



City of North Miami Beach

10-Year Water Supply Facilities Work Plan

August 18, 2014



MWH Project No. 10504693

TABLE OF CONTENTS	Page
1.0 INTRODUCTION	1
1.1 Background	1
1.2 Purpose	2
1.3 Intergovernmental Coordination.....	2
2.0 WATER SERVICE AREA.....	4
2.1 Overall Water Service Area	4
2.2 Bulk Water Purchase Interconnection Locations	4
2.3 Bulk Water Sale Areas.....	11
3.0 EXISTING WATER SUPPLY, TREATMENT, STORAGE, TRANSMISSION AND DISTRIBUTION FACILITIES.....	15
3.1 Water Supply Facilities for Norwood-Oeffler WTP.....	15
3.1.1 Biscayne Aquifer Wells	15
3.1.2 Floridan Aquifer Wells.....	18
3.1.3 Raw Water Supply Mains.....	18
3.2 Water Treatment Facilities (Norwood-Oeffler WTP)	18
3.2.1 Lime Softening	19
3.2.2 Nano-filtration	19
3.2.3 Reverse Osmosis	20
3.2.4 Other Related Facilities	20
3.2.4.1 Membrane Concentrate Disposal Deep Injection Well .	20
3.2.4.2 Post Treatment Structure – Degasification and Odor Control System	21
3.2.4.3 High Service Pumps.....	21
3.3 Finished Water Storage	22
3.3.1 Norwood-Oeffler WTP.....	22
3.3.2 Operations Center	22
3.3.3 Myrtle Grove.....	23
3.4 Water Transmission and Distribution System	23
3.4.1 Two-inch Line Replacement Program	24
3.4.2 Emergency Connections.....	24
3.4.3 Hydraulic Analysis	25
3.4.4 Pressure Sustaining Valves	29
4.0 POPULATION PROJECTIONS.....	31
4.1 Historical Population Data.....	31
4.2 Population Projections	31
4.3 Population Projections Verification	35

5.0 WATER DEMAND PROJECTIONS	37
5.1 Historical Water Use	37
5.2 Per Capita Usage.....	37
5.3 Water Demand Projections.....	38
5.4 Water Conservation Program.....	41
5.4.1 Unaccounted for Water	42
5.4.2 Metering Practices.....	42
5.4.3 Leak Detection	43
5.4.4 Automated Hydro-Flushers.....	43
5.4.5 Water Conservation Rate Structure.....	43
5.4.6 Permanent Irrigation Ordinance	44
5.4.7 Water Shortage/ Emergency Ordinance.....	44
5.4.8 Water Efficient Plumbing Fixtures Code.....	44
5.4.9 Public Education, Outreach and Demonstration Projects.....	44
5.4.10 Water Efficient Landscaping and Irrigation	45
5.4.11 Presentations and Speaker’s Bureau.....	45
5.4.12 Water Conservation Month and Drinking Water Week	45
5.4.13 Rain Harvesting	46
5.5 Water Reuse.....	46
5.6 Alternative Water Supply.....	46
6.0 WORK PLAN.....	48
6.1 Norwood-Oeffler WTP.....	48
6.2 Meeting Average Day Water Supply Needs.....	50
6.3 Peak Day Flow Conditions.....	52
6.4 Meeting Peak Day Finished Water Demands.....	54
6.5 Financial.....	56
6.6 Utility (Operating and Rate) Revenue.....	58
6.7 Impact Fees (“In-Plant” and Fire Flow Connection Charges).....	58
6.8 Goals, Objectives, Policies	59
6.9 Conclusion	63

APPENDICES

Appendix A Cited Florida Statute Provisions (Relevant Portions Only)

Appendix B Agreement Between Miami-Dade County and City of North Miami Beach, Florida For Provision of Water Service and Billing of Sanitary Sewer Service Charges Dated March 19, 2001

Appendix C South Florida Water Management District Water Use Permit No. RE-ISSUE 13-00060-W

**Transmitted September 26, 2007. Permit Modifications
Transmitted June 16, 2009 & June 11, 2012**

**Appendix D North Miami Beach Utility Service Area Population
Projections By TAZ**

Appendix E Conservation Plan

**Appendix F City of North Miami Beach 10-Yr Water Supply Facilities
Work Plan Population Projections Workshop Meeting
Minutes**

LIST OF TABLES

Table Number	Title	Page
2-1	City's Bulk Water Purchase Interconnection Locations with MDWASD from MDWASD 48-inch Regional Transmission Main.....	11
2-2	Existing Water Sales Interconnection Locations.....	14
3-1	Lime Softening Biscayne Aquifer Well Capacity Analysis.....	17
3-2	Five Nano Filtration Biscayne Aquifer Well Characteristics.....	17
3-3	Four Floridan Aquifer Well Characteristics.....	18
3-4	High Service Pumping Capacity	22
3-5	Summary of Existing Transmission and Distribution System	23
3-6	Existing Emergency Interconnection Locations.....	24
3-7	Pressure Sustaining Valve Locations.....	30
4-1	Estimated Historical Population Served in City's Water Service Area	31
4-2	City of North Miami Beach Service Area Populations from County's TAZ	32
4-3	City's Water Service Area Population Projections from County's TAZ Including Projected Developments.....	33
4-4	Projected Population Per Local Government to be Served in City's Water Service Area.....	35
4-5	LEC WSP Population Projections for City of North Miami Beach Utilities Service Area.....	36
5-1	City of North Miami Beach Historic Treated Water Use.....	38
5-2	City of North Miami Beach Projected Treated Water Use.....	39
5-3	City of North Miami Beach Water Service Area	40

	Water Demand Projections.....	
6-1	Norwood-Oeffler WTP Water Production Capacity.....	50
6-2	City’s Water Service Area Peak Day Demand Projections.....	52
6-3	City of North Miami Beach Costs (\$1000) and Schedule of Capital Improvements Required to Meet Projected Water Service Area Growth Needs Through 2024.....	57
6-4	Treated Finished Water Capacity Analysis (Avg. Day).....	64
6-5	Utility Summary Miami-Dade County.....	65

LIST OF FIGURES

Figure Number	Title	Page
2-1	Location Map	5
2-2	City of North Miami Beach Water Service Area	7
2-3	Local Governments Served by the City of North Miami Beach	8
2-4	City of North Miami Beach Pressure Sustaining Valve Installations and Water Sales Purchase Interconnection Locations with MDWASD	9
2-5	City of North Miami Beach Key Water Sales Interconnection Locations.....	13
3-1	City of North Miami Beach Biscayne and Floridan Aquifer Supply Wells.....	16
3-2	City of North Miami Beach, Hydraulic Model Update Project 2007 Max Day Flow Pressure Contours Existing Network	27
4-1	City of North Miami Beach Water Service Area and Traffic Analysis Zones	34
6-1	North Lots – Norwood WTP Proposed Master Plan	49
6-2	City of North Miami Beach Water Service Area Average Day Treated Water Demand and WTP Capacity	51
6-3	City of North Miami Beach Water Service Area Peak Day Water Demand Using Peaking Factor of 1.22 and WTP Capacity	53
6-4	City of North Miami Beach Water Service Area Meeting Peak Day Finished Treated Water Demands (Peaking Factor = 1.22)	55

1.0 INTRODUCTION

The State of Florida has legislation over the past few years with the purpose to strengthen the linkage between growth and water availability based on specific demands identified in the water supply planning process. Section 373.709, Florida Statutes, Section 163.3177(6)(c)3, Florida Statutes, requires that the water supply work plan be updated within 18 months after a water management district's governing board approves an updated regional water supply plan to reflect whatever changes in the regional plan affect their local water supply and work plan. The City's last Water Supply Facilities Work Plan was prepared and adopted in 2008. The South Florida Water Management District (SFWMD) performed an update to the Lower East Coast Regional Water Supply Plan in September 2013. This **10-Year Water Supply Facilities Work Plan (Work Plan)** has been prepared for the City of North Miami Beach (City), located within Miami-Dade County (County). It has been prepared in response to the requirements for local governments to revise their Comprehensive Plan within 18 months after the date the Regional Water Supply Plan is adopted.

1.1 BACKGROUND

Beginning in 2002 and continuing in 2004 and 2005, the State of Florida Legislature took steps to improve the coordination of a Regional Water Supply Plan developed by a Water Management District and individual local government land use planning activities. This strengthened coordination started requiring some local governments to prepare a 10-Year Water Supply Facilities Work Plan (Work Plan) if the local government was located within an area that had a Regional Water Supply Plan and if the local government had responsibility for all or a portion of their water supply facilities. Now, all local governments are required to submit a Work Plan to ensure linkage between the Regional Water Supply Plan and their individual comprehensive plans. Each Work Plan should address infrastructure and conservation requirements, needed capital improvements, and inter-governmental and water supplier coordination.

Appendix A, herein; **Growth Management Statute and Rule Requirements Related to Water Supply Planning**, provides a summary of regulatory requirements that impact local governments and their water supply planning efforts. As a result of their required regional water supply planning efforts, the South Florida Water Management District (SFWMD) evaluated the adequacy of existing water supplies to meet existing and future water demands and determined that traditional water supply resources from the Biscayne Aquifer will not be adequate to meet future demands. The 2013 Lower East Coast Water Supply Plan Update, indicates most future water supply needs will need to be met by the implementation of alternative water supply sources. All local governments located within the Lower East Coast regional area are now required

to develop a Work Plan to ensure linkage between the regional water supply plan and their individual comprehensive plans by March 2015.

1.2 PURPOSE

Since the SFWMD updated the 2013 Lower East Coast Water Supply Plan on September 12, local governments are required to revise their Comprehensive Plan to include their updated Water Supply Facilities Work Plan within 18 months after the date the Regional Water Supply Plan is adopted. The purpose of this **Work Plan** is to fulfil the legislative requirement and to present an implementation plan that will guide the City's efforts to develop and maintain sustainable sources of water for its overall Water Service Area in coordination with the LEC Plan. A description of the City's existing and proposed water supply, treatment, storage, transmission and distribution facilities to satisfy projected water demands is included. As required, it is anticipated that this **Work Plan** will be updated every five years or within 18 months of a revision to the LEC Plan.

1.3 INTERGOVERNMENTAL COORDINATION

The City's Public Services Department Administration and Elected Officials have cooperated and coordinated with numerous other public agencies in order to accomplish:

- A. The first alternative water supply and treatment facility in the County.
- B. A 20-Year Consumptive Use Permit (CUP) from the SFWMD with commitments for additional alternative supply and treatment.
- C. A stellar, award winning conservation program that is continuing to press forward on both "Demand Management" and "Corrective Actions"; such as leak detection and automated meter reading (AMR).
- D. An expanded water treatment site available, rezoned, and large enough to meet all future water supply and treatment demands for at least 20 years.

As part of the previous cooperation and coordination efforts the City met with those local governments and the County where growth was taking place to ascertain projects and land use changes that could affect long-term water demands on the system. Aventura, Sunny Isles Beach, Miami Gardens and North Miami Beach were areas with the most buildings under construction, land use changes, site plan approvals, and zoning changes that would affect raw and treated water needs. Meetings with these public entities provided input into the population and water needs of the City's Water Service Area. This data was

discussed and reviewed in numerous meetings with the SFWMD prior to issuance of the City's 20-Year WUP. Also, numerous meetings were held with Miami-Dade Water and Sewer Department (MDWASD) to make sure the Traffic Analysis Zone (TAZ) Population Projections for the City's Water Service Area matched with those of the County. Where the various communities within the City's Water Service Area indicated ongoing and projected growth exceeding that shown in the County TAZ projections, adjustments were made in a coordinated effort with the SFWMD and these growing communities.

The agreement between the City and County with regards to service area separation, cooperative efforts in permitting and providing emergency backup services has provided the basis for continued coordination of activities to benefit all consumers.

It should be clear that the City must approve (from a water supply, treatment, and distribution system standpoint) each of the developments that occur within their Water Service Area. If new water mains, fire hydrants, meters, or services are needed the City reviews said plans and insists that such facilities be implemented. The City also reviews the status of the water supply and treatment facilities to assure adequate capacity is available prior to approval of the building permit within their Water Service Area. The City also has to install or approve installation of new meters or service lines to any new or redeveloped site. It is during this review process that new or redeveloped site developments must submit their "Fire Flow Fees" and "Connection (Impact) Fees" to help defray the costs of system expansion and improvement to the degree they impact the system.

2.0 WATER SERVICE AREA

The City's Water Service Area was established between 45 and 65 years ago as development began in the area and private water systems located inside and outside the City Limits were acquired by the City. The City currently provides potable water for commercial, industrial, residential and other uses for over 170,000 people in the City's Water Service Area under its Consumptive Use Permit.

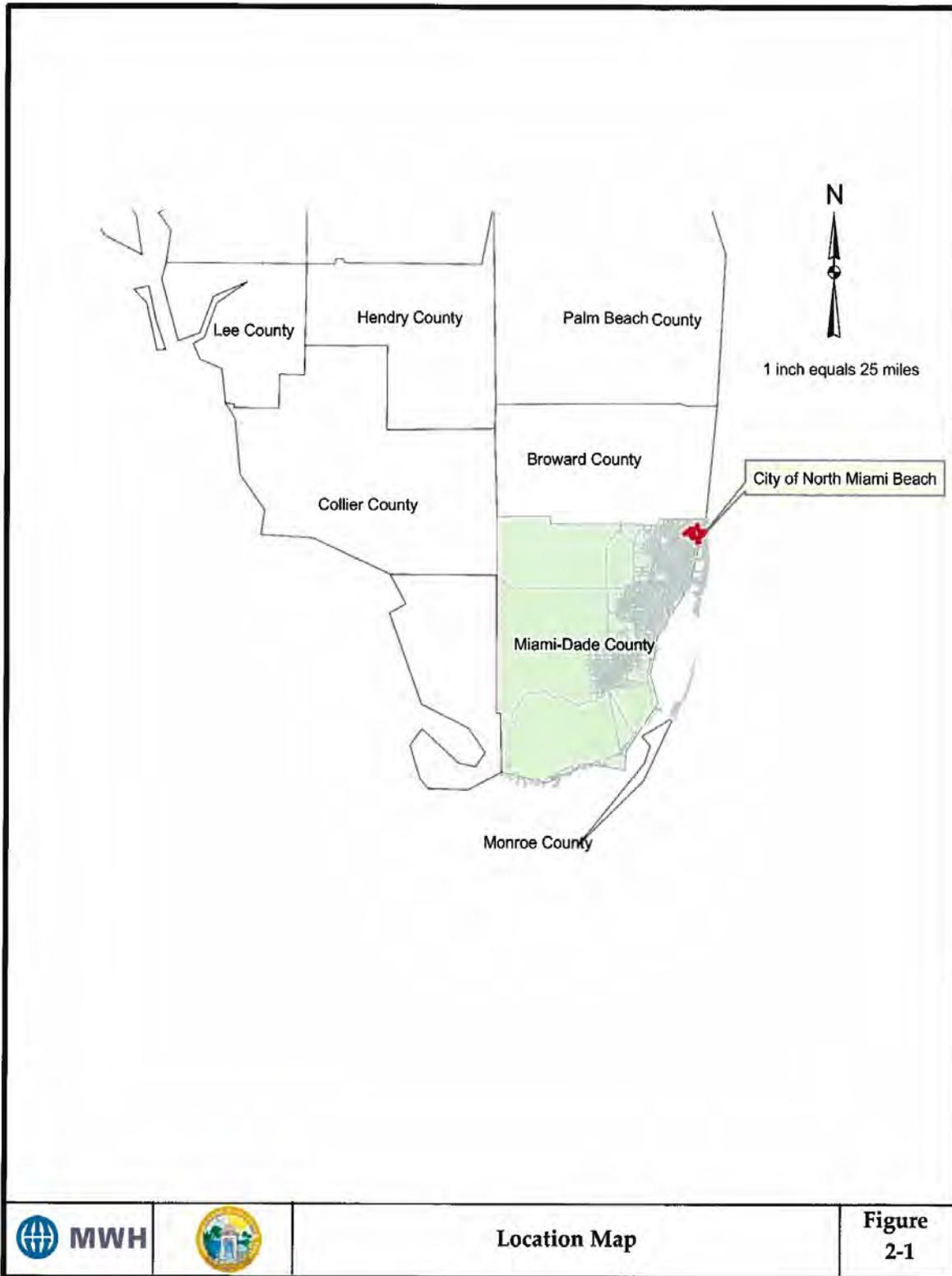
2.1 OVERALL WATER SERVICE AREA

The City of North Miami Beach is located in the northeastern portion of Miami-Dade County, Florida as shown in **Figure 2-1**. The City' Water Service Area is comprised roughly of the area bounded by the Atlantic Ocean on the east; NW 37th Avenue on the west; NW 128th, NW 135th, NW 143rd and NE 146th on the south; and, Ives Dairy Road and Snake Creek Canal on the north as shown in **Figure 2-2**.

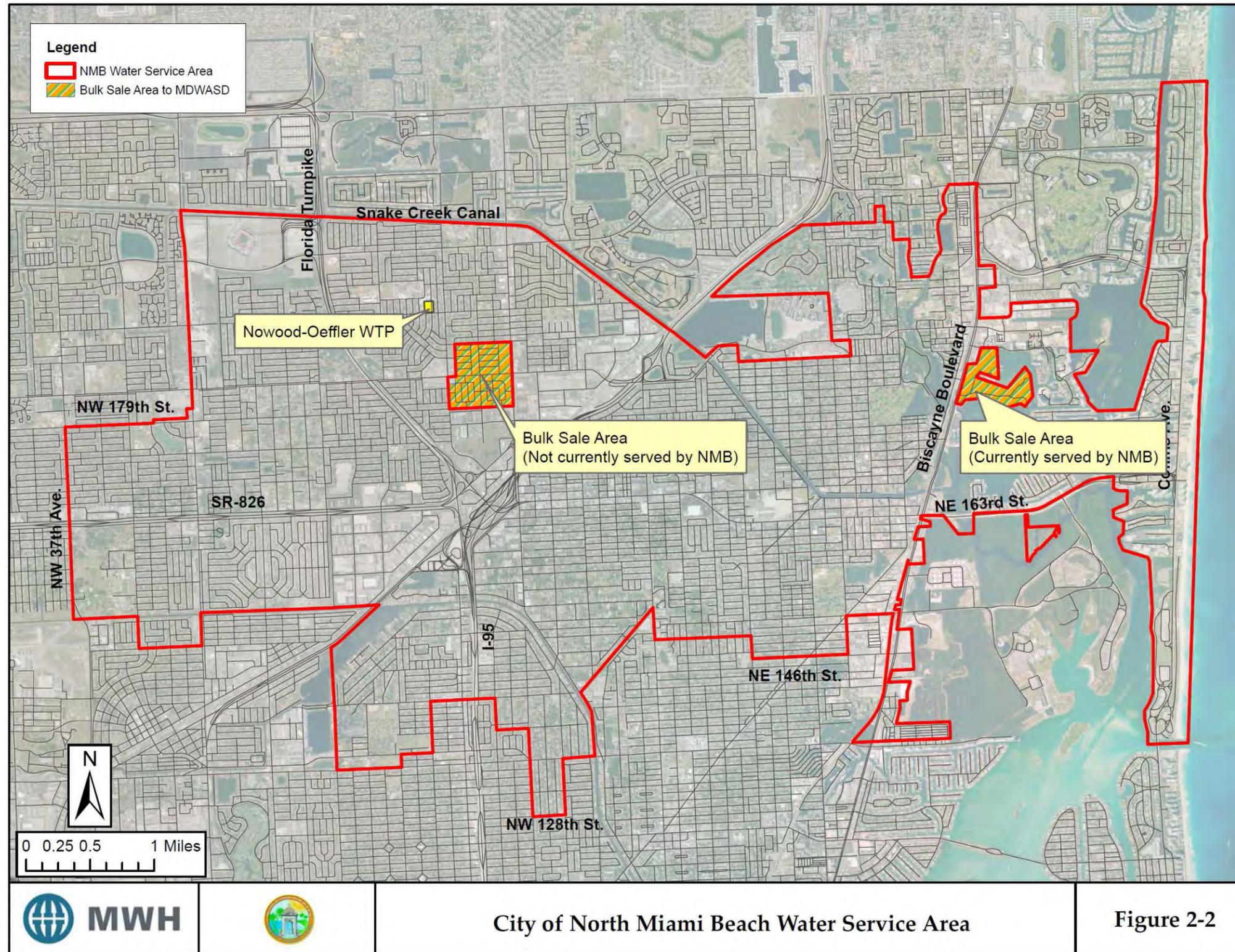
The City's Water Service Area is approximately 16,000 acres or 25 square miles in size. It includes portions of Aventura, Miami Gardens, and unincorporated Miami-Dade County. It also includes all of Golden Beach, North Miami Beach, and Sunny Isles Beach as shown in **Figure 2-3**.

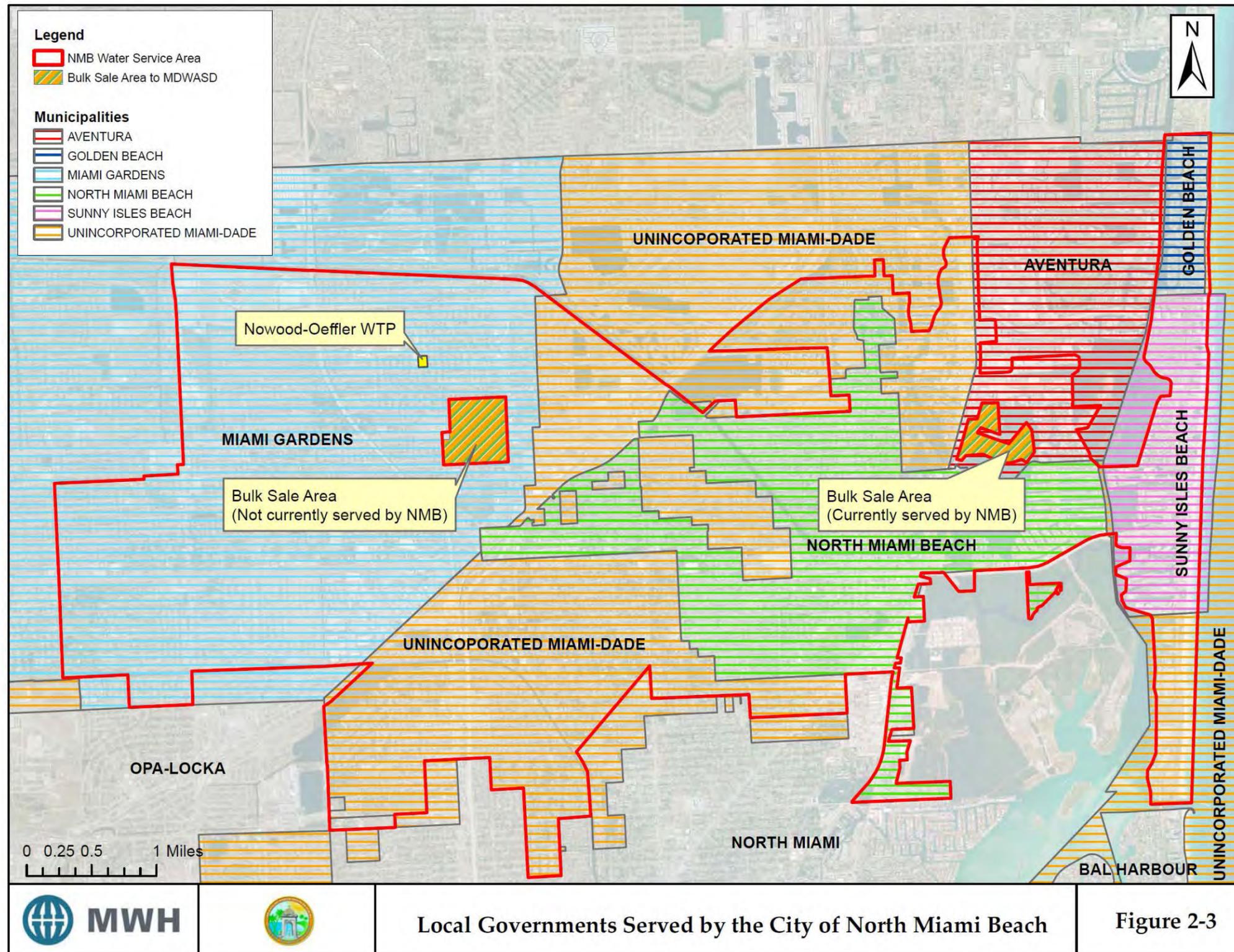
2.2 BULK WATER PURCHASE INTERCONNECTION LOCATIONS

In addition to using potable water from its own water treatment plant, the City used to purchase treated water in bulk from the MDWASD through eight (8) bulk water purchase interconnection locations as shown in **Figure 2-4** and **Table 2-1**. Most of these interconnection locations have been beneficially altered to provide for pressure sustaining valves (PSV's), emergency connections, or for control valves (CV's) that can be used to add water into the storage tanks at the Norwood-Oeffler Water Treatment Plant or Operations Center. The Agreement between the City and County is included as **Appendix B**.



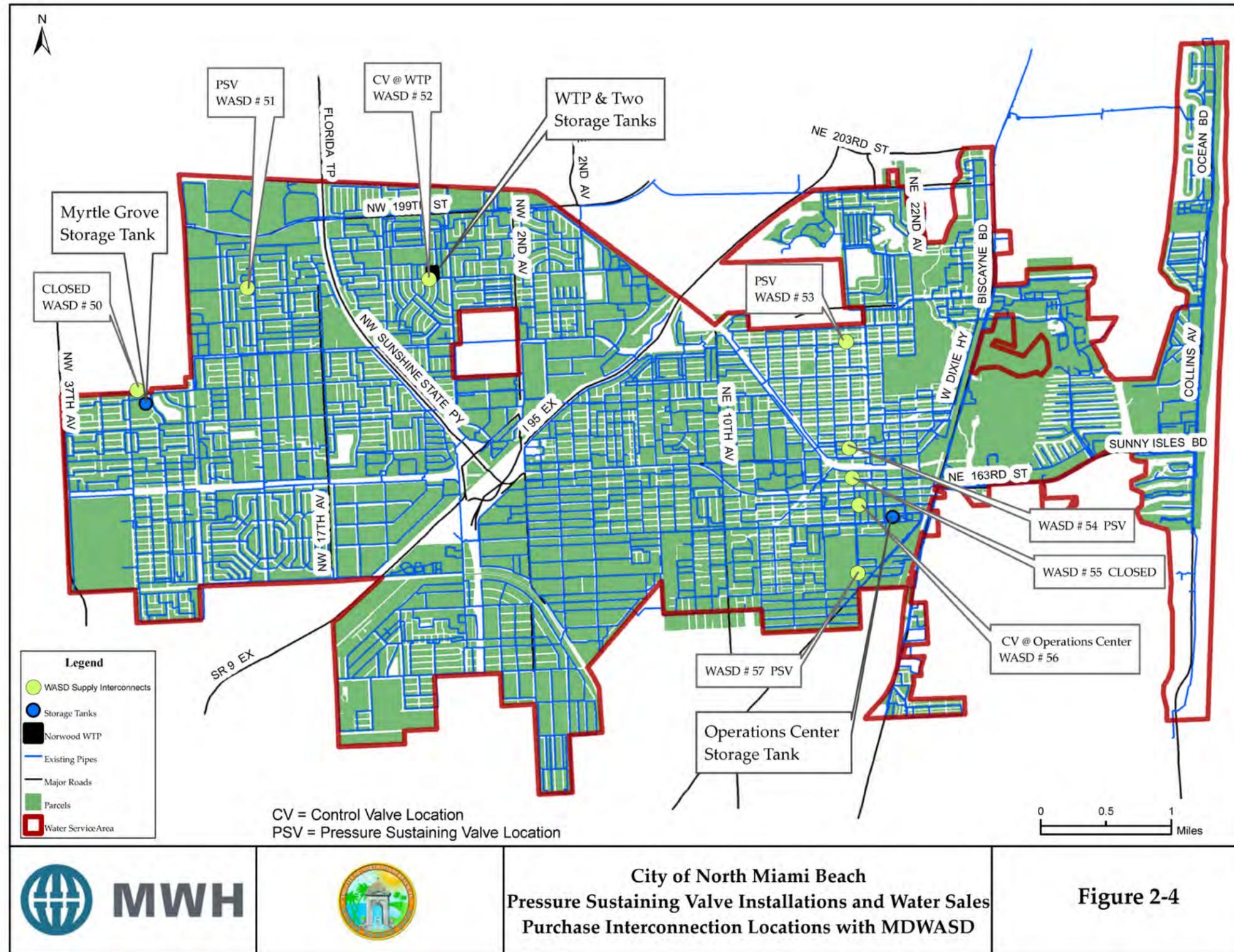
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Local Governments Served by the City of North Miami Beach

Figure 2-3



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Table 2-1
City's Bulk Water Purchase Interconnection Locations with MDWASD
From MDWASD 48-inch Regional Transmission Main

	Interconnection Number	Location Description	Size (inches) / [Quantity]	Status
1	MDWASD 50	NW 179 Street & NW 31 Ave	8 / [two]	CLOSED
2	MDWASD 51	NW 22 Ave & NW 191 Street	6 / [two]	PSV
3	MDWASD 52	NW 8 Avenue & NW 191 Street	Venturi	CV
4	MDWASD 53	NE 18 Avenue & NE 181 Street	8 / [two]	PSV
5	MDWASD 54	NE 18 Avenue & NE 168 Street	6 / [two]	PSV
6	MDWASD 55	NE 18 Avenue & NE 164 Street	6 / [two]	CLOSED
7	MDWASD 56	NE 18 Avenue & NE 161 Street	Venturi	CV
8	MDWASD 57	NE 18 Avenue & NE 153 Street	8 / [two]	PSV

Notes:

1. CLOSED indicates normal status of interconnection; however, each interconnection can be opened for emergency purposes.
2. PSV indicates that interconnection has been equipped with pressure sustaining valves that will open automatically should pressure in the City's system drop below a set pressure level. It is also possible for some of these interconnections to be reconfigured to manually provide emergency service back to MDWASD.
3. CV indicates that interconnection has been equipped with a control valve that can open to help fill a North Miami Beach Storage Tank.

2.3 BULK WATER SALE AREAS

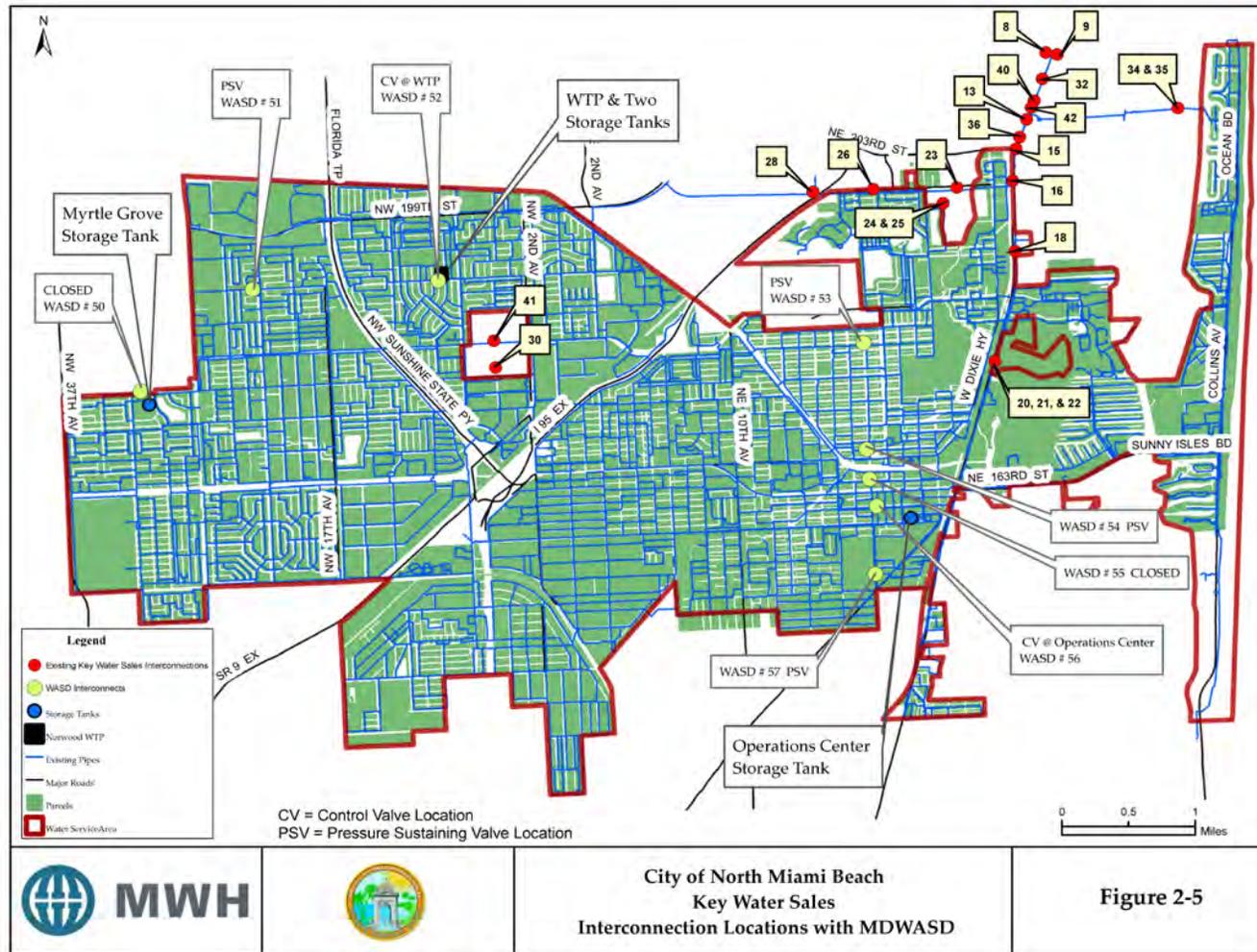
A portion of the water purchased from MDWASD was used within the City's Water Service Area. Another portion was resold ("passed-through") back to MDWASD to serve areas of Aventura and unincorporated Miami-Dade County located outside the City's retail Water Service Area. MDWASD now provides most of the water needs directly to those areas of Aventura and unincorporated Miami-Dade County that used to be served through this "pass-through" arrangement.

Presently, the City provides bulk sales MDWASD retail areas, encompassing the bay area east of Biscayne Boulevard and roughly north of 175th Street and South of 179th Street. This distinct MDWASD retail area served by the City is identified as the green Bulk Sale Areas in **Figure 2-2** and **Figure 2-3**.

The City also continues to provide some supplemental bulk water sales for the MDWASD retail system through three (3) other interconnection locations (MDWASD23, MDWASD24 and MDWASD28). These service areas are not delineated on the previously referenced figures since they are not able to be discreetly isolated, but provide some supplemental treated water into the MDWASD retail service area. Key water sales interconnections to MDWASD are shown in **Figure 2-5**.

The City of Hallandale Beach has also periodically purchased water from the City to meet their potable water demands. The interconnections along Biscayne Boulevard with the City of Hallandale Beach will be kept operable to supply some requested service when appropriate. Also, physical changes were made to enable this connection to be used in a bi-directional way for emergency purposes.

Table 2-2 identifies the City's existing water sales interconnection locations with Hallandale Beach and MDWASD. Emergency interconnections are shown in **Section 3.4.3**.



KEY WATER SALES INTERCONNECTIONS

Table 2-2 Existing Water Sales Interconnection Locations

Int. No.	Interconnect with	Location Description	Meter Size (inches) / [Quantity]	Status
8	City of Hallandale Beach	Biscayne Blvd and County Line Rd.	8	Emergency or Bulk Water Sale
9	City of Hallandale Beach	Biscayne Blvd and County Line Rd.	8	Emergency or Bulk Water Sale
10	MDWASD	NE 207 St. and 34th Ave.	6	Disconnected
11	MDWASD	NE 207 St. and 34th Ave.	6	Disconnected
12	MDWASD	NE 207 St. and 34th Ave.	10	Disconnected
13	MDWASD	20700 Biscayne Blvd	10	Closed
14	MDWASD	20700 Biscayne Blvd	4	Closed Oct.2005
15	MDWASD	20300 Biscayne Blvd	6	Closed
16	MDWASD	19975 Biscayne Blvd	8	Closed Oct.2005
17	MDWASD	19975 Biscayne Blvd	8	Closed Oct.2005
18	MDWASD	19101 Biscayne Blvd	6	Closed Oct.2005
19	MDWASD	18851 NE 29 Ave.	6	Closed
20a	MDWASD	17655 Biscayne Blvd	10 / [two]	Open
20b	MDWASD	17655 Biscayne Blvd	2 / [two]	Open
21	MDWASD	17655 Biscayne Blvd	1.5	Open
22	MDWASD	17655 Biscayne Blvd	6 / [two]	Closed
23	MDWASD	19891 NE 24 Ave.	6	Open
24	MDWASD	19700 NE 23 Ave.	2	Open
25	MDWASD	19700 NE 23 Ave.	6	Open
26	MDWASD	NE 19 Ct. and 20 Ave. at 199 St.	6	Closed
27	MDWASD	NE 19 Ct. and 20 Ave. at 199 St.	8	Closed
28	MDWASD	20101-29 NE 15 Ct. at 199 St	8	Open
29	MDWASD	20101-29 NE 15 Ct. at 199 St.	8	Open
30	MDWASD	17900 NW 5 Ave.	6	Closed
31	MDWASD	17900 NW 5 Ave.	2	Closed Jan.2005
32	MDWASD	NE 212 St. and Biscayne Blvd.	8	Closed
33	MDWASD	NE 212 St. and Biscayne Blvd.	8	Closed
34	MDWASD	36 Ave. / NE 207 St.	6	Closed
35	MDWASD	36 Ave. / NE 207 St.	6	Closed Jan.2005
36	MDWASD	20403 Biscayne Blvd	6	Closed
37	MDWASD	20403 Biscayne Blvd	6	Closed
38	MDWASD	17985 Biscayne Blvd	2	Open
39	MDWASD	17985 Biscayne Blvd	2	Open
40	MDWASD	20955 Biscayne Blvd	2	Open
41	MDWASD	183 rd St. at NW 5 th Ave.	6	Open
42	MDWASD	20801 Biscayne Blvd.	6 / [two]	Closed

Notes:

1. EMERGENCY OR BULK WATER SALE indicates that interconnections are operable for emergency service or bulk water sale from City of North Miami Beach to City of Hallandale Beach only.
2. DISCONNECTED indicates that MDWASD has separated the service lines.
3. OPEN indicates an active meter providing sales to MDWASD for their retail service area.
4. CLOSED indicates that the interconnection is normally closed since MDWASD normally supplies potable water directly to the area. It is also possible for these interconnections to be operated manually to provide emergency service to these MDWASD retail service areas.

3.0 EXISTING WATER SUPPLY, TREATMENT, STORAGE, TRANSMISSION AND DISTRIBUTION FACILITIES

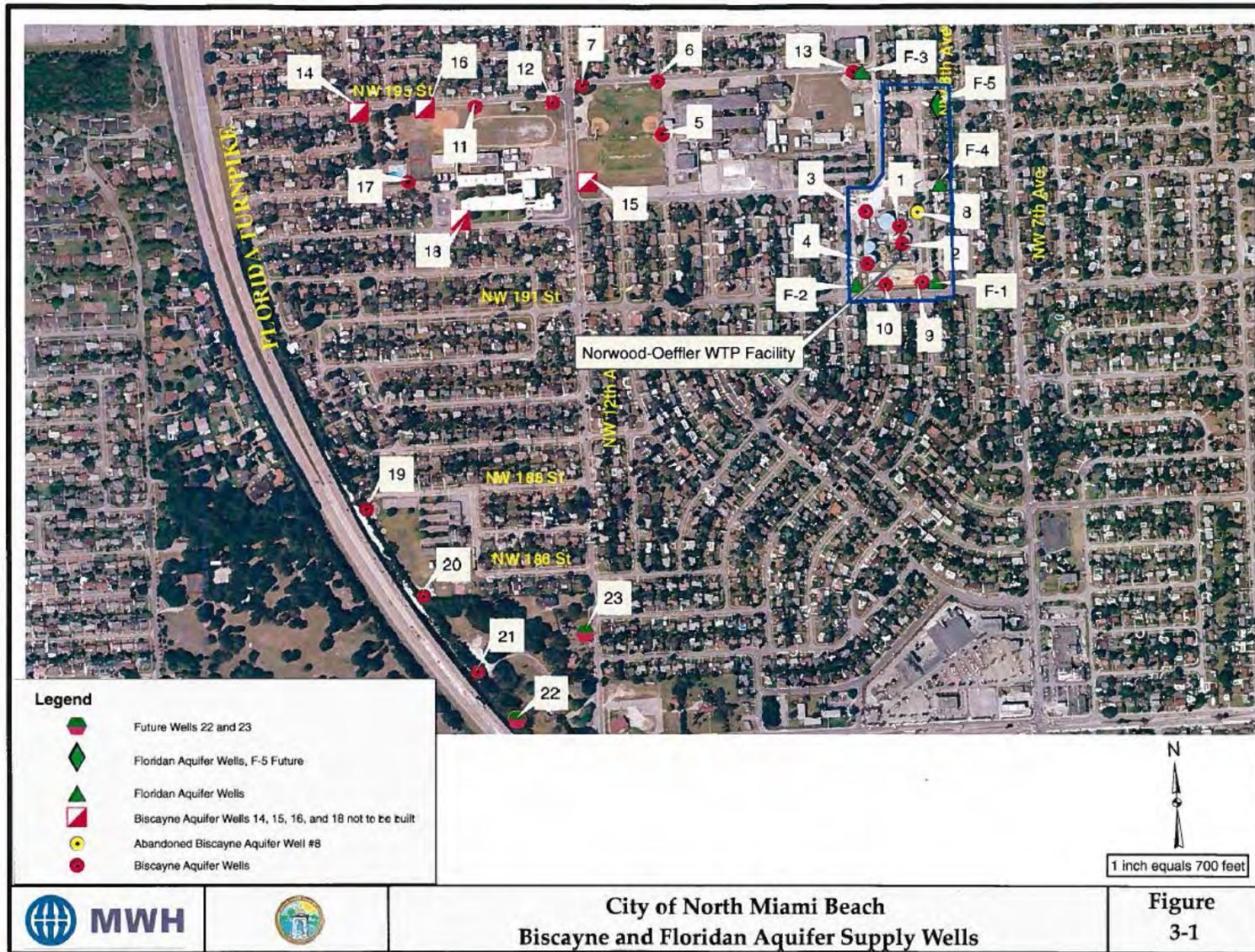
The City's water supply system consists of raw water wellfields (both traditional and alternative), Norwood-Oeffler Water Treatment Plant, four storage tanks, high-capacity high service pumps, pipeline interconnections and approximately 550 miles of water transmission and distribution pipelines.

3.1 WATER SUPPLY FACILITIES FOR NORWOOD-OEFFLER WTP

The Norwood-Oeffler Water Treatment Plant (WTP) uses the Biscayne Aquifer in both the lime softening and nano-filtration (NF) treatment processes and the Floridan Aquifer in the reverse osmosis (RO) treatment process to meet its water supply needs as shown in **Table 3-1**. The City's Biscayne and Floridan wellfields are located in the vicinity of the WTP (east of the Florida Turnpike, west of NW 7th Avenue, south of NW 195th Street and generally north of NW 184th Street). The wellfields include twenty (20) municipal supply wells as shown in **Figure 3-1**.

3.1.1 BISCAYNE AQUIFER WELLS

Sixteen (16) municipal water supply wells have been constructed into the Biscayne Aquifer. Eleven (11) of the sixteen wells are used only for the lime softening treatment process.



**Table 3-1
Lime Softening Biscayne Aquifer Well Capacity Analysis**

Well No.	Capacity (gpm)	Capacity (mgd)
1	1,333	1.92
2	417	0.60
3	1,167	1.68
4	1,500	2.16
5	833	1.20
6	583	0.84
7	1,000	1.44
9	1,500	2.16
10	1,500	2.16
11	4,500	6.48
12	4,167	6.00
TOTAL	18,500	26.64
TOTAL with largest well out of service	14,000	20.16
Treatment Capacity	-	15

Five (5) out of the sixteen Biscayne Aquifer Wells (Wells No. 13, 17, 19, 20, and 21) were constructed in 2003-2004 primarily for the NF treatment process. Well No. 13 and No. 17, are within the existing well field (offsite). Well No. 19, 20 and 21, are located further west along the Florida Turnpike between NW 183 Street and NW 188 Street. Three wells will be in operation generally at any one time to provide source water to produce 9 mgd of finished water. Two other wells will serve as back up. **Table 3-2** presents characteristics for these five Nano Filtration Biscayne Aquifer Wells.

**Table 3-2
Five Nano Filtration Biscayne Aquifer Well Characteristics**

Well No.	Aquifer	PVC Casing (inches)	Surface Casing Depth (ft)	Casing Depth (ft)	Total Depth (ft)	Design Capacity (gpm)
13	Biscayne	30	45	90	100	2600
17	Biscayne	30	45	75	95	2600
19	Biscayne	30	45	80	90	2600
20	Biscayne	30	45	52	62	2600
21	Biscayne	30	45	85	95	2600

3.1.2 FLORIDAN AQUIFER WELLS

Four (4) out of the twenty municipal supply wells are Floridan Aquifer wells. These wells are treated by the RO treatment process. Well No. 1F, 2F and 4F are located within the WTP site and Well No. 3F is located at a nearby school. The wells pump raw water from the Floridan Aquifer directly to the membrane process building for pre-treatment prior to arriving at the low-pressure RO treatment facilities. Each raw water supply well was designed so that one (1) well will supply sufficient raw water for operation of one (1) low-pressure membrane skid, plus additional capacity to provide the ability to blend some raw water when appropriate from the Floridan Aquifer. It is expected that one well will be in operation at any one time to provide source water to produce finished water. Other wells will serve as back-up unless the WTP is operating at its full 6 mgd capacity, in which case only one well will be in reserve. **Table 3-3** presents characteristics for these four Floridan Aquifer wells.

Table 3-3
Four Floridan Aquifer Well Characteristics

Well No.	Aquifer	PVC Casing (inches)	Surface Casing Depth (ft)	Total Casing Depth (ft)	Total Depth (ft)	Maximum Design Capacity (gpm)
1F	Floridan	17.4	300	1000	1235	2500
2F	Floridan	17.4	300	1000	1231	2500
3F	Floridan	17.4	300	1000	1250	2500
4F	Floridan	17.4	300	1000	1250	2500

3.1.3 Raw Water Supply Mains

Over the past several years the City has upgraded portions of its raw water supply mains. One length of raw water supply main conveying Floridan Aquifer source water from Floridan well 3F to the WTP included 350 linear feet of 16-inch diameter PVC piping and 760 linear feet of 20-inch diameter PVC piping.

The City has approximately 4,470 LF of 30 inch, 3,200 LF of 24 inch, 2,160 LF of 20 inch and 3,240 LF of 16 inch raw water transmission mains. An interconnection was constructed to connect the newer Biscayne Aquifer raw water main to the old Biscayne Aquifer raw water main. This interconnection is normally closed; however, it could be opened for emergency purposes.

3.2 WATER TREATMENT FACILITIES (NORWOOD-OEFFLER WTP)

The City owns and operates the WTP, which is located on the northeast corner of NW 191st Street and NW 9th Avenue in the City of Miami Gardens. The existing, older and now refurbished, portion of the WTP is a lime softening water

treatment facility that was initially constructed in 1953. The City currently uses the facility to apply lime softening treatment of ground water withdrawn from City owned Biscayne Aquifer raw water wells.

The City uses three different treatment process for the production of finished water at its Norwood WTP. These processes include a 15.0 mgd lime softening facility, 9.0 mgd nano filtration (NF) facility, 6.0 mgd low pressure reverse osmosis (RO) facility, and 2.0 mgd filtered raw water blend. The total permitted capacity of the facility is 32.0 mgd. Permeate flow streams from the membrane processes are combined for post treatment/ stabilization and subsequently blended with finished water from the lime softening process and transferred to on-site ground storage reservoirs.

The WTP is expandable within current facilities to approximately 38.5 mgd with the addition of a RO membrane treatment skid and additional RO vessels plus associated pre- and post- treatment equipment.

3.2.1 LIME SOFTENING

Water hardness is reduced at the WTP using conventional lime softening treatment. The present treatment capacity, including filtration and chlorination is approximately 15 mgd and normal operation is at approximately 15 mgd. The process includes the following:

1. Raw water supply from Biscayne Aquifer.
2. Raw water receiving basin – 39,500 gallons.
3. Three air stripping units.
4. Two Hydrotreaters (5 mgd unit built in 1965; 10 mgd unit built in 1972).
5. Re-carbonation.
6. Filtration (11 sand filters 17 feet wide by 21 feet long).
7. Clearwell.
8. Transfer pumps.
9. High service pumping facilities.

3.2.2 NANO-FILTRATION

The NF membrane softening facilities are designed to produce 9.0 mgd (3 skids at 3.0 mgd). This was initially expected to be expandable up to a capacity of 12.0 mgd (4 skids at 3.0 mgd), but Biscayne Aquifer restrictions by SFWMD requires future expansion from the alternative water supply source, the Floridan Aquifer. The process includes the following:

1. Raw water supply from Biscayne Aquifer.
2. Sand separation equipment.
3. Pre-treatment sulfuric acid feeding system.
4. Micron Filtration.
5. High pressure feed pumps.
6. Two stage NF membrane treatment units.
7. Post treatment degasification.
8. High service pumping facilities.
9. Concentrate Deep Injection Well shared with RO portion of the WTP (refer to Section 3.2.4.1 for description).

3.2.3 REVERSE OSMOSIS

The low-pressure RO membrane facilities are designed to produce 6.0 mgd (3 skids at 2.0 mgd). This was initially expected to be expandable with additional pressure vessels up to a capacity of 8.0 mgd (3 skids at 2.67 mgd). With newer technology the current RO skids can add vessels and membranes to expand that portion of the WTP to 9.0 mgd. With the possible addition of a new membrane skid, even more capacity can be achieved (2.5 to 4.0 mgd). The process includes the following:

1. Raw water supply from Floridan Aquifer.
2. Pre-treatment sulfuric acid and anti-scalant feeding system.
3. Micron Filtration.
4. High pressure feed pumps.
5. Two stage low pressure RO membrane treatment units.
6. Energy recovery equipment
7. Post treatment degasification.
8. High service pumping facilities.
9. Concentrate Deep Injection Well shared with NF portion of the WTP (refer to Section 3.2.4.1 for description).

3.2.4 OTHER RELATED FACILITIES

The WTP has onsite standby power generation facilities and dual grid sources from Florida Power and Light (FPL). Additionally, the City has a 2,500 KW generator for membrane bay and operations building, a 2,000 KW generator for high service pumps and wells, a 1,500 KW generator for lime softening process, a 750 KW generator for re-pumping at operation center and two 250 KW portable generators. Other plant facilities are as described in following sections.

3.2.4.1 Membrane Concentrate Disposal Deep Injection Well

The water treatment by-product (i.e. membrane concentrate) from the membrane treatment process is disposed of by a deep injection well system. The deep

injection well system consists of one 14.5-inch I.D Class I injection well, one 6-inch dual zone monitoring well, and one booster pump station. The injection well system provides a permitted concentrate disposal capacity of 7.4 mgd, which is adequate to serve both Phase I and II WTP expansions with a combined membrane process capacity over 38 mgd.

Back up for the disposal of membrane concentrate is to the MDWASD sewer system. A 20 inch PVC concentrate disposal main has been constructed to connect the membrane concentrate pipeline to the trunk force main portion of the MDWASD sewer system.

3.2.4.2 Post Treatment Structure – Degasification and Odor Control System

Three degasifiers and two odor control systems are used for post treatment of the membrane permeate. The degasifier system provides for the removal of hydrogen sulfide, carbon dioxide and stabilization of permeate. Each odor control scrubber system has a rated air flow capacity of 39,000 cfm and hydrogen sulfide removal efficiency of greater than 98%.

3.2.4.3 High Service Pumps

There were eight (8), existing high service pumps (HSP), numbered 1 through 8 prior to this recently completed plant expansion. All of these pumps are horizontal split case pumps. HSP number 1 is no longer in service. HSP No. 3, 5, and 7 have a total system capacity of 10,500 gpm with a total system head of 170 feet. These pumps connect to an 18-inch discharge main and 20-inch transmission main. HSP No. 5 has been changed to run by VFD. HSP No. 3 and No. 7 have auxiliary engine drives to allow them to continue to run during a power outage.

HSP No. 2, 4, 6, and 8 have a total system capacity of 11,800 gpm with a total system head of 170 feet. These pumps connect to an existing 24-inch discharge main and a 30-inch transmission main. HSP No. 4 has been changed to run by VFD and HSP No. 8 has an auxiliary engine drive.

As the Capacity of Norwood-Oeffler Water Treatment Plant increased, three (3) new high service pumps were installed as part of the expansion program (on-site), which has a total system capacity of 22,000 gpm with a total system head of 170 feet. These vertical turbine pumps connect to a 36-inch transmission main.

The firm high service pumping capacity at the WTP is 53 mgd at 75 psi (with largest pump out of service). This capacity will meet the projected peak hour demand. The characteristics of the high service pumps are shown in **Table 3-4**.

**Table 3-4
High Service Pumping Capacity**

	Existing Pumps (Nos. 2-8)	New Pumps (3 pumps)	Total
Pump Type	Horizontal Split Case	Vertical Turbine in Barrel/ Can	
Motor Power	1-75 HP 1-125 HP 5-200 HP, each	450 HP, Each	
Pumping Capacity	32 mgd (total)	21 mgd (total)	53 mgd (with largest pump out of service)
Motor Control	Constant Speed; (No.4 & No. 5 use Variable Frequency Drive)	2VFD and 1 Constant Speed	
Discharge Pressure	75 PSI	75 PSI	75 PSI

3.3 FINISHED WATER STORAGE

The City has 10.5 million gallons (MG) of finished water storage in four above-ground (ground level) storage tanks. Finished water is stored in two above-ground storage tanks at the WTP (5 MG and 2 MG) prior to being pumped into the City's water transmission and distribution system. The third storage tank (2 MG) is located at the Operations Center and the fourth storage tank (1.5 MG) is located at the Myrtle Grove site and is not in service.

3.3.1 Norwood-Oeffler WTP

The City has two ground storage tanks located at the WTP. The first tank is an existing steel ground storage tank that holds 2 MG. The second ground storage tank is a pre-stressed concrete potable water tank that was completed in 2007 and holds 5 MG. This tank is 155 feet in diameter and 47 feet high. It was constructed as two tanks, one inside of the other. The inner tank has a 0.8 MG volume while the outer tank has a 4.2 MG volume. The inner tank will serve as a chlorine contact tank for the lime-softening process.

3.3.2 Operations Center

In 2007 the City constructed a 2 MG above-ground (ground level) storage tank at its Operations Center site. It is 135 feet in diameter and 20 feet high and has a re-pumping facility with standby power available.

3.3.3 Myrtle Grove

The City's Myrtle Grove above-ground storage tank was built in 1982 and it holds 1.5 MG. This tank is presently out of service, but plans have been completed to enable reactivation of this facility in the future.

3.4 WATER TRANSMISSION AND DISTRIBUTION SYSTEM

The City's water transmission and distribution system is continually improved and upgraded. The City's Water Service Area contains water mains ranging from 2-inches to 36-inches in diameter. There is roughly 2.86 million feet or 541 miles of water mains in the Water Service Area system as shown in **Table 3-5**.

Table 3-5
Summary of Existing Transmission and Distribution System

Pressure Pipes Inventory (inches)	Estimated Total Pipe Length (ft) ⁽¹⁾	Estimated Total Pipe Length (mi)
less than 2.0 in	4,400	0.8
2	810,880	153.58
3	49,500	9.38
4	89,257	16.90
6	759,057	143.76
8	440,241	83.38
10	57,450	10.88
12	384,437	72.81
16	139,510	26.42
18	18,870	3.57
20	32,590	6.17
24	60,380	11.44
30	31,760	6.02
36	18,010	3.41
Total	2,872,505	548.55

Note: Total pipe lengths were calculated from City's CAD atlas maps.

3.4.1 Two-Inch Line Replacement Program

The City has been executing a multiple phased program to replace two-inch galvanized steel pipe located in backyards and alleyways. While performing these replacements, the City has been improving fire hydrant coverages in those areas at the same time, wherever possible. Its goal has been to replace one to two percent of the 2-inch water lines per year.

3.4.2 Emergency Connections

The City maintains emergency interconnections with the City of Hallandale Beach, the City of North Miami, the City of Opa Locka, the Village of Bal Harbour and the MDWASD. These emergency interconnect locations are identified in **Table 3-6** and are in addition to those eight interconnections with MDWASD previously shown in **Table 2-1**.

Table 3-6
Existing Emergency Interconnection Locations

	Interconnect With	Location Description	Meter Size (inches) / [Quantity]	Status
1	City of Opa Locka	2781 N.W 151 Street	6	Working
2	City of Hallandale Beach	A 1A & Massina	6	Working
3	City of Hallandale Beach	A 1A & Massina	6	Working
4	City of Hallandale Beach	Biscayne Boulevard at County Line	8 / [two]	Working
5	MDWASD	19900 NE 10 Avenue	10	Working
6	MDWASD	19900 NE 10 Avenue	10	Working
7	City of North Miami	Highland Drive and NE 135 Street	10	Working
8	Village of Bal Harbour	Collins Avenue at Bakers Haulover Cut	8 / [two]	Working

Note: Dual metering occurs where two interconnections are shown at the same location.

3.4.3 Hydraulic Analysis

The City's efforts to end its daily reliance on MDWASD to serve its finished water needs required an increase in the City's water supply and treatment capacity. This was accomplished through a water treatment expansion program. An integral part of this expansion was the completion of an updated transmission, distribution, storage and fire hydrant system hydraulic model to include the existing retail service area in addition to existing or proposed bulk sale customers. The existing system was evaluated to determine its adequacy to serve the current and future potable water and fire protection needs in the City's Water Service Area.

In 2006 the City completed an updated hydraulic model network for its existing facilities including meters, valves, pump stations, storage tanks, the WTP and related pipelines. Only pipelines with diameters greater than or equal to 6-inches were included in the network model. Approximately 1.8 million feet of existing water mains are represented in the network model as shown in **Figure 3-2**.

At a later date, this hydraulic model was used to predict changes in velocity and flow direction in the City's transmission and distribution system for two different operating scenarios. These scenarios were selected to reflect the changed conditions associated with ending water purchases from MDWASD and relying solely on the capacity of the City's upgraded WTP. The results of these analyses were used to create a flushing program that was implemented by the City to minimize potential water quality impacts experienced by its customers when the transition was executed.

The hydraulic model was run using Extended Period Simulation (EPS). The overall results showed that flows (measured in the field) matched the EPS data flows and that field pressure measurements fell within a +/- 3 psi range from the model. This is good calibration of the hydraulic model.

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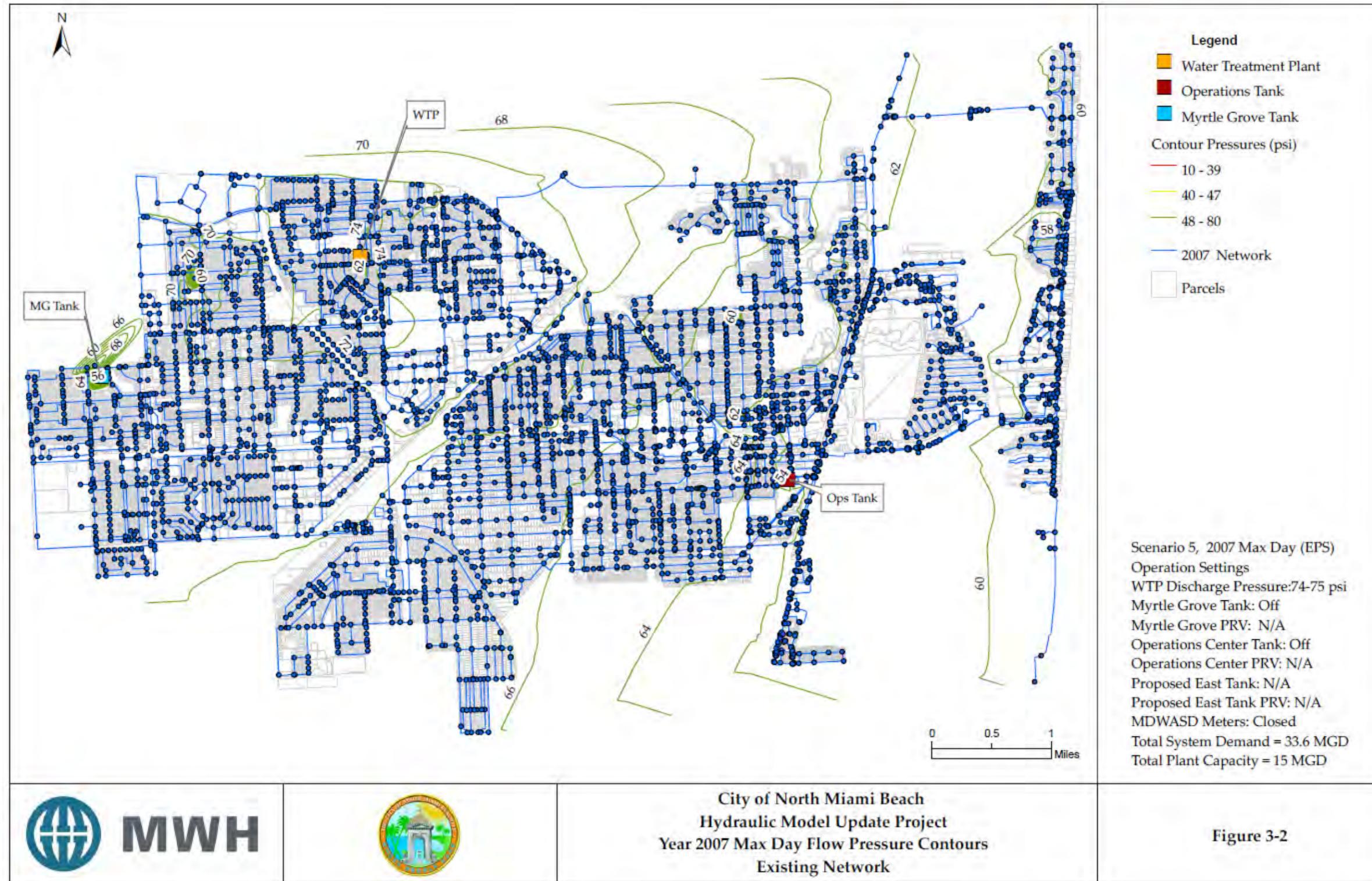


Figure 3-2



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At average flow conditions now, the hydraulic model indicates that the pressure range in the system is between 63 and 75 psi with the 75 psi value representing the pressure leaving the WTP. At average flow on maximum day, the hydraulic model indicates pressures maintained in the system were between 56 and 75 psi with the 75 psi value representing the pressure leaving the WTP. Only small isolated areas show pressures below 60 psi during average flow on the peak day. During the peak hour flow of the year 2007, the hydraulic model indicates the pressure range in the system is between 52 and 75 psi with the 75 psi value representing the pressure leaving the WTP. Under all normal scenarios, the predicted delivery pressure throughout the system stayed well above the target minimum of 40 psi.

The hydraulic model was also run with flows projected in 2015 and 2030. Only one very small area showed pressure slightly below 40 psi (predicted 36 psi minimum) when using flows predicted in 2030. Even in 2030, only 44 nodes showed pressure challenges with a 1000 gpm fire flow applied (this value is double the County's single family residential fire flow standard rate of 500 gpm). When a 500 gpm fire flow was applied, only one node did not meet the 500 gpm, 20 psi residual standard in the year 2030.

The hydraulic model has shown that the City's system does need improvements to obtain better fire hydrant coverage, and is predicted to continue to perform very well into the future (year 2030) without the need for substantial upgrades.

3.4.4 Pressure Sustaining Valves

The City recognizes the importance of maintaining some of the MDWASD interconnects for emergency backup purposes and has incorporated a pressure sustaining valve (PSV) installation at four of the existing water system interconnects with MDWASD. The purpose of these valves is to manage and attenuate distribution system pressures when necessary during peak demand periods or emergency situations. Each PSV installation has pressure sustaining and pressure reducing capabilities. Under peak demand or emergency conditions, when the City's water system pressure drops, the valve will open so that MDWASD water can supplement the City's system. Under normal operating conditions, the pressure will be greater in the City's water system than in the MDWASD water system. The check valve feature prevents water from flowing from the City's system to the MDWASD system through the valve. The pressure-sustaining feature will keep the control valve open so long as the upstream MDWASD water system pressure is above the minimum adjustable pressure set point of 45 psi. The PSV locations are identified in **Table 3-7** and were shown previously in **Table 2-1** and **Figure 2-4** and **Figure 2-5**.

**Table 3-7
Pressure Sustaining Valve Locations**

	PSV Identifier	Location
1	WASD #51	NW 22 nd Avenue and NW 191 st Street
2	WASD #53	NE 181 st Street and NE 18 th Avenue
3	WASD #54	NE 168 th Street and NE 18 th Avenue
4	WASD #57	NE 153 rd Street and NE 18 th Avenue

Water automatically flows from the MDWASD system to the City through any or all of these PSVs in emergencies or when pressure drops are experienced in the City's system. These PSV interconnections could be retrofitted to send water in an emergency situation from the City to the MDWASD system, but it would need to be done manually and carefully to avoid a sudden overdraft on the City's system.

The City also has control valves that allow the introduction of water from MDWASD to fill its storage tanks at two locations. Flow passes through WASD#52 to the storage tanks located at the WTP and WASD#56 to the storage tank at the Operations Center. These control valves were previously identified in **Table 2-1**.

Under ***Paragraph 3 MUTUAL OBLIGATIONS*** of the March 19, 2001 Agreement between the City and County, included as **Appendix B**, provisions are made for water to be provided each to the other in event of emergencies (e.g. water transmission breaks), scheduled interruptions of service (e.g. maintenance) and some resale service.

4.0 POPULATION PROJECTIONS

This section evaluates the historical and future population projections for the City of North Miami Beach Service Area. The development of population projections is a collaborative effort between the City of North Miami Beach, City of Aventura, City of Miami Gardens, City of Sunny Isles Beach, Town of Golden Beach and Miami-Dade County.

4.1 HISTORICAL POPULATION DATA

Since the City's Water Service Area is comprised of several cities, portions of several other municipalities, and a portion of unincorporated Miami-Dade County, there is no direct census count that is just for the City's Water Service Area. Using TAZ population data based on census year 2010, the Water Service Area population was developed and compared against census year 2000 Water Service Area population data. **Table 4-1** presents estimated historical population growth in the City's Water Service Area.

Table 4-1
Estimated Historical Population Served in City's Water Service Area

Year	Population ¹
2004	157,800
2005	158,300
2006	158,800
2007	159,300
2008	159,800
2009	160,300
2010	160,800
2011	162,700
2012	164,600
2013	166,500

Note:

¹ Values were derived from an interpolation between 2007 TAZ data (based on 2000 census) and 2013 TAZ data (based on 2010 census) that was obtained from Miami-Dade County Department of Regulatory and Economic Resources.

4.2 POPULATION PROJECTIONS

The City's Water Service Area population projections were done using the TAZ population projections from Miami-Dade County Department of Regulatory and Economic Resources. TAZ population projections are the primary basis of population projections for this water supply facility work plan (WSFWP). The existing service area boundary was juxtaposed with the TAZ areas and the population was calculated based on the intersecting residential area. A linear interpolation was conducted to project intermediate year populations that were not included in the TAZ projections. Based on this method, the population

projections for the City of North Miami Beach Service Area were derived and are shown in **Table 4-2**. The TAZ areas that are within the City's Water Service Area are shown in **Figure 4-1**. **Appendix D** provides the detailed population projections by TAZ for each municipality and the county.

Table 4-2
City of NMB Service Area Population Projections from County's TAZ

Year	2013	2015	2018	2020	2023	2025	2030
Aventura	11,200	11,400	11,700	11,800	12,100	12,300	12,700
Golden Beach	900	900	900	900	900	900	900
Miami Gardens	45,600	47,100	49,400	51,000	53,300	54,800	58,600
North Miami Beach	42,900	44,100	45,800	46,900	48,700	49,800	52,700
Sunny Isles Beach	21,800	22,500	23,400	24,100	25,100	25,700	27,400
Unincorporated Miami-Dade	44,100	44,400	44,900	45,300	45,800	46,100	47,000
Total	166,500	170,400	176,200	180,000	185,800	189,600	199,300

Note: Population numbers are rounded to the nearest hundred for individual local governments, thus there is a variance to the populations to the degree of 100 between **Table 4-2** and **Appendix D**.

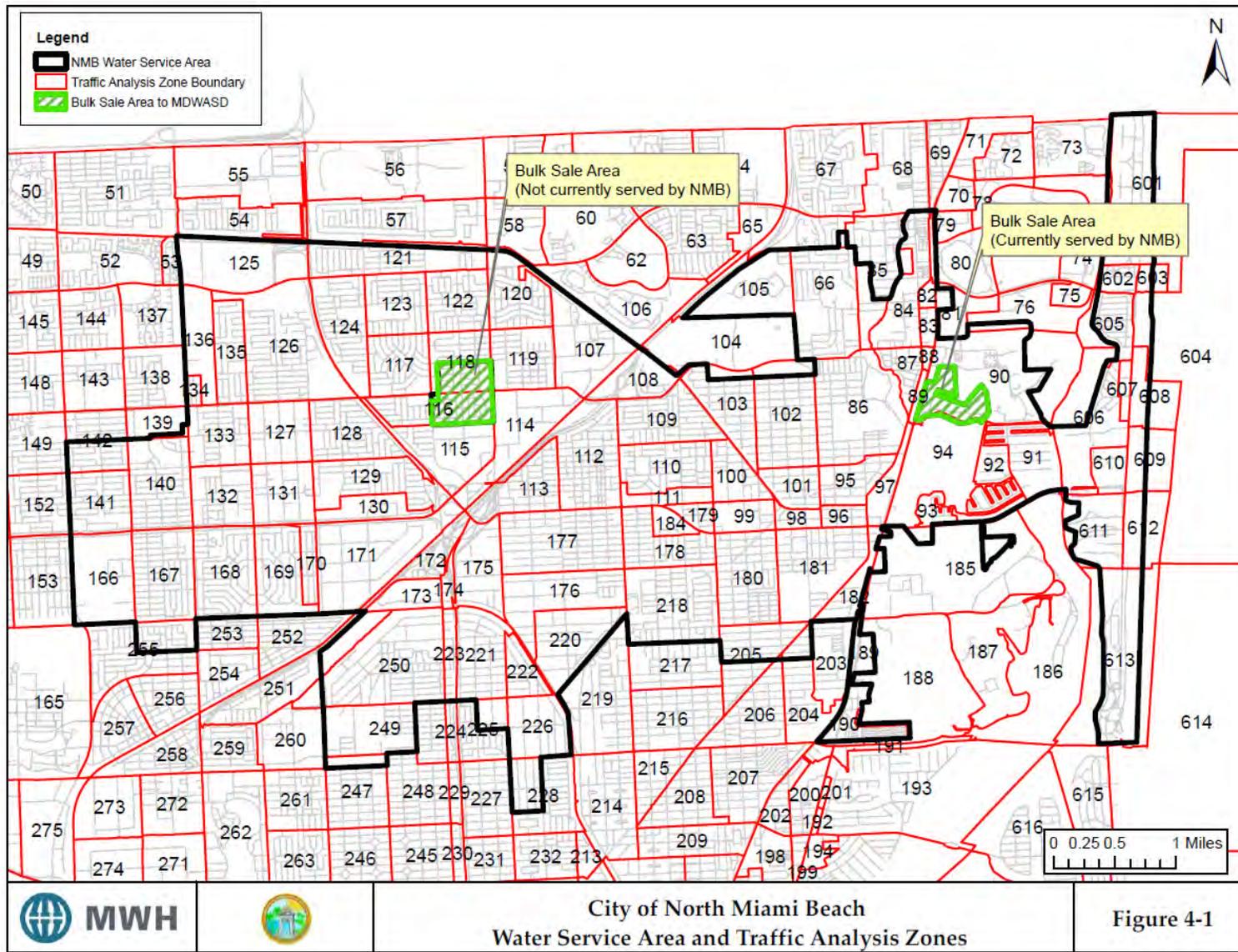
The TAZ growth projections, with adjustments for buildings and developments in the approval process since the 2010 census, were provided for various local governments. There were 5 general categories and each of these development categories was assigned to a specific timeline as indicated below:

- “Existing” or “Under Construction” – Currently accounted for in the Miami-Dade County RER Population data by TAZ. These were not added to TAZ data.
- “Active Building Permit” – Added to TAZ data for year 2015
- “Approved” – Added to TAZ data for year 2020
- “Planned/ Expired” – Added to TAZ data for year 2030

Table 4-3 shows the population that is projected for future developments in each local government and the resulting populations that result for each time horizon.

**Table 4-3
City's Water Service Area Population Projections from County's TAZ Including
Projected Developments**

City's Water Service Area Entity	Projected Dev. by 2015	Projected Dev. by 2020	Projected Dev. by 2030	Total Projected Dev.	Adjusted 2015 Pop. with Projected Dev.	Adjusted 2020 Pop. with Projected Dev.	Adjusted 2030 Pop. with Projected Dev.	2030 Pop. from TAZ
Aventura	0	651	0	651	11,400	12,500	13,300	12,700
Sunny Isles Beach	323	1,371	572	2,266	22,800	25,800	29,600	27,400
Miami Gardens	0	268	0	268	47,100	51,200	58,900	58,600
North Miami Beach	0	0	0	0	44,100	46,900	52,700	52,700
Unincorporated Miami-Dade County	0	0	0	0	44,400	45,300	47,000	47,000
Golden Beach	0	0	0	0	900	900	900	900
City's Water Service Area Total	323	2,290	572	3,185	170,700	182,600	202,400	199,300



The population projections to be used to develop the raw and finished water demand projections are additive of TAZ projection and ongoing development efforts within the service area. These population projections are shown in **Table 4-4**.

Table 4-4
Projected Population Per Local Government
To Be Served in City's Water Service Area

Area within City's Water Service Area	Year						
	2013	2015	2018	2020	2023	2025	2030
Aventura ¹	11,200	11,400	11,700	12,500	12,700	12,900	13,300
Sunny Isles Beach ²	21,800	22,800	23,800	25,800	26,800	27,400	29,600
Miami Gardens ¹	45,600	47,100	49,400	51,200	53,500	55,000	58,900
North Miami Beach ²	42,900	44,100	45,800	46,900	48,700	49,800	52,700
Unincorporated Miami-Dade County ¹	44,100	44,400	44,900	45,300	45,800	46,100	47,000
Golden Beach ²	900	900	900	900	900	900	900
City's Water Service Area	166,500	170,700	176,500	182,600	188,400	192,100	202,400

Notes:

¹Only a portion of Aventura, Miami Gardens and Unincorporated Miami-Dade County are within the City of North Miami Beach's Water Service Area.

²The City of North Miami Beach, Sunny Isles Beach, and Golden Beach are totally within the City of North Miami Beach's Water Service Area from a water supply and water treatment perspective.

4.3 POPULATION PROJECTIONS VERIFICATION

Population projections computed for this WSFWP were shared and agreed upon with these local governments in the City of NMB Utilities Service Area as part of the intergovernmental coordination element of this work plan. A workshop was conducted with local governments to go over population projections. The meeting minutes for this workshop can be found in **Appendix F**.

Population projections developed within this work plan were close to the projections performed by SFWMD for the 2013 Lower East Coast Water Supply Plan Update (LECWSP).

The results of the population projections published in the LECWSP for the City of North Miami Beach regional utility is shown in **Table 4-5**.

Table 4-5
LEC WSP Population Projections for
City of North Miami Beach Utilities Service Area

Year	2010	2020	2030
Population Projection	161,968	176,772	191,577

Population estimates included in the LECWSP used the 2010 United States Census data along with population projections based on BEBR 2011 data for the service area as a basis for population projections, while the population projections presented in this plan are based on the published Miami-Dade county projections as of October 2013 obtained from Miami-Dade County Department of Regulatory and Economic Resources. The population projection variation between this WSWFP and LECWSP is about 5%.

5.0 WATER DEMAND PROJECTIONS

The treated and raw water needs for the City's Water Service Area for the future are compiled in this Section. In long-term agreements with MDWASD there has been a sharing of service area, treated water "pass-through" from MDWASD through the City's distribution system back into MDWASD Service Area, and some bulk sales arrangements from the City to MDWASD retail service area customers. An agreement with MDWASD in 2001 has led to the City's expansion of its Norwood-Oeffler WTP using membranes and a normal day separation of water service areas; whereas, the City serves its retail Water Service Area completely plus it provides wholesale service to one small MDWASD retail area as previously shown in Section 2.

5.1 HISTORICAL WATER USE

The City's current and projected retail Water Service Area, as well as one small wholesale service area (MDWASD Retail Area) that are supplied treated water by NMB are shown in **Figure 2-1**. The estimated population served (as previously identified in **Table 4-1**) is shown in **Table 5-1** below. The recent annual treated water billed within the Water Service Area along with the bulk water sales has also been shown in **Table 5-1**. The per capita treated water usage ranged from 121 to 134 gpcpd (gallon per capita per day) with the average being 126 gpcpd. The per capita is a function of several variables including some such as rainfall, economy, rates, conservation restrictions, seasonal population influx etc. As a utility provider the City has to provide water to its customers no matter the situation. The City has adopted the per capita of 144 gpcpd consistent with its Consumptive Use Permit 13-00060-W and Comprehensive Plan to be able to provide water within the service area regardless of the fluctuating variables. Thus, the historic treated water per capita usage of 144 gpcpd was used as a conservative estimate for future demand projections.

5.2 PER CAPITA USAGE

Prior to the NMB Utility beginning a conservation program in the late 1990's the per capita treated water usage was above 150 gpcpd. Based on the historical water usage results shown in **Table 5-1** an average per capita treated water usage of 144 gpcpd has been projected through 2030 in **Table 5-2**.

**Table 5-1
City of North Miami Beach Historic Treated Water Use**

Year	Estimated Population ¹	Average Annual (MGY) ²	Estimated Gallon Per Capita Per Day ²	Average Month (MG) ^{2,3}	Maximum Month (mgm) ³	Maximum Month/Average Month Ratio ³
2009	160,276	7828	134	652	693	1.1
2010	160,762	7403	126	617	693	1.1
2011	162,687	7505	126	625	649	1.0
2012	164,612	7466	124	622	691	1.1
2013	166,538	7361	121	613	639	1.0
Average⁴			126			1.1

Notes:

- ¹. Interpolations from Traffic Analysis Zones (TAZ) 2000 and 2010 census populations.
- ². Includes all treated water produced and purchased from MDWASD (no additional water has been purchased from WASD since 2011).
- ³. Includes all treated water produced and purchased as well as all bulk sales to other utilities
- ⁴. The average shown is not indicative of normal demands due to:
 - a. Economic slow down since 2008.
 - b. Several years of above average rainfall.
 - c. City, County and SFWMD conservation initiative implementation.
 - d. While population numbers do not indicate a decrease in numbers, there was an actual decline for a while, vacancy data can be supported by billing records.

5.3 WATER DEMAND PROJECTIONS

The population projections have been shown in **Table 5-3** along with the per capita daily usage, giving the Daily Finished Water Needs for specific years. **Table 5-3** also indicates the split of alternative water supply (Floridan Aquifer) and the maximum permitted withdrawal from the Biscayne Aquifer of 26.31 mgd. The bottom line of **Table 5-3** indicates the ratio of Raw Water to Treated Water Demand. This ratio gradually increases from the current 1.15 ratio to 1.19 in 2030.

**Table 5-2
City of North Miami Beach Projected Treated Water Use**

Year	Total Population¹	Per Capita (gpcpd)	Average Annual (MGY)	Average Month (mgm)	Maximum Month (mgm)	Maximum Month / Average Month Ratio
2014	168,463	144	8,854	738	817	1.1
2015	170,712	144	8,973	748	828	1.1
2016	172,637	144	9,074	756	837	1.1
2017	174,562	144	9,175	765	847	1.1
2018	176,487	144	9,276	773	856	1.1
2019	178,413	144	9,377	781	865	1.1
2020	182,628	144	9,599	800	886	1.1
2021	184,553	144	9,700	808	895	1.1
2022	186,478	144	9,801	817	904	1.1
2023	188,403	144	9,902	825	914	1.1
2024	190,329	144	10,004	834	923	1.1
2025	192,254	144	10,105	842	932	1.1
2026	194,179	144	10,206	851	942	1.1
2027	196,105	144	10,307	859	951	1.1
2028	198,030	144	10,408	867	960	1.1
2029	199,955	144	10,510	876	970	1.1
2030	202,452	144	10,641	887	982	1.1

Notes:

¹ Interpolations from Traffic Analysis Zones (TAZ) population projections including new developments within the City's Water Service Area.

Table 5-3
City of North Miami Beach Water Service Area Water Demand Projections

	2015	2018	2020	2023	2025	2030
Water Service Area Population	170,712	176,487	182,628	188,403	192,254	202,452
Water Usage Rate (gpcpd)	144	144	144	144	144	144
Finished Water Demand for City's Water Service Area Population (MGD)	24.58	25.41	26.30	27.13	27.68	29.15
Bulk Finished Water Sales to Other Utilities (MGD) ¹	0.27	0.27	0.27	0.27	0.27	0.27
Bulk Finished Water Purchases from Other Utilities (MGD)	0	0	0	0	0	0
Total Finished Water Demand	24.58	25.41	26.30	27.13	27.68	29.15
BISCAYNE AQUIFER						
City's Water Service Area Finished Water Demand (MGD)	22.58	23.41	24.30	24.13	23.68	24.15
Lime WTP	15.00	15.00	15.00	15.00	15.00	15.00
Treatment Losses (2%)	0.31	0.31	0.31	0.31	0.31	0.31
Nanofiltration Treatment	7.58	8.41	9.30	9.13	8.68	9.15
Treatment Losses (20% up to 2019 and 15% starting 2020)	1.90	2.10	1.64	1.61	1.53	1.62
Water loss in Treatment 2 (MGD)	2.20	2.41	1.95	1.92	1.84	1.92
A SR Losses (MGD)	0	0	0	0	0	0
Total Raw Water Demand (MGD)	24.78	25.82	26.25	26.05	25.52	26.07
FLORIDAN AQUIFER						
Finished Water Demand (MGD)	2.00	2.00	2.00	3.00	4.00	5.00
Water loss in Treatment ² (MGD)	0.67	0.67	0.67	1.00	1.33	1.67
A SR Losses (MGD)	0	0	0	0	0	0
Total Raw Water Demand (MGD)	2.67	2.67	2.67	4.00	5.33	6.67
TOTAL RAW WATER DEMAND (MGD)						
	27.45	28.49	28.91	30.05	30.86	32.74
Raw Water / Treated Water Ratio	1.12	1.12	1.10	1.11	1.11	1.12

Notes:

- ¹ Included in line above (area served through City of North Miami Beach transmission system as of March 2014).
- ² Water treatment efficiencies: nanofiltration- 80%, reverse osmosis- 75%, lime softening- 98%.

5.4 WATER CONSERVATION PROGRAM

In order to meet the water demands of existing and future populations and to ensure that habitats and ecosystems are protected, South Florida's as well as the nation's waters must be sustainable and renewable. Sound water resources management, which emphasizes careful, efficient use of water, is essential in order to achieve these objectives. Efficient water use can have major environmental, public health and economic benefits by helping to improve water quality, maintain aquatic ecosystems and protect drinking water resources. As we face increasing risks to ecosystems and their biological integrity, the link between water quantity and water quality becomes more important. Water conservation is one way of addressing water quantity and quality goals. Other methods of assuring water quantity and quality involve demand management, regional storage, reduction of raw and treated water losses and alternative supply or offsetting reuse of water.

The City began implementing a water conservation program in 1999 for the purpose of promoting the efficient use and conservation of clean drinking water. The creation of a formal conservation program was a result of a requirement by the SFWMD and the City's desire to better manage its water resources. The program includes a combination of educational, financial, operational and regulatory initiatives to encourage efficient water use while remaining consistent with the overall mission, goals and objectives of the City of North Miami Beach. All water conservation programs and incentives, current and future, implemented by the Public Utilities Department will support the goals and objectives of the 2013 Lower East Coast Water Supply Plan Update implemented by the South Florida Water Management District. The City's water conservation program will also conform to anticipated amendments to Florida Statute 62-40.412 – Water Resource Implementation Rule: Water Conservation.

The City is currently updating its Water Conservation Plan in 2014; this plan is currently in draft form. The City's water conservation program continues to develop and implement educational, operational, financial and regulatory best management practices (BMP) that promote the most efficient use of the regions natural water resources and the utility's allocated water supplies. All BMPs are implemented to achieve one or more of the following goals:

- Reduce and/ or control per capita water demands
- Reduce and/ or control peak water demands
- Low unaccounted for water loss
- Greater accountability for water produced/ sold

- Overall efficient development of existing water supplies and infrastructure
- Extend functional life of utility infrastructure
- Lower treatment, energy and capital costs
- Utility revenue stability
- More effective drought response
- Improved consumer confidence and awareness
- Educating customers of all ages

Appendix D provides the City's overall plan. Some of the programs that promote and support the water conservation program for the North Miami Beach Public Services Department are discussed below.

5.4.1 Unaccounted for Water

Conservation and utility staff work cooperatively with relevant departments/ divisions to identify and account for water produced versus water delivered to the City's Water Service Area customers. The Engineering Division and the Finance Division quantify and track non-revenue water loss on a monthly basis. As negative trends are identified, conservation and utility staff assist in problem solving activities. Quantitative and financial methods for monitoring aggregate water use are also employed to readily identify disparities in water production versus water delivery.

5.4.2 Metering Practices

Accurate metering is essential to the City's financial and production accountability. Conservation and utility staff work cooperatively with related departments/ divisions to ensure proper meter placement and replacement, accuracy and monitoring. The Public Utilities Department implements an on-going meter accuracy program throughout the distribution network. Although most 5/ 8 meters are completely changed out either through the previous meter replacement program or through the AMR meter replacement program, other meters may be repaired and/ or rebuilt to improve accuracy. The primary purposes of this BMP are to achieve and maintain greater water use metering accuracy and to reduce non-revenue water loss.

NMB Customer Service assessed meter service length for accounts they service daily. Meters and Backflow Division also assess meter service lengths on a case-by-case basis. Meters in service greater than ten years were requested to be changed through a work order system. Meters were either completely changed

out or rebuilt, depending on size and application. Meters and Backflow Division tracks all meters maintenance activities on a monthly basis. Reports were made on a monthly, quarterly and annual basis.

Implemented through the department's Meters and Backflow Division, 2,500 meters were targeted annually to maintain a length of service no more than 10 years. This program was carried out by the City until 2009. The Public Utilities Department is always looking to find ways to conserve water through Demand Management. Since 2009, the City developed and is in process of implementing an upgrade to transition to an Automatic Meter Reading (AMR) Program. The AMR program is anticipated to begin by fall of 2014 and is anticipated to complete within a year. This program shall track consumer's water usage and detect leaks in the user's system. Once detected, the consumer will be notified. This program will also be used to track the efficiency of various BMPs that have been implemented.

5.4.3 Leak Detection

Water Production/ Distribution & Pipeline System leaks can be identified as main breaks or during other operational practices and miscellaneous occurrences. The City on a quarterly basis performs a leak survey of a portion of water distribution system to identify any leaks in piping network. At the end of the survey a report is prepared to quantify the leaks with estimated amount of water loss identified. The City also piloted a leak detection program in 2014 to pinpoint hard to detect leaks in large diameter water transmission mains. The City conducted the pilot project on two subaqueous mains and the project was successful in identifying two small leaks.

5.4.4 Automated Hydro-Flushers

The City employs five automated Hydro Flushers in designated portions of the distribution network. The primary purpose is to improve and maintain water quality through limited, automatically scheduled, timed discharges used during the flushing process. Hydro Flushers provide water savings as opposed to traditional hydrant flushing by automatically stopping the flushing process on a timed basis when adequate water volumes have flushed out the system, based on water quality analysis from examination of previous month's data.

5.4.5 Water Conservation Rate Structure

The City implemented a rate structure for water and sewer billing that promotes water conservation. Adopted by ordinance by the Mayor and City Council, the rate structure consists of multiple tiers. Base water rates and incremental rates are evaluated annually. To date, three classifications of water users include single-family, multi-family and non-residential.

5.4.6 Permanent Irrigation Ordinance

The City supports and conveys the intent of Miami-Dade County Code, Chapter 32, Section 32-8.2. This Section of the County Code prohibits landscape irrigation during periods of high evaporation and further prohibits irrigation systems to be operated in a manner causing water to be wasted. The County Code prohibits irrigation between the hours of 10:00 a.m. and 4:00 p.m., seven days a week, from Monday to Sunday. The City of North Miami Beach amended its Land Development Code to support the Miami-Dade County code.

5.4.7 Water Shortage/Emergency Ordinance

In the event a water shortage is declared by the SFWMD and per Chapter 40E-21, F.A.C or an emergency situation resulting in a water shortage, the City is prepared to address these situations using City of North Miami Beach, Code of Ordinances, Chapter 19, Article III, Division 5. This ordinance provides for the application, authority to implement, prescribed water restrictions or use curtailments and enforcement.

5.4.8 Water Efficient Plumbing Fixtures Code

The City requires and enforces the guidelines established by the South Florida Building Code, Chapter 46 - Plumbing. Chapter 46 of the South Florida Building Codes supports the requirements set forth by the South Florida Water Management District for use of water efficient plumbing fixtures. The City also adopted by reference and enforces the Miami Dade County Water and Sewer Ordinance No. 32-84, 32-85, 32-86- Plumbing. This BMP requires the installation of water efficient plumbing fixtures in all new construction.

5.4.9 Public Education, Outreach and Demonstration Projects

Education and public awareness are key components of any water conservation program. Educational and outreach programs must be tailored to appeal to a broad audience. Conservation and utility staff constantly evaluate products and technology that relate to water efficiency and initiate the use of those determined to be effective. The City has a voluntary water use assessment survey program for single-family residential and small commercial customers. Customers completes a comprehensive questionnaire on their water use habits, and responses from the surveys are compared to current and historical water billing data to determine the potential for water savings by the customers. A customized written report is provided to the customer containing an assessment of their water consumption and recommendations on how to achieve greater water use efficiency.

The Water Conservation Program provides outreach and other services to industrial, commercial and institutional (ICI) water customers. Water customers in these categories include retail, restaurant, condominium, multi-family and others. Informational fact sheets are made available for customers. The Program makes presentations to students, civic, residential and other groups as invited resulting from ongoing partnerships with schools/ teachers, word of mouth, organized career day events etc. The Program implements an annual water conservation poster contest for elementary school students. Local winners are then forwarded to state wide poster contest coordinated by Florida Section of American Water Works Association.

5.4.10 Water Efficient Landscaping and Irrigation

Conservation staff, the City Forester, and other staff are considered a significant resource for the City's water customers regarding the installation and care of water efficient landscapes (Florida-friendly landscaping techniques) and efficient irrigation practices. City conservation and utility staff use reference materials from South Florida Water Management District, North Miami Beach Urban Forester, American Water Works Association and the Irrigation Association to educate customers about the principles and techniques to be practiced. The City also created a partnership with the Florida Yards & Neighborhoods Program to facilitate this measure. Amendments addressing Florida-friendly landscaping and irrigation codes are pursuant to FS 373.185 and FS 373.62.

5.4.11 Presentations and Speaker's Bureau

Conservation staff, in conjunction with the Public Information Officer, has established contacts with Miami-Dade County Schools, local private schools, local non-profit groups, neighborhood groups and condominium associations to serve as a resource for water efficiency and water quality issues. Conservation and utility staff are available for, or will coordinate, presentations and other activities upon request.

5.4.12 Water Conservation Month and Drinking Water Week

Conservation and utility staff coordinate various educational activities to recognize, celebrate and commemorate Water Conservation Month and Drinking Water Week (DWW). Water Conservation Month, initiated by the Florida Water Wise Council, is a statewide campaign for promoting water conservation issues during the month of April. The Governor recognized the initiative by proclamation. DWW is the international celebration of clean drinking water during the first full week of May. Target audiences during Water Conservation Month and DWW are school students and the general public as well as City employees. Diverse educational opportunities have been developed for these

audiences. Similar activities have also been planned to recognize Public Works Week and other citywide special events. NMB “Water Fest” and the water conservation poster contest are two other annual events the City hosts as part of the Water Conservation Month and DWW.

5.4.13 Rain Harvesting

In an effort to reduce the amount of rainfall runoff lost to tide during rain events, the Public Services Department installed three 10,000 gallon storage tanks. These tanks are filled with rainfall runoff from the roof and impervious areas of the Operations Center. The stored runoff is then used to irrigate “on-site” landscaping and to fill tanker trucks for other irrigation needs around the City.

5.5 WATER REUSE

Water reuse is a practical and beneficial water conservation tool when resources are available. The City does not own or operate a wastewater treatment facility. Wastewater generated by the City’s water customers is treated by MDWASD. There are no readily available sources of reclaimed water at this time; however, the City has and will continue to hold discussions with MDWASD and SFWMD in an attempt to begin a reuse program using reclaimed water from the MDWASD North District Wastewater Treatment Plant, if it becomes available.

An assessment was conducted by the City to determine the feasibility of installing water reuse infrastructure within the corridors of pipelines due for construction as part of the Water Treatment Plant Expansion Program. This evaluation of the installation of reuse water pipelines was performed to identify permitting requirements, potential future usage applications, design criteria, and associated capital costs. A benefit analysis was conducted to evaluate the advantages and disadvantages of the installation of the reuse water pipeline.

The feasibility assessment recommended that a more in-depth evaluation should be performed to identify the best source of reclaimed water (City owned wastewater plant versus acquiring effluent from others), the appropriate selection of a future treatment facility location, and confirmation of the pipe route to be selected.

5.6 ALTERNATIVE WATER SUPPLY

The City of North Miami Beach Public Services Department was the first utility in Miami-Dade County to commit to and then implement a substantive Alternative Water Supply Program for their Water Service Area. The City’s CUP requires that the Floridan aquifer wells operate to withdraw a minimum of 10 percent of the quantity of water withdrawn from Biscayne aquifer wells on an

annual average basis. This system has been in service since 2008 and is further described in **Section 3**.

While demand management and conservation are key focus items, as previously mentioned in this Section, opportunities for alternative supplies or Biscayne Aquifer offsets will continue to be pursued by the City. Reuse water, up to approximately 100,000 gpd, if reasonably available, could be used for a Public Works Vehicle Washing Station. Another option discussed has been the possibility of a wastewater scalping facility to provide reuse water for irrigation or ground water recharge.

6.0 WORK PLAN

The City has made significant strides over the past few years improving their water supply facilities and related treatment, storage, transmission and distribution systems. As part of that effort, additional property adjacent to the WTP site was acquired to allow growth of both the treatment and storage capacity at that location. The current 32 mgd WTP is shown in the Key Plan of **Figure 6-1** and the anticipated future expansion on site is shown in the Proposed Site Plan of **Figure 6-1**. This site expansion including rezoning and NW 8th Avenue right-of-way vacation could not have been accomplished without the cooperation of the City of Miami Gardens and Miami-Dade County, whose citizens receive service from this WTP. This overall expanded WTP allows the City to provide adequate treatment and storage capacity to meet the water supply and treatment requirements of the City's Water Service Area through the Year 2030.

6.1 NORWOOD-OEFFLER WTP

While the current WTP capacity is 32.0 mgd, the City had originally planned for an additional 5.5 mgd of treatment capacity at this location as follows:

- Adding a new NF membrane skid (3.0 mgd).
- Adding new vessels to the existing RO skids (2.0 mgd).
- Creating another 0.5 mgd in blended raw water.

This approach has since been altered due to the Biscayne Aquifer restrictions imposed by SFWMD under their Water Availability Rule. **Table 6-1** reflects the future expansion plans for the WTP, since limits on the Biscayne Aquifer were adopted.

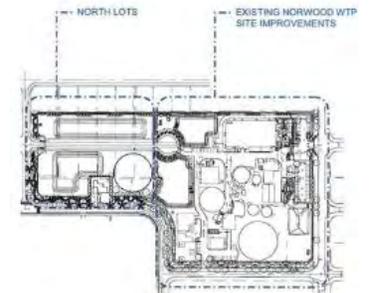


1 PROPOSED SITE PLAN
SCALE: 1" = 30'

SITE DATA:
 SITE DEVELOPMENT FOR REPLACING
 OWNER: CITY OF NORTH MIAMI BEACH
 FOUO NUMBERS: 34-2102-001-0310
 34-2102-001-0320
 34-2102-001-0330
 34-2102-001-0340
 34-2102-001-0350
 34-2102-001-0360
 34-2102-001-0820
 34-2102-001-0830
 34-2102-001-0840
 34-2102-001-0850
 34-2102-001-0855
 34-2102-001-0860
 34-2102-001-0870
 34-2102-001-0640
 34-2102-001-0630
 34-2102-001-0610
 34-2102-001-0600
 34-2102-001-0590

CURRENT ZONING: GP - GOVERNMENT PROPERTY

AREAS:
 TOTAL SITE AREA: 4.05 ACRES 175,222 SQ FT 100.00%
 PROPOSED TANK AREA: 19,100 SQ FT
 PROPOSED GUARDHOUSE: 100 SQ FT



2 KEY PLAN
N.T.S.



NORTH LOTS - NORWOOD WTP PROPOSED MASTER PLAN



OCTOBER 01, 2007

Figure 6-1

**Table 6-1
Norwood-Oeffler WTP Water Production Capacity**

Treatment Process	Capacity (M GD)		
	Current (2008)	Next Expansion Phase	Future Expansion Phase
Lime Softening ¹	15.0	15.0	15.0
Nanofiltration permeate	9.0	9.0	9.0
Low Pressure RO permeate	6.0	9.0 ³	12.0 ⁴
Raw Water Blend	2.0	2.0	2.5
TOTAL	32.0	35.0	38.5
WASD Purchase ²	On demand	On demand	On demand

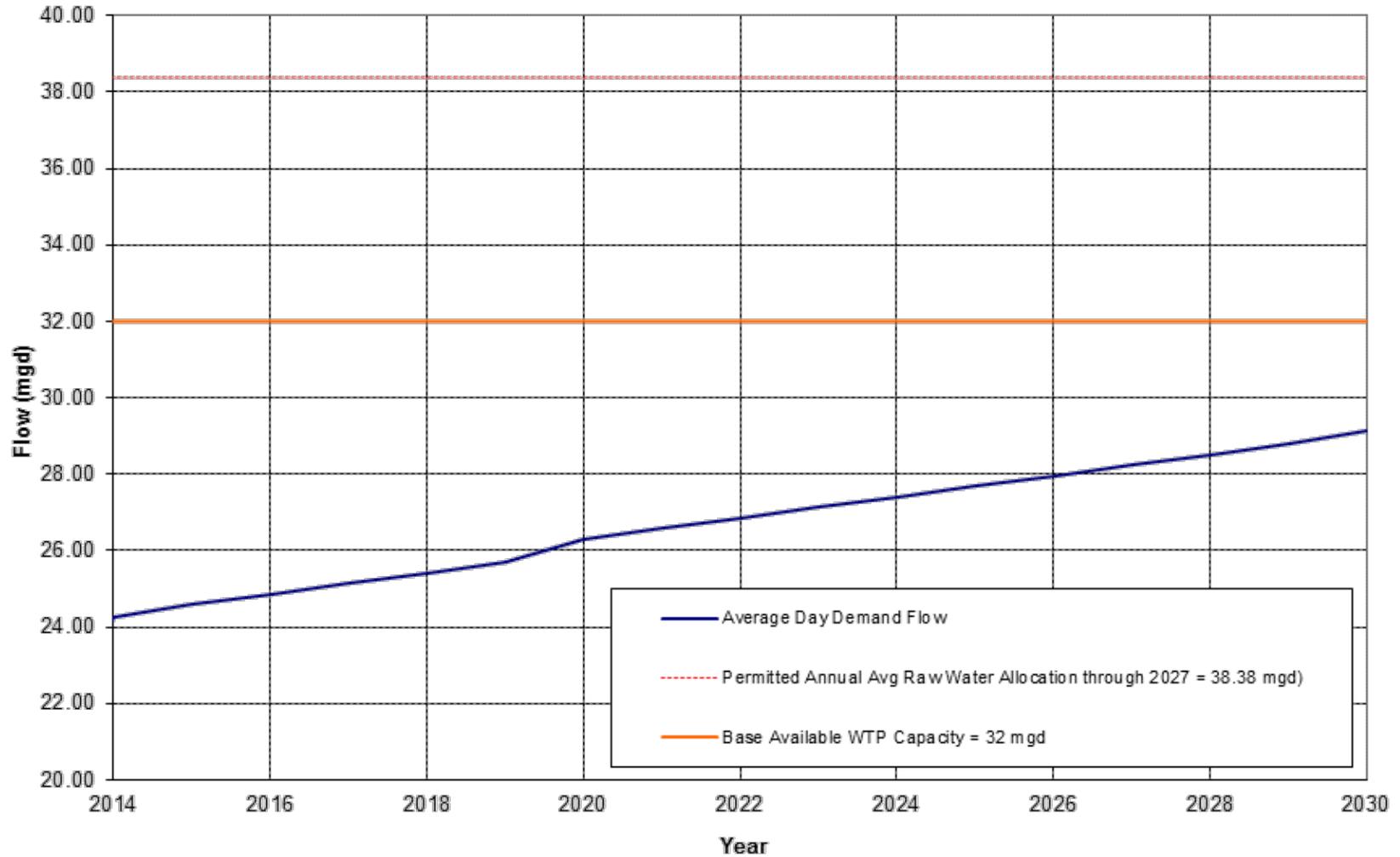
Notes:

- ¹ Lime softening portion of WTP may be able to be operated at 16.0 mgd to meet peak demands or emergency conditions (further evaluation and testing needed).
- ² City has an Agreement to purchase water from WASD on an as-needed basis for emergency purposes, to aid maintenance activities, for resale to retail area customers or other purposes.
- ³ Increased capacity of 3.0 mgd achieved by adding vessels and membranes to existing RO skids increases each skid from 2 mgd to 3 mgd.
- ⁴ Increased capacity of 3.0 mgd achieved by adding one more RO skid to the now vacant, but designed, NF location.

6.2 MEETING AVERAGE DAY WATER SUPPLY NEEDS

The City received Water User Permit No. 13-00060-W from the SFWMD on August 9, 2007, with latest modification to limiting condition 28 and 30 issued on June 11, 2012. The permit expiration date is August 9, 2027 and provides for an average annual raw groundwater withdrawal of 14,009 mg (million gallons) with 4,406 mg average withdrawal from the Floridan Aquifer and 9,603 mg average withdrawal from the Biscayne Aquifer. The total average day raw water allocation is 38.38 mgd with 12.07 mgd taken from the Floridan Aquifer and 26.31 mgd taken from the Biscayne Aquifer. The average day treated water demand and current WTP capacity are shown through 2030 in **Figure 6-2**. It should be noted that the permitted raw water withdrawal and WTP treatment capacity can meet average day demand through 2030. While the WTP will need adjustments to meet peak day demands, the raw water allocation is based on an annual withdrawal amount with monthly (but not daily) withdrawal limits.

**Figure 6-2 City of North Miami Beach Water Service Area
Average Day Treated Water Demand and WTP Capacity**



6.3 PEAK DAY FLOW CONDITIONS

Historically it has been difficult to ascertain exact peak day flows for the City's Water Service Area because the Bulk Purchases of treated water from MDWASD was not routinely recorded daily. Only the monthly volumes were routinely tracked and billed. Thus, a peak day peaking factor of 1.3 had been used as it was typical for utilities in this area. Such peak day peaking factors normally would have occurred on weekends during the months of April or May, which is near the end of the dry season and beginning of the hot season. With the current water restrictions in place, it is not possible to accurately predict future peak day peaking factors. As long as water use restrictions (e.g. odd/ even addresses with limited hours for water irrigation) are in place, the historical peak day use will actually be spread out. The impact will be a peak day peaking factor that is lower than the historical value. It is expected that the City's Water Service Area peak day peaking factor will range from approximately 1.20 to 1.25 in the future. It will take several years of solid data collection and review of said data in the future to ascertain a more accurate peaking factor. The projected total peak day demand flow through 2030 using a conservative peak factor of 1.22 is shown in **Table 6-2**.

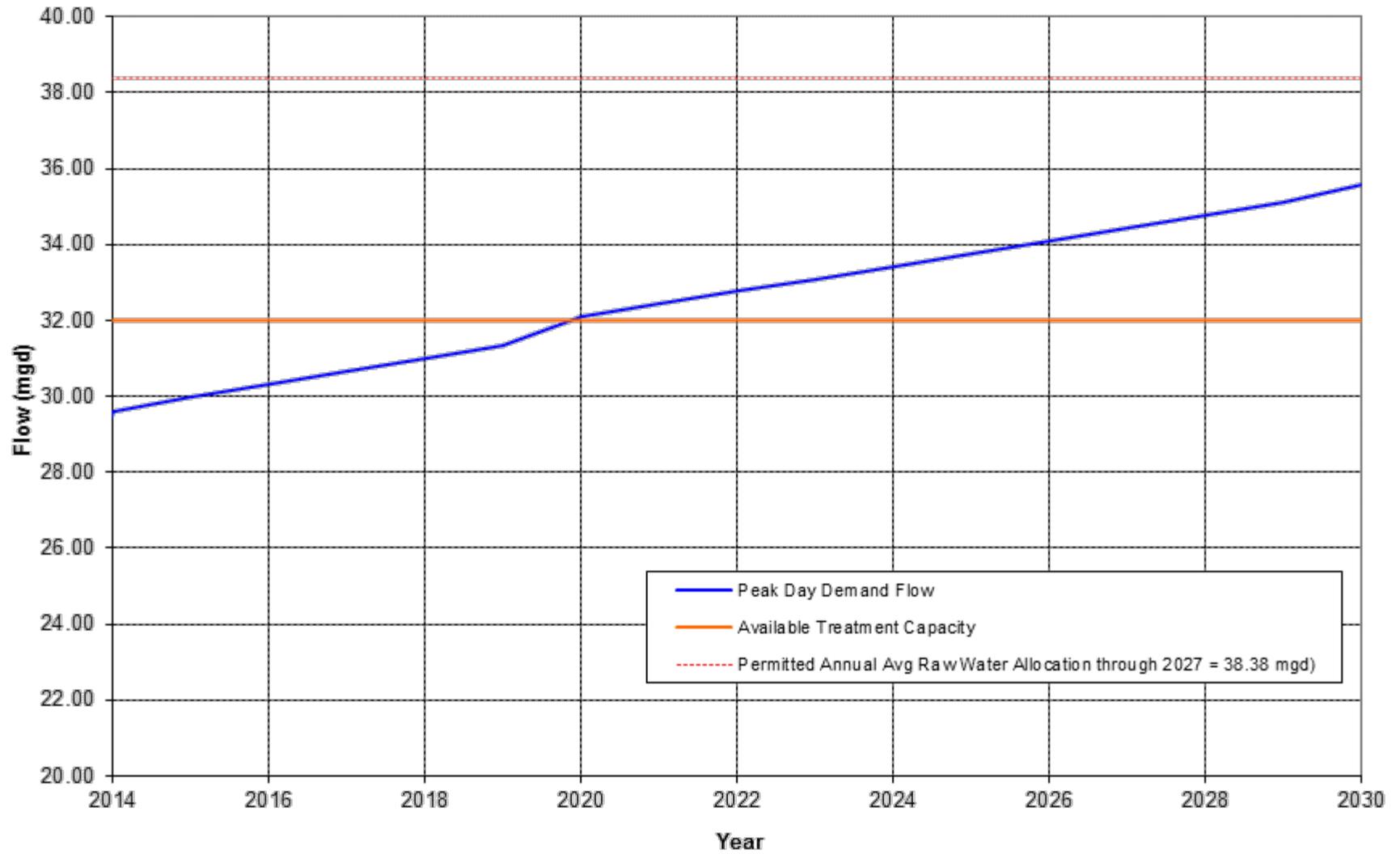
Table 6-2
City's Water Service Area Peak Day Demand Projections

Year	Population	Finished Water Demand	
		Average Day (mgd)	Peak Day (mgd)
2010	160,800	20.28	24.74
2013	166,500	20.17	24.61
2015	170,700	24.58	29.99
2018	176,500	25.41	31.01
2020	182,600	26.30	32.08
2023	188,400	27.13	33.10
2025	192,100	27.68	33.78
2030	202,400	29.15	35.57

Notes: Peak day peaking factor = 1.22.

Figure 6-3 shows the projected peak day treated water needs for the City's Water Service Area through 2030 using a peaking factor of 1.22.

**Figure 6-3 City of North Miami Beach Water Service Area
Peak Day Water Demand Using Peaking Factor of 1.22 and WTP Capacity**



6.4 MEETING PEAK DAY FINISHED WATER DEMANDS

In order to meet peak flow demands (associated with a peaking factor of 1.22) near or above current plant capacity, several alternatives have been considered:

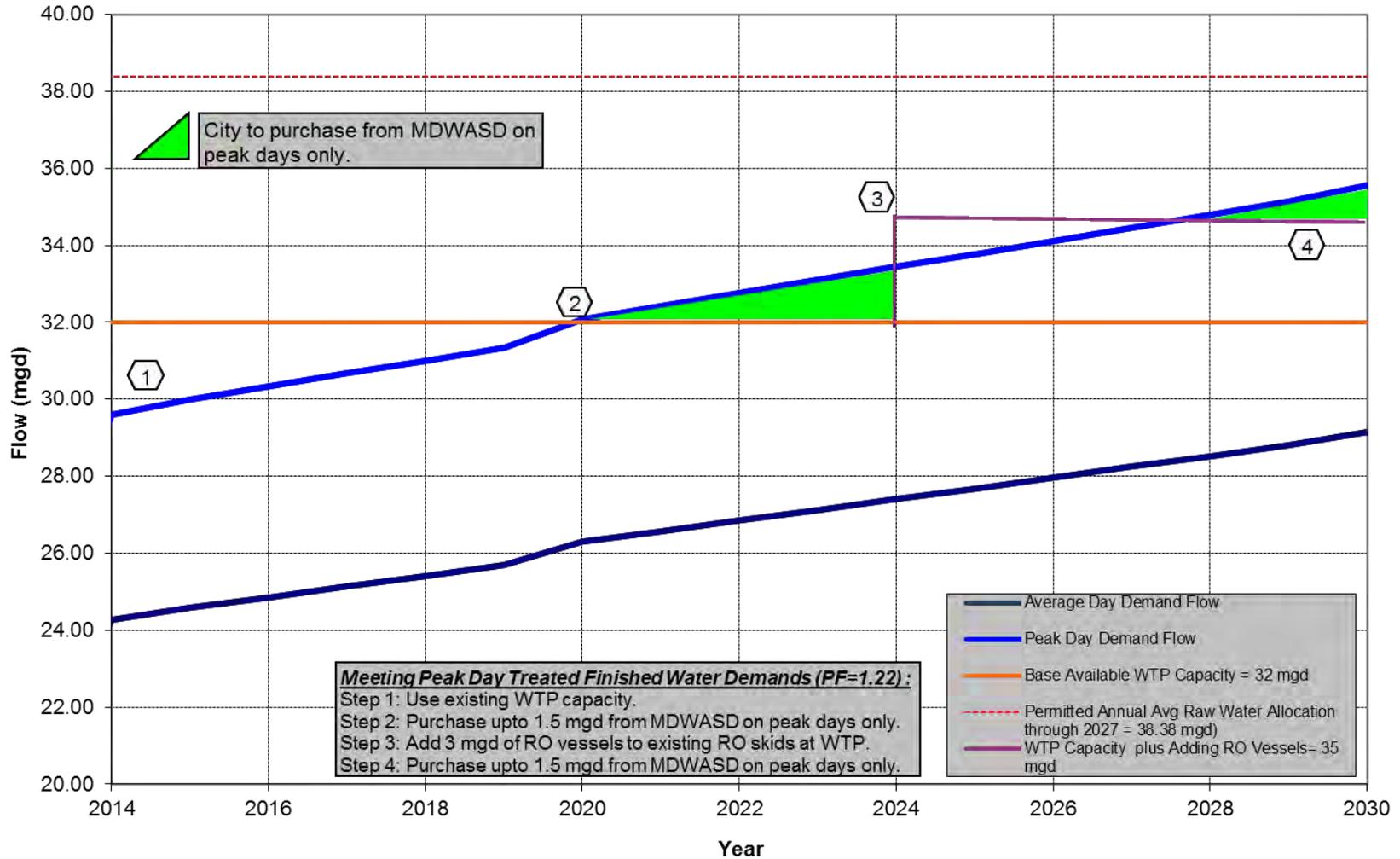
- Withdrawal of needed flow from excess storage capacity on peak day (s);
- Taking water from MDWASD to supplement the flow on only peak days;
- Adding membrane treatment vessels to the RO portion of the WTP; and,
- Adding a new RO membrane treatment skid at the WTP

Currently the average day flow is lower than normal due to the water restrictions instituted by the SFWMD, greater rainfall, vacancies, etc. Based on normal day flow projections and a peak day peaking factor of 1.22, the 32.0 mgd WTP capacity could be reached on a peak day in 2020. With current economic and growth conditions, where connection fee revenues are limited for installing new capacity, it is felt that supplemental water from MDWASD to meet peak day demands (should the WTP capacity actually be reached) is reasonable. This limited MDWASD supplement, as allowed by the Agreement between the City and County dated March 19, 2001, would probably occur only 10 to 20 days per year with a maximum day need of about 1.5 mgd in 2024. By 2024 the City would add 3.0 mgd in additional RO capacity; namely, by evaluating the membrane efficiency and through installation of additional vessels on the existing skids as provided for in the initial WTP design and construction.

This would add 3.0 mgd to the base WTP capacity of 32.0 mgd resulting in a total WTP capacity equal to 35.0 mgd. The City's Water Service Area finished water peak flow demands will be met through the following steps that are also shown in **Figure 6-4**.

1. Existing Plant Capacity.
2. Only peak flow input via PSV or flow control valves into the City's system from MDWASD.
3. Adding RO vessels with membranes to existing RO skids at WTP and Floridan Well No. 5.
4. Only peak flow input via PSV or flow control valves into the City's system from MDWASD.

Figure 6-4 City of North Miami Beach Water Service Area Meeting Peak Day Treated Finished Water Demands (Peaking Factor = 1.22)



The City will continue to exercise its role in water conservation and demand management. **Table 6-3** presents the City's specific Capital Improvements Projects and Schedule that will be implemented pursuant to this **Work Plan**.

In items 2 and 4 above, potable water could be distributed through the MDWASD PSV interconnections or control valves only if demand exceeds plant capacity on a few peak days of the year. For example, in 2020 the average day demand is projected to be 26.30 mgd and the peak day demand will be 32.09 mgd using a peaking factor of 1.22. Applying a peaking factor of 1.25 to 26.30 mgd average day demand results in a peak demand of 32.88 mgd. This is just over the existing WTP capacity of 32.0 mgd. The difference in the 1.22 and 1.25 peaking factor indicates that about 5 to 10 days a year would be needed to supplement the WTP capacity. During these times, the City could use its storage to provide those small amounts of water (less than 1.0 mgd in 2022 for example), but it is likely more prudent to refill storage each night using the MDWASD interconnections (PSV or Control Valves). Total volumes used would likely range from about 5 to 15 million gallons per year.

6.5 FINANCIAL

The City has relied upon three financial elements that aid the utility in addressing both its capital and O&M needs. The Utility Operating and Rate Revenue (tiered rate structure), a Fire Flow Fee and a Connection ("In-Plant") Fee are the key components of their financial plan. Both the Fire Flow Fee and Connection ("In-Plant") Fee were upgraded in 2006 to help defray the cost of Transmission, Storage and Distribution system costs and the cost of WTP capacity, respectively.

The costs of Demand Management and Leak Detection (Items 1 and 2, respectively, in **Table 6-3**) will be paid using the tiered rate structure revenue. The costs of water supply and treatment needs (Items 3 through 7 in **Table 6-3**) will be paid using the Rates and Connection ("In-Plant") Fees.

While not shown as needed in **Table 6-3**, the City will continue to make improvements to the Transmission and Distribution System through funds raised with Fire Flow Fees coupled with some revenue from the Utility Operating and Rate Structure.

**Table 6-3 City of North Miami Beach
Costs (\$1000) and Schedule of Capital Improvements Required to Meet Projected Water Service Area Growth Needs through 2024**

No.	Project Description	Fiscal Year											Future	Work Plan Total
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
1	Demand Management: Automated Meter Reading													
	Administration													
	Construction													
	Contingency	10	3											
	Subtotal	10	3											13
	Funding Source	R	R	R	R	R	R	R						
2	Leak Detection Program													
	Administration													
	Construction	40	40	40	40	40	40	40	40	40	40	40	40	TBC
	Contingency		6	6	6	6	6	6	6	6	6	6	6	TBC
	Subtotal	40	46	46	46	46	46	46	46	46	46	46	46	500
	Funding Source	R	R	R	R	R	R	R						
3	Addition of RO Vessels to Existing Skids to Increase RO capacity from 6 mgd to 9 mgd													
	Administration										450	450		
	Construction											3600		
	Contingency											900		
	Subtotal									450	4950			5450
	Funding Source									IF	TBD			
4	New Floridan Well (F-5)													
	Administration								120	120	240			
	Construction											2420		
	Contingency										120	610		
	Subtotal								120	240	3270			3630
	Funding Source								IF	IF	TBD			

- Notes:
1. Costs shown in thousands of dollars (August 2014, CCI Index 9846).
 2. Administration includes administration, engineering, inspection, legal and permit related activities.
 3. TBC = to be continued; additional funding needed for project completion.
 4. TBD = to be determined
 5. R = funding will be provided through Capital Improvement Program that is funded by rates.
 6. IF = funding will be provided through Impact Fees pursuant to applicable Ordinances.

6.6 UTILITY (OPERATING AND RATE) REVENUE

The City's operating revenues are primarily derived from the sale of water services subject to the rates, fees and charges adopted by the City Council. Operating revenues can primarily be classified into two major categories: (1) User Rates and Charges consisting of the periodic billings to active customers, and (2) Other Operating Revenues consisting of income derived from bulk sales, miscellaneous charges and interest earnings.

Rate Revenue is the primary source of revenue that enables the City to meet all of its current and projected financial requirements. The existing water rate structure provides for a billing charge per bill issued to customers regardless of flows generated and inclining blocks (conservation) consumption charges per thousands of gallons based on monthly metered water.

It should also be noted that the City has adopted a policy in accordance with the Florida Public Services Commission deflator index that allows for automatic inflationary adjustments to the user rates each fiscal year.

6.7 IMPACT FEES (“IN-PLANT” AND FIRE FLOW CONNECTION CHARGES)

The City “In-Plant” and Fire Flow Fees (Impact Fees) are designed to mitigate the cost of new or expanded utility facilities and infrastructure required to support an increased demand for utility service.

“In-Plant” Fees are imposed on developers and builders for new infrastructure that must be built or increased due to new property development. This fee may also be noted as a cost contribution for the expansion and upgrading of the utility's water supply, treatment and storage infrastructure in order to supply the additional demands required by new construction.

Fire Flow Fees are imposed for new or upgrading customers connecting to the water system for which additional transmission, distribution, storage and fire hydrant capacity costs will need to be allocated. The fees collected are used for system improvements to ensure that the City can provide adequate flow, pressure demands and hydrant coverage throughout the Water Service Area.

Both of these fees are collected from new customers connecting to our system for which new water capacity will need to be allocated.

6.8 GOALS, OBJECTIVES, POLICIES

The following existing and proposed goals, objectives and policies of the City's Comprehensive Plan are in support of the City's 10-Year Water Supply Facilities Work Plan:

- Adopt, implement and update the 10-Year Water Supply Facilities Work Plan recommended projects and implementation schedule. (Future Land Use Element; Infrastructure Element; Conservation Element, and Capital Improvement Element)
- The City through its Land Development Regulations and in coordination with the 10-Year Water Supply Facilities Work Plan will coordinate current land uses and any future land use changes with the availability of water supply system. (Future Land Use Element, Policy 1.1.7)
- The City shall require proposed amendments to the Future Land Use Map provide data and analysis demonstrating adequate water supply and facilities are available (Future Land Use Element, Policy 1.1.8)
- Through the Technical Review of Applications for Development (TARD) Process, assure adequate provisions for the water supply, treatment, and distribution system are planned for (Future Land Use Element, Policy 1.9.2)
- Potable Water: the City's water system shall provide 144 gallons per capita per day at a pressure of 40 pounds per square inch. (Infrastructure Element, Policy 1.2.4)
- The City shall consult with the City's Public Services Department prior to the approval of a building permit to determine whether adequate water supplies to serve new development will be available no later than the anticipated date of issuance of the Certificate of Occupancy. (Infrastructure Element, Policy 1.2.7).
- Maintain and expand water conservation, water reuse, and alternative water supply programs (Infrastructure Element, Objective 1.3)
- Utilize the City's Water Conservation Program Plan, based on SFWMD requirements and in support of the goals and objectives of the Lower East Coast Water Supply Plan to assist in guiding water resource management (Infrastructure Element, Policy 1.3.1)

- The City shall promote the use of ultra-low-flow plumbing fixtures through its Showerhead Exchange Program and requires and enforces the guidelines established by the Florida Building Code, Plumbing (Infrastructure Element, Policy 1.3.3)
- Continue to use a water and sewer billing rate structure that encourage conservation (Infrastructure Element, Policy 1.3.4)
- The City's Water Conservation Program Plan will also conform to anticipated amendments to Florida Statute 62-40.412-Water Resource Implementation Rule: Water Conservation and support the goals and objectives of the Lower East Coast Water Supply Plan (Infrastructure Element, Policy 1.3.6)
- The City shall continue to use automated Hydro Flushers to improve and maintain water quality (Infrastructure Element, Policy 1.3.7)
- The City shall continue to support and implement its own version of Miami-Dade County's ordinance that prohibits landscape irrigation during periods of high evaporation and operation of irrigation systems in wasteful manners. (Infrastructure Element, Policy 1.3.8)
- The City shall continue to implement Ordinance 81-22 during water shortage events declared by SFWMD or during other emergency situations resulting in water shortages. (Infrastructure Element, Policy 1.3.9)
- The City shall continue to implement and evaluate the expansion of its water conservation public education, educational water related events, outreach and demonstration projects. (Infrastructure Element, Policy 1.3.10)
- The City shall continue to utilize the three 10,000 gallon storage tanks installed at its Operation Center for on-site and citywide irrigation purposes. (Infrastructure Element, Policy 1.3.11)
- The City shall continue the evaluation of water reuse by identifying the most feasible source of reclaimed water (a potential City owned wastewater plant versus effluent acquired from others). (Infrastructure Element, Policy 1.3.12)

- The City shall continue to implement the requirements of Water Use Permit ‘RE-ISSUE 13-00060-W’ issued on August 9, 2007 by SFWMD and as described in the City’s 10-Year Water Supply Facilities Work Plan to further increase its utilization of raw water as an Alternative Supply. (Infrastructure Element, Policy 1.3.13).
- The City shall continue to cooperate with the SFWMD in monitoring of groundwater supply conditions and consumptive use review. (Infrastructure Element, Policy 1.3.14).
- The City of North Miami Beach Water Supply Facilities Work Plan (Work Plan), as prepared by the City of North Miami Beach Public Services Department in conjunction with MWH Consultants and dated March 2015, is incorporated by reference into the Comprehensive Plan. This document is designed to: assess current and projected potable water demands; evaluate the sources and capacities of available water supplies; and, identify those water supply projects, using all available technologies, necessary to meet the City’s water demands till 2030. The Work Plan shall remain consistent with the City’s Water Use Permit renewals and with projects as listed in SFWMD’s *Lower East Coast Regional Water Supply Plan*. The Work Plan will be updated, at a minimum, every 5-years and within 18 months after the SFWMD’s approval of an updated *Lower East Coast Regional Water Supply Plan*. The potable water supply facilities necessary to satisfy projected water demands during the 2015-2030 period are shown in **Table 6.3** of the Work Plan. (Infrastructure Element, Policy 1.7.1).
- The basis for developing and updating the City’s 10-Year Work Plan will be the current approved version of SFWMD’s 2013 *Lower East Coast Water Supply Plan Update*. (Infrastructure Element, Policy 1.7.2).
- The City shall coordinate appropriate aspects of its Comprehensive Plan with jurisdictions within its water service area and the SFWMD’s 2013 *Lower East Coast Regional Water Supply Plan Update*. The City shall amend its Comprehensive Plan and Water Supply Facilities Work Plan as required to provide consistency with the District plan. (Infrastructure Element, Policy 1.7.3).
- The City shall continue to utilize, expand and pursue the development of new alternative water supplies as detailed in the Work Plan to meet the City’s existing and future water supply needs. (Infrastructure Element, Policy 1.8.1).

- The City shall take the steps necessary to assure that all its potable water wellfields remain available for use and possible future expansion. (Infrastructure Element, Policy 1.8.2).
- In the development of its future potable water supplies the City shall to the maximum extent feasible, utilize methods which preserve the integrity of the Floridan Aquifer and are compatible with the SFWMD's Lower East Coast Regional Water Supply Plan, and comply with the land use and environmental protection policies of the Miami-Dade County CDMP, the Strategic Regional Policy Plan for South Florida, and the State Comprehensive Plan. (Infrastructure Element, Policy 1.8.3).
- The City shall continue to evaluate the development and implementation of reclaimed water use strategies to augment the water supplies of the Biscayne and Floridan Aquifers when feasible and where appropriate. (Infrastructure Element, Policy 1.8.4).
- Utilize the City's Water Conservation Program Plan dated April 2008, based on the SFWMD requirements and in support of the goals and objectives of the Lower East Coast Water Supply Plan to assist in guiding water resource management. (Conservation Element, Policy 1.2.3)
- The implementation of the 10-Year Water Supply Facilities Work Plan shall ensure that sufficient water supplies and public facilities are available to serve the water supply demands of North Miami Beach and the other cities and portions of Miami-Dade County within the water service area. (Conservation Element, Policy 1.2.7)
- The City's Public Services Department shall hold an annual workshop during June of each calendar year with the government jurisdictions located within its water service area, Miami-Dade Water and Sewer Department, Miami-Dade County Department of Environmental Resources Management and South Florida Water Management District. The workshop will focus on water supply needs, implementation of alternative water supply projects (including reuse and other conservation measures), and the establishment of level of service standards (Conservation Element, Policy 1.2.8; Intergovernmental Coordination Element, Policy 1.3.7).

- The City of North Miami Beach Public Services Department's Water Supply Facilities Work Plan shall consider, coordinate, and be compatible with the South Florida Water Management District's 2013 Lower East Coast Water Supply Plan Update.
- The development of future potable water supplies and the City of North Miami Beach 10-Year Water Supply Facilities Work Plan, shall consider, and be compatible, with the South Florida Water Management District's *Lower East Coast Regional Water Supply Plan* (Intergovernmental Coordination Element, Policy 1.9.6).
- Appropriate mechanisms will be developed and adopted by the City of North Miami Beach in order to assure that adequate water supplies are available to all water users of the City of North Miami Beach Public Service Department. Furthermore, the City of North Miami Beach Public Services Department shall be responsible for monitoring the availability of water supplies for all water users of the City of North Miami Beach Public Services Department and for implementing a system that links water supplies to the permitting of new development. (Capital Improvement Element, Policy 1.2.16).
- The City shall incorporate capital improvements affecting its levels of service by referencing the Capital Improvements Schedules of state agencies, regional water supply authorities and other units of government providing services but not having regulatory authority over the use of land into its 5-Year Schedule of Capital Improvements. The City Schedule shall be maintained and updated annually. (Capital Improvement Element, Policy 1.2.17).

6.9 CONCLUSION

The City has established an excellent record in:

- Demand Management and Conservation by being proactive and taking the initiative to implement a wide array of programs and innovative approaches;
- Adoption and implementation of a complex capital improvements program to expand the WTP with room to expand for the future and improve its transmission and distribution system;
- Coordination of cooperative efforts with local and State public entities;
- Planning for the future needs of their system;
- Providing information to customers through their award-winning Consumer Confidence Reports (CCR's);

- Providing for emergency situations, peak conditions and routine operations;
- Funding through its use of an inverted tiered rate structure, updated connection (impact) fees and updated fire flow fees.
- Consistently improving its transmission, distribution and fire flow system and fire hydrant coverage; and,
- Implementing alternative water supply and treatment systems.

Table 6-4 indicates that there are no projected deficits in either water supply or treatment through the end of the City's 20-Year WUP. With the WTP expansions being completed as planned and implementation of its additional permitted alternative water supply source (Floridan wells), there will be adequate water supply and treatment through 2030. **Table 6-5** provides a Utility Summary Update following the format presented in the LEC Plan.

Table 6-4
Treated Finished Water Capacity Analysis (Avg. Day)

	2015	2018	2020	2023	2025	2030
Population Served	170,712	176,487	182,628	188,403	192,254	202,452
Average Daily Demand (mgd)	24.58	25.41	26.30	27.13	27.68	29.15
Demand per Capita (gpd) ⁴	144	144	144	144	144	144
Available Facility Capacity (mgd)	32.00	32.00	32.00	32.00	32.00	32.00
Facility Capacity Surplus (Deficit) ¹ (mgd)	7.42	6.59	5.7	4.87	4.32	2.85
Permitted Amount (mgd, Annual Average) ²	33.40	33.40	33.40	33.40	33.40	33.40
Permitted Surplus (Deficit) ³ (mgd) ⁵	8.82	7.99	7.1	6.27	5.72	4.25

Notes:

1. Calculated by subtracting Average Daily Demand from Available Facility Capacity.
2. As per SFWMD WUP, 38.38 mgd raw water provides 33.40 finished treated water until 2022; thus, 33.40 mgd treated water amount has been shown to be consistent with other treated water information, herein.
3. Calculated by subtracting Average Daily Demand from Permitted Amount.
4. Gallons per Day = gpd
5. Millions of Gallons per Day = mgd

**Table 6-5 Utility Summary
Miami-Dade County**

Supply Entity: City of North Miami Beach
Permitted Entity: City of North Miami Beach
Service Area: City of North Miami Beach, City of Aventura, Town of Golden Beach, City of Miami Gardens, City of Sunny Isles Beach and portions of Unincorporated Miami-Dade County

The City is operating the first Floridan reverse osmosis (RO) water treatment plant (Alternative Supply) in the County and has sufficient capacity to meet future demands. At the same time, the City is investigating reclaimed water opportunities, but is dependent on Miami-Dade County to provide adequately treated wastewater as the City has no wastewater treatment facility.

CURRENT AND PROJECTED WATER SUPPLY			
Item	Projected		
	2010	2020	2030
Population	161,968	182,628	202,452
Per Capita (gallons per day finished water)	126	144	144
(Note: All potable volumes are finished water unless noted.)	mgd	mgd	mgd
Potable Water Demands (daily average annual)	20.28	26.30	29.15
Water Source: Volume from Biscayne / Surficial	19.48	26.25	26.07
Volume from Floridan	4	2.67	6.67
Volume from Other	0	0	0
Volume from Reclaimed	0	0	0
Additional Potable Water Needed (after assessing historic use or proposed projects)	0	0	0

PROJECT SUMMARY					
Projects	Alt. Source	Total Capital Costs (\$1000)	Design Capacity		
			2015	2020	2025
Existing Floridan Wells, Raw Water Lines, Treatment Facilities, Concentrate Disposal, Storage, Blending and Standby Power, Phase I	Brackish	Existing	6.5	6.5	6.5
Floridan RO Well, Lines, Mains and Treatment Facility, Phase II	Brackish	\$9,080	0.0	0.0	3.0
Total Potable Capacity from Floridan Aquifer	Brackish		6.5	6.5	9.5
Reclaimed Water Pipe and Storage for Truck Washing Facility	Reclaimed	\$1,210	0.25	0.25	0.25
Note:					
1. Dependent upon Miami-Dade County establishing transmission mains and production of reuse water.					

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Appendices



Appendix A

2. CITED FLORIDA STATUTE PROVISIONS (RELEVANT PORTIONS ONLY)

163.3167(9): Each local government shall address in its comprehensive plan, as enumerated in this chapter, the water supply sources necessary to meet and achieve the existing and projected water use demand for the established planning period, considering the applicable plan developed pursuant to s. 373.709.

163.3177(3)(a): The comprehensive plan shall contain a capital improvements element designed to consider the need for and the location of public facilities in order to encourage the efficient use of such facilities and set forth:

1. A component that outlines principles for construction, extension, or increase in capacity of public facilities, as well as a component that outlines principles for correcting existing public facility deficiencies, which are necessary to implement the comprehensive plan. The components shall cover at least a 5-year period.
2. Estimated public facility costs, including a delineation of when facilities will be needed, the general location of the facilities, and projected revenue sources to fund the facilities.
3. Standards to ensure the availability of public facilities and the adequacy of those facilities including acceptable levels of service.
4. A schedule of capital improvements which includes any publicly funded project of federal, state or local government, and which may include privately funded projects for which the local government has no fiscal responsibility. Projects necessary to ensure that any adopted level-of-service standards are achieved and maintained for the 5-year period must be identified as either funded or unfunded and given a level of priority for funding.

163.3177(4)(a): Coordination of the local comprehensive plan with the comprehensive plans of adjacent municipalities, the county, adjacent counties, or the region; with the appropriate water management district's regional water supply plans approved pursuant to s. 373.709; and with adopted rules pertaining to designated areas of critical state concern shall be a major objective of the local comprehensive planning process. To that end, in the preparation of a comprehensive plan or element thereof, and in the comprehensive plan or element as adopted, the governing body shall include a specific policy statement indicating the relationship of the proposed development of the area to the comprehensive plans of adjacent municipalities, the county, adjacent counties, or the region, as the case may require and as such adopted plans or plans in preparation may exist.

163.3177(5)(a): Each local government comprehensive plan must include at least two planning periods, one covering at least the first 5-year period occurring after the plan's adoption and one covering at least a 10-year period. Additional planning periods for specific components, elements, land use amendments, or projects shall be permissible and accepted as part of the planning process.

163.3177(6)(a): A future land use plan element designating proposed future general distribution, location, and extent of the uses of land for residential uses, commercial uses, industry, agriculture, recreation, conservation, education public facilities, and other categories of the public and private uses of land. The approximate acreage and the general range of density or intensity of use shall be provided for the gross land area included in each existing land use category. The element shall establish the long-term end toward which land use programs and activities are ultimately directed.

163.3177(6)(a)2.: The future land use plan and plan amendments shall be based upon surveys, studies, and data regarding the area, as applicable including:

- a. The amount of land required to accommodate anticipated growth.
- b. The projected permanent and seasonal population of the area.
- c. The character of undeveloped land.
- d. The availability of water supplies, public facilities, and services.
- e. The need for redevelopment, including the renewal of blighted areas and the elimination of nonconforming uses which are inconsistent with the character of the community.

163.3177(6)(c): A general sanitary sewer, solid waste, drainage, potable water, and natural groundwater aquifer recharge element correlated to principles and guidelines for future land use, indicating ways to provide for future potable water, drainage, sanitary sewer, solid waste, and aquifer recharge protection requirements for the area. The element may be a detailed engineering plan including a topographic map depicting areas of prime groundwater recharge.

1. Each local government shall address in the data and analyses required by this section those facilities that provide service within the local government's jurisdiction. Local governments that provide facilities to serve areas within other local government jurisdictions shall also address those facilities in the data and analyses required by this section, using data from the comprehensive plan for those areas for the purpose of projecting facility needs as required in this subsection. For shared facilities, each local government shall indicate the proportional capacity of the systems allocated to serve its jurisdiction.
2. The element shall describe the problems and needs and the general facilities that will be required for solution of the problems and needs including correcting existing facility deficiencies. The element shall address coordinating the extension of, or increase in the capacity of,

facilities to meet future needs while maximizing the use of existing facilities and discouraging urban sprawl; conserving potable water resources; and protecting the functions of natural groundwater recharge areas and natural drainage features.

3. Within 18 months after the governing board approves an updated regional water supply plan, the element must incorporate the alternative water supply project or projects selected by the local government from those identified in the regional water supply plan pursuant to s. 373.709(2)(a) or proposed by the local government under s. 373.709(8)(b). If a local government is located within two water management districts, the local government shall adopt its comprehensive plan amendment within 18 months after the later updated regional water supply plan. The element must identify such alternative water supply projects and traditional water supply projects and conservation and reuse necessary to meet the water needs identified in s. 373.709(2)(a) within the local government's jurisdiction and include a work plan, covering at least a 10-year planning period, for building public, private, and regional water supply facilities, including development of alternative water supplies, which are identified in the element as necessary to serve existing and new development. The work plan shall be updated, at a minimum, every five years within 18 months after the governing board of a water management district approves an updated regional water supply plan. Local governments, public and private utilities, regional water supply authorities, special districts, and water management districts are encouraged to cooperatively plan for the development of multijurisdictional water supply facilities that are sufficient to meet projected demands for established planning periods, including the development of alternative water sources to supplement traditional sources of groundwater and surface water supplies.

163.3177(6)(d): A conservation element for the conservation, use, and protection of natural resources in the area, including air, water, water recharge areas, wetlands, water wells, estuarine marshes, soils, beaches, shores, flood plains, rivers, bays, lakes, harbors, forests, fisheries and wildlife, marine habitat, minerals, and other natural and environmental resources, including factors that affect energy conservation.

1. The following natural resources, where present within the local government's boundaries, shall be identified and analyzed and existing recreational or conservation uses, known pollution problems, including hazardous wastes, and the potential for conservation, recreation, use, or protection shall also be identified:
 - a. Rivers, bays, lakes, wetlands including estuarine marshes, groundwaters, and springs, including information on quality of the resource available.
 - b. Floodplains.

2. The element must contain principles, guidelines, and standards for conservation that provide long-term goals and which:
 - b. Conserves, appropriately uses, and protects the quality and quantity of current and projected water sources and waters that flow into estuarine waters or oceanic waters and protect from activities and land uses known to affect adversely the quality and quantity of identified water sources, including natural groundwater recharge areas, wellhead protection areas, and surface waters used as a source of public water supply.
 - c. Provides for the emergency conservation of water sources in accordance with the plans of the regional water management district.
3. Current and projected needs and sources for at least a 10-year period based on the demands for industrial, agricultural, and potable water use and the quality and quantity of water available to meet these demands shall be analyzed. The analysis shall consider the existing levels of water conservation, use, and protection and applicable policies of the regional water management district and further must consider the appropriate regional water supply plan approved pursuant to s. 373.709, or, in the absence of an approved regional water supply plan, the district water management plan approved pursuant to s. 373.036(2). This information shall be submitted to the appropriate agencies...

163.3177(6)(h)1.: An intergovernmental coordination element showing relationships and stating principles and guidelines to be used in coordinating the adopted comprehensive plan with the plans of school boards, regional water supply authorities, and other units of local government providing services but not having regulatory authority over the use of land, with the comprehensive plans of adjacent municipalities, the county, adjacent counties, or the region, with the state comprehensive plan and with the applicable regional water supply plan approved pursuant to s. 373.709, as the case may require and as such adopted plans or plans in preparation may exist...

- a. The intergovernmental coordination element must provide procedures for identifying and implementing joint planning areas, especially for the purpose of annexation, municipal incorporation, and joint infrastructure service areas.

163.3177(6)(h)3.b.: Ensure coordination in establishing level of service standards for public facilities with any state, regional, or local entity having operational and maintenance responsibility for such facilities.

163.3180: Concurrency.—

163.3180(1)(a): Sanitary sewer, solid waste, drainage, and potable water are the only public facilities and services subject to the concurrency requirement on a statewide basis...

163.3180(1)(b): The local government comprehensive plan must demonstrate, for required or optional concurrency requirements, that the levels of service adopted can be reasonably met. Infrastructure needed to ensure that adopted level-of-service standards are achieved and maintained for the 5-year period of the capital improvement schedule must be identified pursuant to the requirements of s. 163.3177(3). The comprehensive plan must include principles, guidelines, standards, and strategies for the establishment of a concurrency management system.

163.3180(2): Consistent with public health and safety, sanitary sewer, solid waste, drainage, adequate water supplies, and potable water facilities shall be in place and available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent. Prior to approval of a building permit or its functional equivalent, the local government shall consult with the applicable water supplier to determine whether adequate water supplies to serve the new development will be available no later than the anticipated date of issuance by the local government of a certificate of occupancy or its functional equivalent...

163.3180(3): Governmental entities that are not responsible for providing, financing, operating, or regulating public facilities needed to serve development may not establish binding level-of-service standards on governmental entities that do bear those responsibilities.

163.3191: Evaluation and appraisal of comprehensive plan.—

163.3191(1): At least once every 7 years, each local government shall evaluate its comprehensive plan to determine if plan amendments are necessary to reflect changes in state requirements in this part since the last update of the comprehensive plan, and notify the state land planning agency as to its determination.

163.3191(2): If the local government determines amendments to its comprehensive plan are necessary to reflect changes in state requirements, the local government shall prepare and transmit within 1 year such plan amendment or amendments for review pursuant to s. 163.3184.

163.3191(3): Local governments are encouraged to comprehensively evaluate and, as necessary, update comprehensive plans to reflect changes in local conditions.



Appendix B

AGREEMENT
BETWEEN
MIAMI-DADE COUNTY
AND
CITY OF NORTH MIAMI BEACH, FLORIDA
FOR PROVISION OF WATER SERVICE
AND
BILLING OF SANITARY SEWER SERVICE CHARGES

THIS AGREEMENT, made and entered into this 19TH day of March, 2001, by and between MIAMI-DADE COUNTY, a political subdivision of the State of Florida, hereinafter called the COUNTY, and the CITY OF NORTH MIAMI BEACH, a political subdivision of the State of Florida, hereinafter called the CITY.

WITNESSETH

WHEREAS, the COUNTY owns, operates and maintains a regional water treatment and distribution system through its Miami-Dade Water and Sewer Department, hereinafter called the "Department", and

WHEREAS, the CITY owns, operates and maintains a water treatment plant and distribution system to supply water to customers in its water service area shown and described on Exhibit A, and

WHEREAS, the COUNTY and the CITY entered into a Contract for the Billing of Sewage and Liquid Waste dated December 21, 1966, hereinafter called the "1966 Agreement", which established that the CITY provide a billing system to be used by the CITY to bill sewer charges for the COUNTY's sewer service customers who received water service from the CITY, and

WHEREAS the COUNTY and the CITY entered into a Contract Between Dade County and the City of North Miami Beach for the Sale of Water by the CITY to the COUNTY for

Resale in the Biscayne Village Area by the COUNTY, dated June 2, 1971, hereinafter called the "1971 Contract", which contract provided for the sale of water by the CITY to the COUNTY to serve certain areas in north Miami-Dade County, and

WHEREAS, the CITY and the COUNTY, as successor to the Miami-Dade Water and Sewer Authority, entered into a Contract Between Miami-Dade Water and Sewer Authority and the City of North Miami Beach, Florida, Providing for Rendition of Water Service By Said Authority to Said City of North Miami Beach, Florida, dated February 25, 1982, hereinafter called the "1982 Contract", which required that the CITY annually increase its volume of water purchases from the COUNTY, and

WHEREAS, the CITY and the COUNTY entered into an Agreement Between the City of North Miami Beach, Florida and the Miami-Dade Water and Sewer Authority Providing For Rendition of Water Service by the CITY to the Authority dated May 31, 1983, hereinafter called the "1983 Agreement", which required that the COUNTY purchase water to serve its customers in the area formerly known as the Biscayne Village area, and now known generally as Aventura, and

WHEREAS, the CITY and COUNTY have those points of connection of their water systems as shown on composite Exhibit A; and

WHEREAS, the COUNTY and the CITY desire to modify and consolidate the terms and conditions of the 1966 Agreement, the 1971 Contract, the 1982 Contract, the 1983 Agreement and their respective addenda and/or amendments into one document;

NOW, THEREFORE, in consideration of the mutual covenants entered into between the parties hereto to be made and performed, it is covenanted and agreed to as follows:

1. CITY'S OBLIGATIONS

a. The CITY, at its sole cost and expense, shall seek to renew and/or replace its existing water facilities and/or to expand the capacity of the CITY's water treatment plant. Based upon matters within its control, the CITY plans to commence operation of the expanded water treatment plant to a capacity greater than 15 MGD up to the demands of our customers by or about the end of Year 2005.

b. The CITY does not hereby warrant or guarantee the completion of, or covenant to complete, the construction or expansion or operation of the CITY's water treatment plant within the time frames or production capacity goals, and the CITY's failure to meet said time shall not constitute a breach of the CITY's obligations under this Agreement. During the planning, financing, design, permitting, and construction period, the COUNTY will continue to serve all necessary CITY requirements as specified in this Agreement. If the CITY's expanded or redeveloped plant does not produce sufficient water to meet the CITY's requirements or the CITY does not decide to expand the plant, then the COUNTY will continue to serve those CITY needs, in the same fashion as all wholesale customers of the COUNTY, recognizing that rates may differ between specific wholesale customers.

c. Upon the substantial completion of the construction and/or certification by all affected regulatory agencies that the CITY's expanded water treatment plant is operational, the CITY shall cease the purchase of that portion of its water supplies from the COUNTY system, except such amounts as may be required in the event of maintenance, resale or emergencies, as provided in this Agreement, will be maintained in the same fashion as all wholesale customers, recognizing that rates may differ between specific wholesale customers. Emergencies are defined as acts of God or system failures that may occur and generally not exceed thirty (30) days. Maintenance is defined as a planned interruption with notification to the appropriate party of a scheduled renewal, replacement, or repair that requires the purchase of water from the other party. Scheduled interruptions of service include the period for mechanical integrity testing and/or unit cleaning and maintenance shall be coordinated and planned between the CITY and

he COUNTY. Written notice shall be given 30 days prior to the event (when possible) and shall include the expected duration of the event and the expected amount of water to be purchased. The supplying party shall operate the appropriate valves for the necessary service.

d. From the date hereof and until the substantial completion and/or certification of the CITY's expanded water treatment plant, and thereafter if applicable, the CITY hereby agrees to pay the COUNTY for all volume of water purchased from the COUNTY at the COUNTY's volume rates then applicable to the CITY as approved and as may be modified in the future by the Board of County Commissioners. The amount of water delivered shall be measured at the existing points of connection by meters owned and maintained by the COUNTY. It is anticipated by the parties that the payment, by the CITY to the COUNTY, of water connection charges shall cease as of the date the CITY expands its plant, excluding water purchased for emergency, resale, or maintenance purposes as described above, which shall not be subject to said charges. However, in the event the City's expanded plant cannot supply the amount needed by future customers, connection charges will be assessed in accordance with County Ordinance No. 89-95 or as amended. Following the completion and successful operation of the expanded CITY plant, the volume of water purchased will be eliminated or reduced, and the rates and charges will be as approved by the Board of County Commissioners.

e. The CITY agrees at its sole expense to apply for and pursue the appropriate water use permit allocation for the expanded CITY plant for such renewable term as will be granted by the South Florida Water Management District (District). The COUNTY shall cooperate with the CITY on this application for water use.

f. The CITY agrees at its sole expense to apply for the appropriate zoning within the COUNTY as may be necessary to implement the CITY expanded facilities. The COUNTY shall cooperate with the CITY on these applications for zoning.

g. The CITY agrees at its sole expense to apply for all other such governmental or regulatory approvals (such as brine disposal permits) as necessary to implement the CITY

expanded facilities. The COUNTY shall cooperate with the CITY on such applications as appropriate.

h. The CITY's expanded facilities include, but are not limited to: (1) adequate raw water supply facilities to generate additional potable water; (2) adequate treatment facilities to treat and produce the additional potable water; and (3) adequate storage, pumping and transmission facilities to hydraulically serve customer needs within the CITY's service area as shown and described in composite Exhibit A, not only the CITY's expanded capacity, but also such other capacity as necessary for resale to the COUNTY, for emergencies and/or maintenance activities.

i. The CITY may expand the WTP if and when the CITY decides the water demands of the system warrant such expansion.

j. The CITY may serve the COUNTY from the expanded plant at either the COUNTY wholesale rate or the CITY's cost of service, whichever is greater.

k. The CITY agrees to apply sanitary sewer service charges, in accordance with rate schedules submitted by the COUNTY to the CITY, to the COUNTY's customers who are provided water service by the CITY and to collect said sanitary sewer charges on the CITY's monthly or quarterly bills. The CITY agrees to bill the water and sanitary sewer charges on a single bill, each charge to be shown separately. The CITY shall not render bills to submetered or other special need customers. Starting the beginning of the next Fiscal Year (October 1, 2001), in consideration of the CITY's billing, the CITY shall deduct and retain for its services five dollars (\$5.00) for each bill rendered, which shall be adjusted annually by the Consumers Price Index (CPI), as measured by the Bureau of Labor Statistics All Urban Consumers for the proceeding twelve month period ending on September 30 of each year, beginning with the first full year following execution of this Agreement. Until that time, the CITY shall continue its present billing practices. The CITY agrees to maintain adequate accounting systems and records to properly reflect the sanitary sewer service charges collected by the CITY for the COUNTY.

In addition, such special charges as lien costs or other costs not fully recovered from customers shall annually be deducted by the CITY from payments to the COUNTY. The CITY further agrees to remit such collections, less the five-dollar (\$5.00) per bill charge, to the COUNTY within thirty (30) days of receipt of such billings. The CITY shall collect from the COUNTY's customers a deposit to insure the payment of the monthly or quarterly bills. The deposits shall be in accordance with the CITY's approved schedule and shall be held by the CITY. When applied to past due bills and to final bills, all deposits shall be applied equally. Sewer deposits applied to customer accounts shall constitute cash collections and shall be remitted to the COUNTY. The CITY shall collect and remit to the COUNTY's Department of Environmental Resources Management the appropriate utility service charges for all of the COUNTY's sanitary sewer customers billed by the CITY.

The COUNTY agrees to defend, at its expense, all claims and lawsuits which are filed against the CITY as the result of collection procedures including the disconnection of any premises from the CITY's water system for the nonpayment of all or part of the sanitary sewer bill and shall indemnify and save the CITY harmless from any claims or judgments which may be entered against the CITY as the result of such collection procedures or disconnection.

Notwithstanding any contrary provisions of this agreement, the term for section l.k. shall be ten (10) fiscal years following implementation. It is anticipated that the CITY's billing costs would be reviewed prior to a renewal of the service.

2. COUNTY'S OBLIGATIONS

a. With the execution of this Agreement, the COUNTY may cease the purchase of all or part of its water flows from the CITY's system to serve that portion of the 'Aventura area, which is located within the COUNTY service area as shown on Exhibit A and delineated by the meter locations shown. The remaining flows purchased for Aventura or other COUNTY locations which are "passed-through" the CITY for resale to the COUNTY will include a 9% surcharge added to the County rate. The COUNTY shall then provide water directly to said area

through its water facilities already existing or to be constructed in the future.

b. The COUNTY hereby agrees to cooperate with the CITY in the administrative processing of any and all applications and permits that may be necessary for the CITY to expand the CITY's water treatment plant including wellfield permitting as contemplated by this Agreement as long as said cooperation is in accordance with any and all requirements of the regulatory and permitting agencies. Notwithstanding, nothing herein is intended to limit, restrict or affect the discretion exercised and decisions rendered by said agencies.

3. MUTUAL OBLIGATIONS

a. The CITY and the COUNTY currently buy and sell water to each other on a wholesale basis and may elect to continue or resume this practice, on a mutually equitable basis. Each governing board shall establish their respective wholesale rates for sale to the other party and will attempt to provide each other with a preliminary rate a minimum of ninety (90) days prior to the effective date of said rates. Rates for the COUNTY and CITY shall use the methodology shown in Exhibit B for all flows except for those flows which are passed through the CITY's system (resale flows) and sold to the County. Said flows shall be billed by the CITY to the COUNTY at 109% of the COUNTY's rate to the CITY.

b. The purchasing entity shall pay to the supplying entity for the purchase of the water based on the volume of water that is purchased as measured by meters on said points of connection. Additional points of connection may be requested by either party, yet the intent is to minimize the number of new points of connection. The meter shall be owned and maintained by the supplier of water. Additionally, the COUNTY may request to utilize the CITY's excess capacity if available, for use in Aventura or other portions of its service area. If the COUNTY so requests, the CITY may provide water to the COUNTY from the existing or future points of connection. The CITY may also desire to continue or resume purchasing bulk water from the COUNTY from existing or future points of connection.

c. After the substantial completion and/or certification of the CITY's expanded

water treatment plant, the CITY shall provide water to the COUNTY and the COUNTY shall provide water to the CITY at the existing points of connection in case of emergencies or scheduled interruptions of service. Emergencies include water transmission breaks, contamination or treatment unit failure or other unscheduled occurrence. The CITY intends that this provision is to be considered adequate to satisfy the back-up unit permitting requirements. Scheduled interruptions of service include the period for mechanical integrity testing and/or unit cleaning and maintenance which shall be coordinated and planned with the COUNTY. A scheduled interruption of service must obtain the COUNTY's written concurrence at least 30 days prior to the event. The CITY intends to satisfy the back-up requirements for Deep Well Injection (DWI) and treatment units through the existing system interconnections.

d. Payment by the CITY or the COUNTY for the purchase of water shall be made within thirty (30) days of the date of the invoice for services rendered by SUPPLIER during the preceding month based on the meter readings taken by the SUPPLIER at the end of the previous month. Any late payments by the purchaser shall bear interest at a rate of 1/2% per month on the unpaid balance.

e. The water furnished under this agreement will be delivered at the existing points of connection as reflected in composite Exhibit A. In the event that additional points of connection are necessary or that modifications to the existing points of connections are required, the entity wishing to purchase additional water, at its sole cost and expense, shall build and install, or shall cause to be built and installed, said points of connections or modifications including the meter, subject to approval of the entity supplying water and which shall be conveyed to the supplier for its ownership.

f. The CITY and COUNTY hereby agree to cooperate with each other in the administrative processing of any and all applications that may be necessary for each entity to construct additional water facilities (wells, mains, treatment plant, storage, DWI, etc.) as deemed necessary to provide water service to its customers in their respective areas as long as said cooperation is in accordance with any and all requirements of regulatory agencies. Further, the

CITY and the COUNTY agree to act in good faith and cooperate in the transfer and exchange of information and data that is applicable to the operation of the systems. Notwithstanding, nothing herein is intended to limit, restrict or affect the discretion exercised and decisions rendered by said agencies.

g. Both parties agree that each party shall be responsible to transmit water within its own distribution system at its own expense from each point of delivery to the place of ultimate use. Both parties agree to make every reasonable effort to maintain 100 feet of head at the points of delivery. Accordingly, the CITY and the COUNTY shall not be responsible for insufficient domestic or fire flow service pressure within each other's system.

h. The existing or future water meters, owned by either the CITY or the COUNTY, shall be of standard make and type, pursuant to standards of the American Water Works Association, installed in a readily accessible location with checking or calibration devices, and the installation shall indicate flow with an error not to exceed plus or minus two percent of full scale reading. The CITY and the COUNTY, each at their sole expense, shall be responsible to check the accuracy of their meters once every twelve months, or at such other time intervals. Such checking shall be at a reasonable time, mutually agreeable to the COUNTY and the CITY. If found to be in error exceeding two percent of true accuracy, the meter shall be recalibrated to the satisfaction of the parties hereto. If such error of more than two percent is discovered, bills for the period following the prior meter accuracy check shall be adjusted to reflect the quantity of over-read or under-read exceeding two percent. In calculating such billing adjustment, it will be assumed that the meter accuracy existed for one-half the entire time interval between meter accuracy checks. The billing adjustment shall be made at the same rates established herein, but the volume used in the billing calculations shall be adjusted as described above. Both the CITY and the COUNTY agree that either party may request, and the other agrees to perform a meter accuracy check at any reasonable time acceptable to both parties. If the meter is found to be in error exceeding two percent true accuracy, it shall be recalibrated as described above and the entire cost for such checking and recalibration shall be paid for by the party owning the meter.

In the event the meter is found to be within the limits of accuracy described above, the cost for performing the meter accuracy check shall be paid for by the party requesting the check.

i. The COUNTY hereby grants the CITY and the CITY hereby grants the COUNTY the right to audit those records related to the computation of the rates charged in Paragraph 3 for each fiscal year. Upon written notice, each entity shall make available for the other said records at its offices. In the event that such audit indicates any discrepancy between the rates used by either entity in computing the monthly billings and those rates determined as a result of the audit, and following the other parties' acceptance of the audit findings, an adjustment, for that fiscal year, in the charges previously paid will be made. Said audit must be completed on or before the end of the fiscal year for which the rates apply.

j. No property taxes shall be levied or collected by the CITY or COUNTY upon the properties of the COUNTY or CITY.

k. Either the COUNTY or the CITY may adjust the wholesale rates based upon their respective authorities. In the event that either party, during the term of this Agreement, shall propose any new rate schedule or amended rate schedule applicable to this Agreement, the party proposing the new or amended schedule will attempt to forward to the other party a copy of such proposed rate schedule ninety (90) days prior to the effective date and shall substitute such new or amended rate schedule for the rate schedule then in effect, commencing with the first billing period after the effective date. No retroactive rate changes shall be legislated by either party.

l. All lines, mains, extensions, and other improvements to the water supply and distribution systems shall be installed, maintained and constructed in accordance with all applicable federal, state and local statutes, rules and regulations.

m. The present ownership and responsibilities associated with existing lines, mains, extensions, meters and other improvements associated with the water supply and distribution systems as well as existing service area designations are hereby affirmed and shall be honored by both parties.

n. In the event that the South Florida Water Management District or other governmental unit with just cause and authority declares a water shortage, then the CITY and/or COUNTY shall have the right to restrict service to the other by the same percentage, level and/or manner as the CITY and/or COUNTY is required to restrict service to customers within its respective jurisdiction. Notwithstanding, if the CITY and/or COUNTY should have an insufficient supply of water available to fulfill the total requirements of all customers of the CITY and/or COUNTY, due to prohibitions, restrictions, limitations or requirements of local, state or federal governments having jurisdiction over such matters or due to any other cause beyond the CITY's and/or the COUNTY's control including but not limited to those specifically set forth in this subsection or Paragraph 4, below, the CITY and/or the COUNTY shall be deemed to have fully performed its duties and to have discharged its obligations hereunder if it furnishes and delivers the CITY's and/or the COUNTY's prorata share of such supply as determined by the COUNTY and/or the CITY. The COUNTY and/or the CITY will not be discriminatory in its delivery of water service. The COUNTY and/or the CITY will give expeditious notice to the other whenever the COUNTY and/or the CITY becomes aware of conditions which could reasonably lead to an outage or shortage of such potable water supply or which may bring about such conditions. This section shall not be construed to permit an interruption of service or a degradation of service.

4. UNAVOIDABLE DELAYS. If the CITY or the COUNTY is delayed or prevented from performing the covenants and obligations set forth herein by force majeure, inevitable accident or occurrence or cause beyond the reasonable control of the COUNTY or CITY, the COUNTY or the CITY shall be allowed an appropriate time extension as mutually agreed to. However, the party seeking a time extension as provided herein shall provide written notice to the other party within thirty (30) days after the requesting party becomes aware of the unavoidable delay. As used herein, force majeure shall mean an act of God that includes but is not limited to sudden, unexpected or extraordinary forces of nature such as floods, washouts, storms, fires, earthquakes, landslides, epidemics, explosions, or other forces of nature. Inevitable accidents or occurrences shall mean those which are unpreventable by the COUNTY or CITY

and shall include but not be limited to strikes, lockouts, other industrial disturbances, wars, blockages, acts of public enemies, insurrections, riots, federal, state, county, and local governmental restrictions, regulations and restraints, military action, civil disturbances, conditions in federal, state, county and local permits, bid protests, manufacturing and delivery delays, unknown or unanticipated soil, water or ground conditions and cave-ins, contract default by the COUNTY's or the CITY's consulting and design engineers and contractors, and instances where the COUNTY's or the CITY's engineers and contractors are entitled to a time extension pursuant to the terms of their respective contracts with the COUNTY or the CITY.

5. CONNECTION CHARGES. In accordance with the provisions of COUNTY Ordinance No. 89-95, as currently in effect and as may be amended or revised in the future, the CITY shall require all new retail users, as defined in said Ordinance, to pay the prorated share of the COUNTY's water connection charges until the Expanded City Plant is in service. However, in the event that the CITY's expanded plant cannot supply the amount needed by future customers, COUNTY connection charges will be assessed in accordance with the aforesaid means. The CITY shall not render water service, sewer service or both to any new retail user until either the COUNTY's water and/or sewer connection charges are paid to the CITY or a written receipt from the Department is provided to the CITY. The COUNTY's water connection charges shall not apply to new retail users of the CITY's system after the expanded plant begins operations, however, if the demand exceeds the expansion capacity, that additional demand shall be subject to Ordinance No. 89-95, or as amended. Emergency, resale or temporary use shall be exempt from connection charges.

6. INDEMNIFICATION. In consideration of the mutual covenants in this Agreement, the CITY agrees to indemnify, hold harmless and defend forever, the COUNTY, its officers, agents and employees from all claims, liability, actions, loss, cost and expense, including attorney's fees, which may be sustained by the COUNTY, its officers, agents, and employees due to, caused by, or arising from the negligence of the CITY, its officers, employees in the performance of this Agreement.

In consideration of the mutual covenants in this Agreement, the COUNTY agrees to indemnify and hold harmless forever, the CITY, its officers, agents and employees from all claims, liability, actions loss, cost and expense, including attorney's fees, which may be sustained by the CITY, its officers, agents and employees due to, caused by, or arising from the negligence of the COUNTY, its officers, agents and employees in the performance of this Agreement.

Notwithstanding the above, nothing contained herein shall create any liability of the COUNTY or CITY beyond the scope of Section 768.28, Florida Statutes, as currently in effect or as lawfully amended in the future.

7. NOTICE. All notices required pursuant to this Agreement shall be properly given if mailed by United States certified mail addressed to the party to which notice is to be given at the following respective addresses:

Miami-Dade County
c/o The Director
Miami-Dade Water and Sewer Department
4200 Salzedo Street
Coral Gables, FL 33146

Copy County Attorney

City of North Miami Beach
c/o Director of Public Services
17050 N.E. 19th Avenue
North Miami Beach, FL 33162-3194

Copy City Attorney

8. EARLIER AGREEMENTS. Both the CITY and the COUNTY agree that the 1966 Agreement, the 1971 Contract, the 1982 Contract and the 1983 Agreement and their respective addenda or amendments are hereby replaced and superseded by this Agreement.

9. TERMS. Except for as provided in paragraph 1.k. and Paragraph 4, this agreement shall remain in full force and effect as long as the COUNTY has a valid Water Use Permit (WUP) or permit extension. The CITY acknowledges and understands that the COUNTY existing WUP expires January 30, 2004, and accepts that subsequent renewals may have differing terms and conditions as the South Florida Water Management District may apply from

time to time. However, in the event that the CITY expands its capacity sufficient to fully supply future customers prior to the end of the term the agreement, then this agreement shall remain in full force and effect for 30 years. This agreement may, by mutual agreement of the parties, be dissolved, amended or superceded. Paragraph l.k. provisions are to be reviewed every 10 years, and are anticipated to be renewed by the parties.

10. CONTRACT BINDING UPON SUCCESSORS. This Contract shall inure to and be binding upon the successors of each of the parties hereto.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed in their names and their seals affixed hereto as of the day and year first above written.



ATTEST:

By: [Signature]
Clerk

MIAMI-DADE COUNTY

By: [Signature]
For County Manager

ATTEST:
By: [Signature]
City Clerk

CITY OF NORTH MIAMI BEACH

By: [Signature]
City Manager

Approved as to Legal Form and Sufficiency:

[Signature]
Assistant County Attorney

[Signature]
Attorney for the City of North Miami Beach

City of North Miami Beach
Permit Application for Modification and Renewal
Permit No. 13-00060-W
Appendix D- Agreements

EXHIBIT A

Water Service Area/ Valve & Interconnect Map

EXHIBIT "A"

EXISTING EMERGENCY INTERCONNECT LOCATIONS BETWEEN THE CITY AND OTHERS

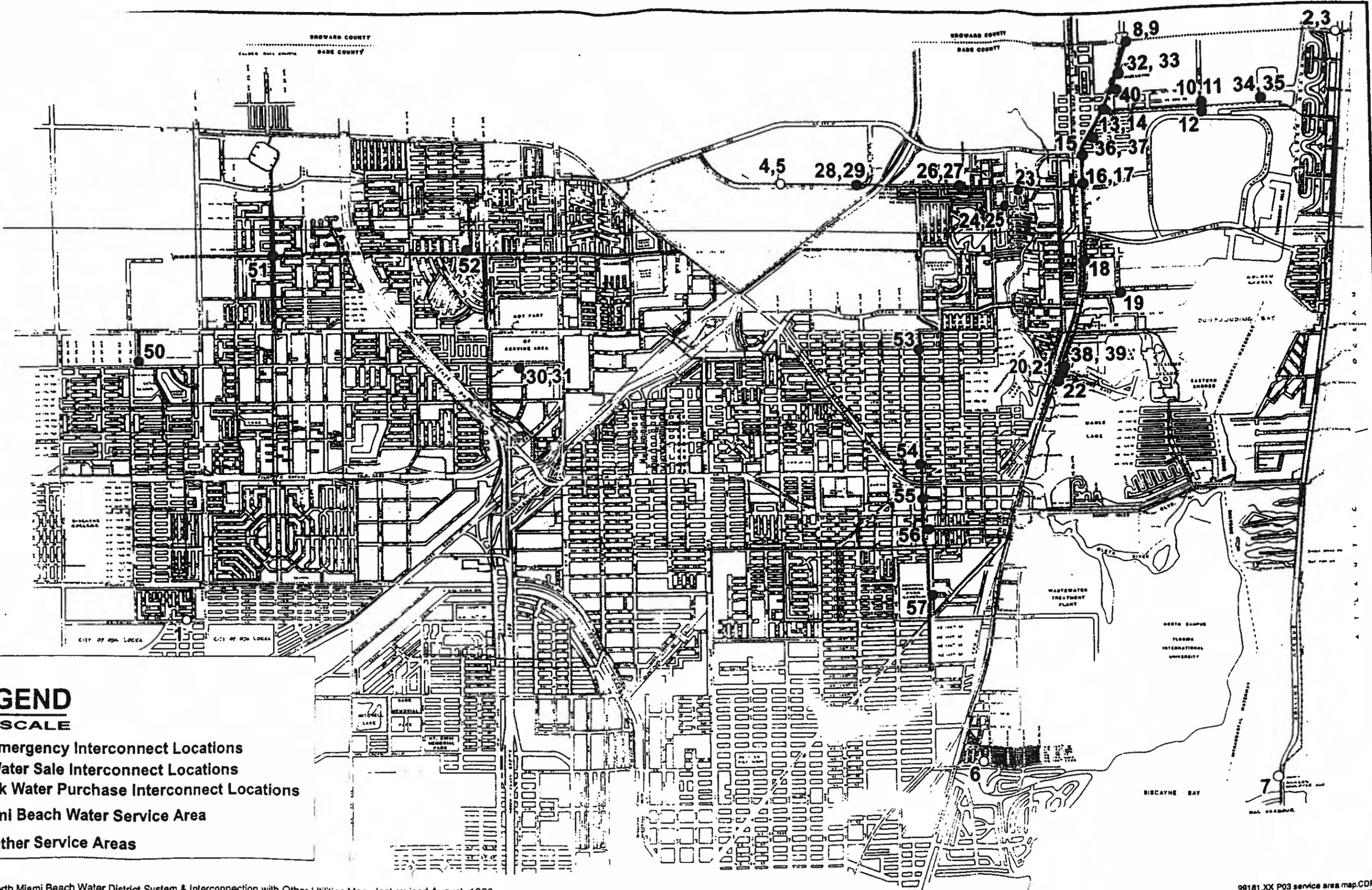
ACCOUNT	LOCATION	ACCT. NO.	MTR.
1 City of Opa Locka	2781 N.W. 151 St.	04-27-00100-13	6" Turbo
2 City of Hallandale	A-I-A & Massina	04-32-13200-14	6" Turbo
3 City of Hallandale	A-I-A & Massina	04-32-13200-14	6" Turbo
4 M.D.W.A.S.A.	19900 N.E. 10 Ave.	04-37-02000-2	10" Turbo
5 M.D.W.A.S.A.	19900 N.E. 10 Ave.	04-37-02100-2	10" Turbo
6 City of North Miami	Highland Dr. & N.E. 135 St.	No Acct. No.	6" Turbo
7 Village of Bal Harbour	Collins Ave. @ Bakers Haulover Cut.	No Acct. No.	6" Turbo

EXISTING BULK SALES INTERCONNECT LOCATIONS BETWEEN THE CITY AND OTHERS

ACCOUNT	LOCATION	ACCT. NO.	MTR.
8 City of Hallandale	Bisc. Blvd. & Cnty. Line Rd.	04-38-00100-10	8" Turbo
9 City of Hallandale	Bisc. Blvd. & Cnty. Line Rd.	04-38-00200-19	8" Turbo
10 M.D.W.A.S.A.	N.E. 207 St. & 34 Ave.	04-37-01300-1	6" Turbo
11 M.D.W.A.S.A.	N.E. 207 St. & 34 Ave.	04-37-01200-1	6" Turbo
12 M.D.W.A.S.A.	N.E. 207 St. & 34 Ave.	04-37-01100-1	10" Turbo
13 M.D.W.A.S.A.	20700 Bisc. Blvd.	04-37-01080-1	10" Turbo
14 M.D.W.A.S.A.	20700 Bisc. Blvd.	04-37-01050-1	4" Turbo
15 M.D.W.A.S.A.	20300 Bisc. Blvd.	04-37-01000-1	6" Turbo
16 M.D.W.A.S.A.	19975 Bisc. Blvd.	04-37-00800-1	8" Turbo
17 M.D.W.A.S.A.	19975 Bisc. Blvd.	04-37-00850-1	8" Turbo
18 M.D.W.A.S.A.	19101 Bisc. Blvd.	04-37-00700-1	6" Turbo
19 M.D.W.A.S.A.	18851 N.E. 29 Ave.	04-37-00600-1	6" Turbo
20 M.D.W.A.S.A.	17695 Bisc. Blvd.	04-37-00300-1	6" Turbo
21 M.D.W.A.S.A.	17695 Bisc. Blvd.	04-37-00200-1	1.5"
22 M.D.W.A.S.A.	17655 Bisc. Blvd.	04-37-00100-1	6" Turbo
23 M.D.W.A.S.A.	19891 N.E. 24 Ave.	04-37-01500-1	6" Turbo
24 M.D.W.A.S.A.	19700 N.E. 23 Ave.	04-37-01700-1	2"
25 M.D.W.A.S.A.	19700 N.E. 23 Ave.	04-37-01600-1	6" Turbo
26 M.D.W.A.S.A.	N.E. 19 Ct. & 20 Ave. @ 199 St.	04-37-01820-2	6" Turbo
27 M.D.W.A.S.A.	N.E. 19 Ct. & 20 Ave. @ 199 St.	04-37-01840-2	6" Turbo
28 M.D.W.A.S.A.	20101-29 N.E. 15 Ct.	04-37-01925-1	8" Turbo
29 M.D.W.A.S.A.	20101-29 N.E. 15 Ct.	04-37-01950-1	8" Turbo
30 M.D.W.A.S.A.	17900 N.W. 5 Ave.	04-37-02600-1	6" Turbo
31 M.D.W.A.S.A.	17900 N.W. 5 Ave.	04-37-02700-1	2" Turbo
32 M.D.W.A.S.A.	NE 212 St. & Bisc. Blvd.	04-37-03100-1	8" Turbo
33 M.D.W.A.S.A.	NE 212 St. & Bisc. Blvd.	04-37-03200-1	8" Turbo
34 M.D.W.A.S.A.	36 Ave./N.E. 207 St.	04-37-01320-1	6" Turbo
35 M.D.W.A.S.A.	36 Ave./N.E. 207 St.	04-37-01330-1	6" Turbo
36 M.D.W.A.S.A.	20403 Biscayne Blvd.	04-37-00920-1	6" Turbo
37 M.D.W.A.S.A.	20403 Biscayne Blvd.	04-37-00940-1	6" Turbo
38 M.D.W.A.S.A.	17985 Biscayne Blvd.	04-37-00400-1	2"
39 M.D.W.A.S.A.	17985 Biscayne Blvd.	04-37-00500-1	2"
40 M.D.W.A.S.A.	20955 Biscayne Blvd.	04-37-01400-1	2"

ACTIVE BULK WATER PURCHASE INTERCONNECT LOCATIONS BY THE CITY

50 M.D.W.A.S.A.	N.W. 179 St. & N.W. 31 Ave.	2-10" Compound
51 M.D.W.A.S.A.	N.W. 22 Ave. & N.W. 191 St.	6" Turbo
52 M.D.W.A.S.A.	N.W. 8 Ave. & N.W. 191 St. (Norwood)	Venturi
53 M.D.W.A.S.A.	N.E. 18 Ave. & N.E. 181 St.	2-8" Turbo
54 M.D.W.A.S.A.	N.E. 18 Ave. & N.E. 168 St.	2-6" Turbo
55 M.D.W.A.S.A.	N.E. 18 Ave. & N.E. 164 St.	2-6" Turbo
56 M.D.W.A.S.A.	N.E. 18 Ave. & N.E. 161 St.	Venturi
57 M.D.W.A.S.A.	N.E. 18 Ave. & N.E. 153 St.	2-8" Turbo



LEGEND

NOT TO SCALE

- Existing Emergency Interconnect Locations
- Existing Water Sale Interconnect Locations
- ⊙ Active Bulk Water Purchase Interconnect Locations
- North Miami Beach Water Service Area
- County / Other Service Areas

NOTE: Based on City of North Miami Beach Water District System & Interconnection with Other Utilities Map - last revised August, 1990

99181.XX P03 service area map.CDR

HARTMAN & ASSOCIATES, INC.
 engineers, hydrogeologists, surveyors & management consultants
 201 EAST PINE STREET - SUITE 1000 - ORLANDO, FL 32801
 TELEPHONE (407) 839-3955 - FAX (407) 839 3790

CITY OF NORTH MIAMI BEACH
 MAJOR WATER FACILITIES, WATER SERVICE AREA AND METER INTERCONNECTIONS

EXHIBIT
 A

EXHIBIT B

City & County Wholesale Rates

EXHIBIT B

WHOLESALE RATE METHODOLOGY

The rate shall be calculated for each fiscal year based on projections from the prior fiscal year and based on the sum of the following: All references to the regional water system expenses shall exclude costs of the COUNTY or the CITY in supplying, treating and serving its own customers, and all administrative and general costs associated with said service.

- (a) That portion of all budgeted annual operating and maintenance expenses, including taxes assessed, if any, for the regional water system divided by the projected total amount of flow used to bill all the system's water customers over the same time period.
- (b) That portion of the budgeted annual renewal and replacement expenses for the regional water system divided by the total projected amount of flow used to bill all the system's water customers over the same time period.
- (c) That portion of the budgeted annual interest obligations of outstanding notes and bonds for the regional water system divided by the projected total amount of flow used to bill all the system's customers over the same time period.
- (d) That portion of the budgeted annual charge for the amortization of the outstanding notes and bonds for the regional water system, to be consistent with the requirements under law, divided by the total projected amount of flow used to bill all the system's water customers over the same time period.
- (e) That portion of the budgeted annual charge for customer accounting and service, for the regional water system divided by the total projected amount of flow used to bill all the system's water customers over the same time period.
- (f) That portion of projected annual administration and general expenses, for the regional water system, divided by the total projected amount of flow used to bill all the system's water customers over the same time period.
- (g) A charge for coverage of debt service for various existing and future bond issues that require a coverage factor. This factor depends on the particular covenant governing the bond issue and is achieved by generating sufficient net operating revenues from all customers to exceed debt service requirements by the percentage prescribed in the covenant. The projected total flow component shall be used to obtain the debt service coverage charge on bond issues for regional water capital improvements.
- (h) A credit for a portion of the budgeted interest income for the regional water system divided by the total projected amount of flow used to bill all the system's water customers over the same time period.
- (i) A credit for a portion of the budgeted water loss adjustment for the regional water system divided by the total projected amount of flow used to bill all the system's water customers over the same time period.

The parties reserve the right to revise or modify the rate and method of calculation in accordance with applicable law and agree to be bound thereby. The parties will attempt to provide each other with a preliminary rate a minimum of 90 days in advance of said rate's effective date. The parties recognize that the adopted rate may differ from the preliminary rate.

Billings for services provided in accordance with this contract shall be rendered monthly.



Appendix C



C-1 WUP 2007



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Permit No. 13-00060-W
Application No. 060207-8

September 26, 2007

NORTH MIAMI BEACH CITY OF
(CITY OF NORTH MIAMI BEACH)
17050 N.E. 19TH AVENUE
NORTH MIAMI BEACH, FL 33162

Dear Permittee:

Enclosed is your Permit as authorized by the Governing Board of the South Florida Water Management District at its meeting on August 9, 2007.

Special Conditions to your Permit require reports to be filed with this District. Please read these Conditions and use the enclosed form(s), as applicable, for your submittal of these required reports.

If you have any questions, please do not hesitate to contact this office.

Sincerely,

Elizabeth Veguilla
Deputy Clerk
Environmental Resource Regulation Department

Enclosures



FORM #0299
Rev 5/03

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 13-00060-W
(NON - ASSIGNABLE)**

Date Issued: 09-AUG-2007

Expiration Date: August 9, 2027

Authorizing: THE CONTINUATION OF AN EXISTING USE OF GROUNDWATER FROM THE BISCAYNE AQUIFER AND FLORIDAN AQUIFER SYSTEM FOR PUBLIC WATER SUPPLY USE WITH AN ANNUAL ALLOCATION OF 14009 MILLION GALLONS.

Located In: Miami-Dade County,

S32-36/T51S/R41E
S32-35/T51S/R42E

Issued To: NORTH MIAMI BEACH CITY OF
(CITY OF NORTH MIAMI BEACH)
17050 N.E. 19TH AVENUE
NORTH MIAMI BEACH. FL 33162

This Permit is issued pursuant to Application No.060207-8 , dated February 7, 2006, for the Use of Water as specified above and subject to the Special Conditions set forth below. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of activities authorized by this permit. Said application, including all plan and specifications attached thereto, is by reference made a part hereof.

Upon written notice to the permittee, this permit may be temporarily modified, or restricted under a Declaration of Water Shortage or a Declaration of Emergency due to Water Shortage in accordance with provisions of Chapter 373, Fla. Statutes, and applicable rules and regulations of the South Florida Water Management District.

This Permit may be permanently or temporarily revoked, in whole or in part, for the violation of the conditions of the permit or for the violation of any provision of the Water Resources Act and regulations thereunder.

This Permit does not convey to the permittee any property rights nor any privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies.

Limiting Conditions are as follows:

SEE PAGES 2 - 6 OF 6 (30 LIMITING CONDITIONS).

South Florida Water Management
District, by its Governing Board

On September 13, 2007
By Elizabeth V. Miller
Deputy Clerk

LIMITING CONDITIONS

1. This permit shall expire on August 9, 2027.
2. Application for a permit modification may be made at any time.
3. Water use classification:

Public water supply

4. Source classification is:

Ground Water from:
Biscayne Aquifer
Floridan Aquifer System

5. Annual allocation shall not exceed 14009 MG.

Maximum monthly allocation shall not exceed 1308.6 MG.

The following limitations to annual withdrawals from specific sources are stipulated:

Floridan Aquifer System-: 4,406 MG.

Biscayne Aquifer-: 9,603 MG.

The following limitations to maximum monthly withdrawals from specific sources are stipulated:

Floridan Aquifer System-: 411.60 MG.

Biscayne Aquifer-: 897.00 MG.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:
City of North Miami Beach
17050 N.E. 19TH AVENUE
Miami, FL. 33162

7. Withdrawal facilities:

Ground Water - Existing:

- 1 - 12" X 60' X 1250 GPM Well Cased To 4555 Feet
- 1 - 12" X 63' X 1250 GPM Well Cased To 58 Feet
- 1 - 30" X 62' X 2600 GPM Well Cased To 52 Feet
- 1 - 12" X 52' X 1250 GPM Well Cased To 47 Feet
- 1 - 36" X 131' X 4167 GPM Well Cased To 110 Feet

- 1 - 12" X 56' X 1250 GPM Well Cased To 51 Feet
- 1 - 30" X 95' X 2600 GPM Well Cased To 85 Feet
- 1 - 30" X 95' X 2600 GPM Well Cased To 75 Feet
- 1 - 30" X 100' X 2600 GPM Well Cased To 90 Feet
- 1 - 36" X 58' X 4167 GPM Well Cased To 48 Feet
- 2 - 17.5" X 1250' X 2100 GPM Wells Cased To 1000 Feet
- 1 - 12" X 48' X 600 GPM Well Cased To 43 Feet
- 2 - 12" X 84' X 1250 GPM Wells Cased To 79 Feet
- 1 - 17.5" X 1235' X 2100 GPM Well Cased To 1000 Feet
- 1 - 17.5" X 1231' X 2100 GPM Well Cased To 1000 Feet
- 1 - 12" X 54' X 900 GPM Well Cased To 49 Feet
- 1 - 12" X 48' X 1500 GPM Well Cased To 43 Feet
- 1 - 30" X 90' X 2600 GPM Well Cased To 80 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:

(1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(2) Reduction in water levels that harm the hydroperiod of wetlands,

(3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(4) Harmful movement of contaminants in violation of state water quality standards, or

(5) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.

12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.

13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.

15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist - Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.

16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.

17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.

20. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.

21. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

22. Prior to any application to renew or modify this permit, the Permittee shall evaluate long term water supply alternatives and submit a long term water supply plan to the District. Within one year of permit issuance, the Permittee shall submit to the District an outline of the proposed plan. The assessment should include consideration of saline intrusion, wellfield protection, plans for compliance with applicable wellfield protection ordinances, expected frequencies and plans to cope with water shortages or well field failures, and conservation measures to reduce overall stresses on the aquifer.

23. Every five years from the date of permit issuance, the permittee shall submit a water use compliance

report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.
2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit. Compliance reports shall be submitted in 2012, 2017, 2022, and 2027. Preparation of compliance reports shall begin at least one year prior to these due dates.
24. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.
25. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.
26. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.
27. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.
28. Permittee shall implement the following wellfield operating plan: As per Exhibit 7A: the wellfields must be operated such that (after start-up and testing of new plant facilities and wells); the City will first operate the Floridan Wells to produce a minimum of 5 million gallons per day (on an annual average basis) of treated water through the reverse osmosis portion of the plant. Secondly, the City must utilize the existing raw water wells consistent with production volume needed from the Lime Softening portion of the treatment plant. Thirdly; the new wells will be used to supply raw water to the nanofiltration portion of the treatment plant consistent with the nanofiltration production needed. It is estimated that when the lime softening facilities are phased out of operation (estimated at 15 to 20 years hence); the City must show a greater reliance (as shown on Exhibit 7A) on the Floridan Aquifer with total withdrawal from the Biscayne averaging no more than the 26.31 mgd approved on an annual basis.
29. Within six months of permit issuance, Permittee shall implement an updated saline intrusion monitoring program. A preliminary proposal to modify the existing salt program shall be submitted to staff for approval within three months of permit issuance. Staff approval will be granted if the proposal successfully updates the existing monitoring network. In developing the program, the Permittee shall consider well localities.

depth, and method of well construction, types of screen, methods of chloride analysis and frequency of data collection.

Permittee shall also consider location, construction details, and operational protocols of the production wells, to ensure the wellfield is adequately protected from both lateral and upward migration of saline water.

In addition, the Permittee shall continue the existing saline water, which comprises monthly monitoring of water levels (referenced to NGVD) and chloride ion concentration in monitor wells DMW1, DMW2, DMW3, DMW4, DMW5, IMW3, IMW4, IMW5, SWIM1 and SWIM2. Monitoring data shall be submitted to the District quarterly.

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The Permittee shall implement actions as necessary to improve the efficiency of the nanofiltration treatment plant during the first three years of operation to achieve 85 percent recovery efficiency or better. In the event this recovery efficiency is not achieved by the year 2010, the permittee shall submit a conservation plan for review by the South Florida Water Management District which, when updated, will reduce the raw water demand by an amount at least equal to achieving an 85 percent recovery efficiency for the nanofiltration plant. Upon approval by South Florida District Staff, the City shall update the water conservation plan within one year.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report Quarterly Report of Withdrawals From Wells and Surface Water Pumps

This Report must be completed and submitted to the District at the address shown as required by your Permit

Permit Number 13-00060-W
 Project Name CITY OF NORTH MIAMI BEACH
 Issued to NORTH MIAMI BEACH CITY OF
 Address 17050 N.E. 19TH AVENUE
 City, State, Zip NORTH MIAMI BEACH FL 33162
 Phone / Fax No (305)948-2967 / (305)957-3502
 E-mail

Return To:
 South Florida Water Management District
 Attn: Water Use Regulation Division (4320)
 PO Box 24680
 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Well 5 Monthly withdrawal	24174					
Well 10 Monthly withdrawal	24175					
Well 2 Monthly wds	7408					
Well 3 monthly wds	7409					
Well 4 Monthly withdrawal	7410					
Well 6 Monthly withdrawal	7411					
Well 7 Monthly withdrawal	7412					
Well 9 Monthly withdrawal	7414					
Well 11 Monthly withdrawal	7415					
Well 12 Monthly withdrawal	7416					

Name of Person Completing Form _____

Signature _____ Date: _____

Form 0188-QMON (08/03)

Printed: 09/25/2007

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 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Well 1 Monthly withdrawal	7417					
Monthly Withdrawal for Well DMW2	137583					
Monthly Withdrawal for Well NMBSIS1 (SWIM1)	137584					
Monthly Withdrawal for Well NMBSIS2 (SWIM2)	137585					
Monthly Withdrawal for Well DMW1	173010					
Monthly Withdrawal for Well DMW3	173011					
Monthly Withdrawal for Well DMW4	173012					
Monthly Withdrawal for Well DMW5	173013					
Monthly Withdrawal for Well IMW3	173014					
Monthly Withdrawal for Well IMW4	173015					

Name of Person Completing Form _____

Signature: _____ Date: _____

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Return To:

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 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly Withdrawal for Well IMW5	173016					
Well F-1 (fas) Monthly withdrawal	106431					
Well F-2 (fas) Monthly withdrawal	106432					
Well 13 Monthly withdrawal	106435					
Monthly withdrawal from Well 17	106439					
Monthly withdrawal from Well 19	106441					
Monthly withdrawal from Well 20	106442					
Monthly withdrawal from Well 21	106443					
Monthly withdrawal from Well F-3	107702					
Monthly withdrawal from Well F-4	141361					

Name of Person Completing Form _____

Signature: _____ Date: _____

Form 0188-QMON (08/03)

Printed: 09/25/2007

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Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly Withdrawal for Well NMBIW	157642					
Monthly Withdrawal for Well NMBSC	157643					
Monthly Withdrawal for Well NMBSIS10	157644					
Monthly Withdrawal for Well NMBSG	157645					

Name of Person Completing Form _____

Signature: _____ Date: _____

Form 0188-QMON (08/03)

Printed: 09/25/2007

2



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Permit No. 13-00060-W
Application No. 060207-8

September 26, 2007

NORTH MIAMI BEACH CITY OF
(CITY OF NORTH MIAMI BEACH)
17050 N.E. 19TH AVENUE
NORTH MIAMI BEACH, FL 33162

Dear Permittee:

Enclosed is your Permit as authorized by the Governing Board of the South Florida Water Management District at its meeting on August 9, 2007.

Special Conditions to your Permit require reports to be filed with this District. Please read these Conditions and use the enclosed form(s), as applicable, for your submittal of these required reports.

If you have any questions, please do not hesitate to contact this office.

Sincerely,

Elizabeth Veguilla
Deputy Clerk
Environmental Resource Regulation Department

Enclosures



FORM #0299
Rev 5/03

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 13-00060-W
(NON - ASSIGNABLE)**

Date Issued: 09-AUG-2007

Expiration Date: August 9, 2027

Authorizing: THE CONTINUATION OF AN EXISTING USE OF GROUNDWATER FROM THE BISCAYNE AQUIFER AND FLORIDAN AQUIFER SYSTEM FOR PUBLIC WATER SUPPLY USE WITH AN ANNUAL ALLOCATION OF 14009 MILLION GALLONS.

Located In: Miami-Dade County,

S32-36/T51S/R41E
S32-35/T51S/R42E

Issued To: NORTH MIAMI BEACH CITY OF
(CITY OF NORTH MIAMI BEACH)
17050 N.E. 19TH AVENUE
NORTH MIAMI BEACH. FL 33162

This Permit is issued pursuant to Application No.060207-8 , dated February 7, 2006, for the Use of Water as specified above and subject to the Special Conditions set forth below. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, maintenance or use of activities authorized by this permit. Said application, including all plan and specifications attached thereto, is by reference made a part hereof.

Upon written notice to the permittee, this permit may be temporarily modified, or restricted under a Declaration of Water Shortage or a Declaration of Emergency due to Water Shortage in accordance with provisions of Chapter 373, Fla. Statutes, and applicable rules and regulations of the South Florida Water Management District.

This Permit may be permanently or temporarily revoked, in whole or in part, for the violation of the conditions of the permit or for the violation of any provision of the Water Resources Act and regulations thereunder.

This Permit does not convey to the permittee any property rights nor any privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation, or requirement affecting the rights of other bodies or agencies.

Limiting Conditions are as follows:

SEE PAGES 2 - 6 OF 6 (30 LIMITING CONDITIONS).

South Florida Water Management
District, by its Governing Board

On September 13, 2007
By Elizabeth V. Miller
Deputy Clerk

LIMITING CONDITIONS

1. This permit shall expire on August 9, 2027.
2. Application for a permit modification may be made at any time.
3. Water use classification:

Public water supply

4. Source classification is:

Ground Water from:
Biscayne Aquifer
Floridan Aquifer System

5. Annual allocation shall not exceed 14009 MG.

Maximum monthly allocation shall not exceed 1308.6 MG.

The following limitations to annual withdrawals from specific sources are stipulated:

Floridan Aquifer System-: 4,406 MG.

Biscayne Aquifer-: 9,603 MG.

The following limitations to maximum monthly withdrawals from specific sources are stipulated:

Floridan Aquifer System-: 411.60 MG.

Biscayne Aquifer-: 897.00 MG.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:
City of North Miami Beach
17050 N.E. 19TH AVENUE
Miami, FL. 33162

7. Withdrawal facilities:

Ground Water - Existing:

- 1 - 12" X 60' X 1250 GPM Well Cased To 4555 Feet
- 1 - 12" X 63' X 1250 GPM Well Cased To 58 Feet
- 1 - 30" X 62' X 2600 GPM Well Cased To 52 Feet
- 1 - 12" X 52' X 1250 GPM Well Cased To 47 Feet
- 1 - 36" X 131' X 4167 GPM Well Cased To 110 Feet

- 1 - 12" X 56' X 1250 GPM Well Cased To 51 Feet
- 1 - 30" X 95' X 2600 GPM Well Cased To 85 Feet
- 1 - 30" X 95' X 2600 GPM Well Cased To 75 Feet
- 1 - 30" X 100' X 2600 GPM Well Cased To 90 Feet
- 1 - 36" X 58' X 4167 GPM Well Cased To 48 Feet
- 2 - 17.5" X 1250' X 2100 GPM Wells Cased To 1000 Feet
- 1 - 12" X 48' X 600 GPM Well Cased To 43 Feet
- 2 - 12" X 84' X 1250 GPM Wells Cased To 79 Feet
- 1 - 17.5" X 1235' X 2100 GPM Well Cased To 1000 Feet
- 1 - 17.5" X 1231' X 2100 GPM Well Cased To 1000 Feet
- 1 - 12" X 54' X 900 GPM Well Cased To 49 Feet
- 1 - 12" X 48' X 1500 GPM Well Cased To 43 Feet
- 1 - 30" X 90' X 2600 GPM Well Cased To 80 Feet

8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

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In addition, the Permittee shall continue the existing saline water, which comprises monthly monitoring of water levels (referenced to NGVD) and chloride ion concentration in monitor wells DMW1, DMW2, DMW3, DMW4, DMW5, IMW3, IMW4, IMW5, SWIM1 and SWIM2. Monitoring data shall be submitted to the District quarterly.

30

The Permittee shall implement actions as necessary to improve the efficiency of the nanofiltration treatment plant during the first three years of operation to achieve 85 percent recovery efficiency or better. In the event this recovery efficiency is not achieved by the year 2010, the permittee shall submit a conservation plan for review by the South Florida Water Management District which, when updated, will reduce the raw water demand by an amount at least equal to achieving an 85 percent recovery efficiency for the nanofiltration plant. Upon approval by South Florida District Staff, the City shall update the water conservation plan within one year.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report Quarterly Report of Withdrawals From Wells and Surface Water Pumps

This Report must be completed and submitted to the District at the address shown as required by your Permit

Permit Number 13-00060-W
 Project Name CITY OF NORTH MIAMI BEACH
 Issued to NORTH MIAMI BEACH CITY OF
 Address 17050 N.E. 19TH AVENUE
 City, State, Zip NORTH MIAMI BEACH FL 33162
 Phone / Fax No (305)948-2967 / (305)957-3502
 E-mail

Return To:
 South Florida Water Management District
 Attn: Water Use Regulation Division (4320)
 PO Box 24680
 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Well 5 Monthly withdrawal	24174					
Well 10 Monthly withdrawal	24175					
Well 2 Monthly wds	7408					
Well 3 monthly wds	7409					
Well 4 Monthly withdrawal	7410					
Well 6 Monthly withdrawal	7411					
Well 7 Monthly withdrawal	7412					
Well 9 Monthly withdrawal	7414					
Well 11 Monthly withdrawal	7415					
Well 12 Monthly withdrawal	7416					

Name of Person Completing Form _____

Signature _____ Date: _____

Form 0188-QMON (08/03)

Printed: 09/25/2007

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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 PO Box 24680
 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Well 1 Monthly withdrawal	7417					
Monthly Withdrawal for Well DMW2	137583					
Monthly Withdrawal for Well NMBSIS1 (SWIM1)	137584					
Monthly Withdrawal for Well NMBSIS2 (SWIM2)	137585					
Monthly Withdrawal for Well DMW1	173010					
Monthly Withdrawal for Well DMW3	173011					
Monthly Withdrawal for Well DMW4	173012					
Monthly Withdrawal for Well DMW5	173013					
Monthly Withdrawal for Well IMW3	173014					
Monthly Withdrawal for Well IMW4	173015					

Name of Person Completing Form _____

Signature: _____ Date: _____

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report

Quarterly Report of Withdrawals From Wells and Surface Water Pumps

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Return To:

South Florida Water Management District
 Attn: Water Use Regulation Division (4320)
 PO Box 24680
 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____	Month: _____	Month: _____	Accounting Method	Date Last Calibrated
		Year: _____	Year: _____	Year: _____		
Monthly Withdrawal for Well IMW5	173016					
Well F-1 (fas) Monthly withdrawal	106431					
Well F-2 (fas) Monthly withdrawal	106432					
Well 13 Monthly withdrawal	106435					
Monthly withdrawal from Well 17	106439					
Monthly withdrawal from Well 19	106441					
Monthly withdrawal from Well 20	106442					
Monthly withdrawal from Well 21	106443					
Monthly withdrawal from Well F-3	107702					
Monthly withdrawal from Well F-4	141361					

Name of Person Completing Form _____

Signature: _____ Date: _____

Form 0188-QMON (08/03)

Printed: 09/25/2007

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Water Use Limiting Condition Compliance Report Quarterly Report of Withdrawals From Wells and Surface Water Pumps

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Return To:
 South Florida Water Management District
 Attn: Water Use Regulation Division (4320)
 PO Box 24680
 West Palm Beach, FL - 33416 - 4680

Water Withdrawals, Million Gallons

Requirement Name	District Identification Number	Month: _____ Year: _____	Month: _____ Year: _____	Month: _____ Year: _____	Accounting Method	Date Last Calibrated
Monthly Withdrawal for Well NMBIW	157642					
Monthly Withdrawal for Well NMBSC	157643					
Monthly Withdrawal for Well NMBSIS10	157644					
Monthly Withdrawal for Well NMBSG	157645					

Name of Person Completing Form _____

Signature: _____ Date: _____

Form 0188-QMON (08/03)

Printed: 09/25/2007

2

C-2 WUP Modification June 2009



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

CITY OF NORTH MIAMI BEACH
PUBLIC SERVICES DEPT.

2009 JUN 18 P 1:39

DIRECTOR'S OFFICE

CON 24-06

Application No.: 090417-17

June 16, 2009

NORTH MIAMI BEACH CITY OF
17050 N E 19TH AVENUE
NORTH MIAMI BEACH, FL 33162

Dear Permittee:

SUBJECT: Permit No.: 13-00060-W
Project: CITY OF NORTH MIAMI BEACH
Location: MIAMI-DADE COUNTY S32-35/T51S/R42E
S32-36/T51S/R41E
Permittee: NORTH MIAMI BEACH CITY OF

District staff has reviewed the information submitted in support of the referenced application for permit modification(s) and determined that the proposed activities are in compliance with the previous permit and the appropriate provisions of Rule 40E-2.331 (4)(a), Florida Administrative Code. The permit modification(s) include the following:

The Wellfield Operating Plan described in Limiting Condition 28 (of the permit issued on August 9, 2007) shall be modified as follows;

Permittee shall implement the following wellfield operating plan:
As per Exhibit 7A: the wellfields must be operated such that (after start-up and testing of new plant facilities and wells);

The City will operate the Floridan aquifer Wells in such a manner to withdraw a minimum of 20 percent of the quantity of water withdrawn from the Biscayne aquifer Wells on an annual average basis. Secondly, the City must utilize the existing raw water wells consistent with production volume needed from the Lime Softening portion of the treatment plant. Thirdly; the new wells will be used to supply raw water to the nanofiltration portion of the treatment plant consistent with the nanofiltration production needed.

Please understand that your permit remains subject to the 30 Limiting Conditions and all other terms of the permit authorization as previously issued.

Sincerely,

A handwritten signature in black ink, appearing to read "Steven J. Memberg".

Steven J. Memberg, P.G.
Section Leader
Water Use Regulation Division

/

Limiting Conditions

- 1 This permit shall expire on August 9, 2027.
- 2 Application for a permit modification may be made at any time.
- 3 Water use classification:

Public water supply

- 4 Source classification is:

Ground Water from:
Biscayne Aquifer

- 5 Annual allocation shall not exceed 14009 MG.

Maximum monthly allocation shall not exceed 1308.6 MG.

- 6 Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

NORTH MIAMI BEACH CITY OF
17050 N E 19TH AVENUE
NORTH MIAMI BEACH, FL - 33162

- 7 Withdrawal facilities:

Ground Water - Existing:

- 1 - 12" X 63' X 1250 GPM Well Cased To 58 Feet
- 1 - 12" X 52' X 1250 GPM Well Cased To 47 Feet
- 1 - 36" X 131' X 4167 GPM Well Cased To 110 Feet
- 1 - 12" X 56' X 1250 GPM Well Cased To 51 Feet
- 1 - 12" X 60' X 1250 GPM Well Cased To 45 Feet
- 1 - 36" X 58' X 4167 GPM Well Cased To 48 Feet
- 1 - 12" X 48' X 600 GPM Well Cased To 43 Feet
- 2 - 12" X 84' X 1250 GPM Wells Cased To 79 Feet

- 1 – 12" X 54' X 900 GPM Well Cased To 49 Feet
- 1 – 12" X 48' X 1500 GPM Well Cased To 43 Feet

- 8 Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:

(1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

(2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

- 9 Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:

(1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

- 10 Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(2) Reduction in water levels that harm the hydroperiod of wetlands,

(3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(4) Harmful movement of contaminants in violation of state water quality standards, or

- (5) Harm to the natural system including damage to habitat for rare or endangered species.
- 11 If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.
 - 12 Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.
 - 13 The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.
 - 14 The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.
 - 15 Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: S.F.W.M.D., Supervising Hydrogeologist – Post-Permit Compliance, Water Use Regulation Dept. (4320), P.O. Box 24680, West Palm Beach, FL 33416-4680.
 - 16 In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.
 - 17 Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

- 18 Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
- 19 The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
- 20 Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
- 21 Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
- 22 Prior to any application to renew or modify this permit, the Permittee shall evaluate long term water supply alternatives and submit a long term water supply plan to the District. Within one year of permit issuance, the Permittee shall submit to the District an outline of the proposed plan. The assessment should include consideration of saline intrusion, wellfield protection, plans for compliance with applicable

wellfield protection ordinances, expected frequencies and plans to cope with water shortages or well field failures, and conservation measures to reduce overall stresses on the aquifer.

- 23 Every five years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:

1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.

2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

Compliance reports shall be submitted in 2012, 2017, 2022, and 2027. Preparation of compliance reports shall begin at least one year prior to these due dates.

- 24 The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.

- 25 If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.

- 26 If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.

- 27 The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

- 28 Permittee shall implement the following wellfield operating plan:

As per Exhibit 7A: the wellfields must be operated such that; the City will operate the Floridan aquifer Wells to withdraw a minimum of 20 percent of the quantity of water withdrawn from the Biscayne aquifer Wells on an annual average basis. Secondly, the City must utilize the existing raw water wells

consistent with production volume needed from the Lime Softening portion of the treatment plant. Thirdly; the new wells will be used to supply raw water to the nanofiltration portion of the treatment plant consistent with the nanofiltration production needed. It is estimated that when the lime softening facilities are phased out of operation (estimated at 15 to 20 years hence); the City must show a greater reliance (as shown on Exhibit 7A) on the Floridan aquifer with total withdrawal from the Biscayne averaging no more than the 26.31 mgd approved on an annual basis.

- 29 Within six months of permit issuance, Permittee shall implement an updated saline intrusion monitoring program. A preliminary proposal to modify the existing salt program shall be submitted to staff for approval within three months of permit issuance. Staff approval will be granted if the proposal successfully updates the existing monitoring network. In developing the program, the Permittee shall consider well localities, depth, and method of well construction, types of screen, methods of chloride analysis and frequency of data collection.

Permittee shall also consider location, construction details, and operational protocols of the production wells, to ensure the wellfield is adequately protected from both lateral and upward migration of saline water.

- 30 .
The Permittee shall implement actions as necessary to improve the efficiency of the nanofiltration treatment plant during the first three years of operation to achieve 85 percent recovery efficiency or better. In the event this recovery efficiency is not achieved by the year 2010, the permittee shall submit a conservation plan for review by the South Florida Water Management District which, when updated, will reduce the raw water demand by an amount at least equal to achieving an 85 percent recovery efficiency for the nanofiltration plant. Upon approval by South Florida District Staff, the City shall update the water conservation plan within one year.

c: B.F.
City of Homestead
Dept of Environmental Protection
M W H
Miami-Dade County
Miami-Dade County Engineer

**Table II-10
City of North Miami Beach
City's Service Area Water Demand Projections (Showing Treatment Losses)**

	2007 ²	2008 ³	2009	2010	2011	2012	2013 ⁴	2014	2015	2016	2017	2018	2019	2020	2021	2022 ⁴	2023	2024	2025	2026	2027
PROJECTED POPULATION	170,829	173,195	175,560	177,926	180,292	182,658	185,023	187,389	189,755	192,121	194,486	196,852	199,218	201,584	203,949	206,315	208,681	211,047	213,412	215,778	218,148
Total Finished Water Production ¹ (MGD)	17.05	22.98	25.28	25.62	25.96	26.30	26.64	26.98	27.32	27.67	28.01	28.35	28.69	29.03	29.37	29.71	30.05	30.39	30.73	31.07	31.41
Per-Capita Use Rate	99.81	132.68	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00	144.00
BISCAYNE AQUIFER																					
Lime Softening Treatment Water (Finished Water)	15.32	13.86	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	0.00	0.00	0.00	0.00	0.00
Treatment Losses (2%)	0.31	0.28	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00
Nanofiltration Treatment (Finished Water)	1.73	6.46	6.28	6.62	6.96	7.30	7.64	7.48	7.82	8.17	8.51	8.35	8.69	9.03	9.35	22.36	22.36	22.36	22.36	22.36	22.36
Treatment Losses (20/15%) ⁵	0.43	1.62	1.57	1.66	1.74	1.83	1.91	1.32	1.38	1.44	1.50	1.47	1.53	1.59	1.65	3.95	3.95	3.95	3.95	3.95	3.95
Total Losses from Treatment	0.75	1.90	1.88	1.97	2.05	2.14	2.22	1.63	1.69	1.75	1.81	1.78	1.84	1.90	1.96	3.95	3.95	3.95	3.95	3.95	3.95
Raw Water Demand	17.80	22.22	23.16	23.59	24.01	24.44	24.86	24.11	24.52	24.92	25.32	25.13	25.53	25.93	26.31	26.31	26.31	26.31	26.31	26.31	26.31
FLORIDAN AQUIFER																					
Reverse Osmosis Treatment (Finished Water) ⁶	0.00	2.66	4.00	4.00	4.00	4.00	4.00	4.50	4.50	4.50	4.50	5.00	5.00	5.00	5.02	7.35	7.69	8.03	8.37	8.71	9.05
Treatment Losses (25%)	0.00	0.89	1.33	1.33	1.33	1.33	1.33	1.50	1.50	1.50	1.50	1.67	1.67	1.67	1.67	2.45	2.56	2.68	2.79	2.90	3.02
Total Losses from Treatment	0.00	0.89	1.33	1.33	1.33	1.33	1.33	1.50	1.50	1.50	1.50	1.67	1.67	1.67	1.67	2.45	2.56	2.68	2.79	2.90	3.02
Raw Water Demand	0.00	3.55	5.33	5.33	5.33	5.33	5.33	6.00	6.00	6.00	6.00	6.67	6.67	6.67	6.69	9.80	10.25	10.71	11.16	11.61	12.07
Total Losses from Treatment	0.75	2.78	3.21	3.30	3.38	3.47	3.55	3.13	3.19	3.25	3.31	3.45	3.51	3.57	3.63	6.40	6.51	6.63	6.74	6.85	6.97
Total Raw Water Demand (MGD)	17.80	28.16	28.49	28.92	29.35	29.77	30.20	30.11	30.52	30.92	31.32	31.80	32.20	32.60	33.00	36.11	36.56	37.02	37.47	37.92	38.38
Percentage FAS compared to Biscayne(9)	***	***	23.03	22.61	22.21	21.82	21.45	24.88	24.47	24.08	23.70	26.53	26.11	25.71	25.43	37.25	38.96	40.71	42.42	44.13	45.88

- Note 1: 2007 and 2008 are actual production, 2009 and beyond - projected finished water production for service area at 144 gpcpd.
- Note 2: RO system not ready. Nanofiltration started August 2007. Average 5.98 MGD purchased from MDWASD
- Note 3: RO system started operational testing in June 2008.
- Note 4: Assumes lime softening phased out in 10-20 years; thus 15 years or 2022 is date shown for such transition.
- Note 5: Assumes nanofiltration efficiency shifts from 80% to 85% in 2013.
- Note 6: First 4mgd from floridan aquifer throughout the permit period with an estimate floridan average of 5.64mgd for the 2009-2027 period.
- Note 7: City of North Miami Beach reserves the right to sell temporary or permanent capacity to the interconnected or to be interconnected municipal and county entities which may accelerate the Floridan production schedule. It is the intent that with 20 mgd of the Biscayne used the first 4mgd would be from the floridan. Thereafter, the floridan would constitute 20% of the additional capacity withdrawn upto the Biscayne resource limit which is shown herein. Thereafter all additional supply is from the Floridan Aquifer source through the permit duration
- Note 8: If permanent or temporary capacity is desired by City of Hallandale Beach, MDWASD, North Miami, or Bal Harbour/Surfside/Bal Harbor Islands, those interlocal agreement will be submitted to the District for an increase in allocation from the Floridan Aquifer or other source
- Note 9: Total Floridan aquifer flow as a percentage of Biscayne aquifer withdrawals

SFWM application 090417-17



C-3 WUP Modification 2012



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

District Headquarters: 3301 Gun Club Road, West Palm Beach, Florida 33406 (561) 686-8800 www.sfwmd.gov

CON 24-06

Application No.: 120514-13

June 11, 2012

CITY OF NORTH MIAMI BEACH
17050 N E 19TH AVE
NORTH MIAMI BEACH, FL 33162

Dear Permittee:

SUBJECT: Permit No.: 13-00060-W
Project: CITY OF NORTH MIAMI BEACH
Location: MIAMI-DADE COUNTY S32-35/T51S/R42E
S32-36/T51S/R41E
Permittee: CITY OF NORTH MIAMI BEACH

District staff has reviewed the information submitted in support of the referenced application for permit modification(s) and determined that the proposed activities are in compliance with the previous permit and the appropriate provisions of Rule 40E-2.331 (4)(a), Florida Administrative Code. The permit modification(s) include the following:

Limiting Condition 28 of the permit is modified to change the Operating Plan for the Floridan aquifer system wells from requiring withdrawal of a minimum of 20 percent of the volume withdrawn from the Biscayne aquifer wells to a minimum of 10 percent on an annual average basis. At the maximum authorized Biscayne aquifer withdrawal rate, ten percent is 2.6 MGD. The remainder of the limiting condition language remains unchanged.

Limiting Condition 30 of the permit shall be modified to require a nanofiltration efficiency of 85 percent or better when new replacement membranes are installed, rather than by 2013, as previously required. The remainder of the limiting condition language remains unchanged.

Please understand that your permit remains subject to the 30 Limiting Conditions and all other terms of the permit authorization as previously issued.

Sincerely,

A handwritten signature in cursive script that reads "Karin A. Smith".

Karin A. Smith, P.G.
Section Leader
Water Use Regulation Division

KAS /jj

Limiting Conditions

1. This permit shall expire on February 11, 2029.
2. Application for a permit modification may be made at any time.
3. Water use classification:

Public water supply

4. Source classification is:

Ground Water from:
Biscayne Aquifer
Floridan Aquifer System

5. Annual allocation shall not exceed 14009 MG.

Maximum monthly allocation shall not exceed 1308.6 MG.

The following limitations to annual withdrawals from specific sources are stipulated:

Floridan Aquifer System-: 4,406 MG.
Biscayne Aquifer-: 9,603 MG.

The following limitations to maximum monthly withdrawals from specific sources are stipulated:

Floridan Aquifer System-: 411.60 MG.
Biscayne Aquifer-: 897.00 MG.

6. Pursuant to Rule 40E-1.6105, F.A.C., Notification of Transfer of Interest in Real Property, within 30 days of any transfer of interest or control of the real property at which any permitted facility, system, consumptive use, or activity is located, the permittee must notify the District, in writing, of the transfer giving the name and address of the new owner or person in control and providing a copy of the instrument effectuating the transfer, as set forth in Rule 40E-1.6107, F.A.C.

Pursuant to Rule 40E-1.6107 (4), until transfer is approved by the District, the permittee shall be liable for compliance with the permit. The permittee transferring the permit shall remain liable for all actions that are required as well as all violations of the permit which occurred prior to the transfer of the permit.

Failure to comply with this or any other condition of this permit constitutes a violation and pursuant to Rule 40E-1.609, Suspension, Revocation and Modification of Permits, the District may suspend or revoke the permit.

This Permit is issued to:

CITY OF NORTH MIAMI BEACH
17050 N E 19TH AVE
NORTH MIAMI BEACH, FL - 33162

7. Withdrawal facilities:

Ground Water - Existing:

- 1 - 36" X 131' X 4167 GPM Well Cased To 110 Feet
 - 1 - 12" X 56' X 1250 GPM Well Cased To 51 Feet
 - 1 - 12" X 60' X 1250 GPM Well Cased To 45 Feet
 - 1 - 30" X 90' X 2600 GPM Well Cased To 80 Feet
 - 1 - 12" X 52' X 1250 GPM Well Cased To 47 Feet
 - 2 - 17.5" X 1250' X 2100 GPM Wells Cased To 1000 Feet
 - 1 - 30" X 95' X 2600 GPM Well Cased To 75 Feet
 - 1 - 17.5" X 1235' X 2100 GPM Well Cased To 1000 Feet
 - 2 - 12" X 84' X 1250 GPM Wells Cased To 79 Feet
 - 1 - 12" X 63' X 1250 GPM Well Cased To 58 Feet
 - 1 - 30" X 62' X 2600 GPM Well Cased To 52 Feet
 - 1 - 17.5" X 1231' X 2100 GPM Well Cased To 1000 Feet
 - 1 - 30" X 95' X 2600 GPM Well Cased To 85 Feet
 - 1 - 12" X 48' X 1500 GPM Well Cased To 43 Feet
 - 1 - 30" X 100' X 2600 GPM Well Cased To 90 Feet
 - 1 - 12" X 48' X 600 GPM Well Cased To 43 Feet
 - 1 - 36" X 58' X 4167 GPM Well Cased To 48 Feet
 - 1 - 12" X 54' X 900 GPM Well Cased To 49 Feet
8. Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.
- Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1 in 10 year drought event that results in the:
- (1) Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or
 - (2) Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.
9. Permittee shall mitigate harm to existing off-site land uses caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm caused by withdrawals, as determined through reference to the conditions for permit issuance, includes:
- (1) Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental

authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

(2) Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or

(3) Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

10. Permittee shall mitigate harm to the natural resources caused by the permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

(1) Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

(2) Reduction in water levels that harm the hydroperiod of wetlands,

(3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

(4) Harmful movement of contaminants in violation of state water quality standards, or

(5) Harm to the natural system including damage to habitat for rare or endangered species.

11. If any condition of the permit is violated, the permit shall be subject to review and possible modification, enforcement action, or revocation.

12. Authorized representatives of the District shall be permitted to enter, inspect, and observe the permitted system to determine compliance with special conditions.

13. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

14. The permit does not convey any property right to the Permittee, nor any rights and privileges other than those specified in the Permit and Chapter 40E-2, Florida Administrative Code.

15. Permittee shall submit all data as required by the implementation schedule for each of the limiting conditions to: SFWMD, Regulatory Support Division, MSC 9611, P.O. Box 24680, West Palm Beach, FL 33416-4680.

16. In the event of a declared water shortage, water withdrawal reductions will be ordered by the District in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C. The Permittee is advised that during a water shortage, pumpage reports shall be submitted as required by Chapter 40E-21, F.A.C.

17. Prior to the use of any proposed water withdrawal facility authorized under this permit, unless otherwise specified, the Permittee shall equip each facility with a District-approved operating water use accounting system and submit a report of calibration to the District, pursuant to Section 4.1, Basis of Review for Water Use Permit Applications.

In addition, the Permittee shall submit a report of recalibration for the water use accounting system for each water withdrawal facility (existing and proposed) authorized under this permit every five years from each previous calibration, continuing at five-year increments.

18. Monthly withdrawals for each withdrawal facility shall be submitted to the District quarterly. The water accounting method and means of calibration shall be stated on each report.
19. The Permittee shall notify the District within 30 days of any change in service area boundary. If the Permittee will not serve a new demand within the service area for which the annual allocation was calculated, the annual allocation may then be subject to modification and reduction.
20. Permittee shall determine unaccounted-for distribution system losses. Losses shall be determined for the entire distribution system on a monthly basis. Permittee shall define the manner in which unaccounted-for losses are calculated. Data collection shall begin within six months of Permit issuance. Loss reporting shall be submitted to the District on a yearly basis from the date of Permit issuance.
21. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
22. Prior to any application to renew or modify this permit, the Permittee shall evaluate long term water supply alternatives and submit a long term water supply plan to the District. Within one year of permit issuance, the Permittee shall submit to the District an outline of the proposed plan. The assessment should include consideration of saline intrusion, wellfield protection, plans for compliance with applicable wellfield protection ordinances, expected frequencies and plans to cope with water shortages or well field failures, and conservation measures to reduce overall stresses on the aquifer.
23. Every ten years from the date of permit issuance, the permittee shall submit a water use compliance report for review and approval by District Staff, which addresses the following:
 1. The results of a water conservation audit that documents the efficiency of water use on the project site using data produced from an onsite evaluation conducted. In the event that the audit indicates additional water conservation is appropriate or the per capita use rate authorized in the permit is exceeded, the permittee shall propose and implement specific actions to reduce the water use to acceptable levels within timeframes proposed by the permittee and approved by the District.
 2. A comparison of the permitted allocation and the allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates. In the event the permit allocation is greater than the allocation provided for under District rule, the permittee shall apply for a letter modification to reduce the allocation consistent with District rules and the updated population and per capita use rates to the extent they are considered by the District to be indicative of long term trends in the population and per capita use rates over the permit duration. In the event that the permit

allocation is less than allowable under District rule, the permittee shall apply for a modification of the permit to increase the allocation if the permittee intends to utilize an additional allocation, or modify its operation to comply with the existing conditions of the permit.

24. The Water Conservation Plan required by Section 2.6.1 of the Basis of Review for Water Use Permit Applications within the South Florida Water Management District, must be implemented in accordance with the approved implementation schedule.
25. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised that the proposal must be in compliance with all permitting criteria and performance standards in effect at the time of submittal, and that a formal modification of the permit shall be required if the withdrawals from the well location will result in an environmental or resource impact significantly greater than that anticipated in the permit review process.
26. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapters 40E-3 and 40E-30, Florida Administrative Code.
27. The Permittee shall submit to the District an updated Well Description Table (Table A) within one month of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.
28. Permittee shall implement the following wellfield operating plan:

As per Exhibit 7A of application 060207-8: the wellfields must be operated such that;

 - 1) the City will operate the Floridan aquifer Wells to withdraw a minimum of 10 percent of the quantity of water withdrawn from the Biscayne aquifer wells on an annual average basis.
 - 2) the City must utilize the older Biscayne aquifer wells consistent with production volume needed for the lime softening portion of the treatment plant.
 - 3) the Biscayne aquifer wells drilled in 2002 will be used to supply raw water to the nanofiltration portion of the treatment plant consistent with the nanofiltration production needed.

It is estimated that when the lime softening facilities are phased out of operation (estimated at 15 to 20 years hence); the City must show a greater reliance (as shown on Exhibit 7A) on the Floridan aquifer with total withdrawal from the Biscayne averaging no more than the 26.31 mgd approved on an annual basis.
29. Within six months of permit issuance, Permittee shall implement an updated saline intrusion monitoring program. A preliminary proposal to modify the existing saline water monitoring program shall be submitted to staff for approval within three months of permit issuance. Staff approval will be granted if the proposal successfully updates the existing monitoring network. In developing the program, the Permittee shall consider well localities, depth, and method of well construction, types of screen, methods

of chloride analysis and frequency of data collection.

Permittee shall also consider location, construction details, and operational protocols of the production wells, to ensure the wellfield is adequately protected from both lateral and upward migration of saline water.

In addition, the Permittee shall continue the existing saline water, which comprises monthly monitoring of water levels (referenced to NGVD) and chloride ion concentration in monitor wells DMW1, DMW2, DMW3, DMW4, DMW5, IMW3, IMW4, IMW5, SWIM1 and SWIM2. Monitoring data shall be submitted to the District quarterly.

30. The Permittee shall implement actions as necessary to improve the efficiency of the nanofiltration treatment plant to achieve 85 percent recovery efficiency or better when current membranes reach end of life, and new membranes are installed.
In the event this recovery efficiency is not achieved at the time of membrane filter replacement, the permittee shall submit a conservation plan for review by the South Florida Water Management District which, when updated, will reduce the raw water demand by an amount at least equal to achieving an 85 percent recovery efficiency for the nanofiltration plant.
Upon approval by South Florida District Staff, the City shall update the water conservation plan within one year.

c: B.F.
Dept of Environmental Protection
Miami-Dade County Engineer

NOTICE OF RIGHTS

As required by Sections 120.569(1), and 120.60(3), Fla. Stat., following is notice of the opportunities which may be available for administrative hearing or judicial review when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Not all the legal proceedings detailed below may be an applicable or appropriate remedy. You may wish to consult an attorney regarding your legal rights.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (SFWMD or District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Fla. Stat. Persons seeking a hearing on a District decision which does or may determine their substantial interests shall file a petition for hearing with the District Clerk within 21 days of receipt of written notice of the decision, unless one of the following shorter time periods apply: 1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Fla. Stat.; or 2) within 14 days of service of an Administrative Order pursuant to Subsection 373.119(1), Fla. Stat. "Receipt of written notice of agency decision" means receipt of either written notice through mail, or electronic mail, or posting that the District has or intends to take final agency action, or publication of notice that the District has or intends to take final agency action. Any person who receives written notice of a SFWMD decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

Filing Instructions

The Petition must be filed with the Office of the District Clerk of the SFWMD. Filings with the District Clerk may be made by mail, hand-delivery or facsimile. **Filings by e-mail will not be accepted.** Any person wishing to receive a clerked copy with the date and time stamped must provide an additional copy. A petition for administrative hearing is deemed filed upon receipt during normal business hours by the District Clerk at SFWMD headquarters in West Palm Beach, Florida. Any document received by the office of the SFWMD Clerk after 5:00 p.m. shall be filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the SFWMD Clerk, P.O. Box 24680, West Palm Beach, Florida 33416.
- Filings by hand-delivery must be delivered to the Office of the SFWMD Clerk. **Delivery of a petition to the SFWMD's security desk does not constitute filing. To ensure proper filing, it will be necessary to request the SFWMD's security officer to contact the Clerk's office.** An employee of the SFWMD's Clerk's office will receive and file the petition.
- Filings by facsimile must be transmitted to the SFWMD Clerk's Office at (561) 682-6010. Pursuant to Subsections 28-106.104(7), (8) and (9), Fla. Admin. Code, a party who files a document by facsimile represents that the original physically signed document will be retained by that party for the duration of that proceeding and of any subsequent appeal or subsequent proceeding in that cause. Any party who elects to file any document by facsimile shall be responsible for any delay, disruption, or interruption of the electronic signals and accepts the full risk that the document may not be properly filed with the clerk as a result. The filing date for a document filed by facsimile shall be the date the SFWMD Clerk receives the complete document.

Initiation of an Administrative Hearing

Pursuant to Rules 28-106.201 and 28-106.301, Fla. Admin. Code, initiation of an administrative hearing shall be made by written petition to the SFWMD in legible form and on 8 and 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, District file number or any other SFWMD identification number, if known.
2. The name, address and telephone number of the petitioner and petitioner's representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the SFWMD's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the SFWMD's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the SFWMD's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the SFWMD to take with respect to the SFWMD's proposed action.

A person may file a request for an extension of time for filing a petition. The SFWMD may, for good cause, grant the request. Requests for extension of time must be filed with the SFWMD prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and that the SFWMD and any other parties agree to or oppose the extension. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

If the District takes action with substantially different impacts on water resources from the notice of intended agency decision, the persons who may be substantially affected shall have an additional point of entry pursuant to Rule 28-106.111, Fla. Admin. Code, unless otherwise provided by law.

Mediation

The procedures for pursuing mediation are set forth in Section 120.573, Fla. Stat., and Rules 28-106.111 and 28-106.401-405, Fla. Admin. Code. The SFWMD is not proposing mediation for this agency action under Section 120.573, Fla. Stat., at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Sections 120.60(3) and 120.68, Fla. Stat., a party who is adversely affected by final SFWMD action may seek judicial review of the SFWMD's final decision by filing a notice of appeal pursuant to Florida Rule of Appellate Procedure 9.110 in the Fourth District Court of Appeal or in the appellate district where a party resides and filing a second copy of the notice with the SFWMD Clerk within 30 days of rendering of the final SFWMD action.

**Table II-10
City of North Miami Beach
City's Service Area Water Demand Projections (Showing Treatment Losses)**

	2007 ²	2008	2009	2010	2011	2012	2013 ⁴	2014	2015	2016	2017	2018	2019	2020	2021	2022 ³	2023	2024	2025	2026	2027
PROJECTED POPULATION	170,829	173,195	175,560	177,926	180,292	182,658	185,023	187,389	189,755	192,121	194,486	196,852	199,218	201,584	203,949	206,315	208,681	211,047	213,412	215,778	218,148
Total Finished Water Production¹ (MGD)	24.60	24.94	25.28	25.62	25.96	26.30	26.64	26.98	27.32	27.67	28.01	28.35	28.69	29.03	29.37	29.71	30.05	30.39	30.73	31.07	31.41
BISCAYNE AQUIFER																					
Lime Softening Treatment Water (Finished Water)	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment Losses (2%)	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00
Nanofiltration Treatment (Finished Water)	4.60	4.94	5.28	5.62	5.96	6.30	6.64	6.98	7.32	7.67	8.01	8.35	8.69	9.03	9.37	22.36	22.36	22.36	22.36	22.36	22.36
Treatment Losses (20/15%)*	1.15	1.24	1.32	1.41	1.49	1.58	1.67	1.75	1.83	1.91	2.00	2.08	2.16	2.25	2.33	3.95	3.95	3.95	3.95	3.95	3.95
Total Losses from Treatment	1.46	1.55	1.63	1.72	1.80	1.89	1.98	2.06	2.14	2.22	2.30	2.38	2.46	2.54	2.62	3.95	3.95	3.95	3.95	3.95	3.95
Raw Water Demand	21.06	21.49	21.91	22.34	22.76	23.19	23.62	24.05	24.48	24.91	25.34	25.77	26.20	26.63	27.06	26.31	26.31	26.31	26.31	26.31	26.31
FLORIDAN AQUIFER																					
Reverse Osmosis Treatment (Finished Water)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.02	7.35	7.69	8.03	8.37	8.71	9.05
Treatment Losses (25%)	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	2.45	2.56	2.68	2.79	2.90	3.02
Total Losses from Treatment	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	2.45	2.56	2.68	2.79	2.90	3.02
Raw Water Demand	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.69	9.80	10.25	10.71	11.16	11.61	12.07
Total Losses from Treatment	3.13	3.22	3.30	3.39	3.47	3.56	3.65	3.73	3.82	3.91	4.00	4.08	4.17	4.26	4.35	6.40	6.51	6.63	6.74	6.85	
Total Raw Water Demand (MGD)	27.73	28.16	28.58	29.01	29.43	29.86	30.29	30.71	31.14	31.57	32.00	32.43	32.86	33.29	33.72	36.11	36.56	37.02	37.47	37.92	38.38

Note 1: For 2007 and beyond - projected finished water production for service area at 144 gpcpd.
 Note 2: Assumes Norwood expansion complete in 2007, supplemental water demands needed for 2007 will be purchased from MDWASD, but unknown quantity.
 Note 3: Assumes lime softening phased out in 10-20 years; thus 15 years or 2022 is date shown for such transition.
 Note 4: Assumes nanofiltration efficiency shifts from 80% to 85% in 2013.

EXHIBIT 7A



splash!

quick facts on...

Getting to Know ePermitting

OCTOBER 2010

The South Florida Water Management District is a regional, governmental agency that oversees the water resources in the southern half of the state. It is the oldest and largest of the state's five water management districts.

Our Mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems, and water supply.

To enhance customer service for Environmental Resource and/or Consumptive Use Permit applicants and reviewers, the South Florida Water Management District has an extensive online Application and Permit Information Database. Site users have fast access to up-to-date permitting information and can complete and manage many different types of applications online.

Benefits for Everyone

www.sfwmd.gov/ePermitting is the online system and database where anyone can access details about pending and issued permits. No account is needed to access this information.

Application and/or permit searches can be conducted using the permit or application number, names of people involved in the project or the project name, county, land use category or date range. Information about South Florida Water Management District permit types, criteria, rules and forms, consent agreements and rulemaking notices is also available.

Information about permit criteria, rules and forms, consent agreements and rulemaking notices from other participating agencies is available online at:

www.flwaterpermits.com.

Additional Services for ePermitting Account Holders

Customers who register with the South Florida Water Management District ePermitting system can use additional helpful online features including:

- Submit Environmental Resource and Consumptive Use permit applications and applications to modify existing permits
- Submit information about permit compliance
- Request permit transfers when property ownership changes
- Submit and access comments made by other government agencies
- Subscribe to receive electronic notifications related to specific permit, application or enforcement case by cost code number(s). Information available includes Receipt of Application, Staff Reports, Notice of Intended/Proposed/Agency Action and List of Applications
- Submit phosphorus budget requests
- Access fee schedules
- Submit additional application details or application changes
- Submit a full or partial permit application fee payment

sfwmd.gov/ePermitting



Appendix D

**Population in North Miami Beach Utilities Water Service Area
For Each Local Government by TAZ**

Municipality	TAZ ID	Population 2013	Population 2015	Population 2018	Population 2020	Population 2023	Population 2025	Population 2030
Aventura	76	719	723	729	733	739	743	753
Aventura	81	0	0	0	0	0	0	0
Aventura	88	918	928	944	954	970	980	1,006
Aventura	89	1,019	1,036	1,062	1,079	1,104	1,121	1,163
Aventura	90	8,577	8,715	8,923	9,061	9,269	9,408	9,754
Subtotal		11,200	11,400	11,700	11,800	12,100	12,300	12,700
Golden Beach	601	919	919	919	919	919	919	919
Subtotal		900						
Miami Gardens	115	3,535	3,628	3,768	3,861	4,000	4,094	4,326
Miami Gardens	117	1,808	1,809	1,810	1,811	1,812	1,813	1,814
Miami Gardens	121	2,047	2,050	2,053	2,055	2,059	2,061	2,067
Miami Gardens	122	1,921	1,994	2,104	2,177	2,287	2,361	2,544
Miami Gardens	123	1,596	1,598	1,600	1,602	1,604	1,606	1,609
Miami Gardens	124	1,885	1,887	1,890	1,892	1,895	1,897	1,902
Miami Gardens	125	0	0	0	0	0	0	0
Miami Gardens	126	3,568	3,571	3,575	3,578	3,582	3,585	3,591
Miami Gardens	127	1,052	1,059	1,070	1,077	1,087	1,094	1,111
Miami Gardens	128	2,379	2,380	2,383	2,385	2,387	2,389	2,393
Miami Gardens	129	2,146	2,148	2,151	2,153	2,156	2,158	2,163
Miami Gardens	130	126	127	127	127	128	128	129
Miami Gardens	131	923	955	1,002	1,034	1,082	1,114	1,193
Miami Gardens	132	1,254	1,313	1,402	1,462	1,551	1,610	1,758
Miami Gardens	133	2,134	2,535	3,138	3,540	4,142	4,544	5,548
Miami Gardens	134	605	1,009	1,614	2,018	2,623	3,027	4,036
Miami Gardens	135	1,684	1,685	1,686	1,687	1,688	1,689	1,690
Miami Gardens	136	31	51	82	102	133	154	205
Miami Gardens	140	2,288	2,328	2,388	2,428	2,488	2,528	2,627
Miami Gardens	141	1,776	1,861	1,989	2,074	2,202	2,287	2,500
Miami Gardens	142	1,068	1,069	1,071	1,072	1,074	1,075	1,078
Miami Gardens	166	254	254	254	254	254	254	254
Miami Gardens	167	2,653	2,691	2,749	2,787	2,844	2,882	2,977
Miami Gardens	168	2,062	2,165	2,319	2,422	2,576	2,679	2,935
Miami Gardens	169	1,518	1,522	1,529	1,533	1,540	1,544	1,555
Miami Gardens	170	650	651	653	654	656	658	661
Miami Gardens	171	2	2	2	2	2	2	2
Miami Gardens	255	819	850	897	928	974	1,005	1,083
Miami Gardens	114	6	9	14	18	23	26	35
Miami Gardens	119	1,179	1,188	1,201	1,210	1,223	1,232	1,254
Miami Gardens	120	878	912	964	999	1,051	1,086	1,173
Miami Gardens	116	848	862	883	897	919	933	968
Miami Gardens	118	930	986	1,070	1,127	1,211	1,267	1,408
Subtotal		45,600	47,100	49,400	51,000	53,300	54,800	58,600
North Miami Beach	87	1,058	1,078	1,109	1,129	1,160	1,180	1,231
North Miami Beach	91	3,396	3,419	3,454	3,477	3,512	3,535	3,593
North Miami Beach	92	1,728	1,757	1,802	1,831	1,876	1,906	1,980
North Miami Beach	93	803	808	815	820	828	833	845
North Miami Beach	94	268	445	710	887	1,152	1,329	1,771
North Miami Beach	95	3,506	3,518	3,536	3,549	3,567	3,580	3,610
North Miami Beach	96	639	643	649	653	659	663	672
North Miami Beach	97	255	268	286	298	317	329	360
North Miami Beach	98	924	930	940	946	956	962	978
North Miami Beach	101	1,291	1,293	1,297	1,299	1,303	1,305	1,311
North Miami Beach	102	3,056	3,061	3,068	3,072	3,079	3,084	3,096
North Miami Beach	103	2,178	2,183	2,190	2,195	2,203	2,208	2,221
North Miami Beach	179	293	295	298	300	303	306	311
North Miami Beach	180	3,157	3,157	3,157	3,157	3,157	3,157	3,157
North Miami Beach	181	2,210	2,222	2,240	2,252	2,270	2,283	2,313
North Miami Beach	182	7	12	19	23	30	35	47
North Miami Beach	184	443	503	593	653	743	803	952
North Miami Beach	185	1,117	1,840	2,924	3,647	4,731	5,454	7,260
North Miami Beach	189	11	18	28	35	46	53	70
North Miami Beach	190	2,301	2,310	2,324	2,333	2,346	2,355	2,377
North Miami Beach	66	1,124	1,125	1,126	1,127	1,129	1,130	1,133
North Miami Beach	108	159	159	159	159	159	159	160

**Population in North Miami Beach Utilities Water Service Area
For Each Local Government by TAZ**

Municipality	TAZ ID	Population 2013	Population 2015	Population 2018	Population 2020	Population 2023	Population 2025	Population 2030
North Miami Beach	109	1,420	1,426	1,434	1,440	1,448	1,454	1,468
North Miami Beach	178	1,144	1,145	1,147	1,148	1,150	1,151	1,154
North Miami Beach	218	2,448	2,454	2,464	2,470	2,479	2,485	2,501
North Miami Beach	99	4	4	5	6	7	8	10
North Miami Beach	100	650	654	660	663	669	673	683
North Miami Beach	110	660	661	662	663	664	665	667
North Miami Beach	86	2,179	2,179	2,179	2,179	2,179	2,179	2,179
North Miami Beach	111	730	738	750	758	770	777	797
North Miami Beach	112	2,543	2,549	2,557	2,563	2,572	2,578	2,593
North Miami Beach	113	1,197	1,202	1,209	1,214	1,221	1,226	1,238
Subtotal		42,900	44,100	45,800	46,900	48,700	49,800	52,700
Sunny Isles Beach	602	1,943	1,954	1,972	1,984	2,001	2,013	2,042
Sunny Isles Beach	603	321	339	365	383	409	427	470
Sunny Isles Beach	604	880	959	1,077	1,155	1,273	1,352	1,549
Sunny Isles Beach	605	672	683	701	713	730	742	771
Sunny Isles Beach	606	8,202	8,280	8,396	8,474	8,590	8,668	8,862
Sunny Isles Beach	607	206	317	483	593	759	870	1,147
Sunny Isles Beach	608	711	765	846	900	981	1,035	1,170
Sunny Isles Beach	609	1,104	1,163	1,251	1,310	1,399	1,458	1,606
Sunny Isles Beach	610	2,667	2,751	2,878	2,962	3,089	3,174	3,385
Sunny Isles Beach	611	3,704	3,787	3,912	3,995	4,119	4,203	4,410
Sunny Isles Beach	612	1,403	1,467	1,563	1,628	1,724	1,789	1,949
Subtotal		21,800	22,500	23,400	24,100	25,100	25,700	27,400
Unincorporated Miami-Dade	82	0	0	0	0	0	0	0
Unincorporated Miami-Dade	83	0	0	0	0	0	0	0
Unincorporated Miami-Dade	84	1,429	1,546	1,720	1,836	2,011	2,127	2,418
Unincorporated Miami-Dade	85	278	278	278	278	278	278	278
Unincorporated Miami-Dade	105	1,887	1,887	1,887	1,887	1,887	1,887	1,887
Unincorporated Miami-Dade	107	2,891	2,905	2,925	2,939	2,959	2,973	3,006
Unincorporated Miami-Dade	172	0	0	0	0	0	0	0
Unincorporated Miami-Dade	173	2,633	2,645	2,662	2,674	2,692	2,704	2,733
Unincorporated Miami-Dade	174	10	17	27	34	44	51	68
Unincorporated Miami-Dade	175	1,494	1,508	1,530	1,544	1,566	1,581	1,617
Unincorporated Miami-Dade	176	2,231	2,242	2,258	2,269	2,286	2,297	2,325
Unincorporated Miami-Dade	177	3,876	3,899	3,933	3,956	3,991	4,014	4,072
Unincorporated Miami-Dade	204	403	404	405	406	407	408	410
Unincorporated Miami-Dade	205	2,003	2,006	2,010	2,013	2,018	2,021	2,028
Unincorporated Miami-Dade	206	0	0	0	0	0	0	0
Unincorporated Miami-Dade	220	1,136	1,142	1,152	1,158	1,167	1,173	1,188
Unincorporated Miami-Dade	221	1,748	1,752	1,759	1,764	1,770	1,775	1,786
Unincorporated Miami-Dade	222	737	741	746	750	755	759	768
Unincorporated Miami-Dade	223	178	178	179	179	180	180	181
Unincorporated Miami-Dade	225	533	534	534	534	535	535	536
Unincorporated Miami-Dade	226	891	894	898	901	906	908	916
Unincorporated Miami-Dade	228	784	791	800	807	816	823	839
Unincorporated Miami-Dade	247	0	0	0	0	0	0	0
Unincorporated Miami-Dade	249	832	834	836	838	840	842	845
Unincorporated Miami-Dade	250	3,390	3,425	3,478	3,513	3,565	3,600	3,687
Unincorporated Miami-Dade	251	0	0	0	0	0	0	0
Unincorporated Miami-Dade	613	0	0	0	0	0	0	0
Unincorporated Miami-Dade	114	6	9	14	18	23	26	35
Unincorporated Miami-Dade	119	1,179	1,188	1,201	1,210	1,223	1,232	1,254
Unincorporated Miami-Dade	120	878	912	964	999	1,051	1,086	1,173
Unincorporated Miami-Dade	66	1,124	1,125	1,126	1,127	1,129	1,130	1,133
Unincorporated Miami-Dade	108	159	159	159	159	159	159	160
Unincorporated Miami-Dade	109	1,420	1,426	1,434	1,440	1,448	1,454	1,468
Unincorporated Miami-Dade	178	1,144	1,145	1,147	1,148	1,150	1,151	1,154
Unincorporated Miami-Dade	218	2,448	2,454	2,464	2,470	2,479	2,485	2,501
Unincorporated Miami-Dade	99	11	13	16	19	22	24	29
Unincorporated Miami-Dade	100	1,949	1,961	1,979	1,990	2,008	2,019	2,049
Unincorporated Miami-Dade	110	1,981	1,984	1,987	1,989	1,993	1,995	2,001
Unincorporated Miami-Dade	86	1,089	1,089	1,089	1,089	1,089	1,089	1,089
Unincorporated Miami-Dade	111	365	369	375	379	385	389	398
Unincorporated Miami-Dade	112	636	637	639	641	643	645	648

**Population in North Miami Beach Utilities Water Service Area
For Each Local Government by TAZ**

Municipality	TAZ ID	Population 2013	Population 2015	Population 2018	Population 2020	Population 2023	Population 2025	Population 2030
Unincorporated Miami-Dade	113	299	300	302	303	305	307	310
Subtotal		44,100	44,400	44,900	45,300	45,800	46,100	47,000
Grand Total		166,500	170,400	176,100	180,000	185,900	189,600	199,300

*Subtotals and totals are rounded either up or down to the nearest hundredth



Appendix E





DRAFT VERSION



water conservation is our future

Mayor **George Vallejo**
Councilman **Anthony F. DeFillipo**
Councilwoman **Barbara Kramer**
Councilwoman **Marlen Martell**
Councilman **Frantz Pierre**
Councilwoman **Phyllis S. Smith**
Councilwoman **Beth E. Spiegel**
Ana M. Garcia, City Manager
Jose Smith, City Attorney
Pamela Latimore, City Clerk

August 2014



Public Utilities Department Service Standards – R.I.S.E..... 2

Water Conservation Program Vision 3

Water Conservation Program Mission..... 3

Program Goals 4

Water Conservation Overview..... 5

Water Utility Profile 7

Service Characteristics

 Potable Water Demand Forecast 8

 Retail Water Sales..... 9

Inventory of Best Management Practices..... 10

Classroom & Other Presentations 11

Industrial, Commercial, Institutional Outreach..... 12

NMB Residential Water Use Assessment Survey..... 13

Water Conservation Poster Contest 14

Water Conservation Rate Structure..... 15

Water Shortage & Water Emergency Ordinance..... 16

Permanent Irrigation Ordinance 17

Water Efficient Landscape Ordinance 18

Water Efficient Plumbing Ordinance 19

Alternative Water Supply..... 20

Water Treatment Process Optimization Program 21

Demand Management / AMR Program 22

Rain Harvest Program 23

Meter Accuracy / Maintenance Program 24

Non-Revenue Water Loss Reduction 25

Reclaimed Water Use 26

Showerhead Exchange Program 27

Leak Detection Program 29

Appendices 30

PUBLIC UTILITIES DEPARTMENT SERVICE STANDARDS - R.I.S.E.

Respect

- We treat others with dignity and respect, maintaining our composure even under pressure
- We communicate professionally and value good listening skills
- We speak in positive terms when offering solutions, and do not gossip or speak ill of others

Integrity

- We value integrity, holding ourselves accountable for our own attitudes, actions, and behavior
- We accept responsibility for working hard and doing well; when we make mistakes we own them
- We follow through on our commitments

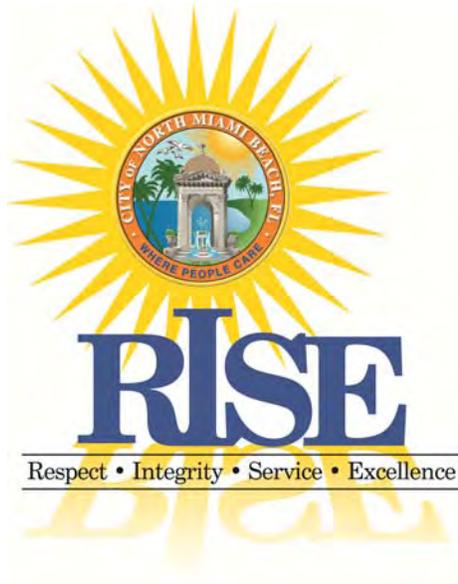
Service

- We are all committed to service excellence! The reason we are here is to serve our citizens.
- Customer service is a part of every job in the City! Citizens are our external customers; other employees and departments are our internal customers.
- Service over Self! We place the needs of the team and the City over our own personal needs
- We are committed to having fun while we work hard and serve others!

Excellence

- We are dedicated to quality in all that we do, and value getting things right the first time
- We strive for excellence and are committed to continuous improvement
- We are open to new ideas and value learning

R.I.S.E. Service Standards are upheld by all North Miami Beach Public Utility Employees.



WATER CONSERVATION PROGRAM

PROGRAM VISION

To provide leadership in water conservation and demand management by cultivating and nurturing an environmentally conscious community and equipping them with a strong water conservation ethic.

PROGRAM MISSION

To develop, implement and promote a progressive program that provides knowledge, tools and technology to help all customers regardless of age, location and user type to use water more efficiently.

PROGRAM GOALS

As an evolving program, our Water Conservation efforts are perpetuated through and guided by the following:

- **Potable Water Use** – Coordinate the collective efforts to increase overall water use efficiency and to make “best and beneficial use” of developed water supplies throughout distribution network. Focuses will be on supply and revenue sustainability, as well as reducing and/or controlling per capita water demands.

Non-Revenue/Unaccounted For Water Loss – Coordinate the efforts to limit non-revenue/unaccounted for water losses to 10% or less.

Irrigation Management – Continue to utilize technologies and practices that result in consistent reductions in potable water in all City-owned irrigation systems.

Education & Outreach – Work with the collective efforts of the Water Education Team, continue to develop, expand, and enhance water conservation education programs for youth, residential, commercial, multi-family and industrial customers.

Technology & Tools – Continue to evaluate and implement technology, tools and practices that promote efficient water use on both the supply and demand side of the utility. Focus will be placed on indoor and outdoor water uses as well as reclaimed water use.

Policy & Legislation – Continue to develop and support water conservation policies and legislation locally, regionally and statewide.

Incentives – Continue to develop and implement recognition and incentives for all customers who implement water best management practices.

Marketing & Media – Through the collective efforts of the Water Education Team, continue to develop comprehensive outreach, media and marketing materials to promote water conservation programs, strategies and policies.

Partnerships – Continue to develop and enhance partnerships with public and private entities that share or support the mission and goals of the Water Conservation program.

WATER CONSERVATION PROGRAM OVERVIEW

The Water Conservation program was created in 1999 for the purpose of promoting the efficient use of North Miami Beach’s potable water supplies. We are proud to say it was the first municipal water conservation program in South Florida. Today, the Water Conservation Program continues to develop and implement educational, operational, financial and regulatory “best management practices” (BMP) that promote the most efficient use of the region’s natural water resources and the utility’s allocated water supplies. Reducing water waste and increasing the efficient use of water helps to create sustainable water supplies and optimizes North Miami Beach’s water utility infrastructure. Since the inception of the program, the inventory of best management practices has grown to include irrigation management and industrial, commercial, and institutional outreach.

The Water Conservation Program is implemented in a team environment. The department’s Water Education Team is comprised of the Public Information Office and Neighborhood Relations Program¹. The Water Conservation Program also coordinates and works closely with other divisions that support the operation of the City’s water utility. The water conservation program has been recognized by numerous awards, featured at technical conferences and has been published in numerous trade publications.

The Water Conservation Program strives to develop, maintain and enhance productive partnerships with public and private entities that share or support the mission and goals of the program and Public Utilities Department. Ongoing partnerships with South Florida Water Management District and the North Miami Beach Water Fund, Inc. are helping to provide technical guidance and funding assistance to North Miami Beach’s water conservation program.

The Water Conservation Program implements a combination of quantifiable and non-quantifiable BMPs². A quantifiable BMP implies that water and/or cost savings can be measured

¹ Reference Appendix A – Water Education Team Organization Chart

² Reference page 10 – Best Management Practice Inventory

PROGRAM GOALS

As an evolving program, our Water Conservation efforts are perpetuated through and guided by the following:

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¹ Reference Appendix A – Water Education Team Organization Chart

² Reference page 10 – Best Management Practice Inventory

as a result of its implementation. A non-quantifiable BMP implies that no water and/or cost savings can be measured. All BMPs are implemented to achieve one or more of the following goals:

- Reduce and/or control per capita water demands
- Reduce and/or control peak water demands
- Low unaccounted for water loss
- Greater accountability for water produced/sold
- Overall efficient development of existing water supplies and infrastructure
- Extend functional life of utility infrastructure
- Lower treatment, energy and capital costs
- Utility revenue stability
- More effective drought response
- Improved consumer confidence and awareness
- Educating consumers of all ages

All water conservation programs and initiatives, current and future, implemented by the Public Utilities Department will support the goals and objectives of the Lower East Coast Water Supply Plan³ implemented by the South Florida Water Management District. North Miami Beach's water conservation program conforms to and supports Florida Statute 373.227 – Florida Water Resources: Water Conservation⁴ as well as Florida Statute 62-40.412 – Water Resource Implementation Rule: Water Conservation⁵.

³ Appendix B – Lower East Coast Water Supply Plan 2013

⁴ Appendix C – Florida Statute 373.227 – Florida Water Resources: Water Conservation

⁵ Appendix D – Florida Statute 62.40.412 – Water Resources Implementation Rule: Water Conservation

WATER UTILITY PROFILE

The City of North Miami Beach water utility provides retail municipal water services to the following areas⁶:

- City of North Miami Beach
- City of Miami Gardens
- City of Sunny Isles Beach
- City of Golden Beach
- Unincorporated portions of Miami-Dade County
- Portions of the City of Aventura

SERVICE CHARACTERISTICS

Estimated service population	170,000
<i>Estimated service area (square miles)</i>	25.5
<i>Miles of main</i>	590
<i>Number of water treatment plants</i>	1 – Norwood Water Treatment Plant
<i>Interconnections with other systems (list systems)</i>	<ul style="list-style-type: none"> • Miami-Dade Water & Sewer • City of Hallandale Beach • Village of Bal Harbor • City of North Miami • City of Opa Locka

ANNUAL WATER SUPPLY 2008

	<i>Annual Volume (MG)</i>	<i>Number of Intakes or source points</i>	<i>Percent Metered</i>
<i>Groundwater</i>	14,009 MGD	20	100 %

AVERAGE & PEAK DEMAND

	<i>Volume</i>	<i>Total Supply Capacity</i>	<i>% Total Capacity</i>
<i>Avg. Day Demand</i>	20.17	32 MGD	63%
<i>Max. Day Demand</i>	22.99 MGD		

PRICING

	<i>Rate Structure</i>	<i>Billing Frequency</i>
<i>Residential Rate</i>	Three tier, inclining	Quarterly
<i>Multi-Family Rate</i>	Three tier, inclining	Monthly
<i>Non-Residential Rate</i>	Three tier, inclining	Monthly

⁶ Appendix E – Water Distribution System Service Area Map

POTABLE WATER DEMAND FORECAST

City of North Miami Beach Water Service Area Demand Projects						
	2015	2018	2020	2023	2025	2030
Water Service Area Population	170,712	176,487	182,628	188,403	192,254	202,452
Water Usage Rate (gpcpd)	144	144	144	144	144	144
Finished Water Demand for City's Water Service Area Population (MGD)	24.58	25.41	26.30	27.13	27.68	29.15
Bulk Finished Water Sales to Other Utilities (MGD) ¹	0.27	0.27	0.27	0.27	0.27	0.27
Bulk Finished Water Purchased from Other Utilities (MGD)	0	0	0	0	0	0
Total Finished Water Demand	24.58	25.41	26.30	27.13	27.68	29.15
BISCAYNE AQUIFER						
City's Water Service Area Finished Water Demand (MGD)	22.58	23.41	24.30	24.13	24.68	26.15
Water loss in Treatment ² (MGD)	3.12	3.33	3.55	3.51	3.65	4.01
ASR Losses (MGD)	0	0	0	0	0	0
Total Raw Water Demand (MGD)	25.70	26.74	27.85	27.64	28.33	30.17
FLORIDAN AQUIFER						
Finished Water Demand (MGD)	2.00	2.00	2.00	3.00	3.00	3.00
Water loss in Treatment ²	0.67	0.67	0.67	1.00	1.00	1.00
ASR Losses (MGD)	0	0	0	0	0	0
Total Raw Water Demand (MGD)	2.67	2.67	2.67	4.00	4.00	4.00
TOTAL RAW WATER DEMAND (MGD)						
TOTAL RAW WATER DEMAND (MGD)	28.37	29.41	30.51	31.64	32.33	34.17
Raw Water / Treated Water Ratio	1.15	1.16	1.16	1.17	1.17	1.17

Footnotes

1. Included in line above (area served through City of North Miami Beach transmission system as of March 2014).
2. Water treatment efficiencies: nanofiltration - 80%, reverse osmosis-75%

RETAIL WATER SALES

Profile FY 2013 – 2014 (3/1/13 TO 2/28/14)

INSIDE CITY:	GALLONS BILLED (MG)	GALLONAGE	
		% OF CATEGORY	% OF GRAND
		TOTAL	TOTAL
<u>SINGLE FAMILY:</u>			8%
Base Consumption Block	404,998	79%	
First Conservation Block	61,516	12%	
Second Conservation Block	47,325	9%	
<u>MULTI-FAMILY:</u>			7%
Base Consumption Block	346,843	82%	
First Conservation Block	59,002	14%	
Second Conservation Block	15,842	4%	
<u>NON-RESIDENTIAL:</u>			6%
Base Consumption Block	251,807	14%	
First Conservation Block	23,777	6%	
Second Conservation Block	<u>300,748</u>	80%	
TOTAL INSIDE CITY	1,311,858		21%
<u>OUTSIDE CITY:</u>			
<u>SINGLE FAMILY:</u>			25%
Base Consumption Block	1,137,074	75%	
First Conservation Block	194,105	13%	
Second Conservation Block	191,357	13%	
<u>MULTI-FAMILY:</u>			32%
Base Consumption Block	1,686,324	86%	
First Conservation Block	239,690	12%	
Second Conservation Block	42,318	2%	
<u>NON-RESIDENTIAL</u>			22%
Base Consumption Block	116,059	9%	
First Conservation Block	59,634	4%	
Second Conservation Block	<u>1,153,237</u>	87%	
TOTAL OUTSIDE CITY	4,819,798		79%
<u>GRAND TOTALS</u>	<u>6,131,656</u>		

INVENTORY OF BEST MANAGEMENT PRACTICES

Best Management Practice	Description	BMP Type	Target Group(s)
Classroom and Community Presentations	Presentations on water conservation, etc.	Education	Youth and adults
Industrial, Commercial, Institutional Outreach Program	Voluntary outreach for ICI and multi-family customers	Education	Multi-family, non-residential
Residential Water Use Assessment	Voluntary survey of water use habits and recommendations	Education	Residential
Water Conservation Poster Contest	Water conservation poster contest	Education	Youth (elementary, middle and high school)
Water Conservation Rate Structure	Three-tier, inclining block rate structure	Financial	Residential, multi-family, non-residential
Water Shortage & Water Emergency Ordinance	North Miami Beach Ordinance 81-22	Legislative	Residential, multi-family, non-residential
Permanent Irrigation Ordinance	Miami-Dade County Water & Sewer Reg. Section 32-8.2	Legislation	Residential, multi-family, non-residential
Water Efficient Landscape Ordinance	NMB Land Development Code, Article XI, Section 24 - Ordinance #2000-9	Legislation	Residential, multi-family, non-residential
Water Use Efficiency Standards Ordinance	Miami-Dade County Water & Sewer Ordinance #32-84,32-85,32-86- Plumbing	Legislation	New residential, multi-family, non-residential
Alternative Water Supply	Use of Floridan Aquifer as potable water source	Operations	Utility operations
Meter Replacement	Replacement of water meters with ten years or more of service	Operations	Residential, multi-family, non-residential
Non-Revenue Water Reduction	Control and reduction of non-revenue water loss	Operations	Utility operations
Pressure Sustaining Valves	Distribution system valves to manage system pressures	Operations	Utility operations
Leak Detection Program	Detect leaks in the distribution system	Technology	Utility operations, Residential / Commercial
AMR / Demand Management Program	Install AMR meters throughout the entire distribution system. Monitor consumer's water usage and utilize leak detection technology in AMR system	Technology	Residential / Commercial
Rain Harvest Program	Harvest Rain Water	Technology	Utility operations / Commercial
Water Treatment Process Optimization Program	Reduce water usage with lime thickener	Technology	Utility operations

CLASSROOM & OTHER PRESENTATIONS

Summary

The Water Conservation Program shall make presentations to students, civic, residential and other groups as invited. Invitations to speak can be a result of on-going partnerships with schools/teachers, word of mouth, organized career day events or other catalysts. Presentation content will vary depending on grade and/or age levels, allocated time, location and other factors.

1. BMP Category
 - a. Educational
2. Responsible Party
 - a. Water Conservation Program
3. Implementation
 - a. Speaking engagements are scheduled as they arise
4. Implementation Schedule
 - a. Staff are available to make presentations throughout the year
5. Coverage Requirement
 - a. This BMP is made available to all customers within the utility service area
6. Documentation & Reporting
 - a. No formal documentation required for this BMP
7. Cost & Water Saving Assumptions
 - a. No quantifiable water savings can be assumed by this BMP

INDUSTRIAL, COMMERCIAL, INSTITUTIONAL OUTREACH

Summary

The Water Conservation Program shall provide outreach and other services to industrial, commercial and institutional (ICI) water customers. Water customers in these categories also include retail, restaurant, condominium, multi-family and others. Informational fact sheets are to be made available for most types of ICI customers. Technical expertise and recommendations shall be offered when requested. When appropriate, incentives will be offered to encourage participation.

1. BMP Category
 - a. Educational
2. Responsible Party
 - a. Water Conservation Program
3. Implementation
 - a. Printed Fact Sheets
 - b. Various flow control devices as appropriate
 - c. Other information items as appropriate
4. Implementation Schedule
 - a. BMP will be ongoing
5. Coverage Requirement
 - a. BMP will be made available to all customers within utility service area
6. Documentation & Reporting
 - a. Tracking of participants
 - b. Participant water use data and profiles
 - c. Quantifiable water savings (if applicable)
7. Cost & Water Saving Assumptions
 - a. No quantifiable water savings can be assumed as BMP is of an educational nature

RESIDENTIAL WATER USE ASSESSMENT SURVEY

Summary

The Water Conservation Program shall implement a voluntary water use assessment survey for single-family residential and small commercial customers. Customers must complete a comprehensive questionnaire requiring responses about their water use habits, etc. Responses from the surveys are compared to current and historical water billing data to determine the potential for water savings by the customers. A customized, written report is provided to the customer containing an assessment of their water consumption and recommendations on how to achieve greater water use efficiency.

1. BMP Category
 - a. Educational
2. Responsible Party
 - a. Water Conservation Division
3. Implementation
 - a. Survey forms and assessments are provided free of charge
4. Implementation Schedule
 - a. Assessments are completed on a monthly basis.
5. Coverage Requirement
 - a. BMP is made available to all single-family and small commercial customers
6. Documentation & Reporting
 - a. Assessments are completed on a monthly basis
 - b. Number of assessments are reflected on division's monthly report
 - c. Customer documents are kept on file by Water Conservation Program
7. Cost & Water Saving Assumptions
 - a. Small printing costs incurred to print surveys
 - b. Postage costs to mail surveys and customized reports
 - c. No water savings tracked or quantified, BMP is primarily educational

WATER CONSERVATION POSTER CONTEST

Summary

The Water Conservation Program shall participate in an annual water conservation poster contest for elementary, middle and high school students. All schools within the North Miami Beach utility service area are invited to participate. Local winners are selected in various grade categories. All local first place winners are forwarded to the statewide poster contest coordinated by Florida Section of American Water Works Association.

1. BMP Category
 - a. Educational
2. Responsible Party
 - a. Water Conservation Program
3. Implementation
 - a. Contest announcements are mailed to all art teachers at area elementary, middle and high schools. Participation is voluntary.
 - b. Teachers return all or selected posters to the Water Conservation Program for judging.
 - c. A judging panel uses a numerical ranking system to judge posters.
 - d. Local first, second and third place winners are selected.
 - e. Prizes are provided for the winning students
 - f. Winning posters are recognized through various Public Utilities publications
4. Implementation Schedule
 - a. Initial solicitation of schools – November
 - b. Deadline for entries – January/February
 - c. Forward local winners to statewide contest – March
 - d. Local winner recognition events – April, May
5. Coverage Requirement
 - a. This BMP applies to all areas of NMB utility service area
6. Documentation & Reporting
 - a. No regular reporting required for this BMP.
7. Cost & Water Saving Assumptions
 - a. No water savings can be assumed for this BMP
 - b. Negligible budgetary impact to implement this BMP

WATER CONSERVATION RATE STRUCTURE

Summary

The City of North Miami Beach shall implement a rate structure for water and sewer billing that promotes water conservation. Adopted by ordinance by Mayor and City Council, the rate structure shall consist of three tiers⁷. Base water rates and incremental rates are to be evaluated annually. To date, three classifications of water users include single-family, multi-family and non-residential.

1. BMP Category
 - a. Financial BMP, legislation
2. Responsible Party
 - a. NMB Mayor and City Council
 - b. NMB Public Utilities Department
 - c. NMB Finance Department
3. Implementation
 - a. Applied to all classes of water users
 - b. Enacted via ordinance by Mayor and City Council
 - c. Administered by NMB Finance Department
4. Implementation Schedule
 - a. Year round implementation
 - b. No seasonal changes or adjustments
5. Coverage Requirement
 - a. Applies to all service connections and classifications
6. Documentation & Reporting
 - a. NMB Finance to issue various monthly and quarterly reports
7. Cost & Water Saving Assumptions
 - a. No operating costs to implement
 - b. Water savings vary and are achieved through rate structure
 - c. No cost/benefit summary available

⁷ Appendix F – North Miami Beach Water Conservation Rate Ordinance 2001-9

WATER SHORTAGE & WATER EMERGENCY ORDINANCE⁸

Summary

The City of North Miami Beach shall codify and enforce an ordinance providing for procedures and protocol during local and regionally declared water shortages and emergencies.

1. BMP Category
 - a. Legislative
2. Responsible Party
 - a. North Miami Beach Mayor & Council
 - b. North Miami Beach Public Utilities Department
3. Implementation
 - a. Enacted by ordinance by NMB Mayor & Council
 - b. Administered by NMB Public Utilities Department
4. Implementation Schedule
 - a. Implemented during officially declared local and/or regional water shortages and emergencies
5. Coverage Requirement
 - a. Ordinance applicable to customer within corporate limits of North Miami Beach
 - b. Adoption by reference is optional for municipalities served by City of North Miami Beach water utility
6. Documentation & Reporting
 - a. Water Conservation Division and Public Utilities Department to facilitate and coordinate any documentation and/or reporting
7. Cost & Water Saving Assumptions
 - a. No quantifiable water savings assumptions can be made at this time

⁸ Appendix G – North Miami Beach Ordinance 81-22: Water Shortage and Water Emergency

PERMANENT IRRIGATION ORDINANCE⁹

Summary

The City of North Miami Beach shall adopt by reference an ordinance of Miami-Dade County providing for permanent, year round restrictions on irrigation during peak daylight hours.

1. BMP Category
 - a. Legislative

2. Responsible Party
 - a. Miami-Dade County Board of Commissioners
 - b. North Miami Beach Mayor & Council
 - c. North Miami Beach Public Utilities Department

3. Implementation
 - a. Enacted by Miami-Dade Board of County Commissioners
 - b. Adopted by reference by North Miami Beach Mayor & Council
 - c. Enforced by North Miami Beach Public Utilities Department

4. Implementation Schedule
 - a. Implemented year round

5. Coverage Requirement
 - a. Ordinance applicable to all residents and water customers within corporate limits of Miami-Dade County, Florida

6. Documentation & Reporting
 - a. No additional documentation or reporting required

7. Cost & Water Saving Assumptions
 - a. No quantifiable water savings can be assumed at this time
 - b. No budgetary impact to North Miami Beach for adoption by reference

⁹ Appendix H – Metropolitan Miami-Dade County Water and Sewer System Regulation Ordinance

WATER EFFICIENT LANDSCAPE ORDINANCE

Summary

The City of North Miami Beach shall promote efficient water use through landscaping and irrigation design. This BMP is provided through North Miami Beach Land Development Code, Article XI, Landscaping Section 24¹⁰. Article XI mandates use of automatic rain sensors, emphasizes use of water efficient plants and promotes the use of water use zones when designing a landscape.

1. BMP Category
 - a. Legislative
2. Responsible Party
 - a. City of North Miami Beach
3. Implementation
 - a. This BMP is enacted by Mayor and City Council
4. Implementation Schedule
 - a. This BMP is on-going
5. Coverage Requirement
 - a. This BMP affects utility customers within the corporate limits of the City of North Miami Beach
6. Documentation & Reporting
 - a. No documentation required by the City of North Miami Beach
7. Cost & Water Saving Assumptions
 - a. Any water savings shall be achieved through adherence to this ordinance

¹⁰ Appendix I – North Miami Beach Land Development Code, Article XI, Ordinance 2000-9

WATER USE EFFICIENCY STANDARDS ORDINANCE

Summary

The City of North Miami Beach shall adopt by reference and enforce the Miami-Dade County Water & Sewer Ordinance #32-84,32-85,32-86– Plumbing¹¹. This BMP requires the installation of water efficient plumbing fixtures in all new construction.

1. BMP Category
 - a. Legislative
2. Responsible Party
 - a. Miami-Dade County
3. Implementation
 - a. Enacted by Miami-Dade Board of County Commissioners
 - b. Adherence is enforced by North Miami Beach Community Development Department.
4. Implementation Schedule
 - a. This BMP is on-going
5. Coverage Requirement
 - a. This BMP applies to areas within the corporate limits of the City of North Miami Beach
6. Documentation & Reporting
 - a. No documentation or reporting required by City of North Miami Beach
7. Cost & Water Saving Assumptions
 - a. Any water savings are achieved through adherence to the plumbing code

¹¹ Appendix J – Miami-Dade County Building Code 8-31, and Water & Sewer Ordinance #32-84,32-85,32-86-Plumbing

ALTERNATIVE WATER SUPPLY

Summary

The Public Utilities Department shall make use of the Floridan Aquifer as an alternative water supply for the utility. Four wells shall be used to access this supply and shall deliver one percent of water demand. Because of the brackish quality of the Floridan water, reverse osmosis shall be used as the treatment process for this water.

1. BMP Category
 - a. Alternative Water Supply
2. Responsible Party
 - a. Water Production Division
 - b. Water Quality Division
3. Implementation
 - a. This BMP shall be implemented at the Norwood Water Treatment Plant. This facility serves as the sole water treatment facility for the City of North Miami Beach water utility.
4. Implementation Schedule
 - a. Full implementation of this BMP was achieved in 2008.
5. Coverage Requirement
 - a. This BMP shall produce water that will meet demands for the entire distribution network.
6. Documentation & Reporting
 - a. Extensive water production data and related reports are/will be required
 - b. Extensive water quality data and related reports are/will be required
7. Cost & Water Saving Assumptions
 - a. At full implementation, this BMP will reduce North Miami Beach's demand on the Biscayne Aquifer source by one percent of water demand.
 - b. Total construction cost is approximately \$20 million

WATER TREATMENT PROCESS OPTIMIZATION

Summary

The Public Utilities Department Norwood Water Treatment Plant shall always try to find ways to optimize the treatment process. In the recent water plant expansion, a lime sludge thickener was installed to replace the lagoons to handle the water treatment residues. This will reduce treatment process water loss.

1. BMP Category
 - a. Water Treatment Process Optimization
2. Responsible Party
 - a. Water Production Division
3. Implementation
 - a. This BMP shall be implemented at the Norwood Water Treatment Plant. This facility serves as the sole water treatment facility for the City of North Miami Beach water utility.
4. Implementation Schedule
 - a. Full implementation of this BMP was achieved in 2008.
5. Coverage Requirement
 - a. This BMP shall reduce water treatment process water loss.
6. Documentation & Reporting
 - a. Extensive water production data and related reports are/will be required
7. Cost & Water Saving Assumptions
 - a. At full implementation, this BMP will reduce North Miami Beach's water use by 100,000 gallons per day.
 - b. Total construction cost was approximately \$900,000

DEMAND MANAGEMENT / AMR PROGRAM

Summary

The Public Utilities Department shall always try to find ways to conserve water through Demand Management. This program shall track consumer's water usage and detect leaks in the user's system. Once detected, the consumer will be notified. This program will also be used to track the efficiency of various BMPs that have been implemented.

1. BMP Category
 - a. Water Treatment Process Optimization
2. Responsible Party
 - a. Water Conservation Division
 - b. Customer Service Division
3. Implementation
 - a. This BMP shall be implemented across water service area.
4. Implementation Schedule
 - a. AMR meter installation began August 2014
 - b. System-wide installation will take approximately 12 months
5. Coverage Requirement
 - a. This BMP shall reduce usage from both the Biscayne and Floridan Aquifers.
6. Documentation & Reporting
 - a. Extensive water production data and related reports are/will be required
7. Cost & Water Leak Detection
 - a. At full implementation, this BMP will reduce North Miami Beach's water use by 1,000,000 gallons per day.
 - b. Total construction cost is approximately \$12,000,000

RAIN HARVEST PROGRAM

Summary

The Public Utilities Department shall always try to find ways to utilize alternative water sources. Recently three, 10,000 gallon storage tanks were installed at the Operation's Center to collect rain water for irrigation and to supply water for bulk water landscaping trucks.

1. BMP Category
 - a. Alternative Water Supply
2. Responsible Party
 - a. Water Conservation Division
3. Implementation
 - a. This BMP shall be implemented at the Public Utilities Operations Center.
4. Implementation Schedule
 - a. Full implementation of this BMP was achieved in 2008.
5. Coverage Requirement
 - a. This BMP shall reduce water used for irrigation and bulk water trucks.
6. Documentation & Reporting
 - a. Extensive water production data and related reports are/will be required
7. Cost & Water Saving Assumptions
 - a. At full implementation, this BMP will reduce North Miami Beach's water use by 600,000 gallons per year.

METER MAINTENANCE / ACCURACY PROGRAM

Summary

The Public Utilities Department shall implement an on-going meter maintenance / accuracy program throughout the distribution network. Although most 5/8 meters will be completely changed out through the AMR meter replacement program, other meters may be repaired and/or rebuilt to improve accuracy. The primary purposes of this BMP are to achieve and maintain greater water use metering accuracy and to reduce non-revenue water loss.

1. BMP Category
 - a. Operational
2. Responsible Party
 - a. Meters and Backflow Division
 - b. Public Utilities Department
 - c. NMB Customer Service Division
3. Implementation
 - a. NMB Customer Service will assess meter service length for accounts they service daily
 - b. Meters and Backflow Division will also assess meter service lengths on a case-by-case basis
 - c. Meters in service greater than ten years are requested to be changed through a work order system
 - d. Meters will either be completely changed out or rebuilt, depending on size and application.
4. Implementation Schedule
 - a. This BMP is on-going
5. Coverage Requirement
 - a. This BMP applies to the entire distribution network
6. Documentation & Reporting
 - a. Meters and Backflow Division will track all meters maintenance activities on a monthly basis.
 - b. Reports are made on a monthly, quarterly and annual basis
7. Cost & Water Saving Assumptions
 - a. Meter replacement and maintenance costs vary depending on size and application
 - b. Water is metered with greater accuracy thereby helping reduce the utility's non-revenue water use

NON-REVENUE WATER LOSS REDUCTION

Summary

The Public Utilities Department shall implement practices to minimize and track non-revenue water loss throughout the distribution network. Primary activities employed to implement this BMP shall include meter replacements/maintenance, system leak detection/repair and rehabilitation of older distribution network components.

1. BMP Category
 - a. Operational
2. Responsible Party
 - a. NMB Public Utilities Department
 - b. Engineering Division
 - c. Finance Division
3. Implementation
 - a. An on-going meter replacement program shall be implemented to ensure accurate metering at all service connections
 - b. Leaks in the distribution network shall be identified and promptly repaired as they occur
 - c. Where warranted, older portions of the distribution network shall be rehabilitated to reduce future leakage
 - d. The Engineering Division shall volumetrically quantify and track non-revenue water loss on a monthly basis.
 - e. The Finance Division shall financially quantify and track non-revenue water loss on a monthly basis.
4. Implementation Schedule
 - a. This BMP shall be an on-going program
5. Coverage Requirement
 - a. This BMP shall apply to the entire distribution network
6. Documentation & Reporting
 - a. Volumetric and financial reporting of non-revenue water loss shall be made on a monthly basis
7. Cost & Water Saving Assumptions
 - a. Target range for non-revenue water loss shall fall between five and ten percent

RECLAIMED WATER USE

Summary

A feasibility study was reviewed in 2008 to determine how to implement reclaimed water use in portions of the North Miami Beach water service area. It was determined at the time that there were no direct sources of wastewater effluent readily available to the City of North Miami Beach.

Although possible sources of reclaimed water are being identified, detailed recommendations for operation and implementation have yet to be developed.

SHOWERHEAD EXCHANGE PROGRAM

Summary

The Water Conservation Division shall implement a voluntary, residential retrofit BMP that encourages customers to trade in old showerheads for new, high-efficient showerheads, faucet aerators and other items that promotes water efficiency.

1. BMP Category
 - a. Technology, residential retrofit
2. Responsible Party(s)
 - a. NMB Water Conservation Program
3. Implementation
 - a. The City of North Miami Beach shall implement this BMP by encouraging customers to trade in their old showerheads to receive new, high efficiency devices.
 - b. Not more than four (4) kits shall be made available to any one household or customer.
 - c. This BMP shall be implemented at the following locations:
 - North Miami Beach Public Utilities Administration
 - Various community events as scheduled
 - Qualified condo/multi-family dwellings (case-by-case basis)
 - d. This voluntary residential retrofit BMP offers kits that include a showerhead, faucet aerators and indoor leak detection devices. Each retrofit kit shall include the following devices:
 - 1.5 gpm showerhead (Niagara “Earth” model or comparable)
 - 1.5 gpm bathroom faucet aerator
 - 1.5 gpm kitchen faucet aerator
 - 2 toilet leak detection packets
 - 1 faucet drip gauge/quantifier
 - Installation Instructions
 - e. Retrofit kits shall be packaged in clear, plastic, sealed bags.
 - f. Where possible, retrofit kits shall be made available for purchase at cost for customers not wishing to exchange their old devices.
 - g. All design and printing of kit inserts, print and other advertisements shall be coordinated through NMB Public Information Office.
4. Implementation Schedule
 - a. BMP shall be offered during regular business hours at North Miami Beach Public Utilities Engineering office, located at 17051 NE 19th Avenue, North Miami Beach, FL 33162. This location shall offer this BMP on an ongoing basis.

Showerhead Exchange Program (continued)

- b. Special community events shall be scheduled as warranted to further implement and promote this BMP.
 - c. Implementation of this BMP in qualified condo/multi-family dwellings shall be accommodated and coordinated on a case-by-case basis.
5. Coverage Requirement
 - a. This BMP shall be made available to each household within the NMB water service area.
6. Documentation & Reporting
 - a. Volume of kits exchanged and/or dispensed shall be collected, documented and recorded by program coordinator.
 - b. Monthly activity and volumes shall be included on the regular monthly reports for the NMB Water Conservation Program.
7. Cost & Water Saving Assumptions
 - a. See original program cost worksheet for this BMP.¹²

¹² Appendix K – Cost Benefit Summary Worksheet

LEAK DETECTION PROGRAM

Summary

The Public Utilities Department shall implement an annual leak detection program. On a quarterly basis, a leak survey of a portion of the water distribution system shall be performed to identify any leaks in the piping network. A quarterly report shall be prepared to quantify the leaks and estimate the amount of water loss identified.

1. BMP Category
 - a. Unaccounted for water loss
2. Responsible Party
 - a. Engineering Division
3. Implementation
 - a. This BMP shall be implemented system wide by a professional leak detection consultant.
4. Implementation Schedule
 - a. Implementation of this program was started in 2006 and continues to this date on a quarterly basis.
 - b. This program will be on going.
5. Coverage Requirement
 - a. This BMP shall cover the entire distribution system over a continuous two year cycle.
6. Documentation and Reporting
 - a. A quarterly report shall be generated by the consultant to identify the progress of the program and identify leaks found.
 - b. An annual progress report shall be presented. to the Public Utilities Commission.
7. Cost and Water Saving Assumptions
 - a. At full implementation, this BMP will reduce the unaccounted for water, reduce the water loss and reduce the North Miami Beach's water demand on the aquifers.
 - b. The total cost of implementation is approximately \$50,000 per year.
 - c. The total cost of repairs found will vary based on the origin of leaks.

APPENDICES

- **Appendix A** – Water Education Team Organization Chart
- **Appendix B** – Lower East Coast Water Supply Plan (Proposed)
- **Appendix C** – Florida Statute 373.227 – Florida Water Resources: Water Conservation
- **Appendix D** – Florida Statute 62.40.412 – Water Resources Implementation Rule: Water Conservation
- **Appendix E** – Water Distribution System Service Area Map
- **Appendix F** – North Miami Beach Water Conservation Rate Ordinance 2001-9
- **Appendix G** – North Miami Beach Ordinance 81-22: Water Shortage and Water Emergency
- **Appendix H** – Metropolitan Miami-Dade County Water and Sewer System Regulation Ordinance
- **Appendix I** – North Miami Beach Land Development Code, Article XI, Ordinance 2000-9
- **Appendix J** – Miami-Dade County Water & Sewer Ordinance #32-84,32-85,32-86- Plumbing
- **Appendix K** – Cost Benefit Summary Worksheet



Appendix F



City of North Miami Beach
10-Yr Water Supply Facilities Work Plan
Population Projections Workshop
May 12, 2014

Attendees: See Attached Sign-In Sheet

Agenda Items		Action Items
1.	Introductions and a project overview of the Water Supply Facilities Work Plan (WSFP) was provided by Sangeeta Dhulashia.	
2.	The attached presentation was given by Sangeeta Dhulashia and Kristin Hink.	
3.	MWH and NMB met with WASD to review discrepancies found in the population data when compared with WASD numbers and these discrepancies are being worked out directly between MWH and WASD. If any changes are made to the population projection data as a result, another workshop for the Draft Workplan will take place, otherwise no further workshops will occur.	<ul style="list-style-type: none"> • Local governments are to confirm the population projections that were presented with their projections.
4.	Data requested from each local governments: <ul style="list-style-type: none"> • Projected development data by May 30, 2014. • Draft 10-yr Water Supply Facilities Work Plan by November, 2014. 	<ul style="list-style-type: none"> • Local governments to provide most up to date projected development data by May 30, 2014. • Local governments to provide draft 10-yr WSFP by November, 2014.

Status of Action Items:

#	Assigned To: Staff and Date	Proposal Authorization and Comments	Status
1.	Maria: 5/12/14	Provide local governments with NMB Service Area shapefiles.	<i>Completed on 5/14/14</i>
2.	Local Governments: 5/12/14	Confirm the population projections that were presented with local government projections.	
3.	Local Governments: 5/12/14	Provide most up to date projected development data by May 30, 2014.	
4.	Local Governments: 5/12/14	Provide a draft 10-yr WSFP by November, 2014.	

Attachments:

- Sign-In Sheet
- Workshop Presentation



MWH

BUILDING A BETTER WORLD

MEETING SIGN IN SHEET

Date: Monday May 12, 2014

Time: 1:00 PM

Location: City of North Miami Beach, Public Services Administration Building

Project: City of North Miami Beach Water Supply Facilities Work Plan

Subject: Population Projections Workshop

In Attendance:

	Name	Phone Number	Email Address	Firm/Organization
1.	Kristin Hink	954-846-0401	Kristin.E.Hink@mwhglobal.com	MWH
2.	Maria Ramirez	954-846-0401	maria.C.ramirez@mwhglobal.com	MWH
3.	Sangeeta Phulashia	954-846-0401	Sangeeta.dhulashia@mwhglobal.com	MWH
4.	CHASUN HASBUN	305-792-1787	CHASUN@STIBFL.NE	CSFB
5.	JOANNE CARR	305 466 8940	carrj@cityofnorthmiami.com	AGESTORA
6.	KARIM ROSSY	305 948-2980	KARIM.ROSSY@citynmb.com	CNMB
7.	JEFF AN	305-787-6049	jeff.an@citynmb.com	CNMB
8.	BARBARA TRINKA	(305) 761-9610 305-948-2980	barbara.trinka@citynmb.com	CNMB
9.	SHELLIE RANSOM-JACKSON	305-622-8054	SRANSOM@MIAMI.GARDENS-FL.GOV	CMG
10.				
11.				
12.				
13.				

CITY OF NORTH MIAMI BEACH

10 YEAR WATER SUPPLY FACILITIES WORK PLAN
A DISCUSSION WITH
AVENTURA, GOLDEN BEACH,
MIAMI GARDENS, SUNNY ISLES BEACH,
and NORTH MIAMI BEACH




May, 2014

BUILDING A BETTER WORLD

Agenda

- Background
 - 10 Year Water Supply Facilities Work Plan
 - Water Use Permit
 - City of North Miami Beach Service Area
- Projections
 - Population
 - Per Capita Usage
 - Future Water Demand
- Local Government Actions
- Questions

CITY OF NORTH MIAMI BEACH

BACKGROUND




May, 2014

BUILDING A BETTER WORLD

All local governments must create a 10 year water supply facilities work plan.

- Local governments subject to the regional water supply plan (Lower East Coast Water Supply Plan) prepared by the South Florida Water Management District are required to:
 - Prepare a 10 year water supply facilities work plan.
 - Identify how future water supply needs will be met.
 - Amend local comprehensive plan to incorporate the work plan.
 - Adopt their water supply facilities work plans by 3/12/2015.

The 10 year water supply facilities work plan is a planning document.

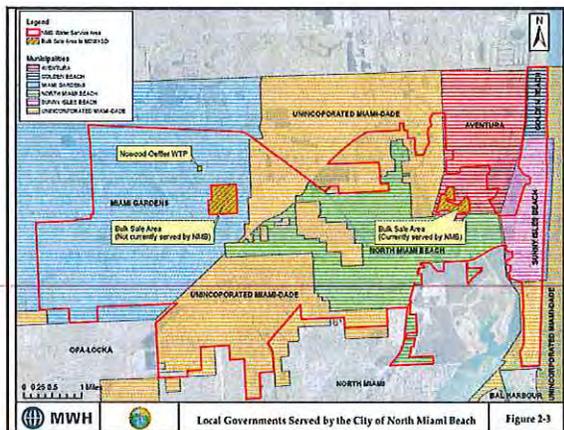
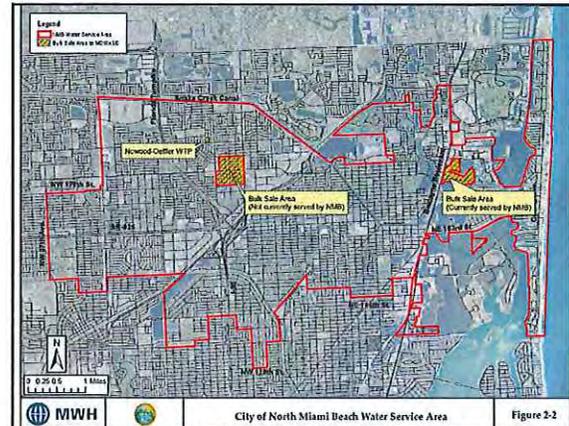
- Incorporates alternative, traditional, reuse and conservation projects or strategies to meet water supply needs identified in Regional Water Supply Plan
- Identifies existing water sources and facilities
- Includes future water demand projections
- Includes concept level estimates and funding for capital improvements projects
- Demonstrates coordination with all water suppliers

Local governments need to obtain the following information from water suppliers.

- Current CUP number and expiration date
- Authorized average and maximum daily withdrawals by source with limitations
- Required alternative water supply projects
- Identification of existing and planned future water sources and facilities.
- Map of service area

Water Use Permit Details

- Current CUP number: 13-00060-W
- Current Application Number: 060207-8
- Permit expiration date: August 9, 2027
- Authorized average withdrawal = 38.38MGD in 2027
 - 26.31MGD from Biscayne Aquifer
 - 12.07MGD from Floridan Aquifer



CITY OF NORTH MIAMI BEACH

PROJECTIONS

May 2014

BUILDING A BETTER WORLD

Planning Horizons

- Water Supply Facilities Work Plan – 10 years
- Current year – 2014
- Adoption – 2015
- Planning Horizons – 2013, 2015, 2018, 2020, 2023, 2025, 2030
- LEC Planning Horizons – 2010, 2020, 2030

Projection Methodology

- Source of Data
 - 2013 Traffic Analysis Zones (TAZ) from Miami-Dade County Department of Regulatory and Economic Resources
- Data Contents
- Methodology

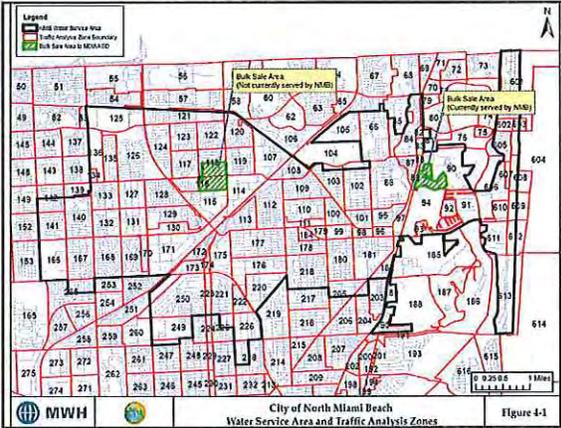


TABLE 4-1: Estimated Historical Population Served in City's Water Service Area

Year	Population ¹
2004	157,800
2005	158,300
2006	158,600
2007	159,300
2008	159,800
2009	160,300
2010	160,800
2011	162,700
2012	164,600
2013	166,500

Note:
¹ Values were derived from an interpolation between 2007 TAZ data (based on 2000 census) and 2013 TAZ data (based on 2010 census) that was obtained from Miami-Dade County Department of Regulatory and Economic Resources.

TABLE 4-2: Water Service Area Population Projections from County's TAZ

City's Water Service Area Entity	2013	2015	2018	2020	2023	2025	2030
Aventura	11,200	11,400	11,700	11,800	12,100	12,300	12,700
Golden Beach	900	900	900	900	900	900	900
Miami Gardens	45,600	47,100	49,400	51,000	53,300	54,800	58,600
North Miami Beach	42,900	44,100	45,800	46,900	48,700	49,800	52,700
Sunny Isles Beach	21,800	22,500	23,400	24,100	25,100	25,700	27,400
Unincorporated Miami-Dade	44,100	44,400	44,900	45,300	45,800	46,100	47,000
Total*	166,500	170,400	176,200	180,000	185,800	189,600	193,300

*These population numbers are rounded to the nearest hundred.

Inclusion of Projected Development Methodology

Developments classified as:

- "Existing" or "Under Construction" – Currently accounted for in the Miami-Dade County RER Population data by TAZ. These were not added to TAZ data.
- "Active Building Permit" – Added these to TAZ data for year 2015
- "Approved" - Added these to TAZ data for year 2020
- "Planned/Expired" - Added these to TAZ data for year 2030

TABLE 4-3: Water Service Area Population Projections Based on TAZ Including Projected Developments

City's Water Service Area Entity	Projected Dev. by 2015	Projected Dev. by 2020	Projected Dev. by 2030	Total Projected Dev.	Adjusted 2015 Pop. with Projected Dev.	Adjusted 2020 Pop. with Projected Dev.	Adjusted 2030 Pop. with Projected Dev.	2030 Pop. from TAZ
Aventura	0	651	0	651	11,400	12,500	13,300	12,700
Sunny Isles Beach	323	1,371	572	2,266	22,800	25,800	29,600	27,400
Miami Gardens					47,100	51,000	58,600	58,600
North Miami Beach					44,100	46,900	52,700	52,700
Unincorporated Miami-Dade County	0	0	0	0	44,400	45,300	47,000	47,000
Golden Beach	0	0	0	0	900	900	900	900
City's Water Service Area Total	323	2,021	572	2,917	170,700	182,400	202,100	193,300

TABLE 4-4: Projected Population Per Local Government

Area within City's Water Service Area	Year						
	2013	2015	2018	2020	2023	2025	2030
Aventura ¹	11,200	11,400	11,700	12,500	12,700	12,900	13,300
Sunny Isles Beach ²	21,800	22,600	23,800	25,800	28,800	27,400	29,600
Miami Gardens ¹	45,600	47,100	49,400	51,000	53,300	54,800	58,600
North Miami Beach ²	42,900	44,100	45,800	46,900	48,700	49,800	52,700
Unincorporated Miami-Dade County ¹	44,100	44,400	44,900	45,300	45,800	46,100	47,000
Golden Beach ²	900	900	900	900	900	900	900
City's Water Service Area	166,500	170,700	176,500	182,400	188,200	191,800	202,100

Notes:
¹ Only a portion of Aventura, Miami Gardens and Unincorporated Miami-Dade County are within the City of North Miami Beach's Water Service Area.
² The City of North Miami Beach, Sunny Isles Beach, and Golden Beach are totally within the City of North Miami Beach's Water Service Area from a water supply and water treatment perspective.

Permitted Raw Water Allocations

PERMITTED RAW WATER ALLOCATIONS

Aquifer	Permitted Raw Water Allocation 2027		
	MGY	MGD	% of Total
Biscayne	9,603	26.31	68.5
Upper Floridan	4,406	12.07	31.5
Total	14,009	38.38	100

TABLE 5-1: Historic Treated Water Use

Year	Total Population ¹	Treated Average Annual (MGY) ²	Gallon Per Capita Per Day ³	Treated Average Month (MG) ³	Maximum Month (MG) ³	Maximum Month/Average Month Ratio ³
2008	159,799	8425	144	702	889	1.3
2009	160,276	7828	134	652	693	1.1
2010	160,762	7403	126	617	683	1.1
2011	162,687	7505	126	625	649	1.0
2012	164,612	7466	124	622	691	1.1
2013	166,538	7361	121	613	639	1.0
Average			129			1.1

Notes:

¹ Interpolations from Traffic Analysis Zones (TAZ) 2000 and TAZ 2010 populations

² Includes all treated water produced and purchased from MDWASD (no water has been purchased from WASD since 2011)

³ Includes all treated water produced and purchased as well as all bulk sales to other utilities

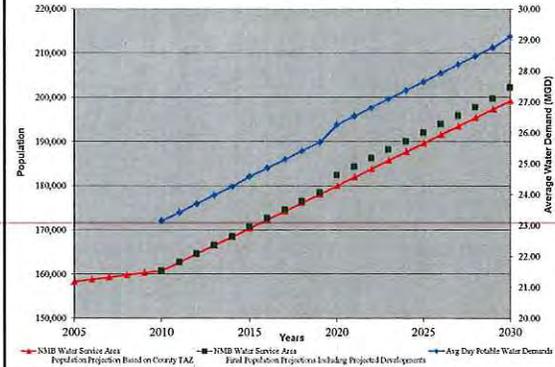
TABLE 5-3: City of North Miami Beach Service Area Water Demand Projections

	2013	2015	2018	2020	2023	2025	2030
Water Service Area Population	166,538	170,712	176,487	182,359	188,135	191,866	202,184
Water Usage Rate (gpcd)	121	144	144	144	144	144	144
Finished Water Demand for City's Water Service Area Population (MGD)	20.17	24.58	25.41	26.26	27.09	27.65	29.11
Total Finished Water Demand	20.17	24.58	25.41	26.26	27.09	27.65	29.11
BISCAYNE AQUIFER							
City's Water Service Area Finished Water Demand (MGD)	15.17	19.58	20.41	21.26	22.09	22.65	20.06
Water loss in Treatment ¹ (MGD)	1.27	2.37	2.58	2.79	3.00	3.14	2.49
ASR Losses (MGD)	0	0	0	0	0	0	0
Total Raw Water Demand (MGD)	16.44	21.95	22.99	24.05	25.09	25.78	22.56
FLORIDAN AQUIFER							
Finished Water Demand (MGD)	5.00	5.00	5.00	5.00	5.00	5.00	9.05
Water loss in Treatment ¹ (MGD)	1.67	1.67	1.67	1.67	1.67	1.67	3.02
ASR Losses (MGD)	0	0	0	0	0	0	0
Total Raw Water Demand (MGD)	6.67	6.67	6.67	6.67	6.67	6.67	12.07
TOTAL RAW WATER DEMAND (MGD)	23.10	28.62	29.66	30.72	31.76	32.45	34.62
Raw Water / Treated Water Ratio	1.16	1.16	1.17	1.17	1.17	1.17	1.19

Notes:

¹ Water treatment efficiencies: nanofiltration- 80%, reverse osmosis- 75%, lime softening- 98%

Population and Treated Water Projections North Miami Beach Water Service Area



LOCAL GOVERNMENT ACTIONS



May 2014

BUILDING A BETTER WORLD

Local governments need to use consistent population and demand projections.

- Provide and review Table II-6 to confirm that new developments are incorporated into the Water Supply Facilities Work Plan.
- Provide City of North Miami Beach with copy of your draft 10-Year Water Supply Facilities Work Plan

**Table II-6: AVENTURA
New and Projected Developments**

Project Name	Location	Type	Bldg sft / units	Population	Gallons/ Day	Year to be included in population projections
The Village at Island Estates LLC	Second Island at Island Estates	Condo	160 u	352	50,688	2020
Coho Aventura Hotel L.L.P.	2777 NE 185 Street	Hotel	215 u	289	43,000	2020
2015 Subtotal				-	-	
2020 Subtotal				651	93,688	
2030 Subtotal				-	-	
TOTAL				651	93,688	

**Table II-6: SUNNY ISLES BEACH
New and Projected Developments**

Project Name	Location	Type	Bldg sft / units	Population	Gallons/ Day	Year to be included in population projections
Parish Design	18555 Collins Avenue 19025, 19202, 19001, 18985, 18965, 18955, 18925, 18915 Atlantic Boulevard	Condo	132 u	250	41,818	2015
Atlantic 15		Single family	15 u	33	4,752	2015
Unique	17141 Collins Avenue 290 & 330 Sunny Isles Beach Boulevard	Condo	64 u	141	20,275	2020
St. Tropez - Parque Towers		Condo	329 u	724	104,227	2020
Sunny Isles Marina	400 Sunny Isles Beach Boulevard	Condo/ Marina	230 u	506	72,864	2020
Triumph	220 160th Drive	Condo	17 u	37	5,366	2030
Epicure	17150-17190 Collins Avenue	Condo	243 u	535	76,982	2030
2015 Subtotal				323	46,670	
2020 Subtotal				1371	197,366	
2030 Subtotal				572	82,388	
TOTAL				2,266	372,874	

CITY OF NORTH MIAMI BEACH

QUESTIONS??



May, 2014

BUILDING A BETTER WORLD

Projected Development Assumptions

Assumptions	
2.2	people /dwelling unit
144	gpcd
0.01	gpd (warehouses 10gpd/1000 sft)
0.1	gpd (Shopping Centers/ Office Buildings 10gpd/100 sft)
2000	g/day/acre
200	gpd/unit (Hotels/motels)
u	Unit