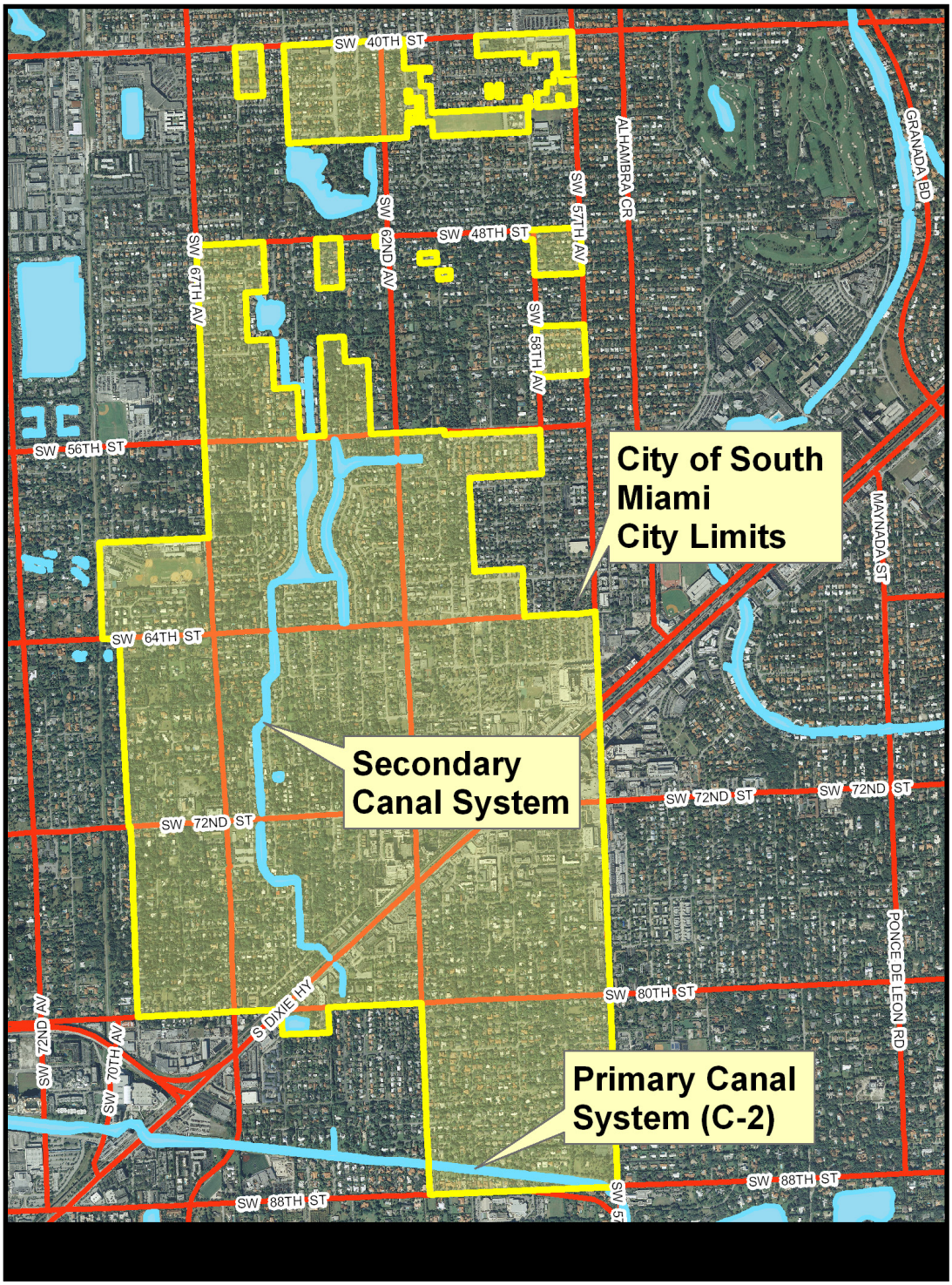

Figure 1-1 –City of South Miami Limits & Canal Systems

The City last prepared a Stormwater Drainage Master Plan in 1997. In order for the City to maintain and improve the National Flood Insurance Program (NFIP) Community Rating System (CRS) classification, the current Stormwater Management Master Plan (SWMMP) must have been updated within the last five years. The CRS rating is tied directly to flood insurance rates and, as a result, maintaining or improving the CRS rating will allow City residents to maintain existing savings on their flood insurance coverage premiums. Therefore, it is imperative that the current SWMMP be updated.

In order to improve Miami-Dade County's CRS classification, the Miami-Dade County Permitting, Environment and Regulatory Affairs Department (PERA, formerly DERM) developed SWMMP's for the main basins and watersheds within the County. To standardize these master plans, PERA established detailed procedures for developing and applying hydrologic/hydraulic computer models, establishing basin flood protection level of service, ranking and prioritizing problem areas, and ranking and prioritizing flood protection projects. These procedures are documented in *Part I and Part II, Planning Criteria Procedures* dated March 1995 and have been approved by the Federal Emergency Management Agency (FEMA) and Federal Insurance and Mitigation Administration (FIMA) which oversee the NFIP. In addition, PERA used these procedures to develop the SWMMP's for the C-2, C-3, C-4, C-5, C-6, and C-7 Canal Basins. Fortunately, the C-2 Basin model covers the vast majority of the City.

Based on the readily available information developed by PERA, the most cost-effective approach to update the City's SWMMP is by using the existing calibrated, verified, and accepted PERA models for the C-2 Basin. This approach entails the use of the hydrologic/hydraulic models and information developed by PERA to establish the City's current flood protection level of service and evaluate the flood protection effectiveness of current and future City stormwater management projects. The findings will then be summarized into a Stormwater Management Master Plan Report that will include a five-year capital improvement plan that will guide the City in implementing future projects in a systematic approach thereby maximizing flood protection with the available funding. Once the SWMMP has been completed, the City will be able to apply for the applicable NFIP CRS classification points and reductions, if applicable. This approach will also expedite the development process and will help the City continue to realize the cost benefits available through the CRS NFIP program.

1.2 Task Purpose and Scope

A.D.A. Engineering, Inc. (ADA) was contracted by the City under RFP Project Number SM-2011-017-PW, Resolution No. 40-12-13597 to complete the SWMMP update for the City. The SWMMP was subdivided into six tasks with the final task consisting of the preparation of the final SWMMP. The results and findings of each primary task will be summarized in task specific technical memorandums. The technical memorandums to be prepared as part of the SWMMP are as follows:

- Technical Memorandum No. 1 – Data Collection and Evaluation
- Technical Memorandum No. 2 – Existing Conditions Hydrologic and Hydraulic Model without City Flood Protection Projects
- Technical Memorandum No. 3 – Identification and Ranking of Problem Areas
- Technical Memorandum No. 4 – Hydrologic and Hydraulic Modeling with City Flood Protection Projects Completed and Under Design
- Technical Memorandum No. 5 – Identification, Ranking and Prioritizing Future City Flood Protection Projects/Capital Improvement Plan
- Stormwater Management Master Plan Report

The purpose of this task, *Technical Memorandum No. 1 - Data Collection and Evaluation*, was to request and collect readily available data that will support the findings within this SWMMP. Data was requested and acquired from the various sources maintaining data specifically within the City of South Miami and the C-2 Canal Basin.

The collected data was cataloged and evaluated and will be utilized as necessary to support the analyses and preparation of the subsequent Technical Memorandums and the final Stormwater Management Master Plan Report. Topographic, geotechnical, or other specific surveys were not included in the scope of work for this task.

2.0 DATA COLLECTION

The data collection task required collecting data from the various entities with jurisdiction or that maintain data within and around the City's limits. Data was requested and/or collected from the flowing entities:

- City of South Miami
- Miami-Dade County Enterprise Technology Services Department (ETSD)
- Miami-Dade County Permitting, Environment, and Regulatory Affairs (PERA)
- South Florida Water Management District (SFWMD)
- National Oceanic and Atmospheric Administration (NOAA)
- Army Corps of Engineers (USACE)
- United States Geological Survey(USGS)
- Natural Resources Conservation Service (NRCS)
- Federal Emergency Management Agency (FEMA) - National Flood Insurance Program

The following information was requested from Miami-Dade County which, besides the City, has the most pertinent and applicable data needed to complete the SWMMP:

1. PERA stormwater master plan report for C-2 Basin
2. PERA stormwater master plan XP-SWMM models for C-2 Basin
3. GIS files supporting the XP-SWMM models
4. Digital Terrain Models (DTM) used to establish stage-storage relationships
5. Latest bare-earth LIDAR data for all sections within the City
6. Latest aerial images within the City
7. GIS shapefiles which include:
    a. PERA basin delineations
    b. Water bodies/canals
    c. Land use (existing and future)
    d. Soil types
    e. Storm Sewer systems (wells, exfiltration trenches, pipes, outfalls, etc.)
    f. Building footprints
    g. Contaminated sites
    h. Roadway Network by classification (local, arterial, and evacuation routes)
    i. Lot/Right-of-Way lines and parcels
8. Flood complaint data within the City.
9. PERA Part I, Planning Criteria and Procedures, Volumes 1 through 7, dated March 1995
10. PERA Part II, Planning Criteria and Procedures, Volumes 1 through 5, dated March 1995

In addition to this data request, the following information was requested from the City:

1. Latest Drainage Atlas Maps in hardcopy and GIS format
2. 1997 Stormwater Storm Drainage Master Plan
3. Current and future flood protection project conceptual or design plans in hard copy and CADD format
4. Location and dimensions of needed drainage conveyance and control structures (dimensions, invert elevations, materials, overflow elevation, etc.)
5. Percolation test data
6. Available building finish floor elevations
7. Construction unit cost data for recently constructed projects
8. Current operation and maintenance procedures and costs
9. Citizen flood/stormwater drainage complaints
10. Pertinent GIS data/coverages that will support development of the stormwater master plans

Data collected from other entities was based on research of available web-data portals and ADA's own data catalogs. Data from these sources were assessed on a case by case basis for pertinence to the development of the City of South Miami's SWMMP.

2.1 City of South Miami

ADA performed a site visit to the City to obtain data which included construction project data and infrastructure data. Additionally, the City also provided a CADD file which details the City's stormwater infrastructure as well as drainage calculations, percolation studies as well as project cost estimates for various projects within the City.

The data catalog presented in **Attachment A** provides a listing of the City project data collected for incorporation into the hydrologic/hydraulic models. The data catalog in **Attachment A** also includes a section of pertinent City of South Miami GIS data collected by the City.

2.2 Miami-Dade County

Data from Miami-Dade County was acquired via two separate departments: PERA and the Miami-Dade Enterprise Technology Services Department (ETSD). PERA provided the various Stormwater Master Plan volumes for the C-2 basin as well as GIS data and XP-SWMM stormwater model data for the C-2 Basin. **Attachment B** provides a catalog of the digital data provided by Miami-Dade County.

PERA also provided a digital terrain model (DTM) in raster format and topographic contours in shapefile format for the entire county in addition to the raw point data used to create both items. These topographic points are LIDAR based bare-earth topographic points and were available through the Florida Division of Emergency Management (FDEM - http://floridadisaster.org/gis/LiDAR/index.htm).

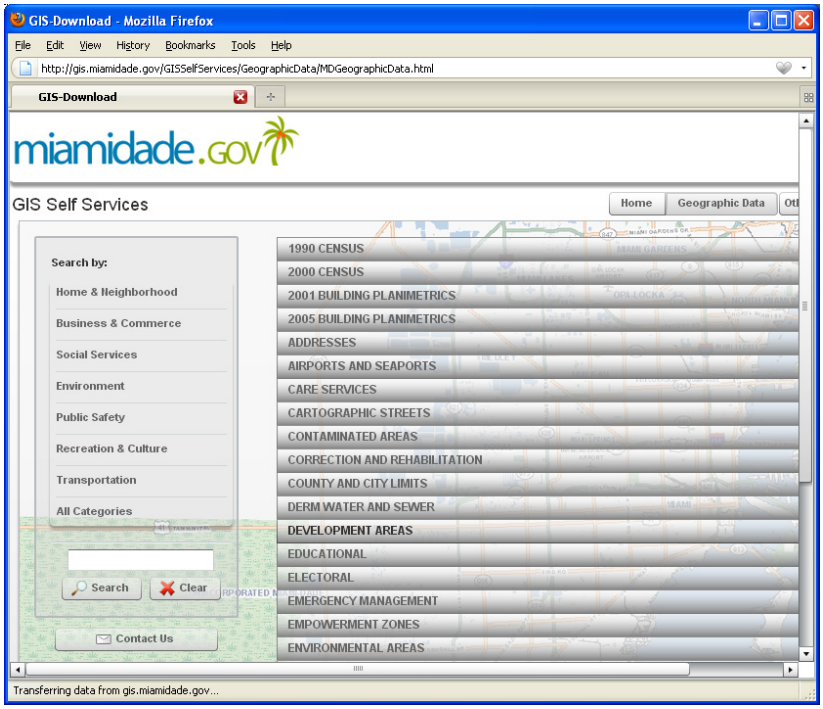

Figure 2-1 – Miami-Dade County GIS data portal

Additionally, ETSD provided GIS data which included shapefiles of County canals, roadways, soils, hurricane evacuation routes, as well as the 2009 SID aerial images of the County. The majority of Miami-Dade County's GIS data is also accessible via the web, at the following location:

- Miami-Dade County GIS data portal
  - http://arcgisinter.Miamidade.gov/GISSelfServices/GeographicData/MDGeographicData.html

A screen capture of the Miami-Dade County GIS data portal is shown in **Figure 2-1** . A catalog of the GIS data collected is also included in **Attachment B**.

2.3 Data from Other Sources

In addition to the main data contributions from the City of South Miami and Miami-Dade County, other sources of information were accessed to help support the development of the Stormwater Management Master Plan Reports. The following subsections provide a description of the entity and applicable data collected to support development of the City's SWMMP.

2.3.1 South Florida Water Management District (SFWMD)

The SFWMD maintains an extensive water resources database, titled DBHYDRO, which includes hydrologic, meteorological, hydrogeologic and water quality data. The data contained within DBHYDRO includes historical and current data for the 16 counties governed by the SFWMD. In order to facilitate the access of this data, the SFWMD has developed a browser accessible via the web, at the following location:

- Main DBHYDRO portal:
- http://www.sfwmd.gov/portal/page/portal/xweb%20environmental%20monitoring/dbhydro%20application DBHYDRO Browser Menu for accessing all SFWMD data:
    - http://my.sfwmd.gov/dbhydroplsql/show_dbkey_info.main_menu

A screen capture of both the main DBHYDRO portal and the DBHYDRO Browser Menu website are shown in **Figure 2-2** and **Figure 2-3**. Rainfall data was collected and analyzed from DBHYDRO for the long term station at Miami International Airport.

The SFWMD also maintains a GIS data repository for all GIS data for the SFWMD - see **Figure 2-4**. This GIS data catalog contains a shapefile with the location of all the DBHYDRO stations where observations, samplings, or monitoring are collected. This shapefile is available via the web, at the following locations:

- GIS Data distribution site:
    - http://my.sfwmd.gov/gisapps/sfwmdxwebdc/
- DBHYDRO monitoring station shapefile:
    - http://my.sfwmd.gov/gisapps/sfwmdxwebdc/dataview.asp?query=unq_id=1588

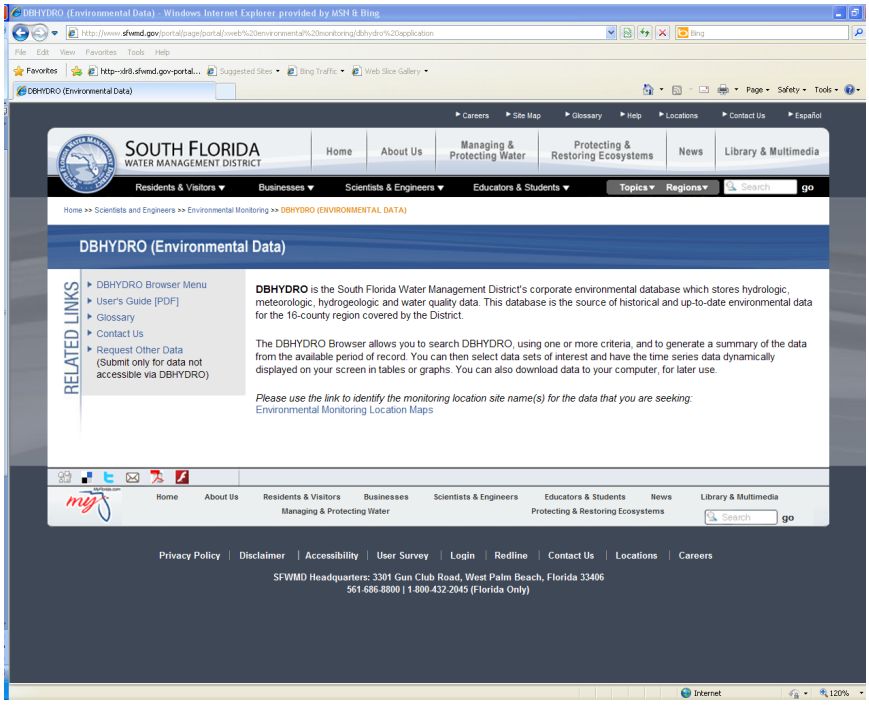

Figure 2-2 – Main DBHYDRO Portal

Figure 2-3 – DBHYDRO Browser Menu

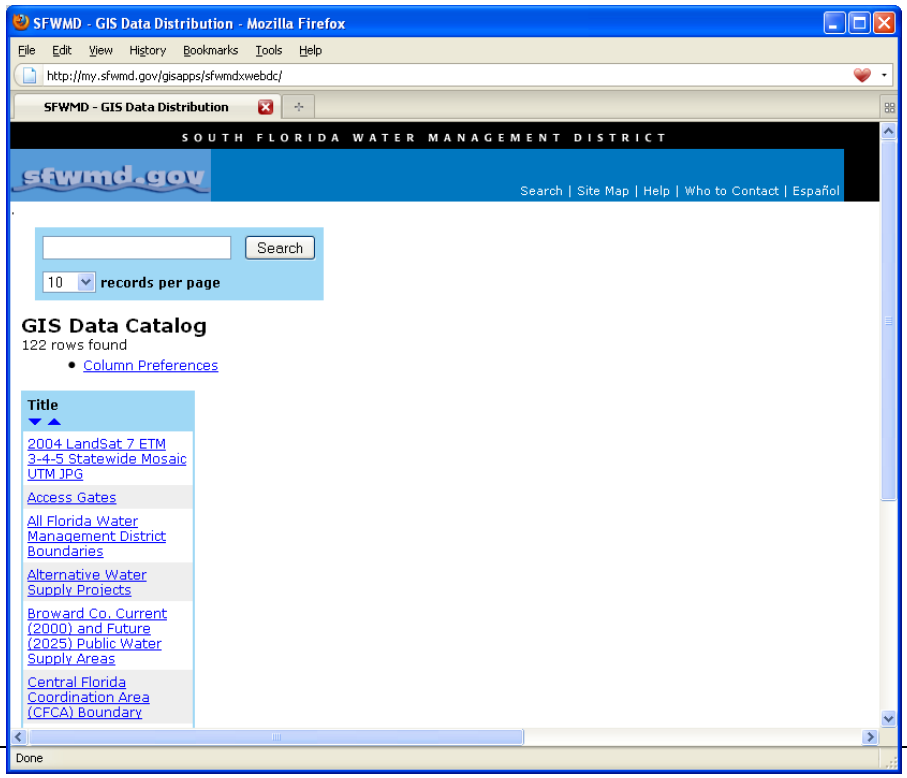

Figure 2-4 - SFWMD GIS Data Distribution Site

Existing stormwater and environmental permitting information is also available via the SFWMD ePermitting website. This website contains supporting documentation for environmental resources permits (ERP) and applications submitted to and approved by the SFWMD. These websites are as follows:

- Main SFWMD permitting portal:
  - http://www.sfwmd.gov/portal/page/portal/levelthree/permits
- SFWMD ePermitting portal:
  - http://my.sfwmd.gov/ePermitting/MainPage.do

In conjunction with the SFWMD permitting website, a GIS shapefile containing the location and extent of the SFWMD ERP permit can be found at the SFWMD GIS data repository mentioned previously.

Additionally, the SFWMD data repository is a viable source for additional data that is often directly available from other sources such as land use, soils, aerial imagery, etc. Although this data may not be maintained regularly, this data may be used if alternate sources are not accessible.

2.3.2 National Oceanic and Atmospheric Administration (NOAA)

Tide data is available from the NOAA. NOAA monitors, assess, and distributes tide, current water level, and other coastal oceanographic data via their Center for Operational Oceanographic Products and Services (CO-OPS). NOAA's data is accessible via the web, at the following location:

- Main NOAA CO-OPS portal:
  - http://tidesandcurrents.noaa.gov/
- NOAA's Observational Data Interactive Navigation (ODIN) site for station data:
  - http://tidesandcurrents.noaa.gov/gmap3/

GIS data is also available from NOAA. GIS data for the NOAA stations can be obtained from the following location:

- NOAA GIS portal:
  - http://coastalgeospatial.noaa.gov/data_gis.html

A screen capture of the NOAA's station data access site nearest to the City as well as the main GIS data access site are shown in **Figure 2-5** and **Figure 2-6**, respectively.

The Virginia Key station (8723214) is the closest monitoring station to the City of South Miami. The actual daily data will be collected as necessary depending on the needs of the calibration task to be performed as part of the SWMMP development.

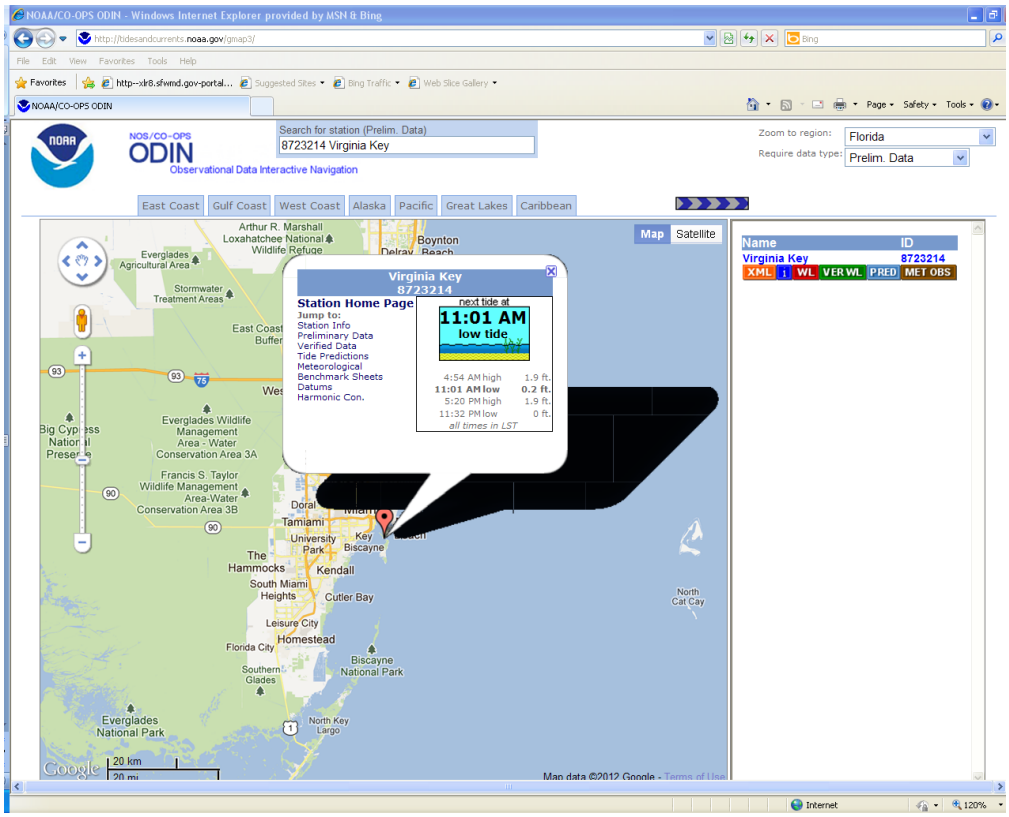

Figure 2-5 – NOAA CO-OPS ODIN data access site

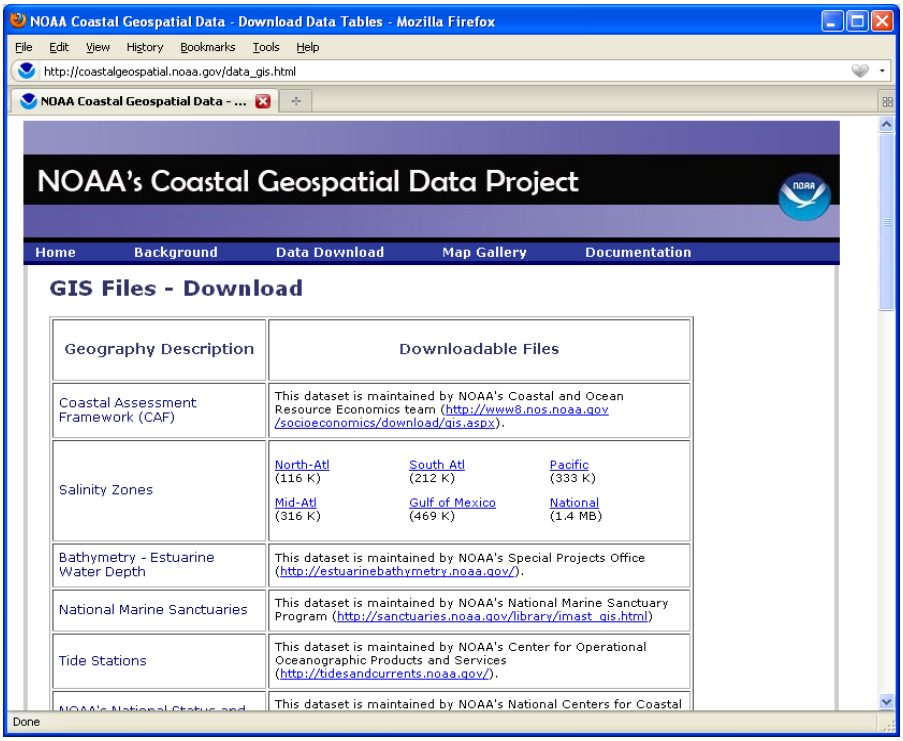

Figure 2-6 – NOAA GIS data site

2.3.3 United States Army Corps of Engineers (USACE)

In July, 2009, the USACE prepared an Engineer Circular which discussed future potential sea level changes and their effects on managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects in coastal regions. This document references various locations in South Florida which correlate closely to the City of South Miami, making this document pertinent to the City due to the City's location adjacent to the ocean and tidal waters.

This document is available via the web at the following location:

- USACE Main Engineer Circular Portal:
  - http://140.194.76.129/publications/eng-circulars/
- USACE Sea Level Change Engineer Circular (EC 1165-2-211)
  - http://140.194.76.129/publications/eng-circulars/ec1165-2-211/toc.html

2.3.4 United States Geological Survey (USGS)

The USGS maintains a network of groundwater wells that are monitored continuously in cooperation with the SFWMD. Groundwater wells are located throughout the City and County and, in some cases, historical data for wells that have been retired is also available. Groundwater stage data for the various wells throughout the City can be obtained from the following website:

- Main USGS data portal:
  - http://www.sflorida.er.usgs.gov/
- Data access site:
  - http://www.sflorida.er.usgs.gov/ddn_data/index.html

The data is provided in trended and de-trended or without trend removal. This accounts for the historical drop in the groundwater levels within the region. The data access site is shown in **Figure 2-7**.

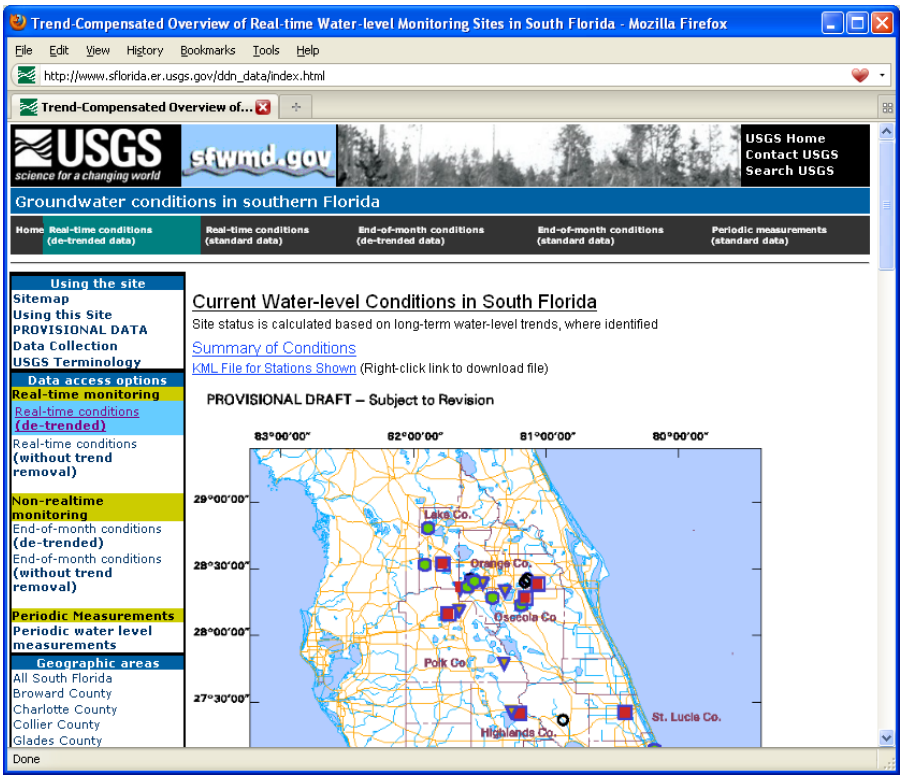

Figure 2-7 – USGS groundwater well data site

2.3.5 Natural Resources Conservation Service (NRCS)

The NRCS is a federal agency under the United States Department of Agriculture (USDA) which performs and maintains soil survey information for the United States. Through the USDA's Geospatial Data Gateway site, soil maps and data is available online for more than 95 percent of the nation's counties – see **Figure 2-8**. The site is updated and maintained online as the single authoritative source of soil survey information and can be accessed via the web

- Main Geospatial Data Gateway Portal:
  - http://datagateway.nrcs.usda.gov/

Additional data is available through this system including digital ortho imagery, digital elevation models, and other cultural and demographic data.

Figure 2-8 – USDA's Geosptial Data Gateway site

2.3.6 Federal Emergency Management Agency (FEMA)

As stated by FEMA in the National Flood Insurance Program (NFIP) Description document:

> "The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods."

Additionally, the Community Rating System (CRS) is described as follows in the same document:

> "The NFIP's Community Rating System (CRS) provides discounts on flood insurance premiums in those communities that establish floodplain management programs that go beyond NFIP minimum requirements. Under the CRS, communities receive credit for more restrictive regulations, acquisition, relocation, or flood-proofing of flood-prone buildings, preservation of open space, and other measures that reduce flood damages or protect the natural resources and functions of floodplains."

The NFIP Flood Insurance Manuals were collected from the following FEMA website:

- FEMA Flood Insurance Manual portal:
  - http://www.fema.gov/business/nfip/manual.shtm

These manuals provide direction with regards to improving the City's CRS rating and thus increasing the discount available to City residents through NFIP. These manuals also provide guidelines and requirement for stormwater management master plans to improve CRS ratings.

3.0 DATA EVALUATION

The data collected from the City of South Miami and Miami-Dade County was evaluated to define the completeness and viability of the data as well as to identify the pertinent items that would be applicable to the stormwater master plan update process. The following subsections detail the pertinent components of the data collected and their potential role in the development of this stormwater master plan update.

3.1 Miami-Dade County PERA Data

The data collection effort associated with this task was primarily focused on collecting the necessary data to ensure the SWMMP can be completed. The most important data collected from PERA included the hydrologic/hydraulic models prepared to support the development of the Stormwater Master Plan for the C-2 Canal Basin. The Stormwater Management Master Plan Report for this basin provides the background, assumptions, and approach on how the model was developed. The report and its respective existing and future XP-SWMM hydrologic/hydraulic models will provide the necessary guidance for the hydrologic/hydraulic modeling activities required as part of this SWMMP. The following are the key points noted in the development of the PERA C-2 SWMMP.

Upon initial evaluation of the PERA models, systems were simulated based on their main inter-basin components and were classified into three types of stormwater management systems – positive, exfiltration/infiltration, and hybrid. Positive systems were broken down into their main components and were based on their physical characteristics based on the best available data. Exfiltration/infiltration and hybrid systems were not modeled physically, but were simulated using an extraction method based on the Horton Infiltration methodology included in the XP-SWMM model.

The Horton infiltration parameters were designed to provide total infiltration up to the 5-year, 24-hour storm volume (6.5 inches) and allow total runoff beyond this volume. This maximum infiltration volume was decreased to 5.0 inches (as recommended by PERA) as it was assumed that due to the age and lack of maintenance of the exfiltration trench systems, that they are no longer able to control the 5-year, 24-hour storm volumes. The following infiltration parameters were used to simulate the operation of exfiltration trenches in the XP-SWMM model:

- Maximum Infiltration Rate – 4.0 in/hr
- Minimum Infiltration Rate – 0.25 in/hr
- Decay Rate of Infiltration – 0.00115 sec-1
- Maximum Infiltration Volume – 5.0 inches
- Impervious Area Depression Storage (IDS) - 0.02 inches
- Pervious Area Depression Storage (PDS) – 0.05 inches
- Impervious Area Manning's Roughness Coefficient (IMPN) – 0.04
- Pervious Area Manning's Roughness Coefficient (PERVN) – 0.02
- Percent of DCIA without Detention Storage (PCTZER) – 25
- Horton Regeneration Factor – 0.003

Additionally, although the PERA C-2 basin was modeled independently, all of the PERA basins have some level of interconnectivity between the basins. Major connections between the main basins were simulated physically and implemented as boundary conditions during the development of the various master plans. The basin interconnectivity for the C-2 Basin, as described in the PERA C-2 master plan documents, is as follows:

- **C-4 Basin** to the north
- **C-100 Basin** to the south

Various assumptions dictated how the boundary conditions were applied and this interconnectivity will be explored further and taken into account in the development of the models, the subsequent Technical Memorandums, and the SWMMP.

PERA also established procedures and criteria, as part of their stormwater master planning activities to identify problem areas, rank problem areas and establish flood protection level of service using the modeling results for the 5-, 10-, 25-, 50- and 100-year design storm events. These procedures and criteria are documented in Part I, Volume 3, "Stormwater Planning Procedures," March 1995 and were applied by PERA to the C-2 basins. In this methodology, the ranking of flooding problem areas is related to the defined floodplain level of service (FPLOS) as follows:

- All structures (commercial, residential, and public) should be flood-free during the 100-year storm event.
- Principal arterial roads, including major evacuation routes, should be passable during the 100-year storm event.
- All canals should operate within their banks during their respective design floods. Primary canal design criteria vary from 10-year to 100-year events and are described for the major drainage basins in the Miami-Dade County Comprehensive Plan.
- Minor arterial roads (up to 4-lanes) should be passable during the 10-year storm event. Collector and local residential streets should be passable during the 5-year storm event, as per current Miami-Dade County Drainage Policy,

The severity of flooding within each sub-basin is determined through the calculation of a flooding problem severity score (FPSS), which is a function of five "severity indicators" that are directly related to the FPLOS criteria described above. These severity indicators are defined and summarized below. Each of these indicators has also assigned a "weighing factor" (WF), which is related to the relative importance of the flooding severity indicator.

<u>Sub-basin Flooding Severity Indicators</u>

1. **NS:** Number of structures flooded by the 100-year flood, which can include commercial, residential, and public buildings. All structures and/or buildings are considered equivalent, regardless of their size or value. **(WF = 4)**
2. **MER:** Miles of principal arterial roads, including major evacuation routes, which are impassable during the 100-year flood. PERA has defined that a principal

arterial road is considered impassable if the depth of flooding exceeds 8 inches above the crown of the road during the 100-year design event. **(WF = 4)**

3. **BM:** Miles of canal with out-of-bank flow, expressed in bank-miles. The length of canal flooding shall be determined for the design storm event originally used to design the canal. **(WF = 3)**
4. **MMAS:** Miles of minor arterial roads impassable during the 10-year flood. PERA has defined that a minor arterial road is considered impassable if the depth of flooding exceeds the crown of the road during the 10-year design event. **(WF = 2)**
5. **MCLRS:** Miles of collector and local residential streets impassable during 5-year flood. PERA has defined that collector and local residential streets are considered passable if the depth of flooding exceeds the crown of the road during the 5-year design storm event. **(WF = 1)**

The severity indicators are rated by an exceedance (E) value pursuant to the following PERA severity score listed in the table below.

Depth of Flooding Above the FPLOS	E
Less than or equal to 6 inches	1
Greater than 6 inches and less than or equal to 12 inches	2
Greater than 12 inches	3

Given the definitions for the flooding severity indicators (NS, MER, BM, MMAS, and MCLRS), WF and E, the FPSS for each sub-basin is calculated using the following formula, where $E_{(i)}$ through $E_{(v)}$ relates to the degree of exceedance for each of the five severity indicators.

$$\textbf{FPSS} = [4 \times E_{(i)} \times NS] + [4 \times E_{(ii)} \times MER] + [3 \times E_{(iii)} \times BM] + [2 \times E_{(iv)} \times MMAS] + [1 \times E_{(v)} \times MCLRS]$$

Once the severity is calculated, the score for each can tabulated, and the sub-basin with the highest FPSS is given a ranking value of 1. Subsequent FPSS scores are then given ranking values of 1 through X. Sub-basins with equivalent FPSS are given the same ranking value. This approach will yield the basins with the highest flooding problems based on a mathematical basis.

The actual flood protection level-of-service (FPLOS) provided within a particular sub-basin is dependent upon the number of FPLOS criteria that have been met, as defined previously. PERA established a FPLOS rating by assigning a letter value based on the following schedule.

FPLOS	Number of Indicators/ FPLOS Criteria Met
A	all five met
B	four of the five
C	three of the five
D	two of the five
E	one or none of the five

The City SWMMP will only focus on the 5- and 100-year design storm events. Modification of this methodology will performed during the SWMMP development process.

3.2 City of South Miami Data

With regards to the City of South Miami Data, the City provided project data for stormwater management projects. The project data for those projects will be evaluated under Technical Memorandum #4 and their inclusion in the SWMMP is dependent on the type of system implemented and the overall function of the system. It should be noted that the PERA models do not represent minor components within a given stormwater management system and as such, smaller localized projects will not be fully implemented in the XP-SWMM model. For example, minor improvements that would only provide a localized benefit within an intersection or interior road and is primarily associated with conveyance within a sub-basin rather than exfiltration or conveyance out of the basin, would not be included because the benefit would not be realized in any portion of the hydraulics of the .

Additionally, the City also provided stormwater infrastructure data that will help verify the connectivity of the C-2 model and percolation test data to help identify the capacity of exfiltration trench systems within the City. Project cost estimates were also provided for various projects within the City and they will be used to evaluate future project costs within the City.

4.0 CONCLUSION RECOMMENDATIONS

Available data has been collected to proceed with the development of this stormwater master plan update. Additional data that may become available, but is not central to the continued development of this master plan, will be incorporated into the data documentation and evaluation section of the Final Stormwater Management Master Plan Report to be prepared upon the completion of Technical Memorandums #1 through #5.

Additionally, based on the data that is known to be available as well as based on an evaluation of the data already collected as part of this task, there is adequate and sufficient information available to complete the City of South Miami SWMMP update.

Attachment A
City of South Miami
Data Catalog

City of South Miami Data Catalog

Title of Document or File	Author	File Type	Description
100% Drainage Calculations.pdf	EAC Consulting	Digital PDF	Drainage Report
2-22-2012PROGRESS ROAD - 100% Submittal.pdf	EAC Consulting	Digital PDF	Project Plans
5801 PLANS - 022712.pdf	Palm Engineering Group	Digital PDF	Project Plans
SW 66 Street Phase II - C-4.0 PVGD.PDF	EAC Consulting	Digital PDF	Project Plans
SW 64 Court - PHASE I DRAWINGS.pdf	EAC Consulting	Digital PDF	Project Plans
CSM CIP Map 2012- Drainage Projects.bmp	City of South Miami	Digital Image	Drainage Project location map.
SWAtlas-update4.dwg	City of South Miami	CADD File	Stormwater Management System Atlas Sheets
5701 and 5789 SW 62 ave.pdf	C3TS	Digital PDF	Percolation/Geotech Test Results
5801 Geotech Results.pdf	GEOSOL	Digital PDF	Percolation/Geotech Test Results
PHASE V Driange.pdf	Milian Swain	Digital PDF	Percolation/Geotech Test Results
SW 64th Court.pdf	GEOSOL	Digital PDF	Percolation/Geotech Test Results
SW 66 St II Bid Results.pdf	City of South Miami	Digital PDF	Cost Estimate
City Hall Sewer Connection.pdf	TY Lin	Digital PDF	Cost Estimate
5801 COST EST.pdf	Undetermined	Digital PDF	Cost Estimate
CITYWIDE DRAINAGE PHASE VI.pdf	Kimley Horn	Digital PDF	Cost Estimate
COMMERCE LANE EST.pdf	Undetermined	Digital PDF	Cost Estimate
PROGRESS COST EST.pdf	Undetermined	Digital PDF	Cost Estimate
Sunset Drive Median Cost Est..pdf	Undetermined	Digital PDF	Cost Estimate
SW 64 CT Drainage.pdf	City of South Miami	Digital PDF	Cost Estimate
Elevation Certificates.pdf	FEMA	Digital PDF	Various Elevation Certificates
2011 RLP Documentation.pdf	FEMA	Digital PDF	Repetitive loss document for the City of South Miami

Attachment B
Miami-Dade County
Data Catalog

Miami-Dade County Data Catalog

Title of Document or File	Author	File Type	Description
building_2005	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX	Misc Database/Shape Files
canals	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
contaminated	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
highways	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
hurr_evac_zone	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
lakes	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
landuse_2000	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
lot	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
majorroads	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
md_pribasins	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
properties	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
soils	Miami-Dade Co / PERA	README	Readme File
soils_sfwmd	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
streets	Miami-Dade Co / PERA	SHP, DBF, PRJ, SBN, SBX, XML	Misc Database/Shape Files
2009_Miami-Dade_60	Miami-Dade Co / PERA	SDW, SID, XML	Aerial Image
Hi-Resolution Aerials	Miami-Dade Co	SDW, SID, XML	Aerial Image
Area # Clip	Miami-Dade Co	ACAD Shape, DBF, XML, SBN, SBX, CPG	ACAD Database Files
Area # Points/Lines	Miami-Dade Co	ACAD Shape, DBF, XML, SBN, SBX	ACAD Database Files
Area # Tin2007 - metadata	Miami-Dade Co	XML, ADF	TIN Files
C-2 Basin XPSWMM Models	Miami-Dade Co	XP, HDR, INT, MDB, RNF, RES, SYG, SYH, DAT, BAK	Exist. Cond. XPSWMM Models (5,10,25,100)
C-2 Basin Master Plan Reports	CH2M Hill/Miami-Dade PERA	PDF	Supporting documentation for Master Plan