



FINAL

City of North Miami Water Supply Facilities Work Plan Update

2014-2030



200-66798-15001

June 11, 2015

EXECUTIVE SUMMARY

In 2002, 2004, 2005, and 2011 the Florida State Legislature expanded upon the requirements of the local government comprehensive plan to include the development of a minimum 10-year Water Supply Facilities Work Plan, with the purpose of increasing the coordination of future land use and water supply planning. This work plan is to be included in each local government's comprehensive plan as part of the potable water sub-element.

Eventually, all local governments with water supply facility responsibilities must prepare and adopt a Work Plan. Local governments must now develop and adopt a minimum 10-year Water Supply Facility Work Plan to address their future water supply needs, water supply sources and the building of all required public, private and regional facilities needed to serve existing and new development. They must incorporate into their comprehensive plan, local government water supply projects selected from those listed in a Regional Water Supply Plan, or propose to the water management district, alternative water supply options sufficient to meet their future needs.

In late 2007, the City of North Miami (City or CNM) initiated the development of a Water Supply Facilities Work Plan to comply with the requirements of the 2005 Florida State Legislature Senate Bills (SB-444 & SB-360). There are also regulatory and financial incentives to encourage alternative water supply use.

This Work Plan Update is based on past historical data, current information, and future projections associated with the City's sole municipal water treatment facility, water conveyance infrastructure, demographics, water sources, water demands and water supply. It covers a planning period of 2014 through 2030.

The City provides potable water for approximately 91,700 (2014 est.) people within its water service area which includes a few municipalities and unincorporated areas outside the city limits. Approximately 8.73 million gallons per day (MGD) is distributed from its water treatment facility which is permitted for 9.3 MGD. But the existing facility is able to satisfy only part of the City's water demands on its own. Supplemental finished water is purchased from Miami-Dade Water and Sewer Department (MDWASD) via interconnects that provide approximately 5.0 – 6.0 MGD to meet the potable water demands of the service area.

Due to potential restrictions on future withdrawals from the City's current water source, the Biscayne aquifer, an alternative water source has been proposed by the CNM. This new water source, the Floridan aquifer, would be able to meet the potable water demands of the City's water service area population, which is expected to grow to 94,980 in 2020 and 100,362 by the year 2030.

Previously, the City had planned to supplement its lime-softened finished water with potable water produced from a new reverse osmosis (RO) plant by 2015. This RO plant would have been used to treat the brackish water of the Floridan aquifer to meet additional demands from the City's projected growth. The City has postponed construction of the RO plant indefinitely, as water demands have been below previous projections. The City intends to continue water purchases from MDWASD as long as MDWASD has the water available to sell. The City has continued to invest in its water treatment facilities, rehabilitating its water supply wells, and recently completing design work for rehabilitation of its water treatment plant and addition of an additional finished water storage near the water treatment plant.

The CNM renewed its Water Use Permit (WUP) in 2010 and was allocated an equivalent annual allocation of 7.97 MGD from the Floridan aquifer and 9.30 MGD from the Biscayne aquifer. The allocation of Floridan aquifer water could serve as a potential future alternative supply.

This plan will be included in various elements of the City's adopted, updated Comprehensive Plan. Based on its water demand projections, the CNM has developed plans for the provision of potable water over the next ten years and beyond, including groundwater supply, infrastructure, and conservation.

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 Background.....	1
1.2 Purpose and Objective	1
1.3 Relevant Regional Issues	3
1.3.1 Overview	3
1.3.2 Surficial Aquifer System Withdrawals	3
1.3.3 Water Conservation	3
1.3.4 Reclaimed Water and the Ocean Outfall Program	3
1.3.5 Climate Change and Sea Level Rise	4
2.0 WATER SERVICE AREA.....	4
3.0 EXISTING WATER SUPPLY FACILITIES.....	8
3.1 Introduction	8
3.2 Raw Water	8
3.2.1 Supply Source.....	8
3.2.2 Raw Water Wells.....	8
3.2.3 Raw Water Mains.....	8
3.3 Water Treatment and Storage Facilities	10
3.4 High Service Pumps	10
3.5 Distribution System.....	12
3.6 Interconnections	12
3.7 Summary	13
4.0 POPULATION AND WATER DEMAND PROJECTIONS.....	16
4.1 General	16
4.2 Historical Population.....	16
4.3 Population Projections.....	16
4.4 Historical Water Use.....	19
4.5 Water Use Permit	19
4.6 Water Demand Projections.....	19
4.6.1 Potable Water Capacity Surpluses and Deficiencies.....	19
4.7 Water Supply Provided by Miami Dade Water and Sewer Department.....	20
4.7.1 Water Use Permit (WUP) Information and Number	20
4.7.2 Current and Future Water Sources.....	20

4.7.3 Applicable Source Limitations 21

4.7.4 Existing and Projected Level of Service Standards and/or Per Capita Use Rates 21

4.7.5 Existing and Future Water Treatment Facilities and Capacities to Meet Demand over the Planning Period 21

4.7.6 Infrastructure and Capital Improvement Needs 23

4.8 Summary 23

5.0 CAPITAL IMPROVEMENTS 25

5.1 Potable Water Supplies and Facility Needs 25

 5.1.1 Infrastructure Element..... 25

 5.1.2 Capital Improvement Element..... 28

5.2 Water Supply Projects 28

 5.2.1 Capital Improvement Program 28

 5.2.2 Alternative Water Sources 28

 5.2.3 Funding Sources 28

5.3 Water Conservation and Reuse 29

5.4 Water Supply Concurrency..... 30

6.0 GOALS, OBJECTIVES AND POLICIES..... 31

 1. Future Land Use Element..... 31

 4. Infrastructure Element 31

 6. Conservation Element 33

 8. Intergovernmental Coordination Element..... 36

 11. Capital Improvement Element 37

7.0 CONCLUSION 38

LIST OF TABLES

Table 3-1 City of North Miami Current Interconnections	12
Table 4-1 City of North Miami's Historic Population: 1960-2010.....	16
Table 4-2 City of North Miami Population Projection Comparisons 2014-2030	17
Table 4-3 City of North Miami Water Service Area Population Projections 2013-2030	17
Table 4-4 Projected Potable Water Demand and Availability.....	20
Table 4-5 MDWASD Project Summary from the 2013 LEC Water Supply Plan Update	24
Table 5-1 Level of Service Standards (Potable Water).....	25
Table 5-2 Scheduled Potable Water System Projects (FY2013/2014-FY2017/2018)	28

LIST OF FIGURES

Figure 2-1 City of North Miami Water Service Area Boundary Map	5
Figure 2-2 City of North Miami Existing Land Use Map	6
Figure 2-3 Miami Dade Water and Sewer Service Area Boundary Map	7
Figure 3-1 Site Map for North Miami Winson Water Treatment Plant and Wells.....	9
Figure 4-1 City of North Miami – Future Land Use Map	18
Figure 4-2 MDWASD Alternative Water Supply Projects to Meet Future Demands.....	22
Figure 5-1 City of North Miami – Proposed Water Treatment Plant Improvements	26

APPENDICES

Appendix A City of North Miami and Miami Dade Water and Sewer Dept. 20-Year Contract for Purchase of Wholesale Water
Appendix B City of North Miami Raw Water Wells Information
Appendix C Miami-Dade County WASD – North Miami Service Area Population Projections
Appendix D City of North Miami Historical Water Use
Appendix E City of North Miami Water Use Permit 13-00059-W
Appendix F Miami-Dade County WASD – 2015 Water Supply Facilities Work Plan Update
Appendix G City of North Miami Winson WTP Upgrades 100% Permitting Cost Estimate
Appendix H City of North Miami Possible Reuse Water Projects Letter to MDWASD

1.0 INTRODUCTION

1.1 BACKGROUND

The City of North Miami (CNM or the City) is located within the northeast section of Miami-Dade County, Florida, between the two major cities of Miami and Fort Lauderdale. It is home to approximately 58,000 residents and is primarily considered a multi-ethnic residential community. The City also has over 7,000 business firms located within four business districts and industrial areas. The City is surrounded by the communities of Miami Shores, Bay Harbor Islands, Bal Harbour, Sunny Isles Beach, Aventura, Biscayne Park, Surfside, and North Miami Beach.

During the 1930's a new water plant and gravity tank were constructed behind the then newly built City Hall building at N.E. 8th Avenue and N.E. 125th Street. This plant provided water for City residents for several decades. Then in the 1970s, saltwater intrusion into the City's wellfields forced the decommissioning of the original water plant. Five interconnection points were created with MDWASD to maintain adequate supply and pressure to City customers, primarily on the east side. The original plant was then used for additional water storage and as a booster pump station until the late 1980s when it was fully decommissioned and dismantled.

Presently, the City's only existing water plant, the *Norman H. Winson Water Treatment Plant (Winson WTP)*, was commissioned in 1962 and has been maintained in operation by the CNM staff over the last forty plus years providing a reliable source of lime-softened water with a permitted raw supply capacity of 9.3 MGD. This plant provides approximately 65% of the City's finished water, but it also supplies water to customers in nearby municipalities outside of its City limits and in parts of unincorporated Miami-Dade County. The City purchases approximately 35% from MDWASD, which is conveyed through a series of interconnections in the southeast part of the City. The City has a 20-year contract with MDWASD for the purchase of wholesale water (Appendix A). The City also owns and operates raw water wells that supply the WTP.

1.2 PURPOSE AND OBJECTIVE

The City of North Miami is situated in Miami-Dade County, which is located in the SFWMD Lower East Coast (LEC) Water Supply Planning Area. All local governments within this planning area must prepare and adopt a minimum 10-year water supply plan into their comprehensive plans within 18 months following the approval of an update to the LEC Regional Water Supply Plan. The objective of the Water Supply Facilities Work Plan is to develop a plan for building public, private, and regional water supply facilities to serve existing and new development within a local government's jurisdiction.

The purpose of this document is to update the City of North Miami's Adopted Water Supply Facilities Work Plan, per requirements of Florida Statutes Subsection 163.3177(6)(c)3, through an amendment to the City's Comprehensive plan within 18 months of the Governing Board's adoption of the applicable Regional Water Supply Plan. The Work Plan covers more than the minimum planning horizon of 10 years. The applicable Regional Water Supply plan for North Miami is the Lower East Coast (LEC) Water Supply Plan, which was adopted on September 12, 2013, meaning that local governments' work plans and related amendments should be incorporated into comprehensive plans by March 2015. The Work Plan will be incorporated into the Comprehensive Plan by reference. Water Supply related capital improvements are found in Section 5.0, and Water Supply related amendments are found in Section 6.0. This Water Supply Facilities Work Plan Update is also developed to be consistent with the Miami-Dade County Water and Sewer Department (MDWASD) Water Supply plan, data, and objectives.

The objective is to develop Water Supply Comprehensive Plan Amendments and a Water Supply Facility Work Plan in accordance with South Florida Water Management District (SFWMD) and Florida Department of Economic Opportunity (DEO) guidelines, and as governed by Florida statutory requirements (Chapter 163.3177, F.S.). The Water Supply Facilities Work Plan Update will be prepared in coordination with the SFWMD Lower East Coast Water Supply Plan Update with a planning period will be from 2014 to 2030 (16-Years).

In general, the legislative changes require local governments to:

1. Coordinate portions of the comprehensive plan with the water management district's (South Florida Water Management District) regional water supply plan (Lower East Coast Water Supply plan) - 163.3177(4)(a), F.S.
2. Base future land use plan on availability of water supplies and facilities - 163.3177(6)(a), F.S.
3. Ensure concurrency of water supply at building permit stage - 163.3180(2)(a), F.S.
4. Revise the appropriate element of the Comprehensive Plan to:
 - a. "Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated regional water supply plan, or the alternative project proposed by the local government" - 163.3177(6)(c), F.S.
 - b. "Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the local government's jurisdiction" - 163.3177(6)(c), F.S.
 - c. "Include a water supply facilities work plan for at least a 10-year planning period for constructing the public, private, and regional supply facilities identified in the element as necessary to serve existing and new development" - 163.3177(6)(c), F.S.
5. "Revise the Conservation Element as necessary to assess projected water needs and sources for at least a 10-year planning, considering the appropriate regional water supply plan....." - 163.3177(6)(c), F.S.
6. "Revise the Intergovernmental Coordination Element to ensure coordination of the comprehension plan with applicable regional water supply plans and regional water supply authorities' plans." - 163.3177(6)(h)1.,F.S.
7. "Address in the Evaluation and Appraisal Report (EAR), the extent to which the local government has implemented the 10-year water supply facilities work plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, bulk sales agreements, and conservation and reuse programs are meeting local water use demands." - 163.3191(2)(1), F.S.

This water facilities supply work plan has been prepared utilizing the South Florida Water Management District's – Water Supply Facilities Work Plan Update Guide.

1.3 RELEVANT REGIONAL ISSUES

1.3.1 Overview

Relevant Regional Issues identified for 2030 in the Lower East Coast Water Supply Planning Region are:

1. Increased withdrawals from both the Surficial Aquifer System and surface water from Lake Okeechobee are limited
2. Conservation continues to be relied upon to reduce per capita use and a means to potentially delay or perhaps avoid adding capacity.
3. Use of reclaimed water continues to be important alternative source in the region and helps to meet requirements of the 2008 Leah G. Schad Ocean Outfall Program.

Additionally, this section also considers the issue of climate change, and initial steps taken by the City to addressing concerns about climate change and the threat of sea level rise.

1.3.2 Surficial Aquifer System Withdrawals

Increased withdrawals from both the Surficial Aquifer System and surface water from Lake Okeechobee are limited. The City of North Miami presently relies on its Biscayne Aquifer allocation, which is part of the Surficial Aquifer System and by connection, reliant on Lake Okeechobee, for recharge.

Therefore the City of North Miami has a vital interest in the preservation and sustainable management of both the Surficial Aquifer System and surface water from Lake Okeechobee. To reduce reliance on the Surficial Aquifer System in the future, the City has developed design documents for a future Floridan aquifer brackish reverse osmosis (RO) expansion at the Winson WTP. The City has postponed construction of this expansion indefinitely.

The City has been able to meet additional water needs through a successful water conservation program, as described in Section 1.3.3, and through purchases of water from MDWASD, as described in Section 6.0. 4. Infrastructure Element.

1.3.3 Water Conservation

Conservation continues to be relied upon to reduce per capita use and a means to potentially delay or perhaps avoid adding capacity. Water conservation promotes the City of North Miami's interests by protecting the Surficial Aquifer System and deferring the need for costly capital upgrades for other alternative water supplies.

The City has promoted water conservation through its policies, described later in this report in Section 6.0, 6. Conservation Element. The City has seen significant results since these policies have been implemented, with a greater than 20% decline in per capita water usage since 2008 (174.1 gpcd). The City is on track to outperform per capita water usage projections from the 2008 Water Supply Facilities Work Plan (165.4 gpcd for 2015). The City had an estimated potable water usage of between 115 gallons per capita per day (gpcd) and 135 gpcd from 2008 to 2014. As noted earlier, this number is lower than the per capita usage in the previous work plan, and is expected to remain steady. A planning usage of 139.4 gpcd was used in the 2010 SFWMD water use permit update and is used in this work plan update.

1.3.4 Reclaimed Water and the Ocean Outfall Program

Use of reclaimed water continues to be important alternative source in the region and helps to meet requirements of the 2008 Leah G. Schad Ocean Outfall Program. Like all of South Florida, the City of North Miami benefits economically from proximity to pristine beaches and marine resources as a vital natural

resource that attracts residents and visitors. Preservation of the Region's shorelines and marine environment is a vital interest to the City of North Miami.

The City of North Miami does not operate a wastewater treatment plant; instead, it sends wastewater to the Miami Dade Water and Sewer Department (MDWASD) for processing. Utilization of reuse water is encouraged by City Policy 6B.4.2.i. The City of North Miami reached out to MDWASD with a letter listing five possible reuse projects for the City of North Miami to use MDWASD reuse water (Appendix G). MDWASD did a preliminary cost estimate for these reuse projects that led to the conclusion that it was not feasible to move forward with the reuse initiative at that time. At this time, MDWASD planned reuse projects include 27.6 mgd of Floridan Aquifer Recharge and up to 90 mgd of reuse water to Florida Power & Light (FP&L).

1.3.5 Climate Change and Sea Level Rise

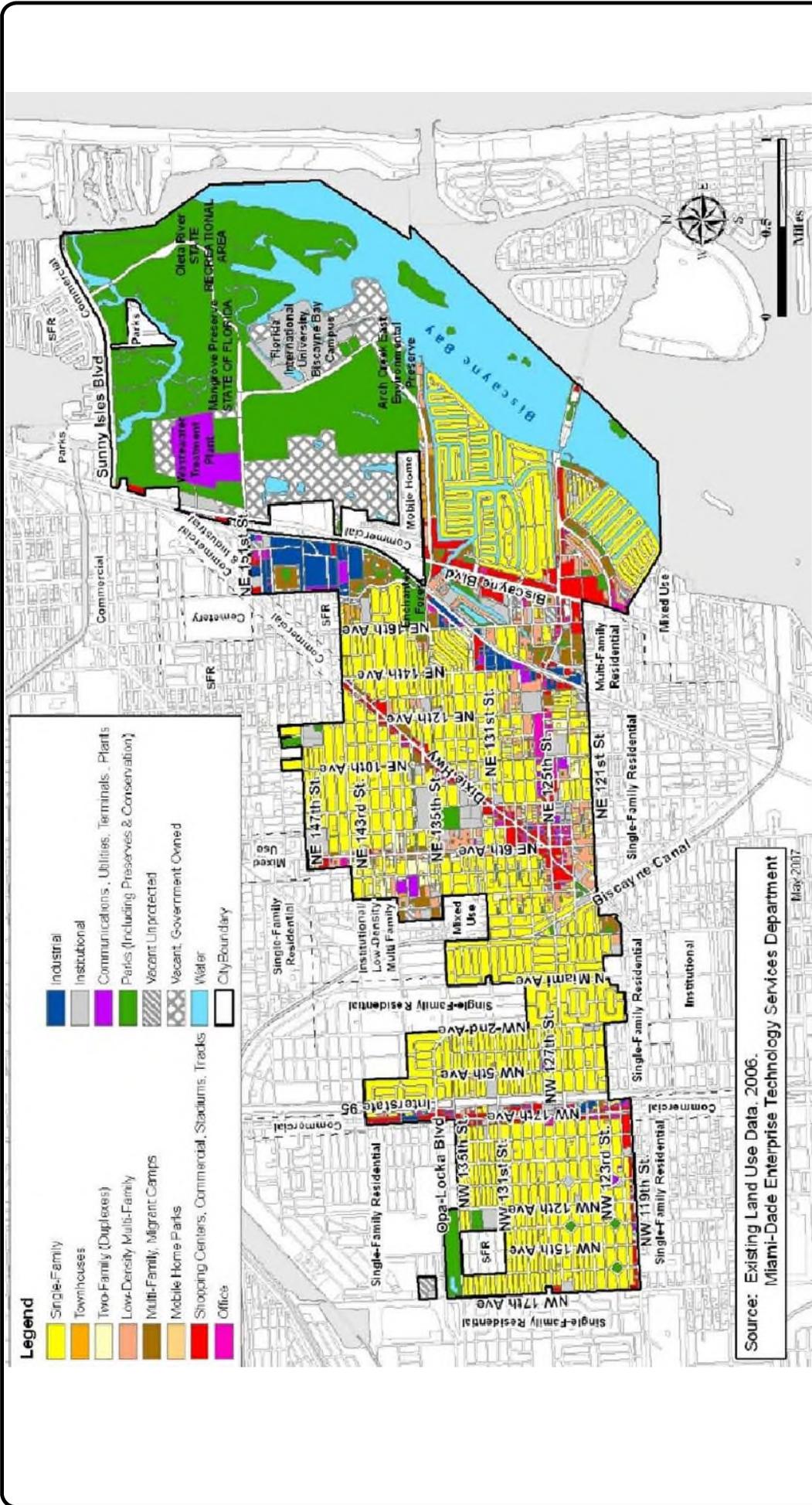
Southeast Florida is at risk of experiencing negative impacts of a changing climate, primarily due to its location and threat of rising sea levels. The City of North Miami could be impacted as a coastal community, if sea level rise continues over this century. Recognizing the importance of this issue, the City of North Miami Mayor and Council passed and adopted Resolution No. R-2013-62, supporting the Southeast Florida Regional Climate Change Compact and agreeing to consider implementing the Regional Climate Action Plan and the Greenprint Sustainability Plan where appropriate and financially feasible.

2.0 WATER SERVICE AREA

The City of North Miami's service area covers approximately 13 square miles, including the municipal service boundary, Biscayne Park, Miami Shores, and areas of unincorporated Miami-Dade County. Extreme boundaries of the water service area are as follows:

1. N.E. 163rd Street on the North
2. Biscayne Bay on the East
3. N.W. 105th Street on the South
4. N.W. 27th Avenue on the West

Existing water mains cover the major part of the service area and provide water service to its developed properties. The City's sole WTP supplies water to the western portion of the service area, which mostly comprises all of the service area west of NE 8th Avenue. The eastern portion of the service area (east of NE 8th Ave.) is supplied by several metered interconnects with MDWASD. The City serves an estimated current population (2014) of 91,700 through 22,000 service connections. **Figure 2-1** illustrates the City's water service area boundaries. The City has submitted applications to Miami-Dade County for annexation of several areas. The Existing City Land Use Map is shown in **Figure 2-2**. The City is largely residential with single-family homes and a mixture of commercial, industrial, and educational facilities. **Figure 2-3** illustrates the portion of North Miami serviced by MDWASD.



- Legend**
- Single-Family
 - Industrial
 - Townhouses
 - Institutional
 - Two-Family (Duplexes)
 - Communications, Utilities, Terminals, Plants
 - Low-Density Multi-Family
 - Parks (Including Preserves & Conservation)
 - Multi-Family, Migrant Camps
 - Vacant Unprotected
 - Mobile Home Parks
 - Shopping Centers, Commercial, Stadiums, Tracks
 - Vacant Government Owned
 - Offices
 - Water
 - City Boundary

Source: Existing Land Use Data, 2006.
Miami-Dade Enterprise Technology Services Department
May 2007

TETRA TECH

www.tetrattech.com

150 WEST FLAGLER STREET, SUITE 1625
MIAMI, FL 33130
PHONE: 786-507-3888 FAX: 786-439-0400

Drawing Description
**EXISTING
LAND USE MAP**

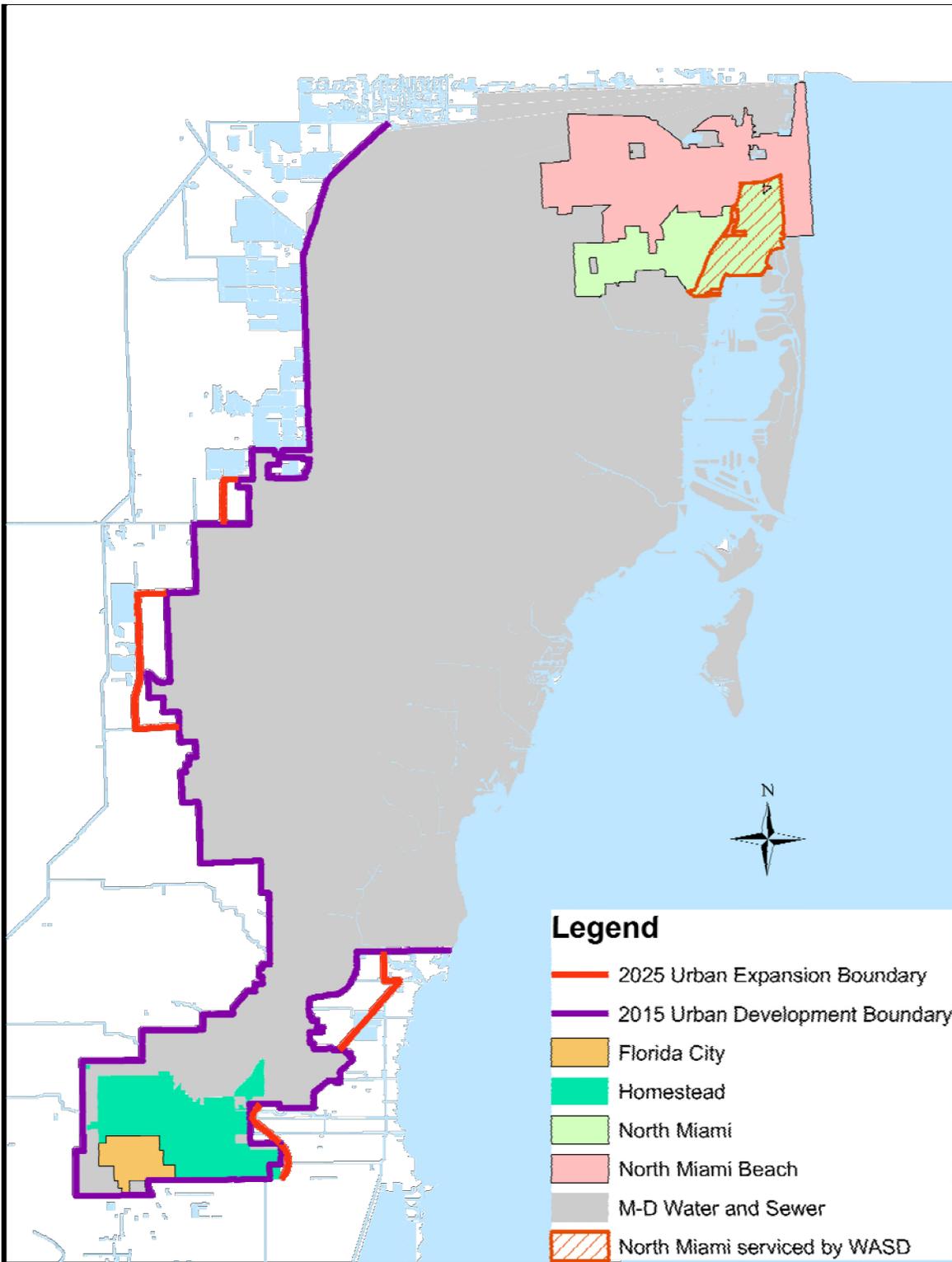
CITY OF NORTH MIAMI
WATER SUPPLY FACILITIES WORK PLAN UPDATE

Project No.: 200-66798-15001

Date: 11-2014

Designed By: #####

Figure
2-2



TETRA TECH

www.tetrattech.com

150 West Flagler Street, Suite 1625
 Miami, FL 33130
 Phone: 786.507.3898 Fax: 786-439-0400

Drawing Description
**Miami-Dade Water &
 Sewer Department
 Water Supply Service Area**

City of North Miami
Water Supply Facilities Work Plan Update

Project No.: 200-66798-15001

Date: 1/26/15

Designed By: ###

Figure

2-3

3.0 EXISTING WATER SUPPLY FACILITIES

3.1 INTRODUCTION

The City is currently implementing plans to rehabilitate its water supply treatment, storage, and transmission systems. Construction plans have been prepared for the rehabilitation of the water supply wells and the treatment plant. Construction plans for the storage tanks and portions of the transmission systems are currently being prepared.

3.2 RAW WATER

3.2.1 Supply Source

The Winson WTP currently receives its supply of raw water exclusively from the Biscayne aquifer. The Biscayne aquifer is a source of fresh water supply in the Surficial Aquifer System (SAS).

3.2.2 Raw Water Wells

There are presently eight, 12-inch diameter raw water wells, which all draw from the Biscayne aquifer. They range in depth from 56 feet to 124 feet. The wells were all drilled and put into service in 1962. The City is currently implementing a well rehabilitation program. To date, Well #3 has been rehabilitated and Well #4 is currently under rehabilitation. Two wells are on site at the plant and another three pairs are located at three different public parks in the vicinity of the WTP. Appendix B contains information on the City's raw water wells and its pumps and Figure 3-1 shows the locations of the wells.

3.2.3 Raw Water Mains

Raw water obtained from all eight water supply wells is transferred through raw water mains that lead into the WTP. These mains range from 8-inches to 24-inches in diameter. Four raw water wells (Wells #3 through #6) are connected to an 8-inch diameter main. Water Wells #7 and #8 are connected to a 10-inch diameter main. The raw water main connections for Wells #1 and #2 are 12-inches and 10-inches in diameter, respectively. The cumulative raw water of six wells (Wells #3 through #8) are connected into one 12-inch diameter main, which then connects into a 20-inch diameter main. The raw water from Well #2 also connects to this 20-inch diameter main. The 20-inch diameter main connects to the final header main leading into the WTP which is 24-inches in diameter. The raw water main from Well #1, which is 12-inches also connects to the 24-inch diameter raw water main prior to discharge into the WTP's aerator.

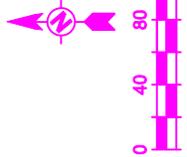
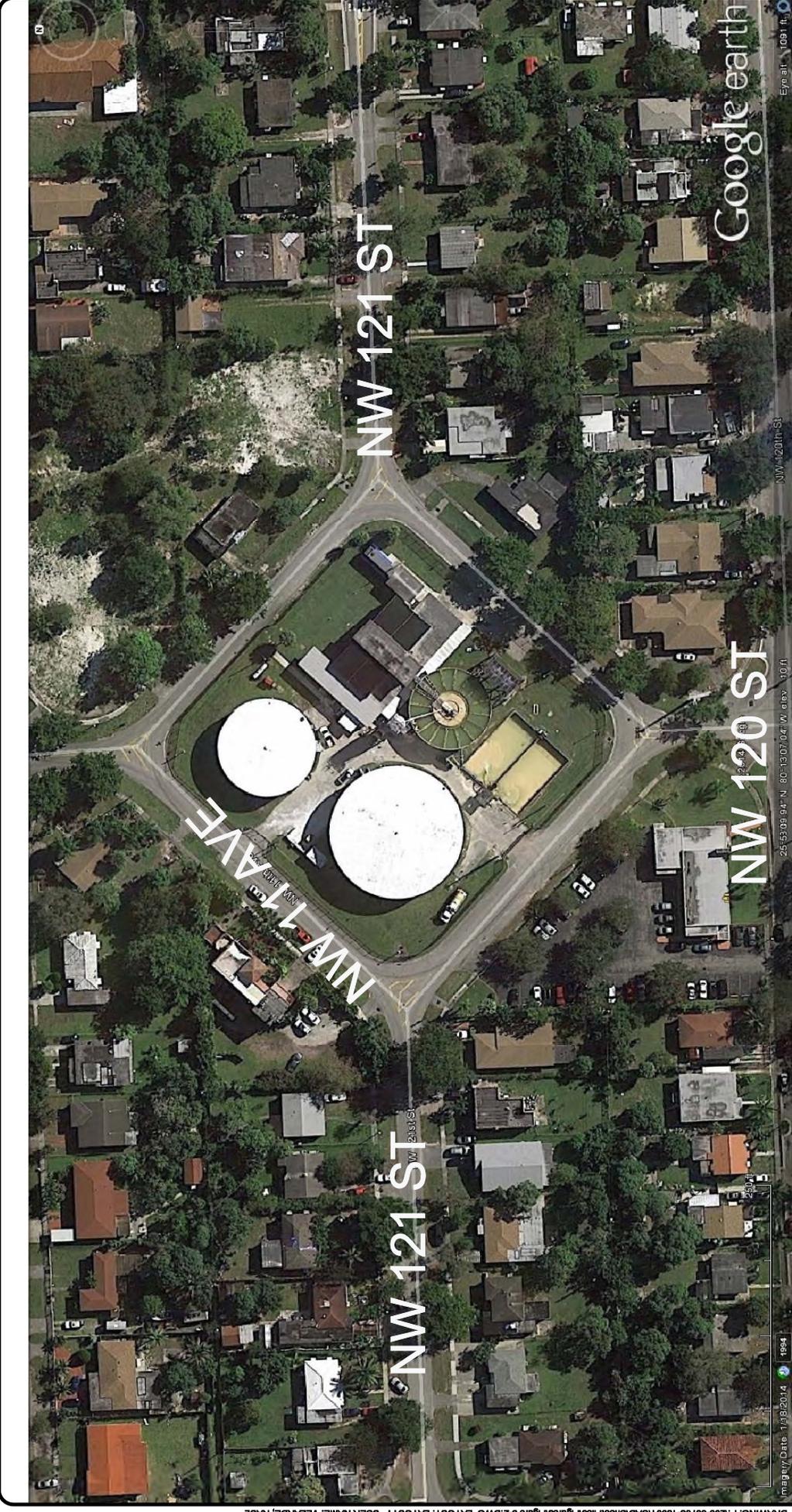
3.3 WATER TREATMENT AND STORAGE FACILITIES

The Winson WTP is located at 12100 NW 11th Avenue in North Miami, and it provides approximately 65% of the water within the CNM service area. An aerial view of the plant's location is presented in Figure 3-2. Groundwater is treated at the WTP via aeration for hydrogen-sulfide removal, lime-softening, filtration, and chloramines for disinfection.

The Winson WTP has two finished water storage tanks at the plant's site, totaling 2.25 million gallons (MG); the 0.75 MG tank was built during the plant's 1964 expansion and the 1.5 MG storage tank pre-dates 1962. The single 1.5 MG tank on the plant site meets the City's domestic and fire flow demands for current city-supplied demand. There are no other storage tanks in the water system.

3.4 HIGH SERVICE PUMPS

There are six high service, constant speed pumps at the Winson WTP, which pump water from the finished storage tanks into the distribution system through a common discharge header. One pump serves as a backup and can operate on either electricity or propane. Information reviewed on the other five pumps reveals that they are all Fairbanks Morse pumps which pre-date the plant. All five pumps are rated at 160 TDH and 1,750 RPM. Three pumps with 8-inch impellers are rated at 2,000 gpm (2.88 mgd) and two pumps with 5-inch impellers are rated at 1,000 gpm (1.44 mgd). The backup pump has a rating of 3,000 gpm (4.32 mgd) at 160 feet TDH. The combined design capacity of all pumps is approximately 15 mgd.



Project No.:	200-66798-15001
Date:	11/2014
Designed By:	####
Figure	3-2

Drawing Description
AERIAL PHOTOGRAPH
NORTH MIAMI WINSON
WATER TREATMENT PLANT
 City of North Miami
 Water Supplies Facilities Work Plan Update

TETRA TECH
 www.tetrattech.com
 150 West Flagler Street, Suite 1625
 Miami, FL 33130
 PHONE: 786.607.8888 FAX: 786.438-0000

Copyright: Tetra Tech

3.5 DISTRIBUTION SYSTEM

There are three transmission mains exiting the plant consisting of two 16-inch diameter pipes and one 12-inch diameter ductile iron pipes. The two 16-inch diameter pipes mostly service the areas east of the WTP. One 16-inch eventually connects to a 20-inch diameter pipe and then to two 12-inch diameter pipes. The 20-inch diameter pipe and one of the two 12-inch diameter pipes connect to a large 30-inch transmission main at different points. This large diameter pipe serves as a main trunkline for distribution on the far, east side of the City.

The other 16-inch diameter pipe reduces to a 12-inch diameter pipe. The 12-inch diameter transmission main which leaves the plant travels west, then north, and expands into the distribution system. Figure 3-3 depicts the City’s water distribution system.

“Unaccounted water” in the service area has been estimated at about 12%. The City does have an active, ongoing pipe surveillance and replacement program to reduce the amount of ‘lost’ water. The City has applied for SRF funds to upgrade water meters throughout the City.

3.6 INTERCONNECTIONS

Supplemental lime-softened finished water is provided to the City through seven existing pipe interconnections between the City and MDWASD to meet demands. This purchased water makes up the additional 35% of finished water needed to serve the City’s water service area. There is also one emergency locked connection with the City of North Miami Beach and in the City of Opa-locka. Three of the seven CNM – MDWASD interconnects are usually open. Turbine meters are used to record the amount of water used by the CNM every month. Figure 3-4 also shows the locations of these interconnects. The approximate locations of the interconnections are as follows (Table 3-1):

Table 3-1
City of North Miami Current Interconnections

Current Interconnections with MDWSD
N.E. 2nd Ave & 115th Street
N.W. 17th Avenue & 112th Street
N.W. 5th Avenue & 119th Street
N.E. 6th Avenue & West Biscayne Canal Road
N.E. 16th Avenue & 123rd Terrace
N.E. 16th Avenue & 143rd Street
N.E. 16th Avenue & 135th Street
Current Interconnection with City of North Miami Beach
1981 N.E. 135th Street

3.7 SUMMARY

The City is presently meeting its customer potable water demands through treatment of its own water and continued purchase of finished water from MDWASD. However, MDWASD maintains the right to terminate its water agreement with the City of North Miami at any time. If this were to occur, the City's WTP would be incapable of meeting the potable water demands of its service area.

4.0 POPULATION AND WATER DEMAND PROJECTIONS

4.1 GENERAL

Planning for provision of water supply service in the CNM's service area is based upon projections of the City's future potable water demands. Potable water demand projections are derived from the Water User Permit's per capita demand of 139.4 gpcd and the MDWASD population projections for North Miami's water service area. Population figures for this work plan are based on historical and projected population data from Year 2014 through Year 2030. The City has submitted applications to Miami-Dade County for annexation of several areas.

4.2 HISTORICAL POPULATION

Since the CNM's incorporation, its population has steadily increased and become increasingly diverse. In the forty-year span, from 1960 to 2000, the City experienced an average increase of 7,793 residents per decennial census (Table 4-1). Since 2000, growth has tapered off, dropping from 2000 to 2010 with the economic downturn, but population has resumed a gradual increase since 2010. Between 1990 and 2000, the City's population grew from 49,998 to 59,880, an increase of almost 20%. Between 2000 and 2010, the City's population declined slightly from 59,880 to 58,912, a decrease of 1.6%.

Table 4-1
City of North Miami's Historic Population: 1960-2010

Year	1960	1970	1980	1990	2000	2010
Population Estimate	28,708	37,767	42,566	49,998	59,880	58,912

Source: Bureau of Economic and Business Research, Historical Data. Accessed: November 1, 2014.
http://www.bebr.ufl.edu/www.bebr.ufl.edu/sites/default/files/population/Estimates_2014.xlsx

4.3 POPULATION PROJECTIONS

The City existing and future population figures were obtained from the Miami-Dade Water and Sewer Department and BEBR (Shimberg). It must also be stated **that** there are discrepancies between the Shimberg population projections for the City, those provided by the Miami-Dade WASD. Table 4-2 illustrates the various population projections for the City. For the purpose of water supply planning the MDWASD WSFWP projections for the City of North Miami's service area will be utilized. These population projections are found in Appendix C. Table 4-3 illustrates the total Water Service Area population projections.

To help alleviate and accommodate the projected natural growth rate of the City's population, amendments will be made to the land use densities in certain corridors of the City to encourage more mixed-use residential and commercial development and redevelopment. The City is also planning for higher density development in the new Biscayne Landing community. Figure 4-1 shows the City's future land use map.

Table 4-2
City of North Miami
Population Projection Comparisons 2014-2030

Year	Shimberg (updated 2010)	MDWASD 20-Year Water Supply Plan (Exhibit C-5)
2014	60,297	57,829
2015	60,289	58,204
2020	61,288	60,082
2025	62,216	61,959
2030	63,053	63,836

*Sources: Florida Housing Data Clearing House <<http://flhousingdata.shimberg.ufl.edu/>> and Miami-Dade County WASD 20 Year Water Supply Plan., 2014.

Table 4-3
City of North Miami Water Service Area
Population Projections 2013-2030

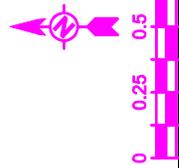
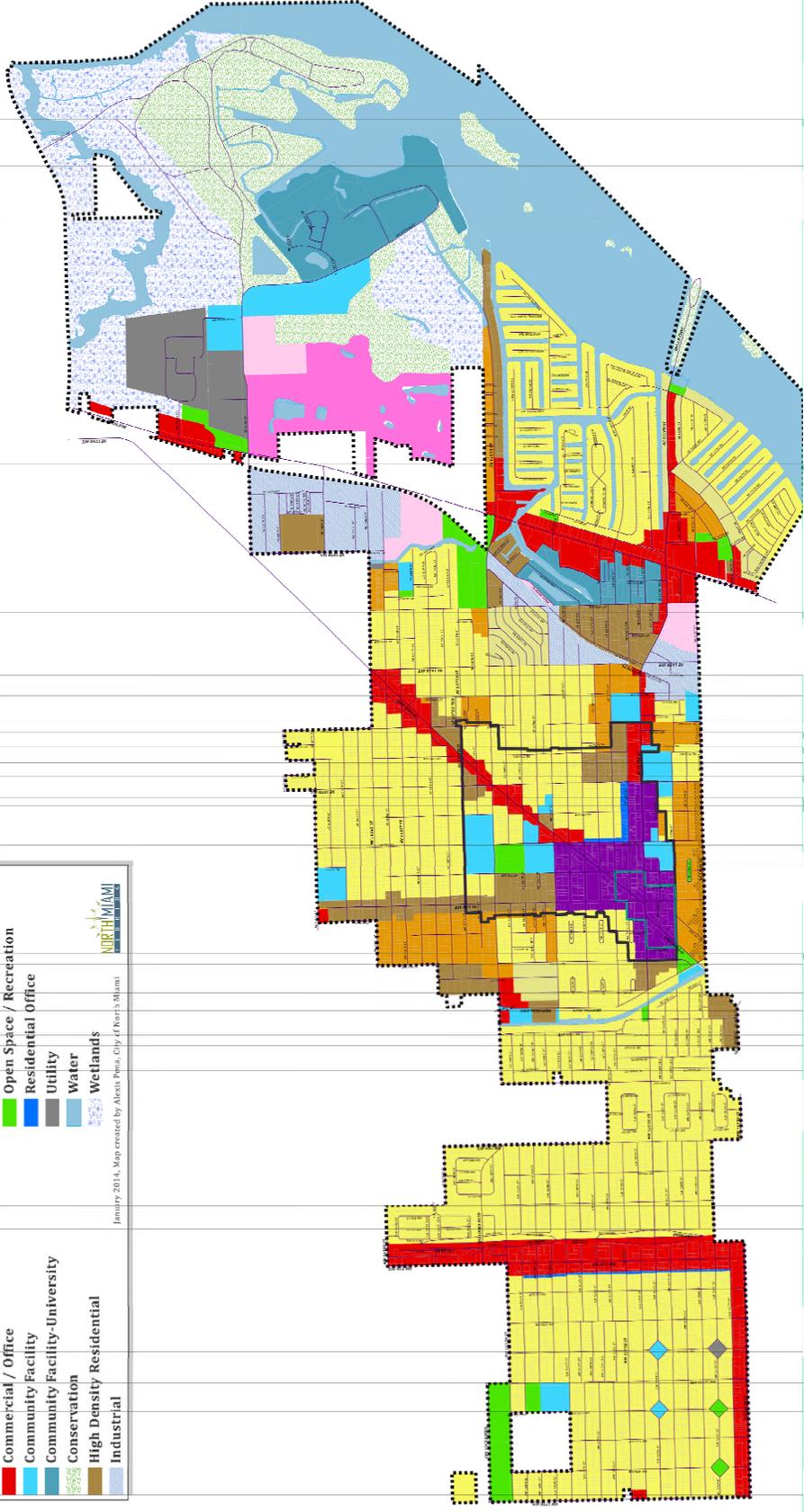
POPULATION PROJECTIONS						
<u>Year</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Municipality by Service Provider:						
North Miami by North Miami	43,240	43,495	43,535	43,734	43,933	44,133
North Miami by WASD	14,250	14,334	14,670	16,348	18,026	19,704
City of North Miami	57,490	57,829	58,204	60,082	61,959	63,836
Unincorporated M-D by North Miami	22,735	22,869	22,969	23,473	23,976	24,480
WASD Within North Miami Service Area	7,623	7,668	7,726	8,015	8,309	8,593
Biscayne Park by North Miami	3,000	3,018	3,022	3,040	3,058	3,076
Miami Shores Within North Miami Service Area (distributed by WASD)	365	368	368	371	374	377
<i>Population Outside City but within Water Service Area</i>	33,723	33,922	34,085	34,898	35,802	36,526
Water Service Area Population Total	91,213	91,751	92,289	94,980	97,761	100,362

*Source: Miami-Dade WASD 20 Year Water Supply Plan. Appendix C 2014. 2013 Values extrapolated from Table for purposes of estimating current per capita demand.

Legend

	City of North Miami Boundary		Low Density Residential
	Central City District Node Boundary		Low-Medium Density Residential
	Neighborhood Redevelopment Overlay Boundary		Medium Density Residential
	Biscayne Park Height Transition Zone		Mixed Use Low
	Central Business Commercial		Mixed Use Medium
	Commercial / Office		Open Space / Recreation
	Community Facility		Residential Office
	Community Facility-University		Utility
	Conservation		Water
	High Density Residential		Wetlands
	Industrial		

January 2014, Map created by Alexis Penn, City of North Miami


TETRA TECH
www.tetrattech.com

150 West Flagler Street, Suite 1625
Miami, FL 33130
PHONE: 786.507.8888 FAX: 786.438-0000

Drawing Description
FUTURE LAND USE MAP
City of North Miami
Water Supplies Facilities Work Plan Update

Project No.: 200-66798-15001
Date: 11/2014
Designed By: ###

Figure
4-1

4.4 HISTORICAL WATER USE

Historic water use figures (average daily demand) were obtained from the Winson WTP for Year 1994 through Year 2013. These figures are shown in the table in Appendix D. The annual average demand has varied from a high of 14.36 MGD in 1995 to a low of 10.6052 MGD in 2010. The annual average demand was approximately 12.85 MGD for the 21-year period. Most recently, in 2013 the annual average demand was 12.04 MGD, which resulted in a daily per capita use rate of about 135 gallons per capita per day (gpcd). This was calculated using a 2013 service area population of 91,213 estimated from Table 4-3. As noted before, the Winson WTP supplies approximately 65% of the City's finished water, but it also supplies water to customers in nearby municipalities outside of its City limits and in parts of unincorporated Miami-Dade County. The City purchases approximately 35% of this flow from MDWASD, which is conveyed through a series of interconnections in the southeast part of the City.

4.5 WATER USE PERMIT

The City's WUP (13-00059-W) issued by SFWMD was renewed in 2010. Under the terms of this permit, the City's annual allocation of raw water withdrawals from the Biscayne aquifer is limited to 3,395 MG. The WUP maximum daily and annual average raw water allocations are both limited to 9.3 MG. The WUP also includes an annual allocation of raw water withdrawals from the Floridan aquifer limited to 2,909 MG, and a maximum monthly withdrawal of 334.13 MG. A copy of the WUP and its limiting conditions is presented in Appendix E.

The Floridan aquifer allocation is available as an alternative supply, should the City's demands grow beyond the ability of MDWASD to continue purchasing water. The City is considering the design for a RO WTP to enable it to proceed with implementation of the alternative water supply, if MDWASD is no longer able to meet the City's purchase needs.

4.6 WATER DEMAND PROJECTIONS

As shown in Table 4-3, the population of the City's water service area is projected to increase by about 3,000 residents by the year 2020 and another 8,500 residents by the year 2030. Table 4-4 is a summary of the forecasted water demands for the City broken down by the source of raw water and its corresponding treatment that will be used to satisfy the demand minus losses.

The annual average water demand projections were estimated using the product of an average consumption per capita and the population projections for the entire service area. The water demand projections presented in the table are based on a finished water daily per capita use rate of about 139.4 gpcd for Years 2014 to 2030, as indicated in the Water Use Permit. Successful water conservation efforts have already served as the City's primary alternative water supply, reducing the need for additional alternative water supplies. The City has a level of service (LOS) standard of 156.7 gpcd to project future water needs. This could be amended to 139.4 gpcd to be consistent with the Water Use Permit. Residential and non-residential land uses are included in the LOS figure, and current projections take into consideration a similar mix of uses.

4.6.1 Potable Water Capacity Surpluses and Deficiencies

The CNM is able to meet the water demands of its service area as long as a yearly agreement with MDWASD is in place. As shown in Table 4-4, the current available facility capacity is not sufficient to meet the City's service area water demand. A deficit is avoided by having purchased water from MDWASD supplement the amount that the CNM Winson WTP produces.

Previously, it was assumed that the City would have a new RO facility in operation by 2015 to not rely on purchased water to make up the deficit. The City has completed the design for upgrades to the lime softening WTP, but intends to postpone construction of the RO facility indefinitely, and continue purchases of water from MDWASD, as available.

Table 4-4
Projected Potable Water Demand and Availability

	2014	2015	2020	2025	2030
Population Served*	91,751	92,289	94,980	97,961	100,362
Demand per Capita ¹ (GPD)	139.4	139.4	139.4	139.4	139.4
Avg. Daily Demand Finished Water (MGD)	12.79	12.87	13.24	13.62	13.99
Permitted Finished Water Allocation ² (MGD)	9.11	9.11	9.11	9.11	9.11
Finished Water Surplus/(Deficit) (MGD)	(3.68)	(3.76)	(4.13)	(4.51)	(4.88)
Raw Water Surplus/(Deficit) ³ (MGD)	(3.76)	(3.84)	(4.21)	(4.60)	(4.98)
<p>*Source: Miami-Dade WASD 20 Year Water Supply Plan. Appendix C 2014 MGD = Million Gallons Per Day; GPD = Gallons Per Day Notes: 1. Per Capita from Water User Permit 2. Assumes 9.3 MGD of Raw Water with a Loss of 2% During Treatment 3. Assumes a Loss of 2% During Treatment</p>					

4.7 WATER SUPPLY PROVIDED BY MIAMI DADE WATER AND SEWER DEPARTMENT

4.7.1 Water Use Permit (WUP) Information and Number

On February 9, 2015, the South Florida Water Management District issued a revised 20-year Water Use Permit to MDWASD. This permit will expire on February 9, 2035 and has a total annual allocation of 140,915.50 million gallons per day (mgd) [127,567.50 mgd from the Biscayne Aquifer and 13,348.05 mgd from the Floridan Aquifer).

4.7.2 Current and Future Water Sources

MDWASD obtains most of its supply of raw water from the Biscayne aquifer, and a portion of its raw water from the brackish Floridan aquifer. The allocation from the Biscayne aquifer is planned to be reduced and be offset by increases in the Floridan aquifer allocation by 2030 due to aquifer recharge of reuse water. MDWASD is required to achieve 117.5 MGD of reuse by 2025, obtaining reuse offsets totaling 37 MGD by 2027. In 2012, MDWASD's Biscayne aquifer allocation was reduced from 388.56 MGD to 349.50 MGD, pending completion of aquifer recharge projects. These reuse offsets are listed as totalling 37 MGD by 2027, supporting an allocation of 386.50 MGD in 2030. If projects are not built, allocation remains at 349.50 MGD

4.7.3 Applicable Source Limitations

Limitations to the average annual withdrawals from specific sources are set differently over three different periods.

The following limitations to the average annual withdrawals from specific sources are applicable through December 31, 2021:

Biscayne aquifer: 127,568 MG
Floridan aquifer: 17,031 MG

The following limitations to the average annual withdrawals from specific sources are applicable from January 1, 2022 through December 31, 2026:

Biscayne aquifer: 135,233 MG
Floridan aquifer: 17,031 MG
Reuse offset: 7,665 MG (21 MGD SWWF recharge)

The following limitations to the average annual withdrawals from specific sources are applicable from January 1, 2027 through December 31, 2030:

Biscayne aquifer: 141,073 MG
Floridan aquifer: 17,009 MG
Reuse offset: 13,505 MG (37 MGD SWWF recharge)

The allocations are further constrained by the wellfield operational plan described in Limiting Condition 27 of the permit. Reuse offsets are required for withdrawals above 109.4 MGD at the SWWF. The offset reuse volumes do not include other reuse projects outlined in Limiting Condition 39 of the permit, which are in addition to the wellfield recharge project.

4.7.4 Existing and Projected Level of Service Standards and/or Per Capita Use Rates

MDWASD had a projected finished water use of 155 gpcd in its 2008 WSFWP. The September 19, 2014 MDWASD Response to RFI for the Water Use Permit Modification, Exhibit 7, indicated that the three year average (2011-2013) per capita finished water use was 137.2 gpcd. The 2013 LEC Water Supply Plan Update assumes that MDWASD will maintain a per capita finished water use of 141 gpcd.

4.7.5 Existing and Future Water Treatment Facilities and Capacities to Meet Demand over the Planning Period

MDWASD has planned several alternative water supply projects to meet future demands over the planning period. Figure 4-2 shows how the anticipated future demands will be met by future alternative water supplies to be implemented. Infrastructure and capital improvement needs identified for MDWASD by the District are discussed in Section 4.7.6. A copy of the MDWASD Water Supply Facilities Work Plan Update is incorporated in Appendix F for reference purposes.

Figure 4-2
MDWASD Alternative Water Supply Projects to Meet Future Demands

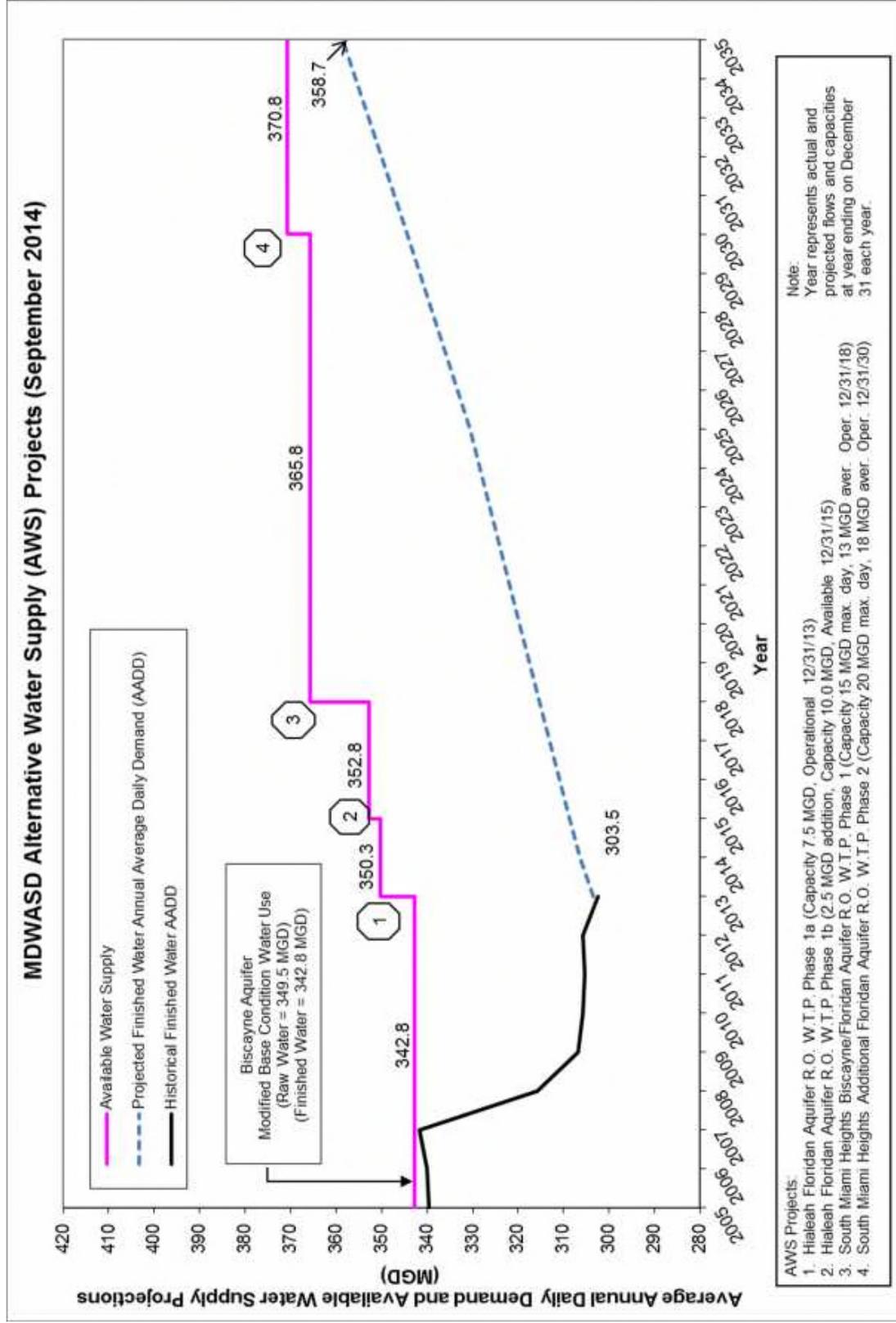


Figure Source: MDWASD 20-year Water Supply Facilities Work Plan (2014-2033)

4.7.6 Infrastructure and Capital Improvement Needs

The following table (Table 4-5) summarizes the infrastructure and capital improvement projects identified in the 2013 LEC Water Supply Plan Update. MDWASD's full capital improvement program for 2014-2020 is presently available through MDWASD's website¹.

4.8 SUMMARY

The City experienced tremendous growth in the past 20 years and is continuing its growth at a slower rate, reflecting the City's approach to buildout. Population projections included in the Future Land Use and Infrastructure Elements, and potable water demand projections in the Conservation, Infrastructure, and Capital Improvement Elements of the City's Comprehensive Plan, will all need to be revised to match the updated figures presented in this section.

The existing plant is limited by its own physical capabilities and bounded by the requirements of its WUP, which limits its raw water withdrawals from the Biscayne aquifer to 9.3 MGD. The CNM continues to meet additional water demands through purchases of water from MDWASD. The City intends to continue this arrangement as long as is feasible for both MDWASD and the City.

¹ <http://www.miamidade.gov/water/library/reports/capital-budget-2014-2020.pdf> Accessed December 22, 2014

Table 4-5
MDWASD Project Summary from the 2013 LEC Water Supply Plan Update

Water Supply Projects	Source	Completion Date	Total Capital Cost (\$ Million)	Projected Cumulative Design Capacity (MGD)	
				2020	2030
Potable Water					
South Miami Heights RO WTP ^a	Brackish Water and 3 MGD Fresh Water	2015	\$194.70	20.00	20.00
Hialeah Floridan Aquifer RO WTP Phase 2 and 3 (including concentrate disposal)	Brackish Water	2026	\$37.80	0.00	7.50
Total			\$344.80^[sic]	20.00	27.75^[sic]
Nonpotable Water					
North District WWTP Reuse	Reclaimed Water	2025	\$13.50	0.00	7.00
Central District WWTP Reuse – Floridan Aquifer Recharge	Reclaimed Water	2025	Information not available	0.00	27.10 ^b
West District Canal Water Reclamation Plant Recharge Phase 2	Reclaimed Water	2021	\$665.00	0.00	21.00
West District Canal Water Reclamation Plant Recharge Phase 3	Reclaimed Water	2021	\$593.00	0.00	16.00
Biscayne Coastal Wetlands Rehydration ^c	Reclaimed Water	2022	\$1,120.00	0.00	89.00
South District WWTP – FPL Distribution (72-inch pipeline)	Reclaimed Water	2021	\$95.00	0.00	90.00 ^d
Total			\$2,486.50	0.00	250.10
Conservation					
Conservation Program	Conservation	2030	\$20.00	12.01	15.19
Total			\$20.00	12.01	15.19

Source: http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/2013_lec_plan.pdf. Accessed November 1, 2014.

a. The annual operation and maintenance cost (including power, chemicals, parts, materials, labor, administration, and compliance) for operating a 20-MGD brackish water RO water treatment plant was estimated to be approximately \$6,990,000 per year, as estimated from the Water Supply Cost Estimation Study by CDM (2007a)

b. The Central District WWTP Reuse – Floridan Aquifer Recharge 27.10 MGD does not increase the actual treatment capacity to the reclaimed water plant and was not included in capacity totals.

c. Feasibility of this project will be determined in the future.

d. This project adds capacity to the reclaimed water distribution system, but does not increase the actual treatment capacity of the reclaimed water plant.

5.0 CAPITAL IMPROVEMENTS

Based on the water demand projections described in Section 4.0 and the City's recommended Level of Service Standards for Potable Water (see Table 5-1), the CNM has developed plans for the provision of potable water over the 16 year planning period, including groundwater supply, infrastructure, conservation, and alternative water supply projects.

Table 5-1
Level of Service Standards (Potable Water)

Public Facility	Level of Service Standard
Potable Water	User LOS - The system shall maintain the capacity to produce and deliver 139.4 gallons per capita per day.
	Water Storage – The City shall provide total storage capacity equal to no less than 15 percent of the service area average daily demand.

This Section describes the water supply facilities that are planned to meet CNM's water demands through 2030. The City's Goals, Policies and Objectives (GOPs) and Data, Inventory, and Analysis (DIA) will be updated through Comprehensive Plan amendments. The CNM Comprehensive Plan, as amended, will address the legislative requirements for water supply planning.

The City will include components of the work plan data and analysis, GOPs, and five-year schedule of capital improvements in the various elements of the Comprehensive Plan. These will be referenced in this section and presented in the appendices. Relevant new or revised GOPs that address water supply sources and facilities are included in Section 6.0.

5.1 POTABLE WATER SUPPLIES AND FACILITY NEEDS

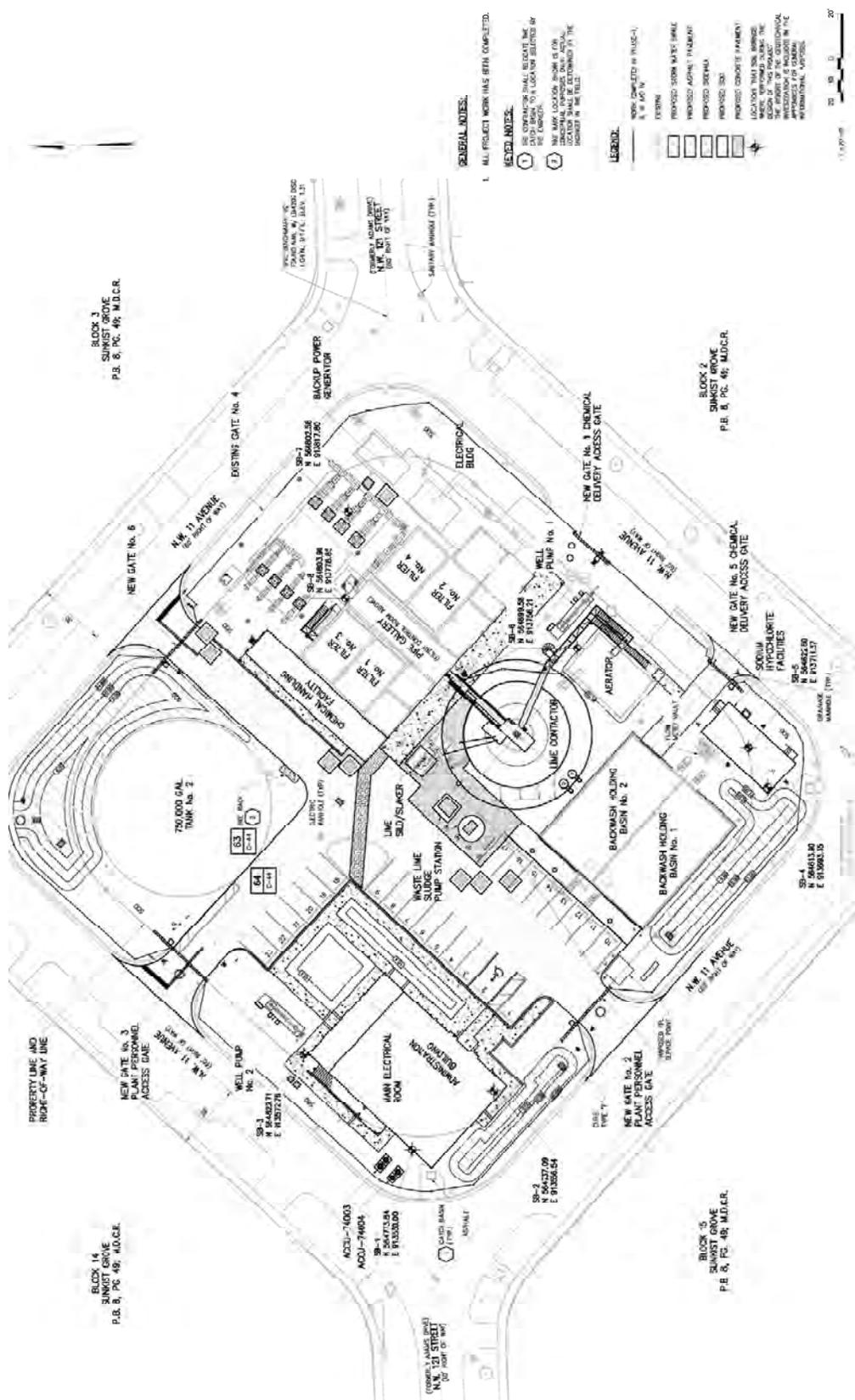
The City hired engineering consultants to prepare plans for the rehabilitation of the Winson WTP. Figures 5-1 and 5-2 illustrate the proposed water treatment plant site plan and storage tank improvements.

In addition, the City's new development, Biscayne Landing, has set aside a parcel of vacant land which is expected to accommodate one 5 MG storage tank and booster facility. The 3½ to 5 acre parcel may be utilized for additional storage, a small desalination (RO) plant, a reuse facility, or other city-designated utilities use in the future.

5.1.1 Infrastructure Element

The Infrastructure Element will be revised to include the planned modernization and rehabilitation of the Winson WTP. Engineering consultants recently completed the design for the plant rehabilitation.

As the City has deferred the RO WTP project indefinitely, the City will need to rehabilitate the Winson WTP and coordinate with MDWASD to ensure that water will be available to supplement CNM's water service area needs. Currently, the SFWMD LEC Water Supply Plan Update 2013 projects that Miami-Dade County will provide 3.0 MGD of water in 2020 and 4.0 MGD of water in 2030. Based on the projections provided earlier, it is anticipated that CNM will need MDWASD to provide 4.1 MGD of finished water in 2020 and 4.9 MGD of finished water in 2030.



GENERAL NOTES:
 1. ALL PROJECT WORK HAS BEEN COMPLETED.
KEYED NOTES:
 (1) THE LOCATION SHALL BE SUBJECT TO A LOCATION SURVEY BY THE ENGINEER.
 (2) THE EXACT LOCATION AS SHOWN IS ONLY AN APPROXIMATE LOCATION. THE EXACT LOCATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

LEGEND:
 (Symbol) EXISTING
 (Symbol) PROPOSED 3000 X 1000 SHALE
 (Symbol) PROPOSED ASPHALT PAVEMENT
 (Symbol) PROPOSED SIDEWALK
 (Symbol) PROPOSED DRIVE
 (Symbol) PROPOSED COURSE PARKING
 (Symbol) LOCATION THAT THIS DRAWING WILL BE APPLIED TO. THE LOCATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
 (Symbol) PROPOSED 1000 X 1000 SHALE
 (Symbol) PROPOSED ASPHALT PAVEMENT
 (Symbol) PROPOSED SIDEWALK
 (Symbol) PROPOSED DRIVE
 (Symbol) PROPOSED COURSE PARKING
 (Symbol) LOCATION THAT THIS DRAWING WILL BE APPLIED TO. THE LOCATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

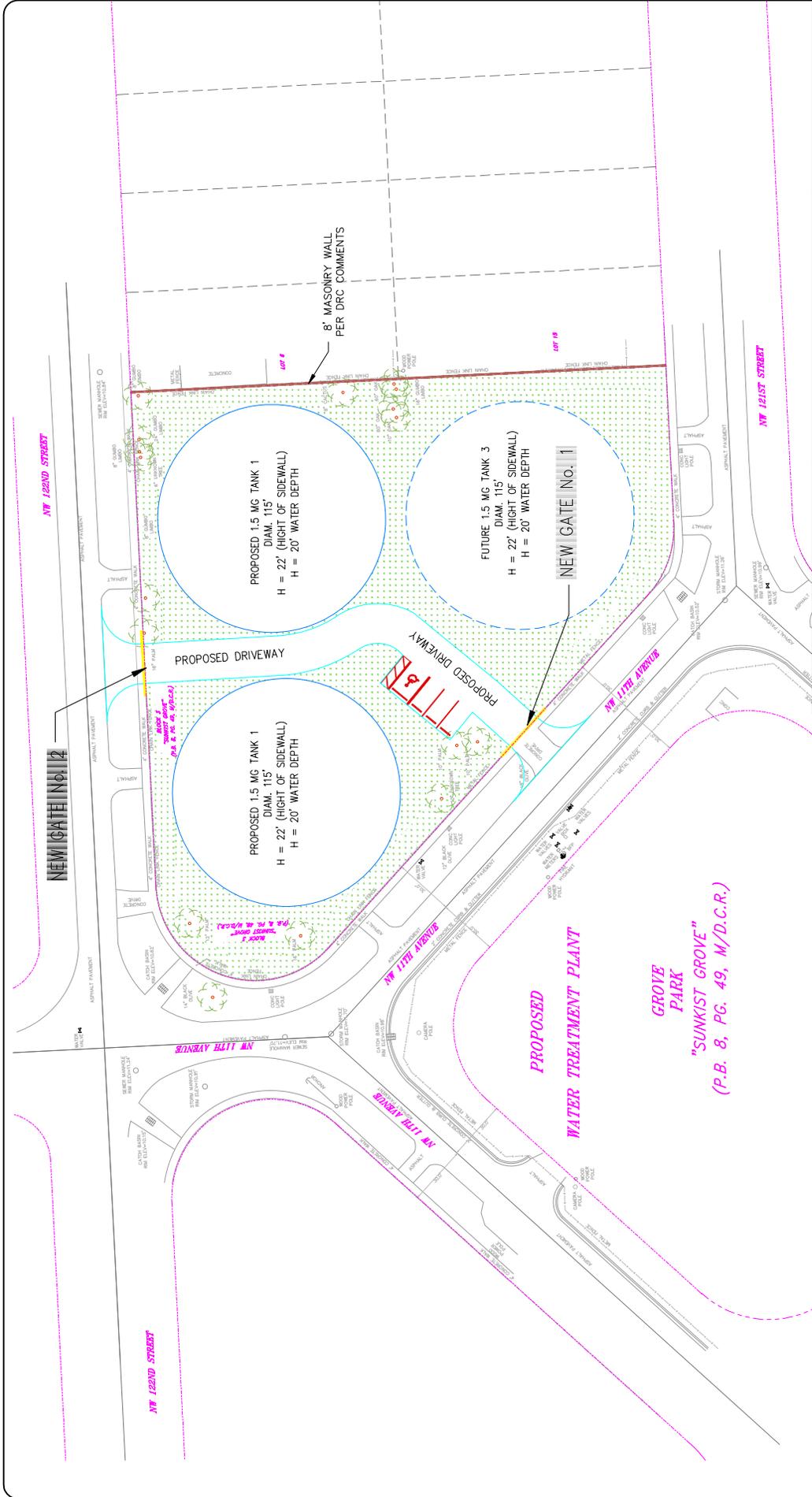
Project No.: 200-86798-15001
 Date: 11-2014
 Designed By: #####
 FIGURE
5-1

Drawing Description
**FUTURE SITE MAP OF
 WINSON WATER
 TREATMENT PLANT
 CITY OF NORTH MIAMI**

TETRA TECH
 www.tetra-tech.com
 150 WEST FLAGLER STREET, SUITE 1825
 MIAMI, FL 33130
 PHONE: 786-507-8988 FAX: 786-439-0400

PREPARED BY HAZEN AND SAWYER FOR 100% SUBMITTAL JUNE 2014

Copyright: Tetra Tech



Project No.: 200-66798-15001
 Date: 11-2014
 Designed By: ###
 Figure 5-2

Drawing Description
PROPOSED WTP STORAGE TANK IMPROVEMENTS
 CITY OF NORTH MIAMI
 WATER SUPPLIES FACILITY WORK PLAN UPDATE

TETRA TECH
 www.tetrattech.com
 150 WEST FLAGLER STREET, SUITE 6025
 MIAMI, FL 33130
 PHONE: 786-507-3898 FAX: 786-436-0400

LEGEND:
 EXISTING TREE TO REMAIN
 PROPOSED GRASS AREA

PREPARED BY CITY OF NORTH MIAMI FOR DESIGN REVIEW COMMITTEE REVIEW

Copyright: Tetra Tech

5.1.2 Capital Improvement Element

The Capital Improvement Element in the 2007 adopted Comprehensive Plan addresses Potable Water Facility Needs. Table 11-1 in the CIE will be updated in the next amendment to reflect updated demand and capacity as shown before in Table 4-4.

5.2 WATER SUPPLY PROJECTS

5.2.1 Capital Improvement Program

The City incorporated in its Five-Year Capital Improvement Program (CIP), potable water system projects. Table 5-2 summarizes the water system projects scheduled for 2013/14 – 2018/19. The CIP is revised annually and adopted by the City Council typically with the first year converting into the annual capital budget. Water supply projects are focused on renewal and replacement of existing WTP infrastructure, water mains, and water meters.

Table 5-2
Scheduled Potable Water System Projects (FY2013/2014-FY2017/2018)

Potable Water Projects	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019
Keystone Bridge Water Main Replacement	\$61,800	-	-	-	-	-
Water Main Replacement	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000
Water Meter Replacement	\$500,000	\$500,000	\$500,000	-	-	-
Upgrade of Existing Lime Softening WTP	\$3,921,800	\$7,914,495	\$4,750,000	\$6,000,000	-	-

5.2.2 Alternative Water Sources

The City had identified the Floridan aquifer as the only proposed alternative water source to meet its future water service area demand over the next 20 years. To treat this source of raw water, a future RO plant had been planned to be built on the same site as the existing WTP, since it was determined that there are little to no advantages of separating the existing lime-softening and RO facilities. Ten new proposed Floridan wells were scheduled to be developed to supply raw water to the RO plant. Due to past decreases and slow growth in water demand, the City has elected to postpone construction of the RO facility indefinitely, and continue purchases of water from MDWASD.

5.2.3 Funding Sources

The modernization and expansion of the existing Winson lime softening WTP was estimated to cost approximately \$22,000,000 (Appendix G.). These repairs are necessary in order to maintain the existing WTP in working condition to standard industry levels of service. The City has indicated in its CIP that the funding for this and other water upgrades in the CIP will come from the Water & Sewer fund (#420).

5.3 WATER CONSERVATION AND REUSE

The City has developed a water conservation plan to help reduce the demand for potable water and lower its consumption on a per capita basis. The CNM's planned water conservation efforts are detailed in the Conservation Element of the Comprehensive Plan and are described below. Furthermore, the Conservation Element addresses the protection of the quality and quantity of ground water. There are also regulations and programs in place impacting resource conservation within the City, in particular natural drainage and groundwater recharge. This is discussed in the Infrastructure Element. The City enacted Public Education and Water Conservation Efforts that have coincided with decreases in per capita water use. The City had an estimated potable water usage of between 115 gallons per capita per day (gpcd) and 135 gpcd from 2008 to 2014. As noted earlier, this number is lower than the per capita usage in the previous work plan (which had projected 165.4 gpcd for 2015), and is expected to remain steady. A planning usage of 139.4 gpcd was used in the 2010 SFWMD water use permit update and is used in this work plan update.

To maintain consistency with the South Florida Regional Planning Council Strategic Regional Policy Plan Policy 7.14 and as a potable water provider, the City will continue to implement and strengthen water conservation strategies and policies to reduce demand as follows:

- The City will continue to encourage the use of high efficiency toilets, showerheads, faucets, clothes washers and dishwashers that are Energy Star rated and WaterSense certified in all retrofitted residential and commercial projects and continue its showerhead exchange program.
- The City will continue to require the use of high efficiency toilets, showerheads, faucets, clothes washers and dishwashers that are Energy Star rated and WaterSense certified in all new residential and commercial projects, as required by the Miami-Dade County Water Use Efficiency Standards Ordinance 08-100 (Effective Date January 1, 2009) and Manual and adopted by City Ordinance by January 2010.
- The City will continue to require the use of xeriscape, Florida Friendly Landscape guidelines and principals; gutter downspouts, roof runoff, and rain harvesting through the use of rain barrels and directing runoff to landscaped areas; drip irrigation or micro-sprinklers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc.) on walkways, driveways and patios.
- The City will continue to participate, when warranted, in the SFWMD's Water Savings Incentive Program (WaterSIP) for large-scale retrofits as recommended by the Lower East Coast Water Supply Plan.
- The City shall continue to submit a water conservation plan to the County as required by the Miami-Dade County Code, Section 32-83.1. Said Plan shall be updated for the County's approval every five years following submittal and Conserve Florida Guide generated reports shall be filed annually at the close of the fiscal year.
- The City will continue to assist Miami-Dade County in the enforcement of Section 32-8.2 of the Code of Miami-Dade County relating to permanent landscape irrigation restrictions.
- The City will continue education programs related to water conservation. These programs include brochures and mailings, presentations to homeowners associations and presentations at public schools located within the City's water service area.

- The City will continue to explore water reuse opportunities with the SFWMD, MDWASD and North Miami Beach.
- The City will continue to expand as necessary the City's water leak detection and repair program.

Implementing the above policies and strategies will allow the City to maintain reduced per capita water consumption through the end of the planning period.

Reuse or reclaimed water is treated wastewater which is used for a beneficial purpose such as irrigation. Utilization of reuse water is encouraged by the City Policy 6B.4.2.i. Currently, all of the City's wastewater is handled and treated by Miami-Dade County. Thus, the CNM does not have its own water reuse system. The County had planned a reclaimed water irrigation project for the North District Wastewater Treatment Plant that is scheduled to be completed in the near future.

The City has written a letter to MDWASD requesting assistance in developing small reuse projects for irrigation at the North Miami stadium, Biscayne Landings condominiums, city parks, and at new Miami-Dade School Board facilities on 135th Street and N.E. 8th Avenue. A copy of the letter as included in Appendix H. MDWASD did a preliminary cost estimate for these reuse projects that led to the conclusion that it was not feasible to move forward with the reuse initiative at that time. At this time, MDWASD planned reuse projects include 27.6 mgd of Floridan Aquifer Recharge and up to 90 mgd of reuse water to Florida Power & Light (FP&L).

5.4 WATER SUPPLY CONCURRENCY

To ensure that water and other services are available at the time of development, a concurrency management system has been developed by the City and incorporated into the Capital Improvement Element under Policy 11.4.2 and further described in the Data, Inventory and Analysis Report. This management program stipulates that no new development will be approved unless the applicant has presented plans demonstrating that the new development shall:

- Be serviced with all requisite public facilities with the impacts of development;
- Provide LOS for all requisite facilities which is compliant with the City's adopted LOS standards; and,
- Not cause a reduction of LOS for existing infrastructure below minimum adopted threshold.

6.0 GOALS, OBJECTIVES AND POLICIES

The following comprehensive plan goals, objectives, and policies (GOPs) have been reviewed for consistency with the Work Plan. New GOPs to be adopted and existing GOPs to be revised are identified below. In addition, GOPs adopted in the original Work Plan and have been reviewed to see if updates or revisions are needed.

1. FUTURE LAND USE ELEMENT

Objective 1.9

To preserve the existing environment by encouraging and requiring native plants and green space in development and redevelopment projects, ensuring the protection of natural resources and to encourage the use of alternative fuels in City owned vehicles.

Monitoring and Evaluation Update:

- Continue use of the City's Xeriscape/Florida friendly plant list.
- Amend the City's previously adopted 17-Year Water Supply Plan by August 2015. (Work Plan Update to be Adopted August 2015)

Policy 1.9.5

Proposed future land use map amendments shall be supported with data and analysis from the adopted 16-Year Water Supply Facilities Work Plan Update demonstrating that adequate water supplies and associated public facilities will be available to meet the projected growth demands. The impact on potable water shall be determined by applying the standard generation rates outlined in Policy 4D.2.6 of the infrastructure element.

Policy 1.9.6

The City shall coordinate land uses and future land use amendments with available and projected fiscal resources and a financially feasible schedule of capital improvements for water supply and facility projects.

Policy 1.9.7

The City shall provide for the protection of water quality in the traditional and new alternative water supply sources as recommended in the 16-Year Water Supply Facilities Work Plan Update.

4. INFRASTRUCTURE ELEMENT

Potable Water

Water Provision

Objective 4D.2

Continue to provide an adequate supply of potable water to meet the demands of the service area population through the year 2030 by purchasing water from Miami-Dade WASD.

Additionally, the City shall comply with its adopted 16-Year Water Supply Facilities Work Plan Update (adopted January 2015), as required by section 163.3177(6)(c), F.S. to be adopted within 18 months after the governing board of the South Florida Water Management District approved its Lower East Coast Water Supply Plan Update on September 12, 2013. The Work Plan Update will be updated, at a minimum, every

5 years and within 18 months after the South Florida Water Management District's approval of any updates to the Lower East Coast Regional Water Supply Plan. The City's Work Plan Update 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 levels of service and water demands for a 16-Year period.

Monitoring and Evaluation Update:

- Provision of water that meets water service area demands. City has continued to provide water that meets water service area demands.
- Consistency with the Miami-Dade County 20-Year Water Supply Facilities Work Plan, which is compatible with the Water Use Permit renewals and with the projects listed in the South Florida Water Management District's Lower East Coast Regional Water Supply Plan. The Work Plan will be updated, within 18 months after the South Florida Water Management District's approval of an updated Lower East Coast Regional Water Supply Plan.

Policy 4D.2.7

The City shall comply with the City's 16-Year Work Plan Update, adopted January 13, 2015, and incorporate such Work Plan by reference into the City of North Miami Comprehensive Plan.

Policy 4D.2.8

The City shall coordinate appropriate aspects of its Comprehensive Plan with the South Florida Water Management District's regional Water Supply Plan adopted September 12, 2013 and with the Miami-Dade County 20-Year Water Supply Facilities Work Plan adopted February 4, 2015. The City shall amend its Comprehensive Plan and Work Plan as required to provide consistency with the District and County plans.

Policy 4D.2.9

The City shall maintain a minimum of a five-year schedule of capital improvements for the expansion and upgrade in the capacity of water and sanitary sewage facilities in accordance with the Water Supply Facilities Work Plan Update.

Policy 4D.2.10

The City's 16-Year Water Supply Facilities Work Plan Update, adopted January 13, 2015, is incorporated by reference into the Comprehensive Plan. The Work Plan will be updated, at a minimum every five years, concurrent with the update of the Miami-Dade County 20-Year Water Supply Facilities Work Plan, adopted February 4, 2015, which shall also be incorporated in the City's Work Plan by reference.

Policy 4D.2.11

The City's 16-Year Water Supply Facilities Work Plan Update shall remain consistent with the Potable Water Level of Service standards as establish in the Comprehensive Plan.

Policy 4D.2.12

The City's 16-Year Water Supply Facilities Work Plan Update shall guide future expansion and upgrade of facilities needed to transmit and distribute potable water to meet current and future demands. The City shall research and identify alternative, renewable sources of water to the projected increases in demand.

Policy 4D.2.13

The City shall provide for the protection of water quality when using traditional and new alternative water supply sources.

Policy 4D.2.14

The City shall identify traditional and alternative water supply projects and the conservation and reuse programs to meet current and future water use demands within the City's jurisdiction consistent with the Miami-Dade 20-Year Water Supply Facilities Work Plan and the South Florida Water Management District's Water Supply Plan.

6. CONSERVATION ELEMENT

Water Conservation

Objective 6B.4

- Continue to implement programs and activities which result in the conservation of potable water resources through reduced water consumption in North Miami and its service area.

Monitoring and Evaluation:

- Continue to implement water conservation public education programs, such as participation in the "Drop Savers" contest where City of North Miami students K-12 are encouraged to create a poster depicting a water conservation idea, in slogan form, drawing form, or both.
 - Monitor compliance with the Water Use Efficiency Ordinance (Adopted August 28, 2012).
 - Monitor compliance with the permanent landscape irrigation restrictions.
 - Evaluate the need to expand the City's successful water leak detection and repair program.
 - The City reduced its water use below the 165 gallons per capita day (gpcd) goal identified in the 2008 Water Supply Facilities Work Plan. The City will strive to continue to meet its goal of water use at or below 165 gpcd. .
 - The City shall continue to monitor its per capita consumption on a bi-annual basis to ensure that it is continuing to achieve its water conservation goals.

Policy 6B.4.2

The City shall continue to maintain consistency with the SFRPC Strategic Regional Policy Plan Policy 7.14, as may be amended, and strengthen the following water conservation measures. The City has adopted the following measures, including:

- a. selecting landscaping materials from the City's Xeriscape/Florida friendly Plant List which recommends landscaping methods that maximize the conservation of water through the use of xeriscaping and other site-appropriate plants and efficient watering systems;

- b. utilization of native plant material as a first priority in landscaping;
- c. implementation of a water conservation public education program; The City of North Miami participates in the “Drop Savers” contest where City of North Miami students K-12 are encouraged to create a poster depicting a water conservation idea, in slogan form, drawing form, or both
- d. continuation of a leak detection and repair program for public water supply systems;
- e. adoption of a water conservation-based rate structure by utilities that provides a financial incentive for users to reduce demand. The City of North Miami’s Water and Sewer Utility implemented a new consumption based rate structure in 2012 (Resolution No. R-2012-52.) that became effective on October 1, 2013.
- f. implementation of water loss prevention programs including the adoption of a rain sensor device ordinance for automatic sprinkler systems. The City of North Miami adopted a rain sensor device ordinance (Ordinance No. 1339). (Resolution No. R-2012-52.) on August 28, 2012.
- g. adoption of an ultra-low volume fixtures ordinance;
- h. adoption of an irrigation hours ordinance and reduction in the use of potable water for irrigation;
- i. Utilization of reuse water wherever and whenever possible based upon the ecological and technical factors involved, and analysis of reclaimed water feasibility by potable water supply utilities.
- j. Encouragement of green building design and techniques.
- k. Continuation of the City’s Commercial Restaurant Spray Valve Exchange Program providing low-flow restaurant pre-rinse valves to local restaurants, and cafeterias in exchange for their old water-wasting spray valves to reduce their water consumption

Policy 6B.4.3

The City will continue to encourage the use of high efficiency toilets, showerheads, faucets, clothes washers and dishwashers that are Energy Star rated and WaterSense certified in all retrofitted residential and commercial projects and continue its showerhead exchange program.

Policy 6B.4.4

The City will continue to require the use of high efficiency toilets, showerheads, faucets, clothes washers and dishwashers that are Energy Star rated and WaterSense certified in all new residential and commercial projects, as required by the Miami-Dade County Water Use Efficiency Standards Ordinance 08-100 (Effective Date January 1, 2009) and Manual and adopted by City Ordinance by January 2010.

Policy 6B.4.5

The City will continue to require the use of xeriscape, Florida Friendly Landscape guidelines and principals; gutter downspouts, roof runoff, and rain harvesting through the use of rain barrels and directing runoff to landscaped areas; drip irrigation or micro-sprinklers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc.) on walkways, driveways and patios.

Policy 6B.4.6

The City will continue to participate, when warranted, in the SFWMD's Water Savings Incentive Program (WaterSIP) for large-scale retrofits as recommended by the Lower East Coast Water Supply Plan.

Policy 6B.4.7

The City shall continue to submit a water conservation plan to the County as required by the Miami-Dade County Code, Section 32-83.1. Said Plan shall be updated for the County's approval every five years following submittal and Conserve Florida Guide generated reports shall be filed annually at the close of the fiscal year.

Policy 6.4.8

The City shall continue to assist Miami-Dade County in the enforcement of Section 32-8.2 of the Code of Miami-Dade County relating to permanent landscape irrigation restrictions.

Policy 6B.4.9

The City shall continue education programs related to water conservation. These programs include brochures and mailings, presentations to homeowners associations and presentations at public schools located within the City's water service area.

Policy 6.4.10

The City shall continue to explore water reuse opportunities with the SFWMD, MDWASD and North Miami Beach.

Policy 6B.4.11

The City shall continue to expand as necessary the City's water leak detection and repair program.

Policy 6B.4.12

The City of North Miami is committed to enhancing the quality of life for all of our residents, businesses, customers, visitors and employees by providing efficient public service through the sustainable use of

resources to preserve an atmosphere of courtesy, integrity, quality, fiscal and environmental responsibility for the benefit of current and future generations.

8. INTERGOVERNMENTAL COORDINATION ELEMENT

Policy 8.4.2

The City shall participate in any update to the Regional Water Supply Plan in conjunction with the SFWMD. The City shall also incorporate the 16-Year Water Supply Facilities Work Plan Update into the Comprehensive Plan within 18 months of the effective date of the Regional Water Supply Plan.

Policy 8.4.3

The City and SFWMD shall develop and adopt water supply plans in accordance with State statute, which shall reflect policies and strategies of water use and alternative water supplies in the regional water supply plan. The City shall also meet with the SFWMD to continue to identify mutual concerns and long-term goals.

Policy 8.6.9

The City of North Miami Public Works Department Water and Sewer Utilities shall continue to hold annual workshops with other governmental jurisdictions located within the North Miami water service area, Miami-Dade County Water and Sewer Department, Miami-Dade County 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.

Additionally, the City will adopt communication protocols to communicate and/or prepare an appropriate action plan to address any relevant issue(s) associated with water supply, conservation or reuse or LOS.

Policy 8.6.12

The City shall coordinate with Miami-Dade County Water and Sewer Department in the implementation of alternative water supply projects, establishment of level-of-service-standards and resource allocations/water allocation system and changes in service areas.

Policy 8.6.13

Appropriate mechanisms will be developed and adopted with the Villages of Miami Shores and Biscayne Park, the South Florida Water Management District, and Miami-Dade County to assure that adequate water supplies are available to all water users. Prior to approval of a building permit or its functional equivalent, the City, County and Villages shall consult with City of North Miami Public Works Department – Water and Sewer Utilities to determine whether adequate water supplies to serve the new development will be available no later than the anticipated date of issuance of a certificate of occupancy. Furthermore, the City will be responsible for monitoring the availability of water supplies for all water users and for implementing a system that links water supplies to the permitting of new development.

11. CAPITAL IMPROVEMENT ELEMENT

Potable Water Projects:**Policy 11.4.6**

The City shall incorporate capital improvements affecting City levels of service by referencing the Capital Improvements Schedules of Miami-Dade County, 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 Capital Improvement Element Schedule shall be maintained and updated annually and shall demonstrate that level of service standards will be maintained during the next five-year (2013/2014 through 2018/2019) planning period.

Policy 11.4.7

Every effort shall be made to use funds for the expansion, enhancement, and upgrade of the water supply facilities in accordance with the City's Adopted 16-Year Water Supply Facilities Work Plan Update.

7.0 CONCLUSION

This Work Plan Update has demonstrated that the CNM has developed a viable strategy for meeting its projected growth and future potable water demands. The Floridan aquifer was previously identified as an alternative source of raw water to be treated by an RO process. Population projections were revised to take into account the additional residents who will be moving into the City's new large-scale development, Biscayne Landing, over the next several years. Table 4-4 shows a demand of 12.87 MGD of finished water in 2015, 13.24 MGD in 2020, 13.62 MGD in 2025 and 13.99 MGD in 2030. The City's water conservation efforts have already exceeded projections of the previous work plan. Successful water conservation efforts have already served as the City's primary alternative water supply, reducing the need for additional alternative water supplies. Reliance on MDWASD supplied potable water is expected to continue as potable water demand remains steady in the CNM service area. The City is carrying out modifications and improvements to its existing lime softening WTP. Renewal of the WUP for an additional 20 years was completed in 2010.

APPENDICES

Appendix A

City of North Miami and Miami Dade Water and Sewer Dept.

20-Year Contract for Purchase of Wholesale Water

CONTRACT
BETWEEN
MIAMI-DADE COUNTY
AND
CITY OF NORTH MIAMI, FLORIDA
PROVIDING FOR THE RENDITION OF WATER SERVICE

THIS CONTRACT, made and entered into this 26th day of July, 2007, between Miami-Dade County, a political subdivision of the State of Florida, referred to as the "COUNTY" and the City of North Miami, a municipal corporation organized and existing under the laws of the State of Florida, referred to as the "CITY".

W I T N E S S E T H:

WHEREAS, on October 20, 2003, the COUNTY and the CITY entered into a Contract providing for the rendition of water service by the COUNTY to the CITY, and

WHEREAS, on May 10, 2006, the COUNTY and the South Florida Water Management District (SFWMD) entered into a contract which requires the COUNTY to obtain twenty (20) year water service contracts with its volume water customers to coincide with the request of the COUNTY for twenty (20) year Consumptive Use Permits issued by the South Florida Water Management District, and

WHEREAS, without a twenty (20) year contract with the CITY, the water supply source for the CITY, may be allocated from an alternative more expensive source for the CITY, and

WHEREAS, the COUNTY and the CITY desire to enter into this Contract so the COUNTY can continue to render water service to the CITY for a twenty (20) year period, and

WHEREAS, the Miami-Dade Water and Sewer Department, referred to as the "Department", operates and maintains the COUNTY's water system.

NOW, THEREFORE, in consideration of the mutual covenants and obligations set forth, the COUNTY and CITY agree as follows:

1. Insofar as it may be lawful to do so in accordance with the terms and limitations of any Consumptive Use Permit issued the COUNTY by the SFWMD, and subsequent to the terms herein, the COUNTY shall sell and deliver to the CITY, and the CITY shall purchase and receive from the COUNTY potable water necessary to fulfill a portion of the water requirements of the CITY during the effective period of this Contract. Potable water obtained by the CITY from the COUNTY may be utilized to serve the CITY's customers in its existing water service area or future water service area(s) that the CITY is legally authorized to serve.

2. Notwithstanding the obligations of Paragraph 1 above, if the COUNTY should have an insufficient supply of water available to fulfill the total requirements of all customers of the 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 COUNTY's control including but not limited to those specifically set forth in Paragraph 21 below, the COUNTY shall be deemed to have fully performed its duties and to have discharged its obligations if it furnishes and delivers the CITY's prorata share of such supply as determined by the COUNTY. The COUNTY will not be discriminatory in its delivery of water service. The COUNTY shall give expeditious notice to the CITY whenever the COUNTY becomes aware of conditions which could reasonably lead to an outage or shortage of such potable water supply or which may bring about such condition. Notwithstanding the preceding, the County shall not be obligated to take or omit any action to ensure current or future water supply to the City.

3. The CITY agrees to be bound by existing and future standards, laws, rules and regulations which may be enacted by the COUNTY or as may be necessary to ensure continued compliance with local, state and federal laws and regulations and permit conditions.

4. The water furnished will be delivered by the COUNTY and will be accepted and received by the CITY at the following points of delivery:

- a. NE 2nd Avenue and NE 115th Street
- b. NW 17th Avenue and NW 112th Terrace
- c. NW 5th Avenue and NW 119th Street
- d. NE 6th Avenue and West Biscayne Canal Road
- e. NE 16th Avenue and NE 123rd Terrace
- f. NE 16th Avenue and NE 143rd Street
- g. NE 16th Avenue and NE 135th Street

Additional points of delivery may be established at such times and places as shall be mutually agreed by the Director of the Department and the CITY. The CITY shall bear the entire cost and expense of establishing each such additional point of delivery, obtaining such easements as may be needed and furnishing all necessary labor and materials required to connect with the COUNTY's main, all in accordance with plans and specifications which are subject to approval of the COUNTY. The CITY will supply and install meter(s) and transfer ownership to the COUNTY. The CITY shall convey to the COUNTY, by appropriate bill of sale, as shown on Exhibit "A" attached hereto, and Grants of Easements, all of the CITY's right, title and interest in and to the tees or crosses in the feeder mains, meters, meter vaults and all piping, valves and appurtenances between and including the aforesaid tees or crosses and the valve immediately on the discharge side of the meters. The COUNTY shall thenceforth own, control, operate and maintain such facilities. Readings of each meter at all points of delivery shall be taken by the COUNTY on or about the 28th day of each month and shall be used for monthly billing purposes under the provisions of Paragraph 11 below.

5. The Parties agree and warrant that their respective water distribution and transmission system and any extensions shall be constructed, operated and maintained in accordance with the requirements of all applicable federal, state, county and other local laws, rules and regulations. The operation and maintenance of all facilities on the CITY side of the meters shall be the responsibility of the CITY. Upon reasonable notice that the CITY is in violation of this Agreement, the CITY shall provide the COUNTY with access to the CITY's distribution and transmission system. Said inspections shall be made at reasonable times and upon reasonable notice in such manner as to least disturb the normal operation of the CITY.

6. In order for the COUNTY to adequately plan for future water demands, within ninety days following execution of this

contract and on or before each January 1 thereafter, the CITY shall submit to the COUNTY the CITY's projected annual water needs for the next five years. Within 120 days of the COUNTY's receipt of the CITY's projected annual water needs for the next five years, the County will notify the City of the County's ability or inability to meet such needs, which is subject to local, state and federal agencies and other regulatory bodies having jurisdiction over such matters. The CITY agrees that the COUNTY shall not be liable or in any way responsible for any cost, claims or losses incurred by the CITY as a result of actions by regulatory bodies. Notwithstanding the preceding, nothing contained herein shall require the COUNTY to take or omit any action to ensure that the expected demand is satisfied. Any representation as to the County's ability to satisfy expected demands is conditional, and shall not obligate the County to deliver any specific amount of water.

7. The COUNTY shall own, operate and maintain metering stations at the points of delivery listed above which will measure all potable water delivered by the COUNTY to the CITY. The metering stations shall be of standard make and type installed in a readily accessible location with checking or calibration devices. The installation shall indicate flow with an error not to exceed plus or minus two percent of full scale reading (true accuracy). The Department, at its sole expense, shall check the accuracy of each metering installation once every six months, or at such other time intervals as it may deem appropriate. The Department shall provide the results of the checking to the CITY's Public Works Director no later than thirty (30) days after the meter is checked. Such checking shall be at a reasonable time, mutually agreeable to the Department and the CITY. In the event the City desires to be present for said meter checks, it shall be the City's responsibility to contact the Department and make arrangements to be present. If found to be in error exceeding two (2) percent of true accuracy, the meter shall be recalibrated to the satisfaction of the parties. If such error of more than two (2) percent is discovered, bills for the periods following the prior meter accuracy check shall be adjusted to reflect the quantity of over-read or under-read exceeding two (2) percent. In calculating such billing adjustment it will be assumed that the meter inaccuracy existed for the entire time interval between meter accuracy tests. The billing adjustment shall be made at the same rate in effect during the period of meter inaccuracy.

8. The CITY may request and the COUNTY agrees to perform a meter accuracy test 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 testing and recalibration shall be paid for by the COUNTY. If the meter is found performing within two (2) percent true accuracy, the meter accuracy test shall be paid for by the CITY within thirty (30) days of receiving the COUNTY's invoice.

9. In the event of complete or partial failure of any meters to register the CITY's water consumption, the COUNTY may determine the estimated water consumption based on the most recent twelve (12) full months of consumption measured by the meters when they were operating properly or another method mutually agreed upon by the Department and the CITY. To the extent possible, the COUNTY shall repair all failed meters within thirty (30) days of the determination that the meter has completely or partially failed.

10. It shall be the obligation and duty of the CITY to transmit the water at its own expense from each point of delivery to the place or places of ultimate use and, in so doing, to supply and impart to the water such adequate pressure and flow as may be necessary to provide adequate pressure at all points beyond such points of delivery. Accordingly, the COUNTY shall not be responsible for insufficient pressure, for either domestic or fire flow service, nor be required to correct any fluctuation in pressure occurring beyond any point of delivery. The COUNTY shall provide at least 24-hour notice before any planned decrease in pressure which would affect the CITY's ability to deliver services to any CITY customer, is implemented by the County.

11. The CITY shall pay to the COUNTY, as compensation for the treatment and transmission of all water delivered to the CITY, a monthly charge for such service based on a uniform rate for the COUNTY's volume customers. The rate shall be calculated for each Department fiscal year based on projections from the prior Department fiscal year and based on the sum of the following:

(a) That portion of all budgeted annual operating and maintenance expenses, including taxes assessed, if any, for the COUNTY's regional water system divided by the projected total amount of flow used to bill all the COUNTY's water customers over the same time period.

(b) That portion of the budgeted annual renewal and replacement expenses for the COUNTY's regional water system divided by the total projected amount of flow used to bill all the COUNTY water customers over the same time period.

(c) That portion of the COUNTY's budgeted annual interest obligations of outstanding notes and bonds for the COUNTY's regional water system divided by the projected total amount of flow used to bill all the COUNTY water customers over the same time period.

(d) That portion of the budgeted annual charge for the amortization of the COUNTY's outstanding notes and bonds for the COUNTY's regional water system, to be consistent with the requirements under law, divided by the total projected amount of flow used to bill all the COUNTY's water customers over the same time period.

(e) That portion of the budgeted annual charge for customer accounting and service, for the COUNTY's regional water system divided by the total projected amount of flow used to bill all the COUNTY's water customers over the same time period.

(f) That portion of projected annual administration and general expenses, for the COUNTY's regional water system, divided by the total projected amount of flow used to bill all the COUNTY's water customers over the same time period.

(g) That portion of the charge for debt service coverage requirement for bond issues for the COUNTY's regional water system divided by the total projected amount of flow used to bill all the COUNTY's water customers over the same time period.

12. The City shall prepare a water conservation plan for its distribution system, to the satisfaction of the COUNTY, and shall implement the tenets of such plan. This plan shall comply with applicable local, state and federal conservation rules and guidance, as appropriate. The COUNTY may impose a surcharge on the use of such amounts of water by the CITY as could be conserved by the CITY through the implementation of a conservation plan, provided that the surcharge is applied uniformly to all volume water customers of COUNTY. The amount of the surcharge is subject to the review and approval of the Board of County Commissioners. Water conservation is a necessary to meet the public water supply demands of the COUNTY.

13. The COUNTY reserves the right to revise or modify the rate and the method of calculation included in Paragraph 11 as may be approved by the Board of County Commissioners in accordance with applicable law and the CITY agrees to be bound thereby. The COUNTY will attempt to provide the CITY with a preliminary rate and shall attempt to provide such rate a minimum of six (6) weeks in advance of any rate increase effective date. The CITY recognizes and agrees that the adopted rate may differ from the preliminary rate. The CITY recognizes and agrees that the COUNTY intends to implement in the future such charges or rate structures, including but not limited to peak flow surcharges, as it deems necessary to fairly recover its costs for any needed infrastructure improvements. The CITY further recognizes and agrees that the COUNTY's right to revise or modify the rate or methods of calculation under this paragraph is not limited solely to revisions or modifications allowing the COUNTY to recover costs for infrastructure improvements.

14. The COUNTY grants the CITY the right to audit all Department records related to the computation of the rates for each fiscal year. Upon written notice, the COUNTY shall make available for the CITY such records at the offices of the Department on an annual basis. In the event that such audit indicates any discrepancy between the rates used by the COUNTY in computing the monthly service charges to the CITY and the amount paid by the CITY determined as a result of the audit, and following the COUNTY's acceptance of the audit findings, the COUNTY shall make an adjustment, for that fiscal year, in the service charges previously paid by the CITY. The audit must be completed on or before the end of each fiscal year for which the rates apply. Adjustments shall not be made for prior fiscal years.

15. Billings for services provided in accordance with this contract shall be rendered monthly. Invoices will be mailed by the tenth day of the month following the month for which service has been provided, based on meter readings taken by Department employees on or about the 28th day of each month. Amounts billed on such invoices are due when rendered. In the event the CITY disputes a bill, the CITY shall provide the COUNTY with notice of the reasons for non-payment and shall escrow such portion of the bill that is disputed in an interest-bearing account. The parties shall promptly meet and use good faith efforts to resolve the dispute within forty-five(45) days of the notice. Except for any portion of a bill disputed by the CITY, payments not received by

the Department on or before twenty-five (25) days after the postmark date of the bill shall be considered past due. All past due invoices shall be subject to a late charge as established by the COUNTY, such charge to reimburse the Department for costs in processing and otherwise administering late payments. In addition, per annum interest shall accrue on the past due charges including the late charges at the maximum legal rate provided by Florida law for contracts in which no interest rate is specified, for each day, including Saturdays, Sundays and holidays, from the past due date until the date of receipt by the Department. For purposes of this paragraph, date of receipt shall be the date of actual receipt by the Department if hand delivered or mailed, or date of transfer to the Department's bank, if electronic funds transfer is used.

16. Any and all suits brought by either party shall be instituted and maintained in any court of competent jurisdiction in Miami-Dade County, Florida. In all such suits, the prevailing party shall be entitled to receive costs and reasonable attorney's fees. The amount of such costs and fees shall be determined by the court in which such actions are brought.

17. The CITY shall accept delivery of water transmitted at a flow rate as nearly uniform as practical throughout each daily 24-hour period during November, December, January, February, March and April of each year and at all such other times when the daily quantity of water delivered during the preceding six (6) months set forth above. The COUNTY shall have the right to make such tests as it shall deem necessary, and at such times as it shall deem to be appropriate, to determine to what extent the maximum 60-minutes sustained demand imposed upon the facilities of the COUNTY by the requirements of the CITY between the hours of 6:00 A.M. and 9:00 P.M. is exceeding the average daily demand for the same month. For the purpose of making each such test and of ascertaining and utilizing the result to give effect to the provisions of this Paragraph, the COUNTY shall use a recording flow meter installed at each of the points of delivery provided for in Paragraph 4 above. Such tests shall apply to each of the six (6) months set forth above and to any other month in which the average daily demand is equal to or greater than the average daily demand for the six (6) months considered collectively. Provided however, that no test allowed by this paragraph shall occur on less than three (3) business days notice to the CITY.

18. In the event that the maximum 60-minute sustained demand between the hours of 6:00 A.M. and 9:00 P.M. as shown simultaneously by all recording flow meters considered collectively

shall exceed one hundred sixty (160) percent of the average daily demand for the same month, the COUNTY shall notify the CITY in writing providing the CITY with ten (10) days to reduce the demand to less than one hundred sixty (160) percent of the average daily demand. If no such reduction occurs, the COUNTY shall have the right to increase the rate per thousand (1,000) gallons of water, for all water delivered during the month in which such test is made, by one (1) percent of the rate for each four (4) percent or major fraction thereof (2.5 percent) by which the maximum 60-minute sustained demand shall exceed one hundred sixty (160) percent of the average daily demand. No increase in rate provided for in this paragraph shall be applied during any period of time when any of the transmission, storage or pumping facilities of the CITY are not available for service due to reasons beyond the control of the CITY such as water main breaks, major emergency/scheduled maintenance at the water plant or fires.

19. The CITY shall establish, impose, maintain and collect, or shall cause to be established, imposed, maintained and collected at all times throughout the effective period such rates and charges for water distributed as will enable it to pay in full all amounts to which the COUNTY shall be entitled.

20. No property taxes shall be levied or collected by the CITY upon the properties of the Department. Additionally, the CITY shall not impose zoning changes upon the personal property of the Department.

21. Any cessation of water services and any consequences caused by force majeure, inevitable accident or occurrence or cause beyond the reasonable control of either Party, shall not constitute a breach of this Contract and neither party shall be liable to the other or its inhabitants or customers for any damage resulting from such cessation or interruption of water service. Force majeure shall mean an act of God which includes but is not limited to sudden, unexpected or extraordinary forces of nature such as floods, washouts, storms, fires, earthquakes, landslides, hurricanes, epidemics, explosions or other forces of nature, strikes, lockouts, other industrial disturbances, wars, blockades, acts of terrorism, insurrections, riots, federal, state, county and local governmental restrictions, regulations and restraints, military action, civil disturbances, or conditions in federal, state, county and local permits.

Neither party shall be liable for its failure to carry out its obligations under the contract during a period when such party is rendered unable, in whole or in part, by force majeure or inevitable accidents or occurrences to carry out such obligations, but the obligations of the party or parties relying on such force majeure shall be suspended only during the continuance of any inability so caused and for no longer period of an unexpected or uncontrollable event, and such cause shall, so far as possible, be remedied with all reasonable dispatch. It is further agreed and stipulated that the right of any party to excuse its failure to perform by reason of force majeure shall be conditioned upon such party giving, to the other party, written notice of its assertion that a force majeure delay has commenced within ten (10) working days after such commencement, unless there exists good cause for failure to give such notice, in which event, failure to give such notice shall not prejudice any party's right to justify any non-performance as caused by force majeure unless the failure to give timely notice causes material prejudice to the other party.

22. In accordance with the provision 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 the Ordinance, to pay the COUNTY's water and sewer connection charges. The CITY shall not render water service, sewer service or both to any new retail user until a written receipt from the Department is provided to the CITY. Pursuant to Ordinance No. 05-167, the provision of water and/or sewer service to new retail users by the CITY who did not pay the appropriate charges, shall render the CITY liable to the COUNTY for the payment of such charges.

23. In consideration of good and valuable consideration received from the COUNTY and in consideration of the covenants in this Contract, the CITY agrees to indemnify and save harmless 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 and agents in connection with the performance of this Contract. The CITY agrees to defend against any claims brought or actions filed against the COUNTY, its officers, agents and employees in connection with the subject of the indemnities contained herein.

24. In consideration of good and valuable consideration received from the CITY and in consideration of the covenants in

this Contract, the COUNTY agrees to indemnify and save 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 , it officers, agents, and employees due to, caused by, or arising from the negligence of the COUNTY, its officers, employees and agents in connection with the performance of this Contract. The COUNTY agrees to defend against any claims brought or actions filed against the CITY , its officers, agents and employees in connection with the subject of the indemnities contained herein.

25. Notwithstanding the above, nothing 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.

26. No rights pursuant to this contract shall be assignable by the CITY unless the COUNTY agrees in writing.

27. This Contract shall be and remain in full force and effect for a period of twenty (20) years from the date of execution of this Contract, subject to the provisions in the two paragraphs below, providing the South Florida Water Management District extends the current Consumptive Use Permits for a twenty (20) year period. The CITY shall comply with the terms and conditions of the Consumptive Use Permit issued by the SFWMD and any revisions or modifications to such permit. Where the Permit requires reporting of various measures to the SFWMD, or requires actions be taken to the satisfaction of the SFWMD, the CITY shall make such reports or take such actions to the satisfaction of the COUNTY. The COUNTY may enforce any Permit term imposed on the COUNTY against the CITY without need for prior legal or administrative action against the COUNTY by the SFWMD.

In the event that the City builds a water treatment or production facility with sufficient capacity to fully supply water to all properties within its service area, the City may terminate this agreement. Prior to such termination, however, the following additional conditions must be met: 1) the City must give the County written notice of the approximate date on which it proposes to terminate this agreement two years prior to such date, though subsequent postponements or extensions of this date shall require only thirty days written notice to the County; and, 2) the water production facilities must have received all permits and licenses necessary for operation.

The City acknowledges that the County has constructed various water distribution and production facilities to serve the City. The City

City of North Miami
Water Service Contract
04/17/2007

acknowledges and agrees that, in the event of termination of this agreement under this section, the County may use such facilities to serve other customers, including direct County customers. In the event that the County is not able, due to system distribution issues or regulatory constraints, unable to serve other customers using these facilities as these facilities exist as of the date of termination of this agreements, the County shall notify the City of such inability, and, 180 days after receipt of such notice by the City, the City shall compensate the County for one half of the value of such facilities. Where facilities served both the City and other customers, the amount owed by the City shall be one half the value of such facilities multiplied by the percentage of that facility used by the City as opposed to other customers. This section shall survive termination of this agreement.

28. Connections to the County's water system stated in Paragraph 4 shall remain for emergency purposes only. Such uses shall not exceed thirty (30) days. Emergencies are defined as acts of God or system failures. The Director or his designee can authorize an extension to the thirty (30) day use on a case by case basis.

29. The CITY grants to the COUNTY the right to provide reuse water for non-drinking purposes, when available, within the CITY subject to federal, state and local laws and regulations in effect and as may be amended in the future, subject to the issuance of construction permits by the CITY and upon the CITY 's engineer giving approval in writing which shall not be unreasonably withheld. The CITY agrees to accept and utilize re-use water in lieu of potable water, if such water is provided by the COUNTY, to the extent the use for which the COUNTY is offering such re-use water is permitted by law and is economically feasible to do so.

30. All notices required pursuant to this Contract shall be properly given if mailed by United States registered or 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
3071 SW 38 Avenue
Miami Florida 33146

City of North Miami
Water Service Contract
04/17/2007

City of North Miami
City Manager
776 NE 125th Street
North Miami, Florida 33261-0850

31. This contract shall be governed by and construed according to the laws of the State of Florida, and venue shall be in Miami-Dade County, Florida.

32. This Contract contains the entire Contract of the parties with respect to the subject matter and replaces and supersedes all prior contracts or understandings, oral or written, with respect to such subject matter, and such contracts or understandings are now void and no longer in effect including the October 20, 2003 agreement.

33. If any Section of this Contract is found to be null and void, the other Sections shall remain in full force and effect.

(THE REST OF THIS PAGE IS INTENTIONALLY LEFT BLANK)

IN WITNESS WHEREOF, the parties have caused this instrument to be executed in their names and their corporate seals affixed and to all duplicates by their respective officers all as of the day and year above.

MIAMI-DADE COUNTY

By: [Signature]
County Mayor



[Signature]
Clerk 7/24/07

ATTEST:

CITY OF NORTH MIAMI

By: [Signature]
Deputy City Clerk

By: [Signature] (SEAL)
City Manager

Approved as to form and legal sufficiency:

Approved as to form:

[Signature]
Assistant County Attorney

[Signature]
Attorney for City of North Miami

Appendix B

City of North Miami

Raw Water Wells Information

TABLE - A
Description Of Wells.

Application Number: 071012-6

Well ID	45234	45237	45238	45239	45240	45241
Name	Winson 1	Winson 2	Winson 3	Winson 4	Winson 5	Winson 6
Map Designator	1	2	3	4	5	6
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	12	12	12	12
Total Depth(feet)	124	104	60	65	107	56
Cased Depth(feet)	100	90	45	57	99	45
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	-30	-25	-25	-27	-27	-27
Pump Capacity(GPM)	1500	1500	1500	1500	1100	1100
Year Drilled	1962	1962	1962	1962	1962	1962
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	913699	913536	912425	912235	910988	910789
Feet North	564780	564851	564711	564720	564772	564562
Accounting Method	flow meter					
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor					
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 071012-6

Well ID	45242	45243	137484	137485	137486	137487
Name	Winson 7	Winson 8	F-275	F-279	G-3224	G-894
Map Designator	7	8				
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	4	6	2	2
Total Depth(feet)	60	62	50.8	115.3	19.2	74.15
Cased Depth(feet)	50	52				
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0				
To	0	0				
Pumped Or Flowing	P	P				
Pump Type	submersible	submersible	none	none	none	none
Pump Int. Elev. Feet (NGVD)						8.78
Feet (BLS)	-27	-27				
Pump Capacity(GPM)	1100	1100	0	0	0	0
Year Drilled	1962	1962				
Planar Location						
Source	REVIEWER	REVIEWER				
Feet East	912446	912115	926200.8	923308.3	916465	924885.208
Feet North	565906	565914	567787.7	565901.8	560276.4	569334.439
Accounting Method	flow meter	flow meter	none	none	none	none
Use Status	Primary	Primary	Monitor	Monitor	Monitor	Monitor
Water Use Type	Public Water Supply	Public Water Supply	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Water Shortage Monitoring Facility Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **071012-6**

Well ID	137489	153705	255446	255447	255448	255449
Name	Gratigny Well	G-297 (121 & 4th)	FL-1	FL-2	FL-3	FL-4
Map Designator	Gratigny		F-1	F-2	F-3	F-4
FLUWID Number						
Well Field						
Existing/Proposed	E	E	P	P	P	P
Well Diameter(Inches)	2	2	16	16	16	16
Total Depth(feet)	154.35	107.6	1250	1250	1250	1250
Cased Depth(feet)			1000	1000	1000	1000
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing			P	P	P	P
Pump Type	none	none	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	2500	2500	2500	2500
Year Drilled						
Planar Location						
Source						
Feet East	920419.6	917715.3	913535	912270	910960	913655
Feet North	564833.9	564979	564765	564825	564765	566230
Accounting Method	none	none	totalizer	totalizer	totalizer	totalizer
Use Status	Monitor	Monitor	Primary	Primary	Primary	Primary
Water Use Type	Monitor	Monitor	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Aquifer Unspecified	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

TABLE - A
Description Of Wells.

Application Number: 071012-6

Well ID Name	255450	255457	255458	255459	255460	255461
Map Designator	FL-5	FL-6	FL-7	FL-8	FL-9	FL-10
FLUWID Number	F-5	FL-6	F-7	F-8	F-9	F-10
Well Field						
Existing/Proposed	P	P	P	P	P	P
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	1250	1250	1250	1250	1250	1250
Cased Depth(feet)	1000	1000	1000	1000	1000	1000
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2500	2500	2500	2500	2500	2500
Year Drilled						
Planar Location Source						
Feet East	912165	912730	912690	912110	911220	910200
Feet North	566010	568982	568982	569825	569725	569745
Accounting Method	totalizer	totalizer	totalizer	totalizer	totalizer	totalizer
Use Status	Secondary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply					
Aquifer	Floridan Aquifer System					

**City of North Miami Water Use Permit (SFWMD)
Per Capita Use Per MORs and MDWASD (Fin. Water)**

	2005	2006	2007	2008*	2009	Average 2005 - 2009
Population in Service Area**	88,732	89,429	90,125	90,586	91,401	90,055
Per Capita Usage (Annual Average) (gpcd)	145.59	147.31	142.94	132.02	129.12	139.40
Total Annual Use (Finished Water- From Winson WTP) (MG)	3172.447	2923.192	2823.412	2393.035	2905.909	2843.599
Total Annual Use (Finished Water- From MDWASD) (MG)	1542.903	1885.33	1878.664	1983.912	1413.62	1740.89
Total Annual Use (Finished Water- Total) (MG)	4715.350	4808.522	4702.076	4376.947	4319.533	4584.486
Average Month Use (Finished Water- From Winson WTP) (MG)	264.371	243.599	235.284	199.420	242.159	236.967
Average Month Use (Finished Water- From MDWASD) (MG)	128.575	157.111	156.555	165.326	117.802	145.074
Average Month Use (Finished Water- Total) (MG)	392.946	400.710	391.839	364.746	359.961	382.040
Max Month Usage (Finished Water- From Winson WTP) (MG)	279.399	268.230	269.184	217.312	253.163	257.458
Max Month Usage (Finished Water- From MDWASD) (MG)	147.964	208.281	190.656	222.462	146.969	183.267
Max Month Usage (Finished Water- Total) (MG)	427.363	476.511	459.840	439.774	400.132	440.724
Ratio Max:Average (Finished Water- From Winson WTP)	1.06	1.10	1.14	1.09	1.05	1.09
Ratio Max:Average (Finished Water- From Winson WTP)	1.15	1.33	1.22	1.35	1.25	1.26
Ratio Max:Average (Finished Water- From Winson WTP)	1.09	1.19	1.17	1.21	1.11	1.15

* Leap Year

** Population Based on Interpolation of Data from Nmpopulationworksheet New Service Area

North Miami Service Area Average Day Water Demand Projections (Showing Treatment Losses)

Calendar Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Projected Population in Service Area (in thousands)	92.22	93.03	93.84	94.66	95.47	96.29	97.1	97.92	98.73	99.55	100.36	101.18	101.99	102.81	103.4	104.21	105.02	105.83	106.64	107.46	108.27
Total Finished Water Per Capita (gpc-d)	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40
Total Finished Water Demand (MGD)	12.86	12.97	13.08	13.20	13.31	13.42	13.54	13.65	13.76	13.88	13.99	14.10	14.22	14.33	14.41	14.53	14.64	14.75	14.87	14.98	15.09
Total Finished Water Production Capacity (MGD)	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11
Finished Water Purchased from MDWASD (MGD)	3.74	3.85	3.97	4.08	4.19	4.31	4.42	4.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biscayne Aquifer																					
Total Lime Softened Finished Water Produced (MGD)	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11
Losses from Treatment (%)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Lime Softened Treatment Losses (MGD)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Biscayne Raw Water Demand (MGD)	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Floridan Aquifer																					
Total Membrane Treated Finished Water Produced (MGD)	0	0	0	0	0	0	0	0	4.65	4.76	4.88	4.99	5.10	5.22	5.30	5.41	5.53	5.64	5.75	5.87	5.98
Losses from Treatment (%)	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Losses from Treatment (MGD)	0	0	0	0	0	0	0	0	1.55	1.59	1.63	1.66	1.70	1.74	1.77	1.80	1.84	1.88	1.92	1.96	1.99
Floridan Raw Water Demand (MGD)	0	0	0	0	0	0	0	0	6.20	6.35	6.50	6.65	6.80	6.96	7.07	7.22	7.37	7.52	7.67	7.82	7.97
Raw Water (Biscayne + Floridan Aquifers) Totals*																					
Total Finished Water Demand (Biscayne + Floridan Aquifers) - Does not include MDWASD Supply	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	13.76	13.88	13.99	14.10	14.22	14.33	14.41	14.53	14.64	14.75	14.87	14.98	15.09
Total Losses From Treatment (MGD)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	1.74	1.77	1.81	1.85	1.89	1.93	1.95	1.99	2.03	2.07	2.10	2.14	2.18
Total Raw Water Demand from Combined Sources (MGD)	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	15.50	15.65	15.80	15.95	16.10	16.26	16.37	16.52	16.67	16.82	16.97	17.12	17.27

Legend:

Year 2018 – WTP expansion and Floridan Wells on line
 Years 2012, 2016, 2020 and 2024 are leap years
 * Does not include MDWASD Source Water

Appendix C

Miami-Dade County WASD - North Miami Service Area
Population Projections

Appendix C Water Supply for Municipalities

Exhibit C-5 Other Utilities Population Projections

Exhibit C-5

Exhibit C-5 Other Utilities Population Projections

		2014	2015	2020	2026	2030	2033	2035	
Service Area Florida City	Municipality	Florida City							
	Water By Utility	WASD							
		North Miami							
		NMB							
		Homestead							
		Florida City	9790.86	9790.86	9790.86	9790.86	9790.86	9790.86	9790.86
	Total	9,791	9,791	9,791	9,791	9,791	9,791	9,791	
	Municipality	Florida City-WASD Service Area							
	Water By Utility	WASD	0.90	0.93	1.04	1.16	1.28	1.35	1.40
		North Miami							
NMB									
Homestead									
Florida City									
Total	1	1	1	1	1	1	1		
Total WASD		1	1	1	1	1	1	1	
Total Florida Service Area Pop.		9,791	9,791	9,791	9,791	9,791	9,791	9,791	
Total Florida City Muni. Pop		9,792	9,792	9,792	9,792	9,792	9,792	9,792	
Service Area Homestead	Municipality	Homestead-Homestead service area							
	Water By Utility	WASD							
		North Miami							
		NMB							
		Homestead	60238.47	61294.84	66576.74	71858.63	77140.52	80309.65	82422.41
		Florida City							
	Total	60,238	61,295	66,577	71,859	77,141	80,310	82,422	
	Municipality	Homestead within WASD service area							
	Water By Utility	WASD	2778.33	2839.66	3146.32	3452.98	3759.64	3943.64	4066.30
		North Miami							
NMB									
Homestead									
Florida City									
Total	2,778	2,840	3,146	3,453	3,760	3,944	4,066		
Municipality	Unincorporated-Homestead Service Area								
Water By Utility	WASD	5150.39	5233.24	5647.50	6061.76	6476.02	6724.57	6890.28	
	North Miami								
	NMB								
	Homestead								
	Florida City								
Total	5,150	5,233	5,648	6,062	6,476	6,725	6,890		
Total Homestead Municipal Population		63,017	64,135	69,723	75,312	80,900	84,253	86,489	
Total Homestead Service Area Population		65,389	66,528	72,224	77,920	83,617	87,034	89,313	
Service Area North Miami	Municipality	North Miami							
	Water By Utility	WASD	14334.20	14669.80	16347.81	18025.81	19703.81	20710.61	21381.81
		North Miami	43494.82	43534.68	43734.01	43933.34	44132.66	44252.76	44331.99
		NMB							
		Homestead							
		Florida City							
	Total	57,829	58,204	60,082	61,959	63,836	64,963	65,714	
	Unincorporated within NM Service Area								
	Water By Utility	WASD	7667.74	7725.56	8014.68	8303.81	8592.93	8766.40	8882.05
		North Miami	22868.76	22969.46	23472.96	23976.46	24479.96	24782.06	24983.46
NMB									
Homestead									
Florida City									
Total	30,536	30,695	31,488	32,280	33,073	33,548	33,866		
Municipality	Biscayne Park								
Water By Utility	WASD								
	North Miami	3017.99	3021.61	3039.72	3057.82	3075.93	3086.79	3094.03	
	NMB								
	Homestead								
	Florida City								
Total	3,018	3,022	3,040	3,058	3,076	3,087	3,094		
Municipality	Miami Shores								
Water By Utility	WASD	367.60	368.16	371.00	373.84	376.68	378.38	379.52	
	North Miami								
	NMB								
	Homestead								
	Florida City								
Total	368	368	371	374	377	378	380		
Total Muni. Population		57,829	58,204	60,082	61,959	63,836	64,963	65,714	
Total Pop. Served by WASD		22,370	22,764	24,733	26,703	28,673	29,855	30,643	
Total Pop. Served by NM		66,364	66,504	67,207	67,910	68,613	69,034	69,315	
Total NM Service Area		91,751	92,289	94,980	97,671	100,362	101,977	103,053	

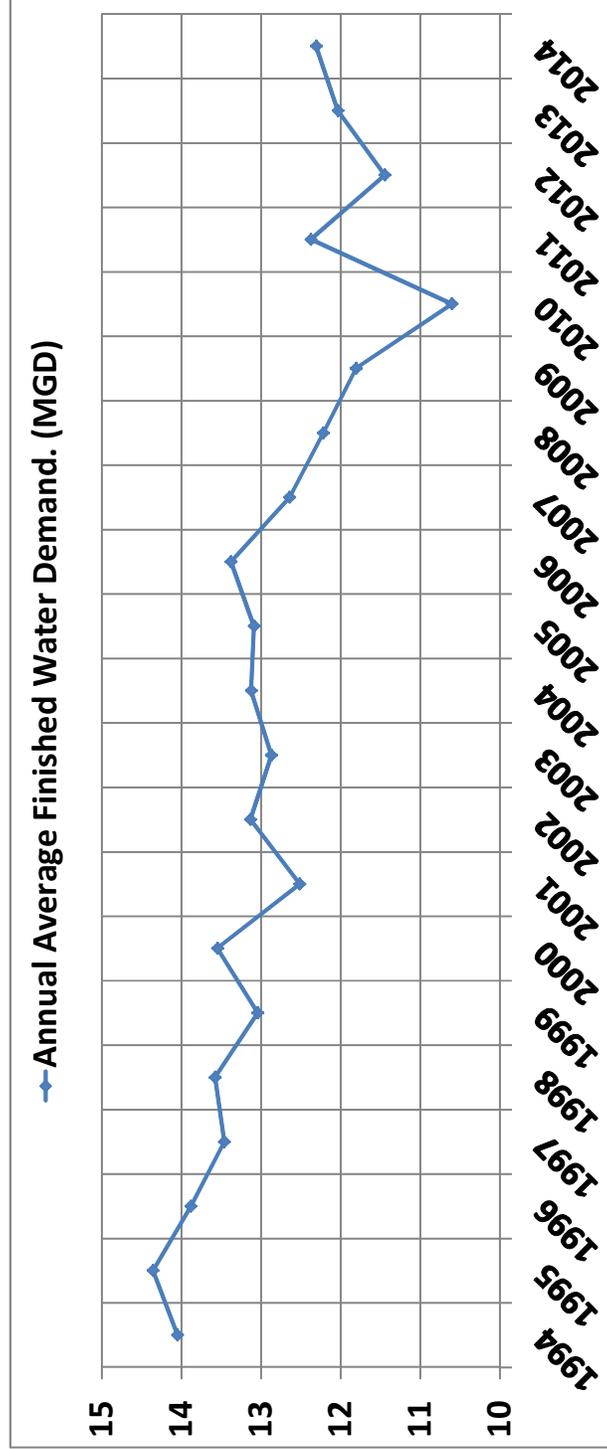
Appendix D

City of North Miami

Historical Water Use

CITY OF NORTH MIAMI
 HISTORICAL WATER USE
 (AVG. DAILY DEMAND)
 1994-2014

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Month	MGD																				
January	13.88	14.21	15.05	13.64	13.12	12.17	13.62	12.38	12.91	13.24	12.45	13.69	13.82	13.79	12.85	12.69	11.91	11.65	10.59	11.2	12.60
February	12.51	12.87	13.73	12.42	12.25	11.37	11.93	10.82	11.41	12.67	11.86	12.05	12.35	12.26	11.44	11.12	11.91	12.88	11.21	11.21	12.44
March	14.33	14.16	13.98	13.95	13.49	13.73	13.72	13.34	12.99	13.61	13.37	13.11	13.91	13.06	11.84	12.16	11.68	12.79	10.57	12.12	12.19
April	13.88	13.54	14.62	13.61	13.41	13.60	12.90	12.41	13.69	13.03	12.75	12.71	13.21	12.62	11.88	12.05	10.8	13.48	10.67	12.37	12.46
May	14.71	15.21	14.18	13.73	15.43	13.26	14.75	12.27	14.23	13.44	12.93	13.00	14.26	11.67	12.43	11.98	10.86	12.88	11.06	12.46	12.68
June	14.14	14.21	13.08	13.33	15.06	13.33	13.34	12.28	13.20	12.94	14.09	13.77	12.89	11.53	13.02	11.07	10.64	13.11	11.91	12.36	12.02
July	14.35	14.65	14.59	13.58	13.66	13.42	13.61	12.78	13.34	13.07	13.73	13.02	13.21	13.13	12.13	12.12	10.06	12.74	11.09	11.09	12.05
August	15.09	14.63	13.91	13.35	15.58	13.71	13.34	12.95	13.03	12.33	13.52	13.30	13.53	13.62	11.73	11.73	9.61	9.72	11.65	12.32	12.00
September	13.79	14.58	13.48	13.54	13.49	12.79	15.27	12.01	13.04	12.64	12.71	12.57	12.94	12.23	12.61	12.61	9.79	14.92	11.95	12.71	12.34
October	14.24	14.92	13.31	13.62	12.41	12.58	13.54	13.36	12.95	13.22	13.22	12.92	13.91	12.72	12.15	11.54	10.03	11.48	11.57	12.41	
November	13.90	14.93	12.63	12.55	12.47	13.61	13.43	12.44	12.38	11.72	13.51	13.51	13.24	13.14	12.41	10.95	9.75	11.4	12.92	12.11	
December	13.79	14.38	14.04	14.24	12.56	12.94	13.14	13.15	14.45	12.82	13.36	13.42	13.27	11.95	12.15	11.67	10.21	11.44	12.18	12.09	
Age Finished Water De	14.05083	14.3575	13.88333	13.46333	13.5775	13.0425	13.54917	12.51583	13.135	12.87167	13.125	13.08917	13.37833	12.64833	12.22	11.81	10.60	12.37	11.45	12.04	12.31



Appendix E

City of North Miami

Water Use Permit, 13-00059-W



**SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE PERMIT NO. RE-ISSUE 13-00059-W
NON-ASSIGNABLE**

Date Issued: August 23, 2010

Expiration Date: August 23, 2030

Authorizing: THE USE OF GROUND WATER FROM THE BISCAYNE AQUIFER AND FLORIDAN AQUIFER SYSTEM FOR PUBLIC WATER SUPPLY USE WITH AN ANNUAL ALLOCATION OF 6303.55 MILLION GALLONS.

Located In: Miami-Dade County,

S26/T52S/R41E
S26/T52S/R42E

Issued To: CITY OF NORTH MIAMI
(CITY OF NORTH MIAMI)
776 NE 125 ST,
NORTH MIAMI, FL 33161

This is to notify you of the District's agency action concerning Permit Application No. 071012-6, dated October 12, 2007. This action is taken pursuant to the provisions of Chapter 373, Part II, Florida Statutes (F.S.), Rule 40E-1.603 and Chapter 40E-2, Florida Administrative Code (F.A.C.). Based on the information provided, District rules have been adhered to and a Water Use Permit is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.5 and Section 120.569, or request a judicial review pursuant Section 120.68, Florida Statutes.
2. The attached 28 Limiting Conditions.
3. The attached 13 exhibits.

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 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.

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition or request, please provide written objections, petitions, requests and/or waivers to:

Elizabeth Veguilla, Deputy Clerk, MSC2440
South Florida Water Management District
Post Office Box 24680
West Palm Beach, FL 33416-4680

Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights", we will assume that you concur with the District's action.

CERTIFICATION OF SERVICE

I HEREBY CERTIFY that the Staff Report, Conditions and Notice of Rights have been mailed to the Permittee (and the persons listed on the attached staff report distribution list) no later than 5:00 p.m. on this 24th day of August, 2010, in accordance with Section 120.60(3), Florida Statutes, and a copy has been filed and acknowledged with the Deputy District Clerk.

ORIGINAL SIGNED BY

By JACKI MCGORTY
DEPUTY CLERK
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Attachments

CERTIFIED MAIL# 70050390000598196998

PAGE 1 OF 5

LIMITING CONDITIONS

1. This permit shall expire on August 23, 2030.
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 6304 MG.

Maximum monthly allocation shall not exceed 616.855 MG.

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

Biscayne Aquifer-: 3,395 MG.
Floridan Aquifer System-: 2,909 MG.

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

Biscayne Aquifer-: 282.72 MG.
Floridan Aquifer System-: 334.13 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
c/o MARK E. COLLINS
776 NE 125 ST
NORTH MIAMI, FL 33161

7. Withdrawal Facilities:

Ground Water - Existing:

1 - 12" X 124' X 1500 GPM Well Cased To 100 Feet
1 - 12" X 62' X 1100 GPM Well Cased To 52 Feet

- 1 - 12" X 107' X 1100 GPM Well Cased To 99 Feet
- 1 - 12" X 60' X 1500 GPM Well Cased To 45 Feet
- 1 - 12" X 56' X 1100 GPM Well Cased To 45 Feet
- 1 - 12" X 60' X 1100 GPM Well Cased To 50 Feet
- 1 - 12" X 104' X 1500 GPM Well Cased To 90 Feet
- 1 - 12" X 65' X 1500 GPM Well Cased To 57 Feet

Ground Water - Proposed:

- 10 - 16" X 1250' X 2500 GPM Wells Cased To 1000 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, Environmental Resource Compliance, 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. The Permittee shall notify the District within 30 days of entry into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District on a quarterly basis.
21. 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.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.
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. The Permittee's monitoring plan shall be implemented as follows:
Continue to record water levels and chloride concentrations in Monitor wells F-275, F-279, G-3224, G-894, and the Gragny Monitor Well. Record chloride concentrations in each Biscayne aquifer production well and Facility @ G-297 (121 & 4th). The locations of these monitor wells are shown on Exhibit 3. Construction details are shown on Exhibit 4.

SEARCHED 08/24/2010 15:27 BH

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.

Last Date for Agency Action:
August 23, 2010

Water Use Staff Review Summary

Application Number: 071012-6

Permit Number: 13-00059-W

Project Name: CITY OF NORTH MIAMI

Water Use Permit Status: MODIFICATION/RENEWAL

Environmental Resource Permit Status: NOT APPLICABLE.

Right Of Way Permit Status: NOT APPLICABLE

Location: MIAMI-DADE COUNTY, S26/T52S/R41E
S26/T52S/R42E

Applicant's Name and Address: CITY OF NORTH MIAMI
776 NE 125 ST
NORTH MIAMI, FL 33161

**FINAL APPROVED BY THE
EXECUTIVE DIRECTOR
AUGUST 23, 2010**

Purpose:

The purpose of this application is to renew and modify Water Use Permit 13-00059-W for public water supply for the City of North Miami. The applicant is requesting a raw water allocation of 6,303.55 million gallons per year (mgy) [an average of 17.27 million gallons per day (mgd)] to provide 5,509 mgy of finished water (15.09 million gallons per day) to an estimated 108,267 people within its service area through the year 2030. The applicant is requesting to withdraw up to 8.73 mgd from the Biscayne aquifer and 8.72 mgd from the Floridan aquifer system on an average annual basis.

Withdrawals are from the Biscayne aquifer via 8 existing withdrawal facilities and from the Floridan aquifer system via 10 proposed withdrawal facilities.

Project Summary

Expiration Date: August 23, 2030
Water Use Classification: Public Water Supply
Sources: **Ground Water from:** Biscayne Aquifer
 Floridan Aquifer System

Authorized Allocation:

Annual Allocation: 6,304 Million Gallons (MG)
Maximum Monthly Allocation: 616.9 Million Gallons (MG)

Specific Source Limitations:	Annual(MG)	Monthly(MG)	Daily(MG)
Biscayne Aquifer	3394.5	282.72	9.3
Floridan Aquifer System	2909.05	334.13	

Existing Withdrawal Facilities - Ground Water

- Source: Biscayne Aquifer
- 1 - 12" X 56' X 1100 GPM Well Cased to 45 Feet
 - 1 - 12" X 65' X 1500 GPM Well Cased to 57 Feet
 - 1 - 12" X 62' X 1100 GPM Well Cased to 52 Feet
 - 1 - 12" X 124' X 1500 GPM Well Cased to 100 Feet
 - 1 - 12" X 60' X 1100 GPM Well Cased to 50 Feet
 - 1 - 12" X 104' X 1500 GPM Well Cased to 90 Feet
 - 1 - 12" X 60' X 1500 GPM Well Cased to 45 Feet
 - 1 - 12" X 107' X 1100 GPM Well Cased to 99 Feet

Proposed Withdrawal Facilities - Ground Water

- Source: Floridan Aquifer System
- 10 - 16" X 1250' X 2500 GPM Wells Cased to 1000 Feet

Rated Capacity

<u>Source</u>	<u>Status Code</u>	<u>GPM</u>	<u>MGM</u>	<u>MGY</u>
Biscayne Aquifer	E	10,400	455.3	5,466
Floridan Aquifer System	P	25,000	1,094.4	13,140
Totals:		35,400	1,549.7	18,606

Project Description

The City of North Miami (the City) currently provides potable water for municipal use to an estimated 91,401 people (2009) within its service area, which is located in northeast Miami-Dade County (Exhibit 1-3). The City's water-service area incorporates approximately 40 square miles in Township 45 South, Ranges 41 and 42 East in Miami-Dade County.

EXISTING FACILITIES

The City of North Miami's Norman H. Winson Water Plant wellfield consists of 8 existing Biscayne aquifer raw water supply wells (Exhibit 3 and 4). The treatment plant uses lime softening, filtration and chloramines for disinfection and is currently permitted to treat 9.3 mgd of raw Biscayne aquifer water. The plant maintains 2 ground storage tanks with a capacity of 2.25 mgd.

HISTORY

The City has been had a public water supply consumptive use permit issued by the South Florida Water Management District (District) since 1977. The allocation issued in 1977 was for 3.39 billion gallons per year, or 9.3 mgd. The maximum-day allocation also was limited to 9.3 mgd, which corresponds to the capacity of the treatment plant. Their most recent permit was issued on December 12, 2002 for a five-year duration. When the 2002 permit was issued, the City's finished water demands exceeded the capacity (9.3 mgd) of their existing lime-softening treatment plant. The City met demands beyond their allocation through a bulk services agreement with Miami-Dade County Water and Sewer Department (MDWASD). The 2002 permit authorized the City to continue to withdraw up to 9.3 mgd from the Biscayne aquifer on an average-annual and maximum-monthly basis. Projected demands beyond the 9.3 mgd allocation (estimated to be 13.44 mgd on an annual basis and 16.8 mgd on a maximum-monthly basis in 2007) were met through the MDWASD Bulk Sales Agreement.

MODIFICATION REQUEST

On October 12, 2007, the City of North Miami timely applied for a modification and renewal of their consumptive use permit. The applicant requested an allocation to provide treated water for up to 108,267 people in the year 2030. The City of North Miami worked closely with District staff in developing projections of customer demands (finished water use). The population projections were developed by analyzing the Traffic Analysis Zones with Miami-Dade County, Miami-Dade County Water and Wastewater Services Department and the District and are reflective of populations approved by the Department of Community Affairs through the prevailing Comprehensive Land Use Plan Amendment. The City is proposing to install 10 Floridan aquifer system wells (Exhibits 3 and 4) and construct a reverse-osmosis treatment plant. Upon completion of these wells and treatment system, the City intends to cease purchasing bulk treated water from MDWASD on a regular basis.

RAW WATER DEMANDS

Average Annual Demands

Based on historical water use (Exhibit 6A) and the criteria of Section 2.6.3 of the District's Basis of Review for Consumptive Use Permits (BOR), the City's projected finished per capita use rate is 139.4 gallons per capita per day. Exhibit 6B shows projected finished and raw water demands for each year through 2030 based on projected population. The projections indicate that the population of the service area will increase from 92,220 people in 2010 to 108,267 people in 2030. The total finished water demand for the year 2030 is 5,509 mgd (15.09 mgd).

Per Section 3.2.1.E of the (BOR), pumpage reports for the City were evaluated for the five years preceding April 1, 2006 and show the base condition water use was 3,185.39 mgd (average of 8.73 mgd) as shown in Exhibit 5. Analytical groundwater flow modeling was conducted in order to evaluate the

Project Description

potential impact to the regional system due to a total Biscayne aquifer withdrawal rate of 9.3 mgd (an additional 0.57 mgd over the baseline condition). Results of this modeling indicate that less than 0.1 feet of additional drawdown will occur at the nearest Lower East Coast Everglades Waterbody. Therefore, no harm to the regional system will occur as specified in Section 3.2.1.E of the BOR (Exhibit 11F).

All water required to meet the service area demands beyond the recommended Biscayne aquifer source limit of 9.3 mgd will be provided through the bulk sales agreement with MDWASD until the proposed Floridan aquifer system treatment facility is completed. The City estimates the wells and treatment facility will be completed by the end of 2018. Water from the Floridan aquifer system will be treated by reverse osmosis technology, which typically results in up to 25 percent loss of the raw water in order to produce potable water. The efficiency of the lime-softening plant results in a 2 percent treatment loss for Biscayne aquifer withdrawals.

The total annual projected finished demand of 5,509 mgd (15.09 mgd) will be met through the withdrawal of 3,394.5 mgd (9.3 mgd) of raw Biscayne aquifer water (9.11 mgd finished water) and approximately 2,909 mgd (7.97 mgd) of raw Floridan aquifer system water (5.98 mgd finished water), for a total raw water allocation of 6,303.55 mgd. Exhibit 6B provides a more detailed description of how these quantities are derived.

Maximum-Monthly Demands

The ratio used to project the maximum monthly allocation water use to the average monthly water use is 1.15 to 1, as per Section 2.6.4 of the BOR (Exhibit 6A). Utilizing this ratio, the projected maximum-monthly finished-water demand will be about 527.6 million gallons per month (mgm) [17.35 mgd] in the year 2030.

This maximum withdrawal rate from the Biscayne aquifer of 9.3 mgd continues with this permit modification due to the potential for saline water intrusion. Treatment of this water results in a finished production of 9.11 mgd. The balance of finished demand, to be met with withdrawals from the Floridan aquifer system, is 8.24 mgd. Approximately 10.99 mgd of raw Floridan water is necessary to produce this finished volume.

Prior to completion of the reverse-osmosis treatment plant, estimated to be completed in 2018, additional treated water will be supplied through the MDWASD bulk-sales agreement. Once the reverse-osmosis treatment plant comes on-line, this additional quantity of water will be derived from the Floridan aquifer system. Exhibit 7 summarizes these demand calculations.

FLORIDAN AQUIFER IMPACT ASSESSMENT MODEL

In order to assess impacts from the proposed Floridan aquifer system withdrawals, the City submitted analytical modeling to define the area encompassed by the 1-foot drawdown contour. A Winflow groundwater flow model (Environmental Simulations, Inc. 1995) was used to simulate a Floridan aquifer system withdrawal of 12.0 mgd. The model was set up to simulate 10 wells, each withdrawing 833.3 gallons per minute (1.2 mgd or 160,428 cubic feet per day) for 90 days. Winflow is capable of simulating withdrawals from a single layer with a leaky confining unit which are conditions found in the upper Floridan aquifer in the project vicinity.

Aquifer coefficients obtained from an aquifer performance test conducted by the District in Hollywood (District C-13 Floridan aquifer testing site) were used for the model. These parameters were determined to be the most reliable aquifer coefficients in the area because they were calculated from a full-scale aquifer performance test. The following aquifer coefficients were established: Transmissivity, 24,064 feet-squared per day; storage coefficient, 0.0002; leakance, 0.00014 foot/day-foot.

EXAMINED 08/24/2010 4:57 PM

Project Description

The modeling predicts the 1-foot drawdown contour extends approximately 6 miles from the center of the wellfield. Four Floridan aquifer wells owned by the City of North Miami Beach (Water Use Permit 13-00060-W) were identified within the cone of depression defined by the 1-foot drawdown contour. Maximum drawdown in the Floridan aquifer from the City's proposed pumpage is estimated to be about 27.5 feet below the background static water level (which is expected to be about 30 feet above sea level) at the wellfield and about 4 feet at the nearest North Miami Beach well (Exhibit 11C). It should be noted that these results are conservative, as the recommended maximum-monthly withdrawal rate from limit from the Floridan aquifer system is about 1.0 mgd less than the modeled withdrawal rate.

Impact Assessments

Water Resource Availability

Biscayne Aquifer

Per United States Geological Survey Water-Resources Investigations Report 90-4108, the base of the Biscayne aquifer is at approximately -160 feet National Geodetic Vertical Datum (NGVD). As part of the review for previous permit renewals analytical modeling was performed. Using the Theis analytical solution, a model scenario was conducted for 90 days and no recharge at the maximum pumping rate of 9.3 mgd. This modeling predicted a maximum drawdown within the wellfield of approximately 3 feet. This drawdown is quite conservative, as it does not include the recharge effects of rainfall, canals, and other surface water bodies. Water level data collected from the City's monitoring wells (F-275, F-279, G3224, G-894), located east of the wellfield, indicate that water levels range between +6 to +8 feet NGVD (Exhibits 10a-10d). Therefore, more than 160 feet of drawdown is available. Based upon historical water level data, the potential for harm to occur to water resource availability as a result of the recommended allocation is considered minimal.

Floridan Aquifer System

The top of the Floridan aquifer system occurs at about -1,000 feet NGVD. Maximum drawdown in the aquifer is estimated to be about 27.5 feet below the background static water level which is expected to be about 30 feet above sea level. Over 900 feet of drawdown will remain available. Therefore, the potential for harm to occur to the water resource availability of the aquifer as a result of the withdrawal of the recommended allocation is considered minimal.

Existing Legal Users

Biscayne Aquifer

The nearest existing legal user of the Biscayne aquifer is Brothers & Sons Service Station (13-00570-W), located about 550 feet to the southwest of the western-most City of North Miami Beach production well. Previous modeling indicates that a maximum of about 3 feet of drawdown could occur at this location as a result of the maximum pumpage from the City's Biscayne aquifer wells. The City has been pumping at a rate close to this maximum for more than 10 years with no reported problems from any existing legal users in the area. The potential for harm to occur to existing legal users as a result of the withdrawal of the recommended allocation is considered minimal.

Floridan Aquifer System

The nearest existing legal user of the Floridan aquifer system is the City of North Miami Beach (13-00060-W) The modeling indicates a maximum drawdown of about 4 feet could occur at the nearest City of North Miami Beach Floridan aquifer system well. This magnitude of drawdown is not expected to impact the ability of the City of North Miami Beach to withdraw water from the Floridan aquifer system consistent with their permit. Therefore, the potential for harm to occur to existing legal users as a result of the withdrawal of the recommended allocation is considered minimal.

071012-6
CITY OF NORTH MIAMI
08/23/2010 13:07 PM

Saline Water Intrusion

Biscayne Aquifer

The primary resource issue for this permittee is the potential for inducing saline water intrusion. As discussed previously, the City has historically been limited to a maximum withdrawal rate of 9.3 mgd in order to minimize the potential for saline water intrusion. The City has typically been operating its wellfield at an average rate of about 7.5 to 8.7 mgd for about 25 years (Exhibit 8). The City's saline intrusion monitoring network has shown that chloride concentrations generally have not increased during this time period.

The Gratigny Monitor Well was installed as a condition of the previous permit and has been monitored for chlorides since 2002. This well is screened from 145-155 feet below land surface and is located about 8,000 feet to the east of the eastern-most Biscayne aquifer production well. This well was designed to intercept the top of the "salt water wedge" that occurs in the Biscayne aquifer in eastern Miami-Dade County. Since 2003, the chloride concentration in this well has trended between 800 and 1,600 milligrams per liter (mg/L). The higher chloride readings have occurred at the end of the dry season in the last three years (2008-2010).

In April 2001, saline water monitor Well F-279 (Exhibit 9D) showed an increase in chloride concentration, up to 3,600 mg/L, from the historic levels of 30 to 50 mg/L. Well F-279 is completed at a depth of 117 feet below land surface at the approximate base of the lower productive zone of the Biscayne aquifer. District files indicate that this well sustained some damage at the well head around this time. It is not known if this damage had any effect on chloride readings. It should also be noted that this time frame corresponds to the end of a significant drought in southern Florida. Chloride readings in this monitor well have been consistently measured in the 3,000 to 3,700 mg/L range since April 2001. Monitor Well F-279 is located about 1,000 feet east of the C-8 (Biscayne Canal) and about 9,000 feet due east of the wellfield. The C-8 Canal is held at an elevation of 1.8 to 2.1 feet NGVD by structure S-28, located downstream from this site.

The chloride data do not indicate a significant increase in movement of the saline water interface in the last ten years. However, the chloride data from well F-279, as well as the other chloride monitor wells, shall be monitored due to the proximity of the City's wells to the saline water interface. Chlorides in the remaining monitor wells and the eight production wells have remained consistently low, in the 30-60 mg/L range (Exhibits 9A-9M).

Limiting the withdrawal rate to the historical allocation, along with continued chloride and water level monitoring, should provide reasonable assurance that significant saline water intrusion will not occur.

Floridan Aquifer System

The upper Floridan aquifer of the Floridan aquifer system, as indicated by the chloride values in the District's C-13 aquifer performance test (1,000-1,200 foot interval), is saline with a chloride concentration of approximately 4,200 mg/L. The chloride concentration of water obtained in the aquifer performance test from the deeper middle Floridan aquifer zone (1,500-1,600 foot interval) was approximately 2,800 mg/L. Due to better water quality in the 1,500 to 1,600 foot zone, and the hydrologic separation from the saline water in the deeper lower Floridan aquifer, the potential for saline water intrusion due to upconing is considered minimal.

Wetlands

Biscayne Aquifer

There are no wetlands located within the cone of depression of the City's Biscayne aquifer wellfield. Therefore, the potential for harm to occur to wetlands as a result of the recommended allocation is considered minimal.

071012-6
CITY OF NORTH MIAMI
13-00059-W
August 23, 2010

Floridan Aquifer System

The Floridan aquifer system is isolated from the surficial aquifer system's environmental features by the confining beds of the Hawthorn Formation. Therefore, the potential for harm to occur to wetlands as a result of the withdrawal of the recommended allocation is considered minimal.

Source Of Pollution

Biscayne Aquifer

This application is for the continuation of a previously permitted use of Biscayne aquifer water with no reported problems involving the induced movement of pollutants. Therefore, the potential for induced movement of pollutants to occur as a result of the recommended allocation is considered minimal.

Floridan Aquifer System

The Floridan aquifer system is isolated from the surficial aquifer system's environmental features by the confining beds of the Hawthorn Formation. Therefore, the potential for movement of contaminants, if present, from known pollution sources as a result of the withdrawal of the recommended allocation is considered minimal.

Other Impacts

Biscayne Aquifer

EXISTING OFFSITE LAND USES

Pursuant to Section 3.6.2 of the BOR, the use is not expected to result in significant reductions in water levels on the property of an existing off-site land use to the extent that the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values), damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or land collapse or subsidence caused by reduction in water levels associated with consumptive use.

Additional Information

CONDITIONS OF ISSUANCE

Pursuant to Limiting Condition 17, 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 of the BOR. 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.

Pursuant to Limiting Condition 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.

Pursuant to Limiting Condition 21, unaccounted-for distribution losses shall be determined for the entire distribution system on a monthly basis and reported to the District annually.

Pursuant to Limiting Condition 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 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 and a comparison of the permitted allocation and the

Additional Information

allocation that would apply to the project based on current District allocation rules and updated population and per capita use rates.

WATER CONSERVATION

A: Permanent Irrigation Ordinance: The City is in the process of drafting and approving a Permanent Irrigation Ordinance. As per Limiting Condition 24, a permanent irrigation ordinance shall be adopted and effective no later than August 31, 2011.

B: Xeriscape Ordinance: The City is in the process of adopting a Florida Friendly Landscape Ordinance. As per Limiting Condition 24, this ordinance shall be adopted no later than August 31, 2011.

C: Ultra-Low Volume Plumbing Fixture Ordinance: North Miami Code Sec. 5-16. Adoption of Florida Building Code. The Florida Building Code, as adopted and amended by the state, shall be the building code for the city. (Ord. No. 1253, § 1, 4-8-08; Ord. No. 1262, § 1, 7-8-08)

D: Water Conservation Rate Structure: The City is conducting a study towards the adoption of a Tiered Water Conservation Rate Structure. As per Limiting Condition 24, a tiered Water Conservation Rate Structure shall be implemented no later than August 31, 2011.

E: Leak Detection Program: The City has provided The City has provided the following description of their leak detection program:

First a section of the distribution system is surveyed using Aqua 40 Loggers. The data from the logger are down loaded into Aqua 40 program, when a leak is detected the date is recorded. Next using correlation equipment the leak is located and recorded. That information is then passed on to the Distribution Department to be scheduled for repairs. When the leak is uncovered we visually estimate the gallons per minute, that information and the date repaired is recorded. Using this information the amount water lost is calculated.

F: Rain Sensor Device Ordinance: The City is currently revising their Land Development Regulations (Ordinance No. 1278, adopted April 28, 2009) to comply with current District criteria. As per Limiting Condition 24, the City shall adopt a Rain Sensor Ordinance by August 31, 2011.

G: Water Conservation Education Program: The City provides the following services; in-school programs, printed materials, public service announcements, AWWA Developed in-house.

H: Reclaimed Water: The City does not operate a wastewater treatment plant. The City will continue to explore water reuse opportunities with the SFWMD, MDWASD and the City of North Miami Beach.

MONITORING

Pursuant to Limiting Condition 28, the Permittee shall continue to submit monitoring data in accordance with the approved saline water intrusion monitoring program for this project. Water levels and chloride concentrations shall be monitored in wells F-275, F-279, G-3224, G-894, and the Gratigny Monitor Well. In addition, chloride concentrations shall be measured from each Biscayne aquifer production well and the facility at G-297. Data is to be collected monthly and submitted quarterly. The locations of these monitor wells are shown on Exhibit 3. Construction details are given in Exhibit 4.

WELLFIELD OPERATION

Wells 3 through 8 are monitored and controlled by the use of a telemetry system. Each well site is visually inspected and maintained on a daily basis. The combination of wells in operation fluctuates depending on

UNCLASSIFIED 08/24/2010 13:57 GH

Additional Information

the demand. The schedule is set up to rotate down-time so each of Wells 3 through 8 are off approximately the same amount of time. Wells 1 & 2 are on continuously since they are the only wells that have back-up generator power.

MINIMUM FLOWS AND LEVELS (MFL)

Biscayne Aquifer -The Biscayne aquifer is an MFL water body covered under a prevention strategy set forth in Chapter 40E-8, F.A.C. The Biscayne aquifer MFL is defined as the water level which results in movement of the saltwater interface landward to the extent the water quality of an established withdrawal point is insufficient to serve as a water supply source. Consumptive use permit criteria for MFLs are located in Section 3.9 of the Water Use Basis of Review. The potential for westward movement of saline water resulting from the City's withdrawals was extensively evaluated for the previous permit issuance and it was determined that a daily maximum withdrawal rate limited to no greater than 9.3 mgd from the Biscayne aquifer should not induce the westward movement of saline water. Limiting future withdrawals from the Biscayne aquifer to 9.3 mgd provides assurances that the requested allocation should not violate the MFL criteria for the Biscayne aquifer. In addition, the Water Level and Water Quality Monitoring Network has been established to detect the movement of saline water towards the City's wellfield. In the event harmful saline water intrusion occurs as a result of the City's withdrawals despite the reasonable assurances provided, the City will be required to take remedial actions as per Limiting Condition 10. Therefore, the recommended allocation is consistent with the Biscayne aquifer MFL Prevention Plan.

Everglades -The Everglades is an MFL water body under a recovery plan under Rule 40E-8.421, F.A.C. Section 3.9 of the BOR contains criteria to be evaluated to determine consistency between requested allocations and the MFL recovery plan. Under Section 3.9.1.C of the BOR, the requested use meets the requirements of the section if the use is consistent with the recovery plan in the applicable regional water supply plan (LEC, 2005-2006). Section 3.2.1.E of the BOR is a component of the recovery strategy for MFLs for the Everglades. The recommended allocation from the Biscayne aquifer is consistent with criteria contained Section 3.2.1.E of the BOR. Therefore, the recommended allocation is consistent with the Everglades MFL Recovery Plan.

REGIONAL WATER AVAILABILITY

The City's Biscayne aquifer wellfield is located between District Canals C-6 and C-7, which are considered a part of the Lower East Coast Everglades Waterbodies. In order to assess whether or not the incremental additional allocation of 0.57 mgd beyond the calculated baseline condition could induce harmful seepage from either of these Waterbodies, pursuant to Section 3.2.1.E.2 of the BOR, an impact evaluation was conducted. The Theis (1935) analytical solution contained within the Winflow (Environmental simulations, Inc., 1995-2009) groundwater modeling software was utilized to demonstrate compliance with this criteria.

Drawdown contours resulting from this simulation are shown on Exhibit 11F. The net additional drawdown resulting from this withdrawal shows that the 0.1-foot drawdown contour line does not extend into either of these Waterbodies. Section 1.7.5.2 of the BOR considers a drawdown of 0.1 feet as the extent of the cone of influence. Therefore, the additional allocation, beyond the calculated baseline condition, does not cause a net increase in the volume or cause a change in timing on a monthly basis of water from District Canals C-6 or C-7 over the base condition water use that existed as of April 1, 2006.

PERMIT DURATION

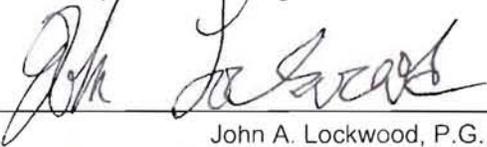
Pursuant to Section 1.7.2 of the BOR, Staff recommends a 20-year permit duration.

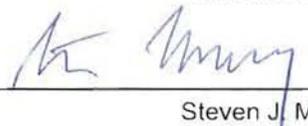
Recommendations

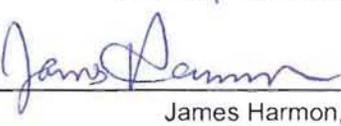
Project Name: CITY OF NORTH MIAMI
Application Number: 071012-6
Permit Number: 13-00059-W

Recommendations to Executive Director:

Staff recommends the modification and renewal of a Water Use Permit for public water supply for the City of North Miami Service Area. Withdrawals are from from the Biscayne aquifer via eight existing withdrawal facilities and from the Floridan aquifer system via 10 proposed withdrawal facilities. The use is reasonable-beneficial, will not interfere with any presently existing legal use of water and is consistent with the public interest. The use is further subject to 28 limiting conditions.

Application Reviewer:  Date: 8-17-10
John A. Lockwood, P.G.

Supervisor:  Date: 8/17/10
Steven J. Memberg, P.G.

Water Use Division:  Date: 8/17/10
James Harmon, P.G.

SCANNED ON 04/24/2010 13:27 54

Limiting Conditions

- 1. This permit shall expire on August 23, 2030.
- 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 6304 MG.

Maximum monthly allocation shall not exceed 616.855 MG.

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

Biscayne Aquifer-: 3,395 MG.
 Floridan Aquifer System-: 2,909 MG.

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

Biscayne Aquifer-: 282.72 MG.
 Floridan Aquifer System-: 334.13 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
 c/o MARK E. COLLINS
 776 NE 125 ST
 NORTH MIAMI, FL 33161

- 7. Withdrawal Facilities:

Ground Water - Existing:

- 1 - 12" X 124' X 1500 GPM Well Cased To 100 Feet
- 1 - 12" X 62' X 1100 GPM Well Cased To 52 Feet

SCANNED ON 08/23/2010 11:57 AM

Limiting Conditions

- 1 - 12" X 107' X 1100 GPM Well Cased To 99 Feet
- 1 - 12" X 60' X 1500 GPM Well Cased To 45 Feet
- 1 - 12" X 56' X 1100 GPM Well Cased To 45 Feet
- 1 - 12" X 60' X 1100 GPM Well Cased To 50 Feet
- 1 - 12" X 104' X 1500 GPM Well Cased To 90 Feet
- 1 - 12" X 65' X 1500 GPM Well Cased To 57 Feet

Ground Water - Proposed:

- 10 - 16" X 1250' X 2500 GPM Wells Cased To 1000 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,

071012-6 09/24/2010 10:37 AM

Limiting Conditions

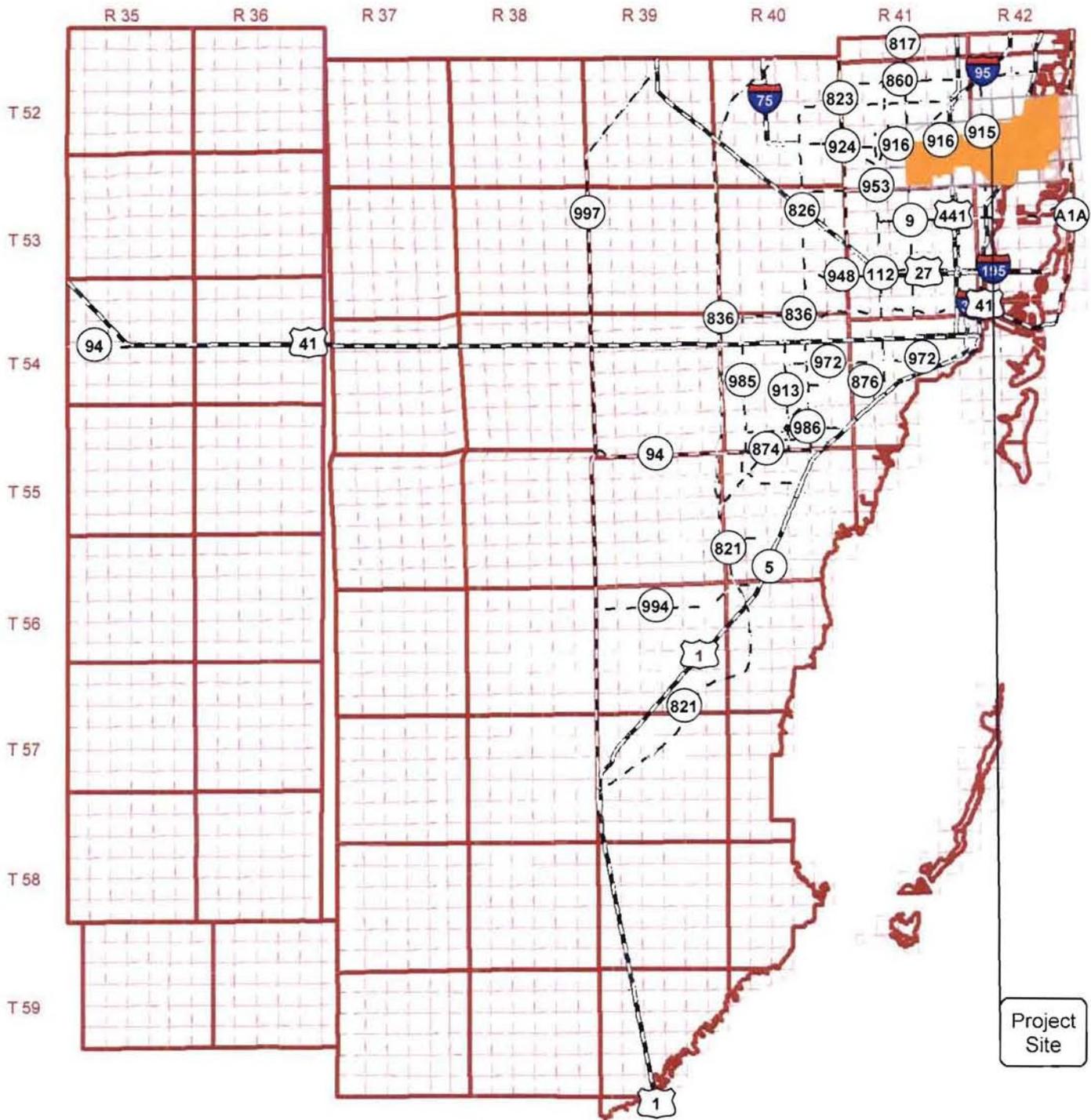
- (2) Reduction in water levels that harm the hydroperiod of wetlands,
 - (3) Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,
 - (4) Harmful movement of contaminants in violation of state water quality standards, or
 - (5) Harm to the natural 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, Environmental Resource Compliance, 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. The Permittee shall notify the District within 30 days of entry into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District on a quarterly basis.
21. 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.
22. Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

Limiting Conditions

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. The Permittee's monitoring plan shall be implemented as follows:
Continue to record water levels and chloride concentrations in Monitor wells F-275, F-279, G-3224, G-894, and the Gratigny Monitor Well. Record chloride concentrations in each Biscayne aquifer production well and Facility @ G-297 (121 & 4th). The locations of these monitor wells are shown on Exhibit 3. Construction details are shown on Exhibit 4.



Project Site



MIAMI-DADE COUNTY, FLORIDA

Legend

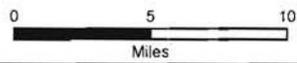
- Application
- Application Sections

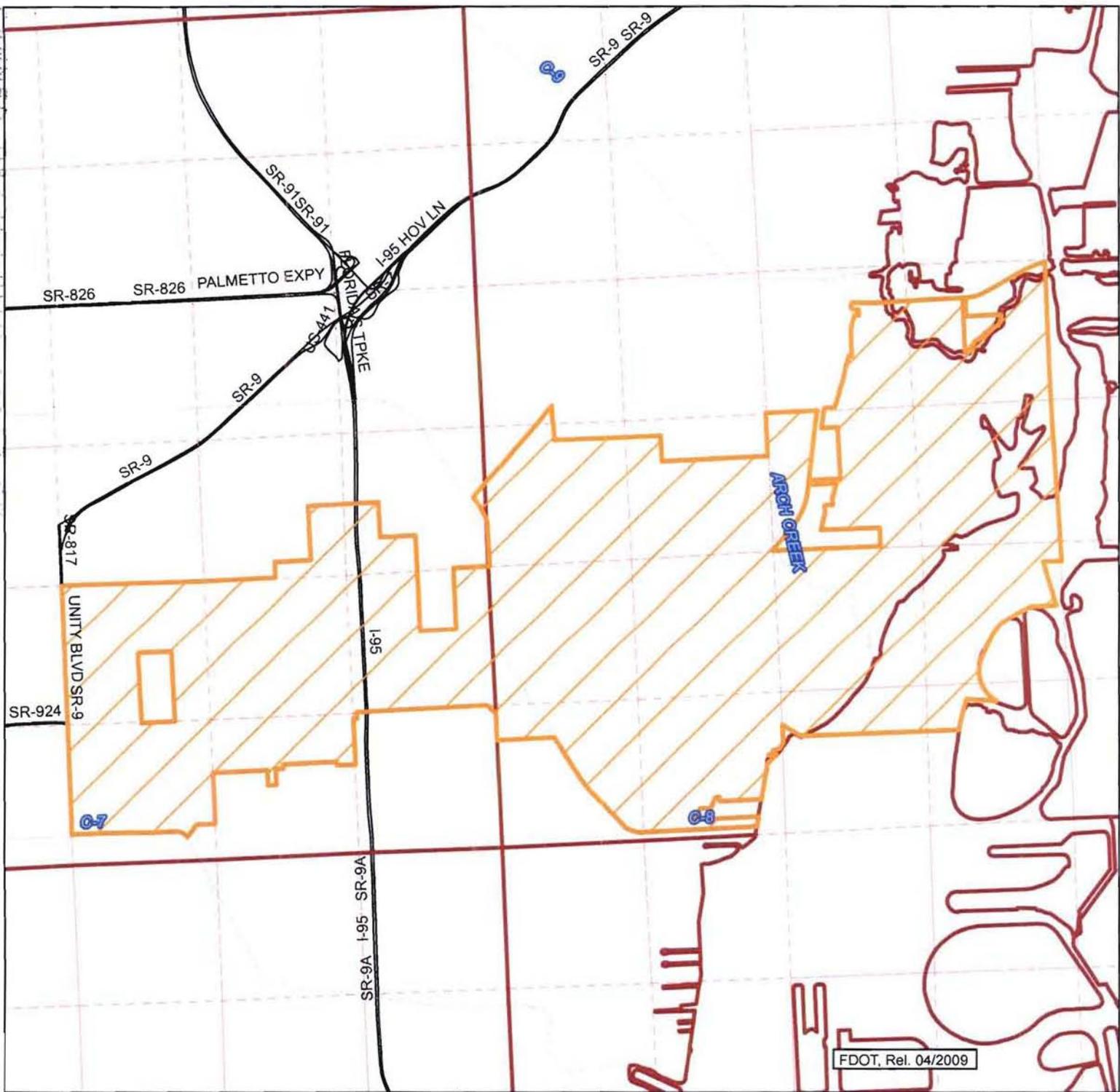
Map Date: 6/18/2010

Application Number: 071012-6

Permit Number: 13-00059-W

Project Name: CITY OF NORTH MIAMI





FDOT, Rel. 04/2009



MIAMI-DADE COUNTY, FLORIDA

Legend

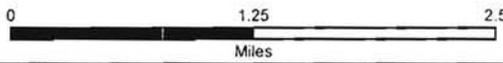
 Application

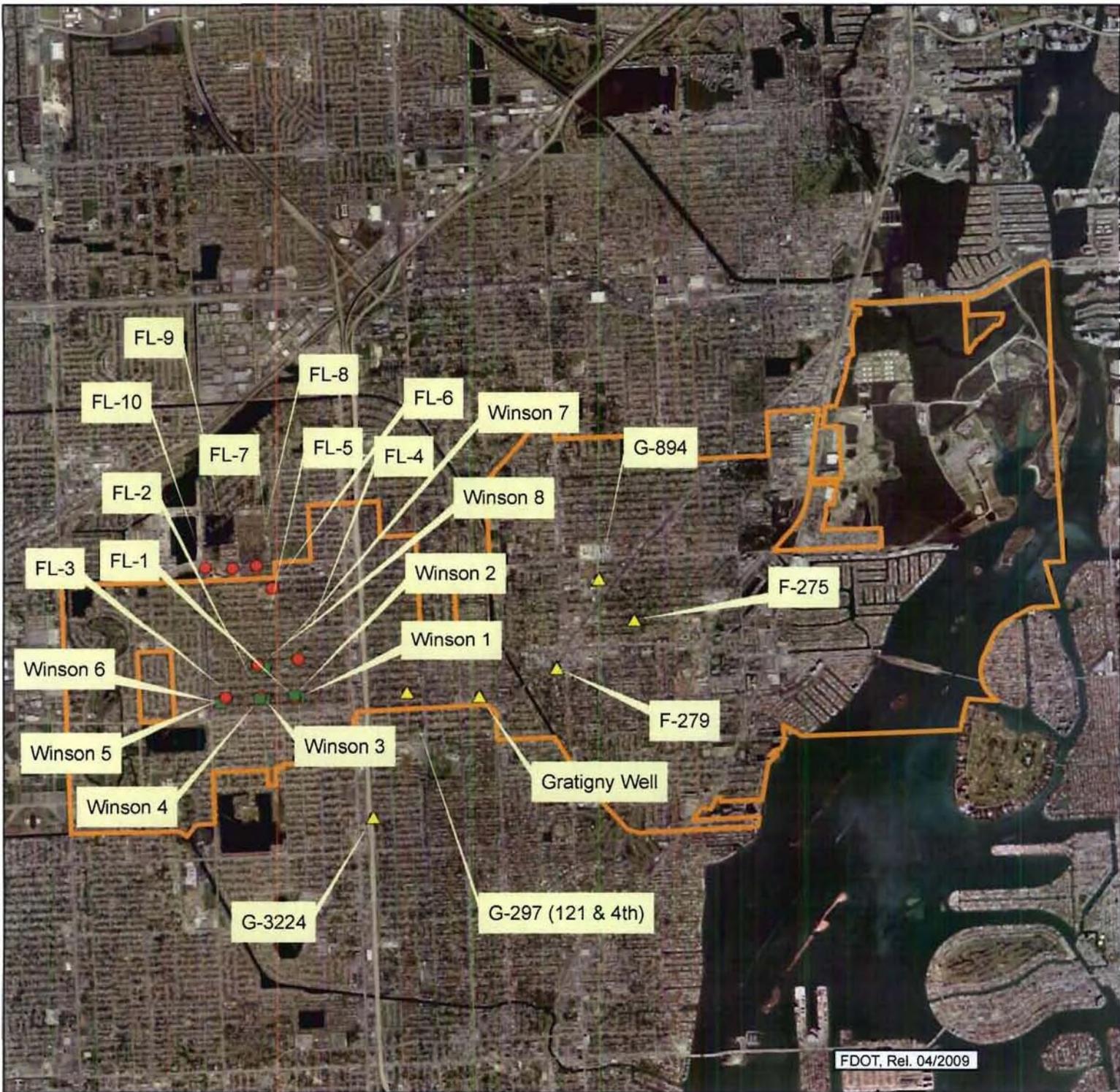
Map Date: 6/18/2010

Application Number: 071012-6

Permit Number: 13-00059-W

Project Name: CITY OF NORTH MIAMI





MIAMI-DADE COUNTY, FLORIDA

-  Application
-  Monitor Wells
-  FAS Wells
-  Biscayne Aquifer Wells

Application Number: 071012-6

Permit Number: 13-00059-W

Project Name: CITY OF NORTH MIAMI

Map Date: 6/17/2010



TABLE - A
Description Of Wells.

Application Number: 071012-6

Well ID	45234	45237	45238	45239	45240	45241
Name	Winson 1	Winson 2	Winson 3	Winson 4	Winson 5	Winson 6
Map Designator	1	2	3	4	5	6
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	12	12	12	12
Total Depth(feet)	124	104	60	65	107	56
Cased Depth(feet)	100	90	45	57	99	45
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	turbine	turbine	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)	-30	-25	-25	-27	-27	-27
Pump Capacity(GPM)	1500	1500	1500	1500	1100	1100
Year Drilled	1962	1962	1962	1962	1962	1962
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	913699	913536	912425	912235	910988	910789
Feet North	564780	564851	564711	564720	564772	564562
Accounting Method	flow meter					
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply Monitor					
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: 071012-6

Well ID	45242	45243	137484	137485	137486	137487
Name	Winson 7	Winson 8	F-275	F-279	G-3224	G-894
Map Designator	7	8				
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	4	6	2	2
Total Depth(feet)	60	62	50.8	115.3	19.2	74.15
Cased Depth(feet)	50	52				
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0				
To	0	0				
Pumped Or Flowing	P	P				
Pump Type	submersible	submersible	none	none	none	none
Pump Int. Elev. Feet (NGVD)						8.78
Feet (BLS)	-27	-27				
Pump Capacity(GPM)	1100	1100	0	0	0	0
Year Drilled	1962	1962				
Planar Location						
Source	REVIEWER	REVIEWER				
Feet East	912446	912115	926200.8	923308.3	916465	924885.208
Feet North	565906	565914	567787.7	565901.8	560276.4	569334.439
Accounting Method	flow meter	flow meter	none	none	none	none
Use Status	Primary	Primary	Monitor	Monitor	Monitor	Monitor
Water Use Type	Public Water Supply	Public Water Supply	Monitor	Monitor	Monitor	Monitor
	Monitor	Monitor	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Water Shortage
	Biscayne Aquifer	Biscayne Aquifer				Monitoring Facility
Aquifer						Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **071012-6**

Well ID	137489	153705	255446	255447	255448	255449
Name	Gratigny Well	G-297 (121 & 4th)	FL-1	FL-2	FL-3	FL-4
Map Designator	Gratigny		F-1	F-2	F-3	F-4
FLUWID Number						
Well Field						
Existing/Proposed	E	E	P	P	P	P
Well Diameter(Inches)	2	2	16	16	16	16
Total Depth(feet)	154.35	107.6	1250	1250	1250	1250
Cased Depth(feet)			1000	1000	1000	1000
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing			P	P	P	P
Pump Type	none	none	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	2500	2500	2500	2500
Year Drilled						
Planar Location						
Source						
Feet East	920419.6	917715.3	913535	912270	910960	913655
Feet North	564833.9	564979	564765	564825	564765	566230
Accounting Method	none	none	totalizer	totalizer	totalizer	totalizer
Use Status	Monitor	Monitor	Primary	Primary	Primary	Primary
Water Use Type	Monitor	Monitor	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Aquifer Unspecified	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System	Floridan Aquifer System

TABLE - A
Description Of Wells.

Application Number: 071012-6

Well ID Name	255450	255457	255458	255459	255460	255461
Map Designator	FL-5	FL-6	FL-7	FL-8	FL-9	FL-10
FLUWID Number	F-5	FL-6	F-7	F-8	F-9	F-10
Well Field						
Existing/Proposed	P	P	P	P	P	P
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	1250	1250	1250	1250	1250	1250
Cased Depth(feet)	1000	1000	1000	1000	1000	1000
Facility Elev. (ft. NGVD)						
Screened Interval From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	submersible	submersible	submersible	submersible	submersible	submersible
Pump Int. Elev. Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2500	2500	2500	2500	2500	2500
Year Drilled						
Planar Location Source						
Feet East	912165	912730	912690	912110	911220	910200
Feet North	566010	568982	568982	569825	569725	569745
Accounting Method	totalizer	totalizer	totalizer	totalizer	totalizer	totalizer
Use Status	Secondary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply					
Aquifer	Floridan Aquifer System					

PERMIT_NO	13-00059-W	13-00059-W
Permit name	North Miami	North Miami
fac grp name	North Miami	North Miami
Source	Biscayne Aquifer	
Apr-01	205.50	
May-01	206.51	largest value
Jun-01	191.80	3185.39
Jul-01	195.68	largest value mgd
Aug-01	202.97	8.73
Sep-01	209.40	dates
Oct-01	213.26	Aug-02
Nov-01	228.99	Jul-03
Dec-01	232.12	
Jan-02	209.71	
Feb-02	198.21	
Mar-02	264.43	2558.58
Apr-02	267.74	2620.82
May-02	268.30	2682.61
Jun-02	239.69	2730.50
Jul-02	266.41	2801.23
Aug-02	275.32	2873.58
Sep-02	262.29	2926.47
Oct-02	285.51	2998.72
Nov-02	263.05	3032.78
Dec-02	254.91	3055.57
Jan-03	254.03	3099.89
Feb-03	243.81	3145.49
Mar-03	265.21	3146.27
Apr-03	275.22	3153.75
May-03	274.71	3160.16
Jun-03	261.19	3181.66
Jul-03	270.14	3185.39
Aug-03	264.67	3174.74
Sep-03	254.86	3167.31
Oct-03	260.12	3141.92
Nov-03	250.24	3129.11
Dec-03	258.20	3132.40
Jan-04	247.75	3126.12
Feb-04	228.79	3111.10
Mar-04	255.05	3100.94
Apr-04	247.16	3072.88
May-04	262.09	3060.26
Jun-04	257.84	3056.91
Jul-04	262.73	3049.49
Aug-04	266.04	3050.86
Sep-04	229.03	3025.03
Oct-04	245.28	3010.19
Nov-04	246.46	3006.41
Dec-04	268.02	3016.23
Jan-05	264.41	3032.89
Feb-05	243.26	3047.36
Mar-05	276.47	3068.77
Apr-05	269.89	3091.51
May-05	281.30	3110.72
Jun-05	262.24	3115.12
Jul-05	274.71	3127.10
Aug-05	268.88	3129.94
Sep-05	249.00	3149.91
Oct-05	243.29	3147.92
Nov-05	252.75	3154.21
Dec-05	269.60	3155.79
Jan-06	254.69	3146.07
Feb-06	248.08	3150.89
Mar-06	250.89	3125.32
Apr-06	252.70	3108.13
May-06	252.20	3079.02
Jun-06	219.03	3035.81
Jul-06	248.38	3009.47
Aug-06	241.35	2981.94
Sep-06	265.15	2998.09
Oct-06	255.71	3010.51
Nov-06	191.11	2948.86
Dec-06	230.47	2909.73

**City of North Miami Water Use Permit (SFWMD)
Per Capita Use Per MORs and MDWASD (Fin. Water)**

	2005	2006	2007	2008*	2009	Average 2005 - 2009
Population in Service Area**	88,732	89,429	90,125	90,586	91,401	90,055
Per Capita Usage (Annual Average) (gpcd)	145.59	147.31	142.94	132.02	129.12	139.40
Total Annual Use (Finished Water- From Winson WTP) (MG)	3172.447	2923.192	2823.412	2393.035	2905.909	2843.599
Total Annual Use (Finished Water- From MDWASD) (MG)	1542.903	1885.33	1878.664	1983.912	1413.62	1740.89
Total Annual Use (Finished Water- Total) (MG)	4715.350	4808.522	4702.076	4376.947	4319.533	4584.486
Average Month Use (Finished Water- From Winson WTP) (MG)	264.371	243.599	235.284	199.420	242.159	236.967
Average Month Use (Finished Water- From MDWASD) (MG)	128.575	157.111	156.555	165.326	117.802	145.074
Average Month Use (Finished Water- Total) (MG)	392.946	400.710	391.839	364.746	359.961	382.040
Max Month Usage (Finished Water- From Winson WTP) (MG)	279.399	268.230	269.184	217.312	253.163	257.458
Max Month Usage (Finished Water- From MDWASD) (MG)	147.964	208.281	190.656	222.462	146.969	183.267
Max Month Usage (Finished Water- Total) (MG)	427.363	476.511	459.840	439.774	400.132	440.724
Ratio Max:Average (Finished Water- From Winson WTP)	1.06	1.10	1.14	1.09	1.05	1.09
Ratio Max:Average (Finished Water- From Winson WTP)	1.15	1.33	1.22	1.35	1.25	1.26
Ratio Max:Average (Finished Water- From Winson WTP)	1.09	1.19	1.17	1.21	1.11	1.15

* Leap Year

** Population Based on Interpolation of Data from Nmpopulationworksheet New Service Area

North Miami Service Area Average Day Water Demand Projections (Showing Treatment Losses)

Calendar Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Projected Population in Service Area (in thousands)	92.22	93.03	93.84	94.66	95.47	96.29	97.1	97.92	98.73	99.53	100.36	101.18	101.99	102.81	103.4	104.21	105.02	105.83	106.64	107.46	108.27
Total Finished Water Per Capita (gpc-d)	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40	139.40
Total Finished Water Demand (MGD)	12.86	12.97	13.08	13.20	13.31	13.42	13.54	13.65	13.76	13.88	13.99	14.10	14.22	14.33	14.41	14.53	14.64	14.75	14.87	14.98	15.09
Total Finished Water Production Capacity (MGD)	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11
Finished Water Purchased from MDWASD (MGD)	3.74	3.85	3.97	4.08	4.19	4.31	4.42	4.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biscayne Aquifer																					
Total Lime Softened Finished Water Produced (MGD)	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11
Losses from Treatment (%)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Lime Softened Treatment Losses (MGD)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Biscayne Raw Water Demand (MGD)	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30
Floridan Aquifer																					
Total Membrane Treated Finished Water Produced (MGD)	0	0	0	0	0	0	0	0	4.65	4.76	4.88	4.99	5.10	5.22	5.30	5.41	5.53	5.64	5.75	5.87	5.98
Losses from Treatment (%)	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Losses from Treatment (MGD)	0	0	0	0	0	0	0	0	1.55	1.59	1.63	1.66	1.70	1.74	1.77	1.80	1.84	1.88	1.92	1.96	1.99
Floridan Raw Water Demand (MGD)	0	0	0	0	0	0	0	0	6.20	6.35	6.50	6.65	6.80	6.96	7.07	7.22	7.37	7.52	7.67	7.82	7.97
Raw Water (Biscayne + Floridan Aquifers) Totals*																					
Total Finished Water Demand (Biscayne + Floridan Aquifers) - Does not include MDWASD Supply	9.11	9.11	9.11	9.11	9.11	9.11	9.11	9.11	13.76	13.88	13.99	14.10	14.22	14.33	14.41	14.53	14.64	14.75	14.87	14.98	15.09
Total Losses From Treatment (MGD)	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	1.74	1.77	1.81	1.85	1.89	1.93	1.95	1.99	2.03	2.07	2.10	2.14	2.18
Total Raw Water Demand from Combined Sources (MGD)	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	15.50	15.65	15.80	15.95	16.10	16.26	16.37	16.52	16.67	16.82	16.97	17.12	17.27

Legend:

Year 2018 – WTP expansion and Floridan Wells on line
 Years 2012, 2016, 2020 and 2024 are leap years
 * Does not include MDWASD Source Water

PROJECTED MAXIMUM-MONTHLY ALLOCATION CALCULATION

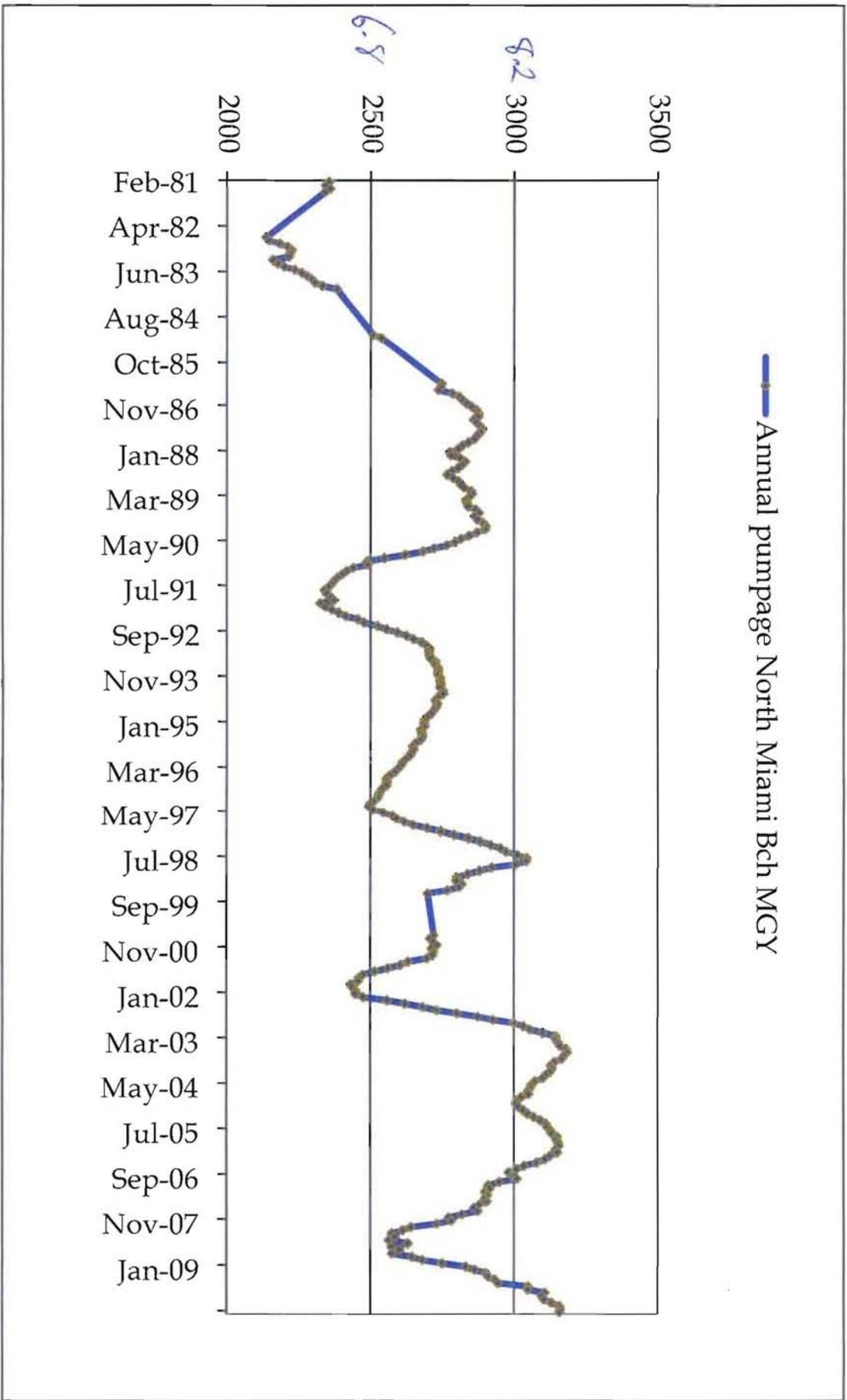
ALL VALUES IN MGD

TOTAL FINISHED WATER DEMAND 15.09
MAX-MONTH FINISHED DEMAND 17.3535 15.09x1.15=17.3535

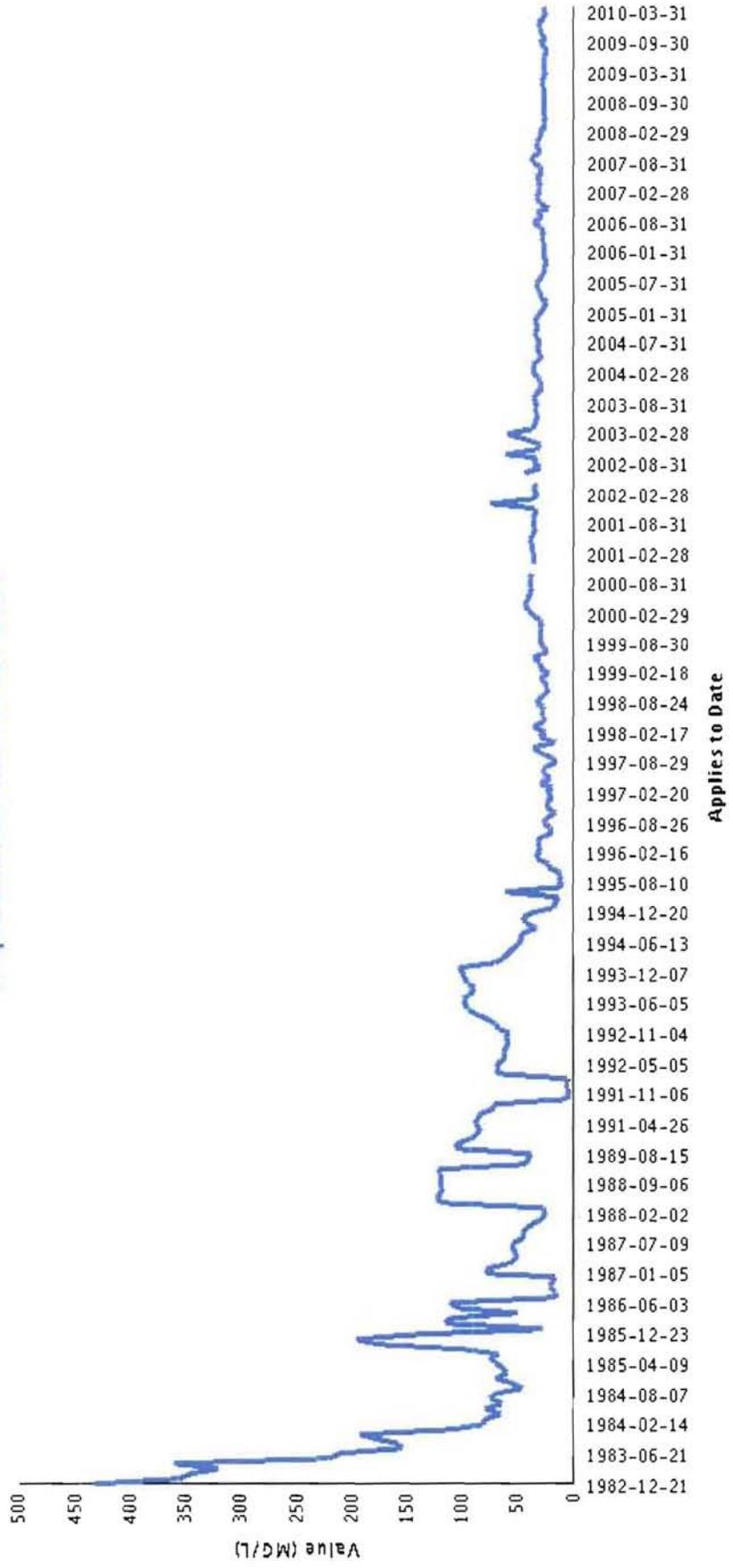
17.3535 MGD TO BE DERIVED AS FOLLOWS:

BISCAYNE AQUIFER
FINISHED WATER 9.11 (9.3x0.98) - (98% TREATMENT EFFICIENCY)
RAW WATER (SOURCE LIMITED) 9.3

FLORIDAN AQUIFER
(REMAINING DEMAND FROM FLORIDAN) 8.2435
FINISHED WATER 8.2435 (17.3535-9.11=8.2435) - 75% TREATMENT EFFICIENCY)
RAW WATER (8.2435/0.75)=10.9913 - RAW WATER DEMAND



Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: Chloride for G894



Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: Chloride for G3224

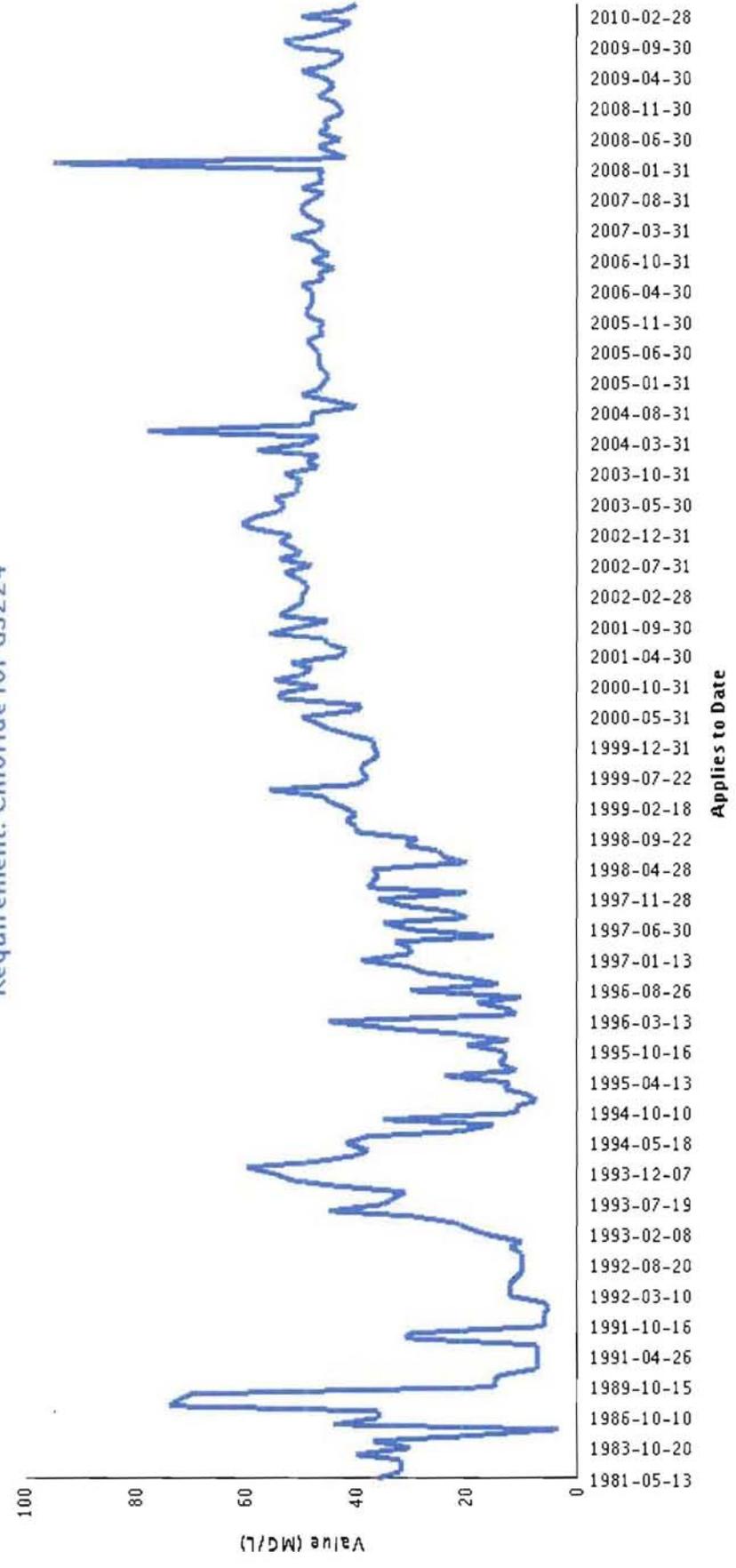
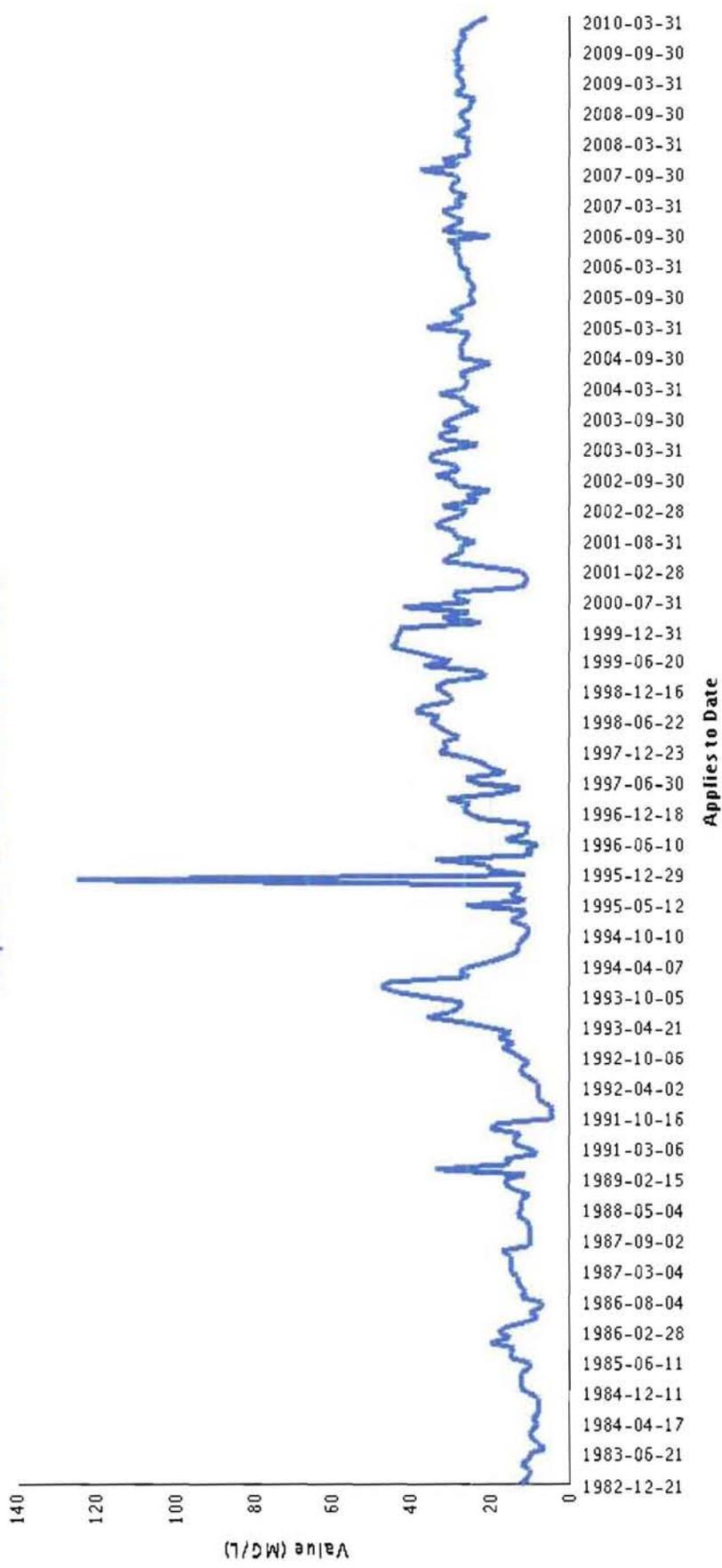
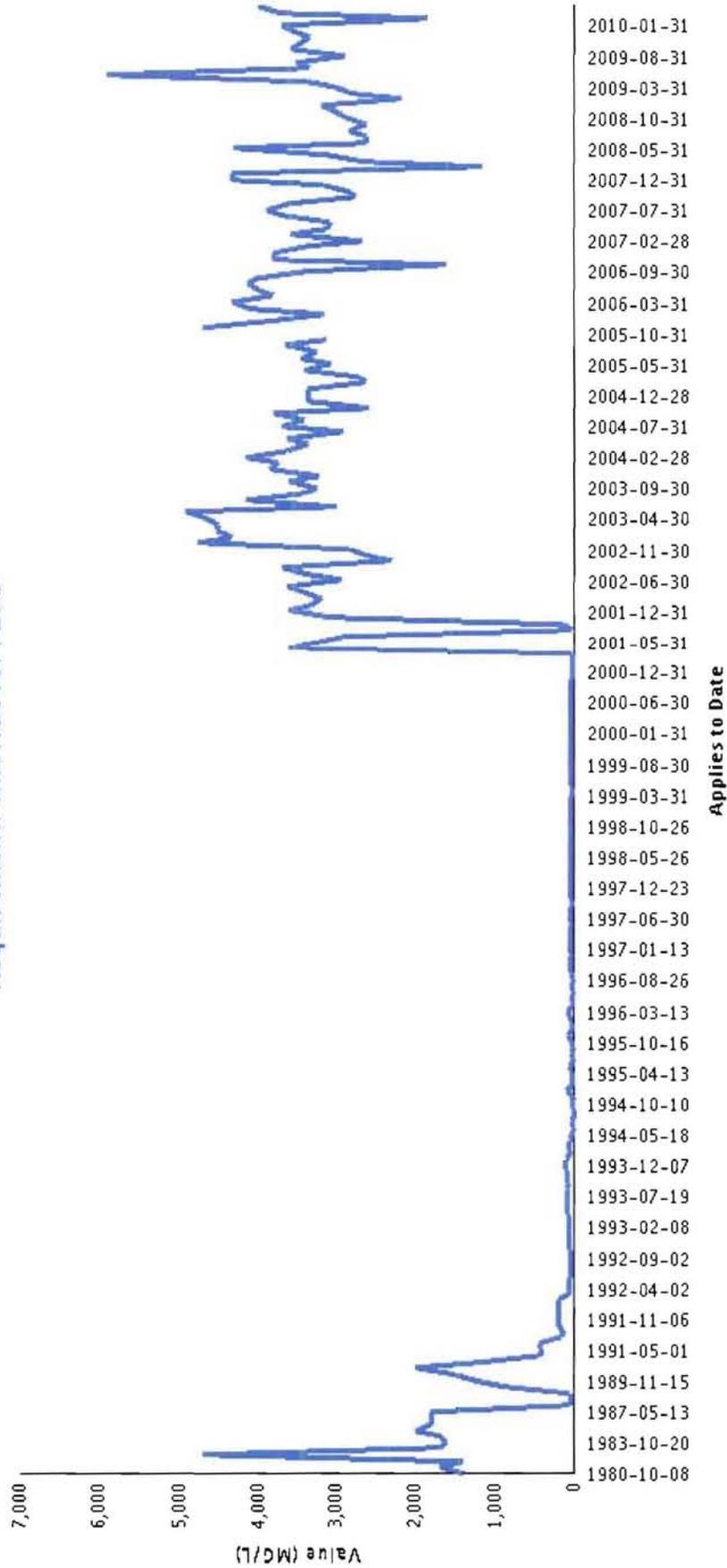


EXHIBIT 9B

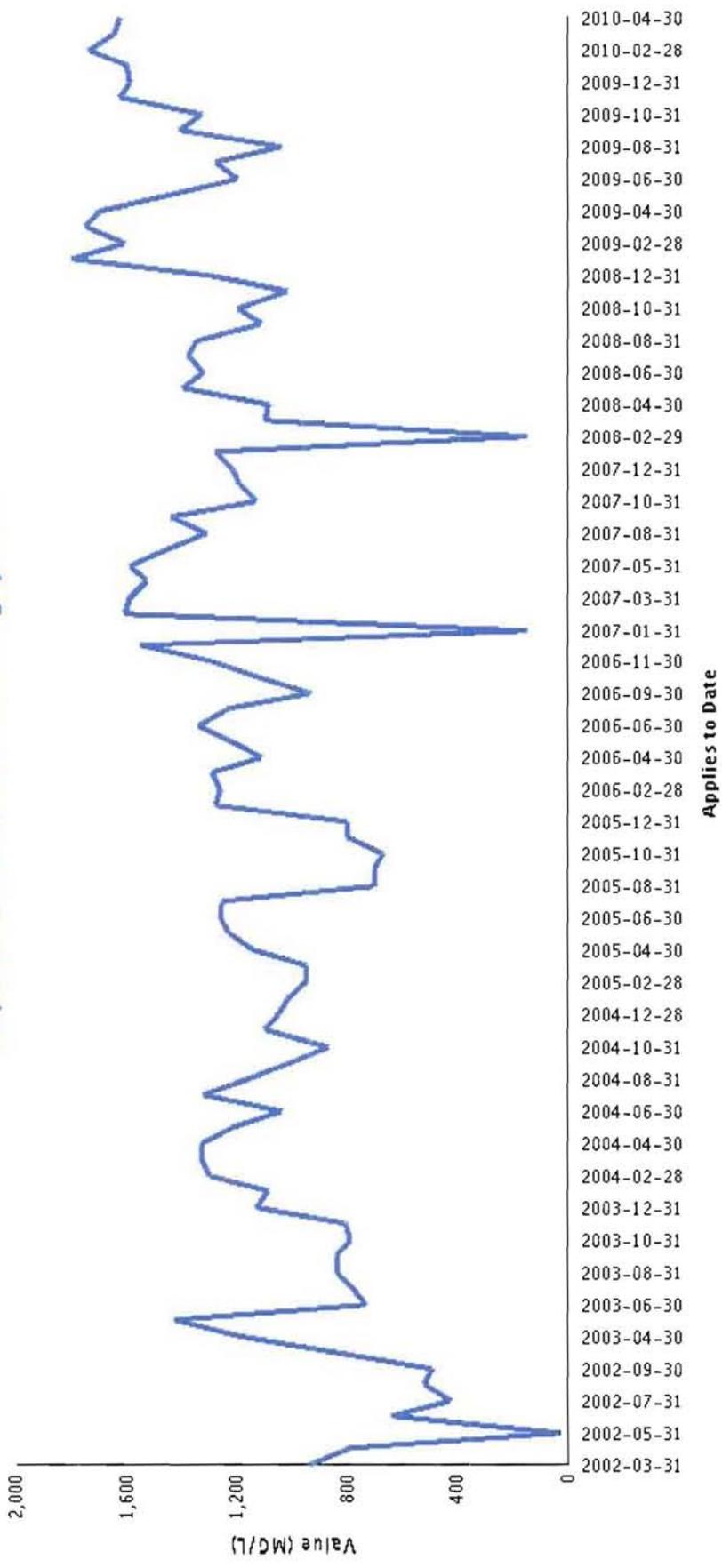
Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: Chloride fro F275



Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: chloride for F279



Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: Chloride from Gragny well



Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: Chloride for 1

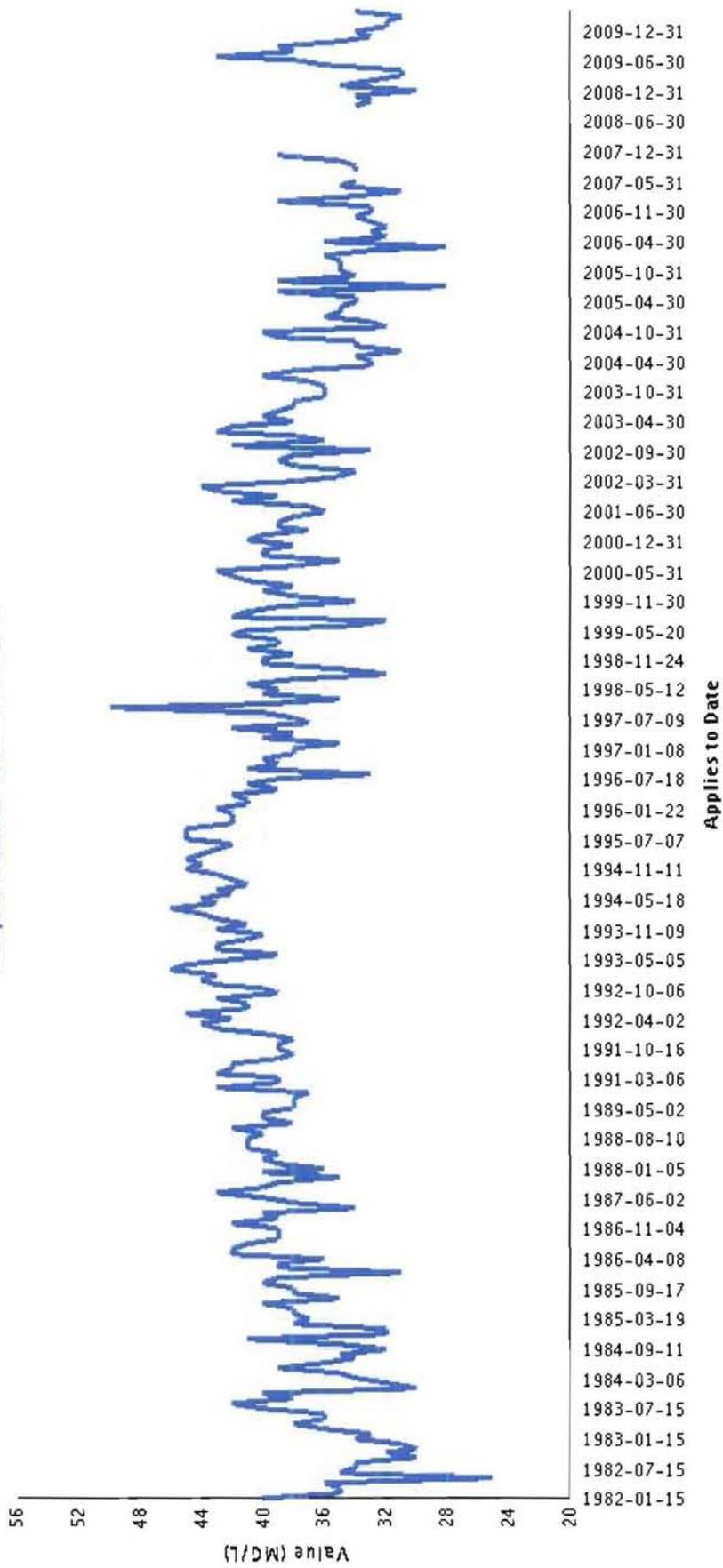


EXHIBIT 9F

Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
 Requirement: Chloride for 3

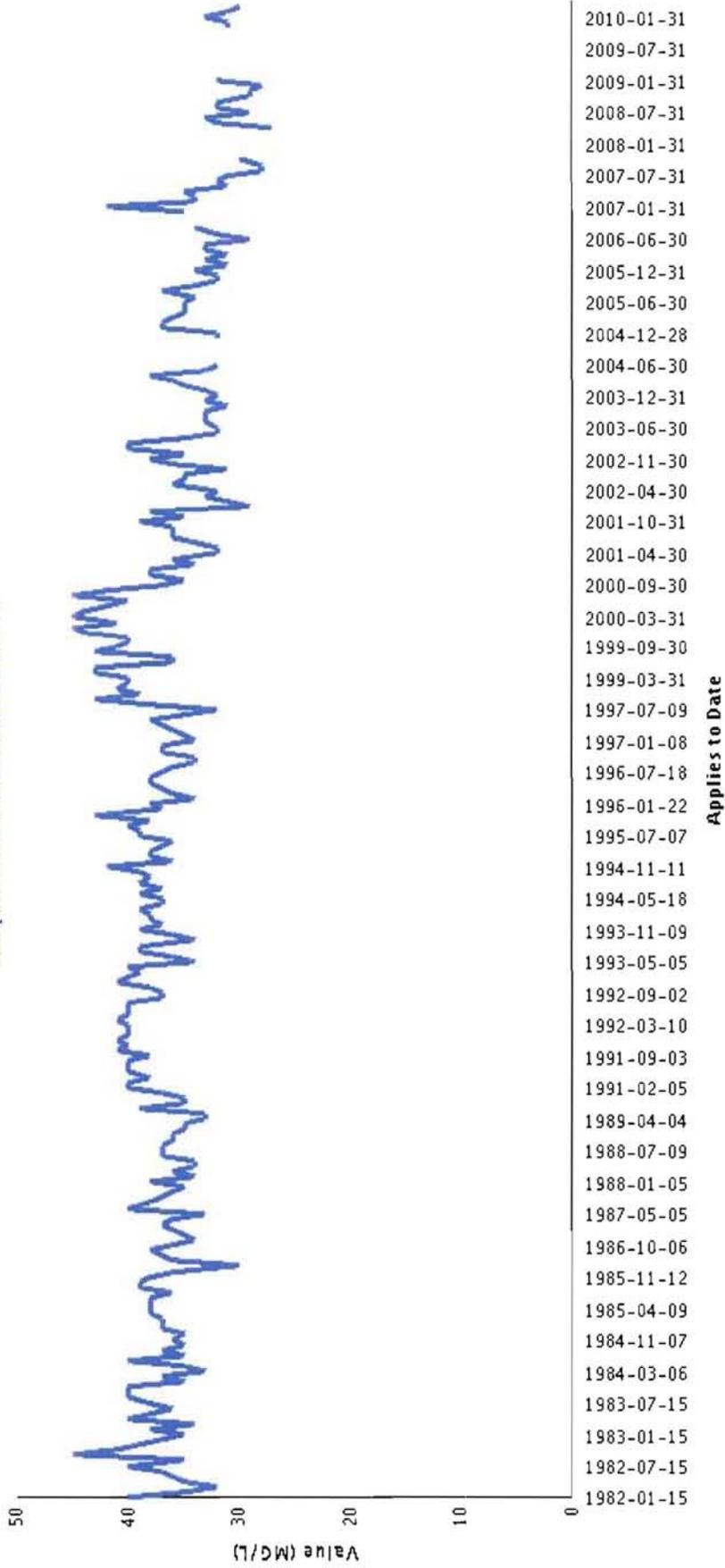
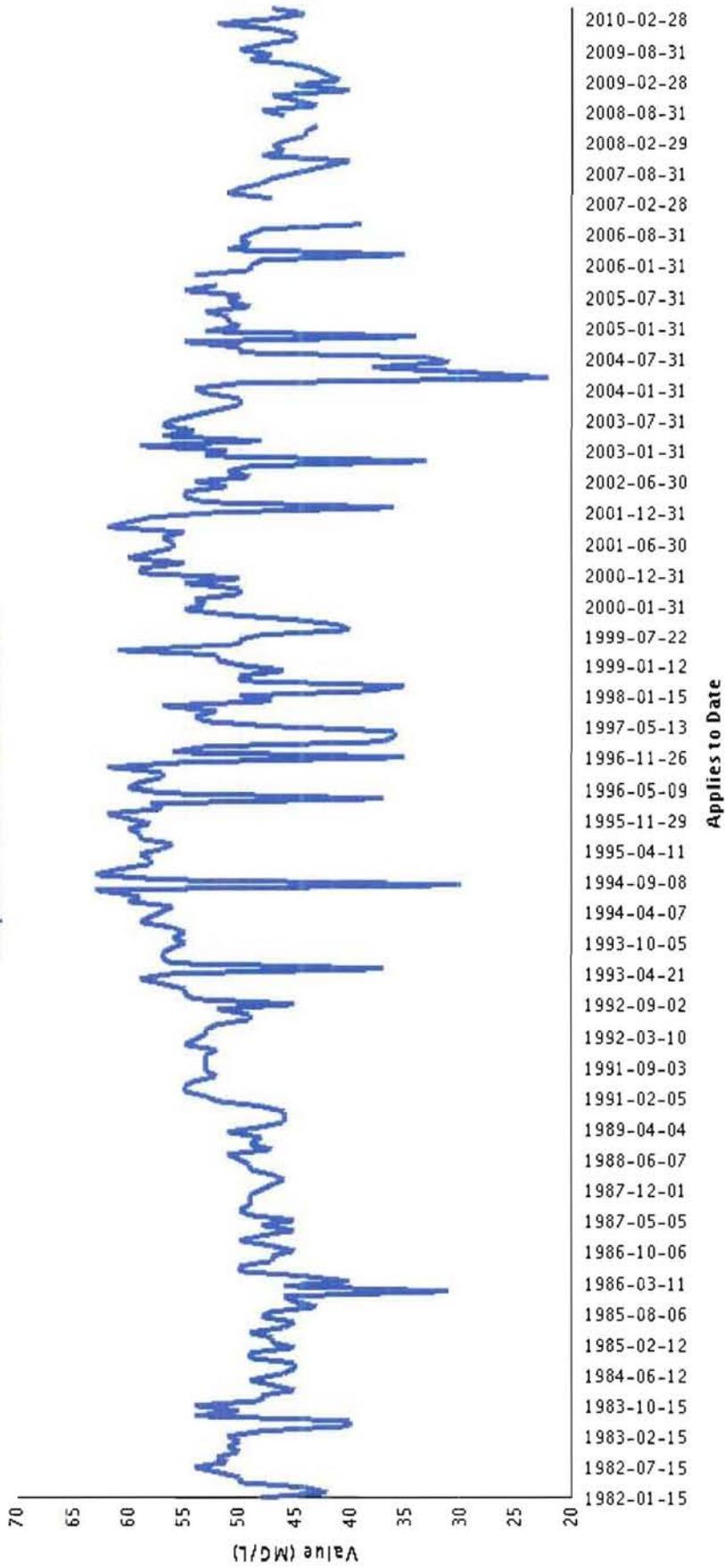


EXHIBIT 9H

Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: chloride for 5



Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: chloride for 6

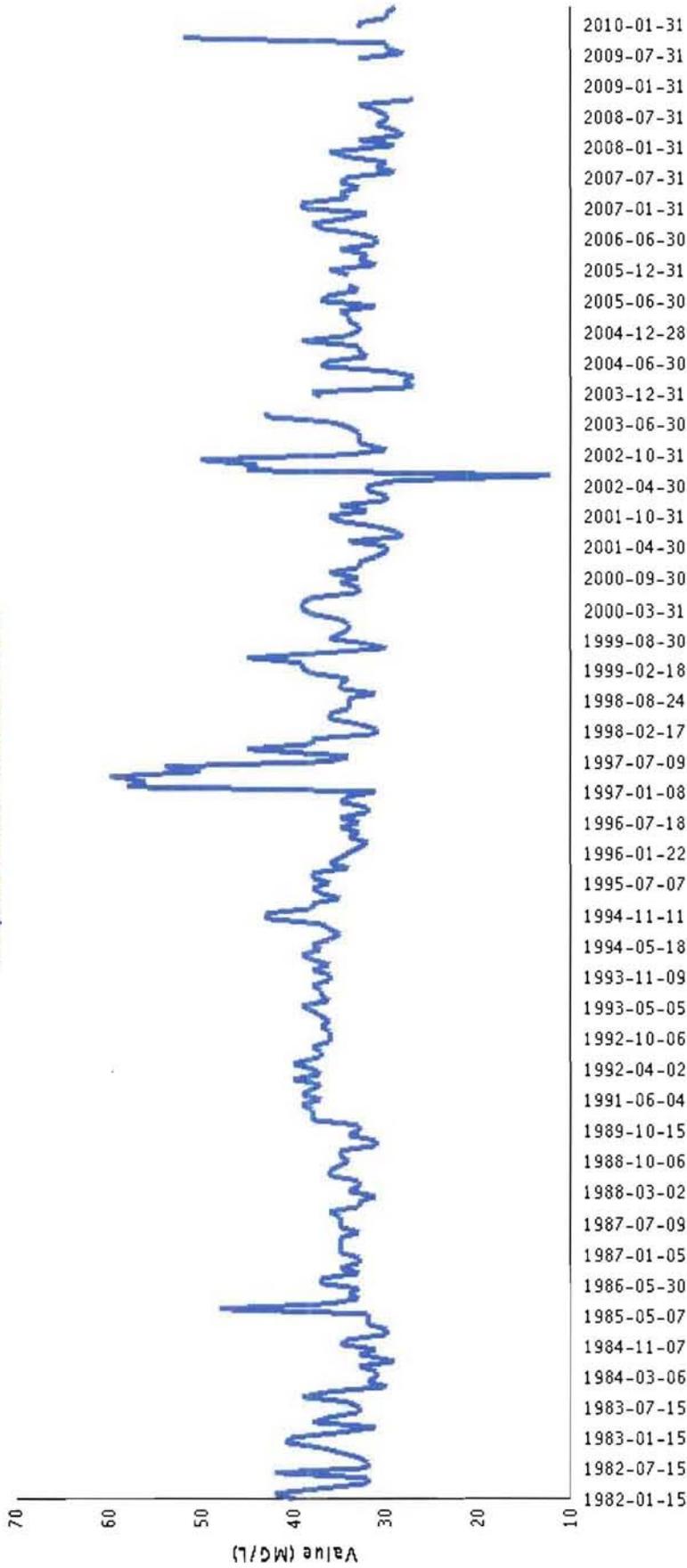
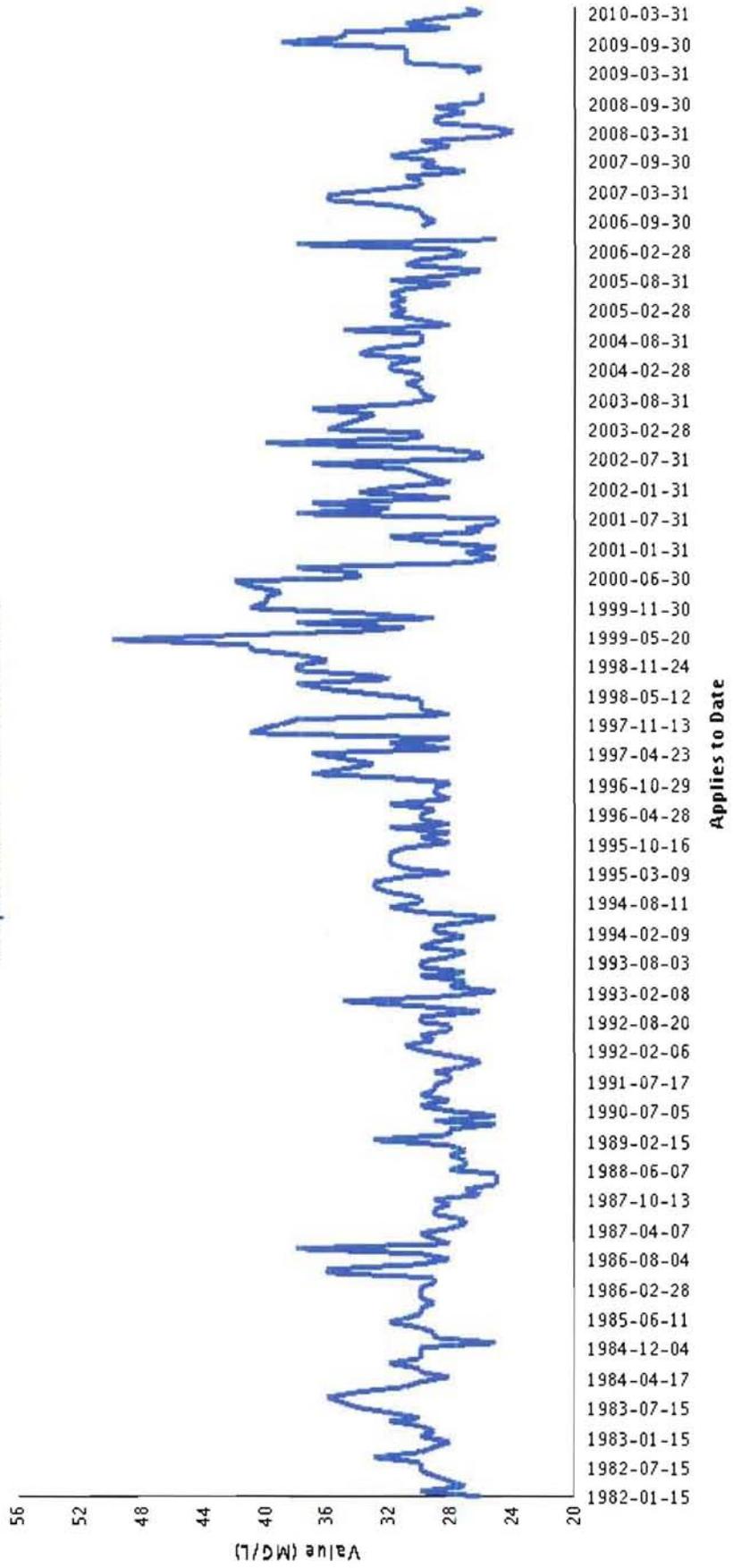
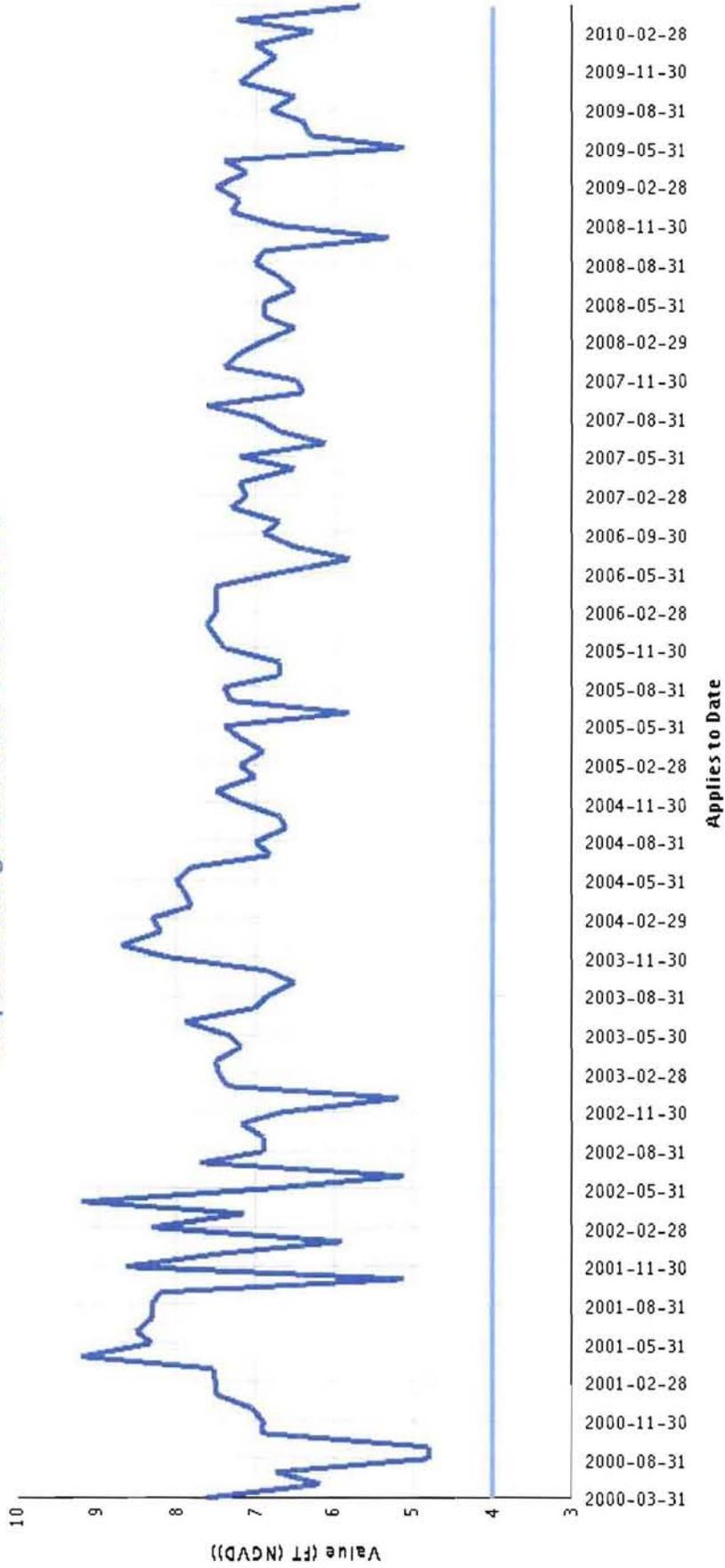


EXHIBIT 9K

Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: chloride for 8



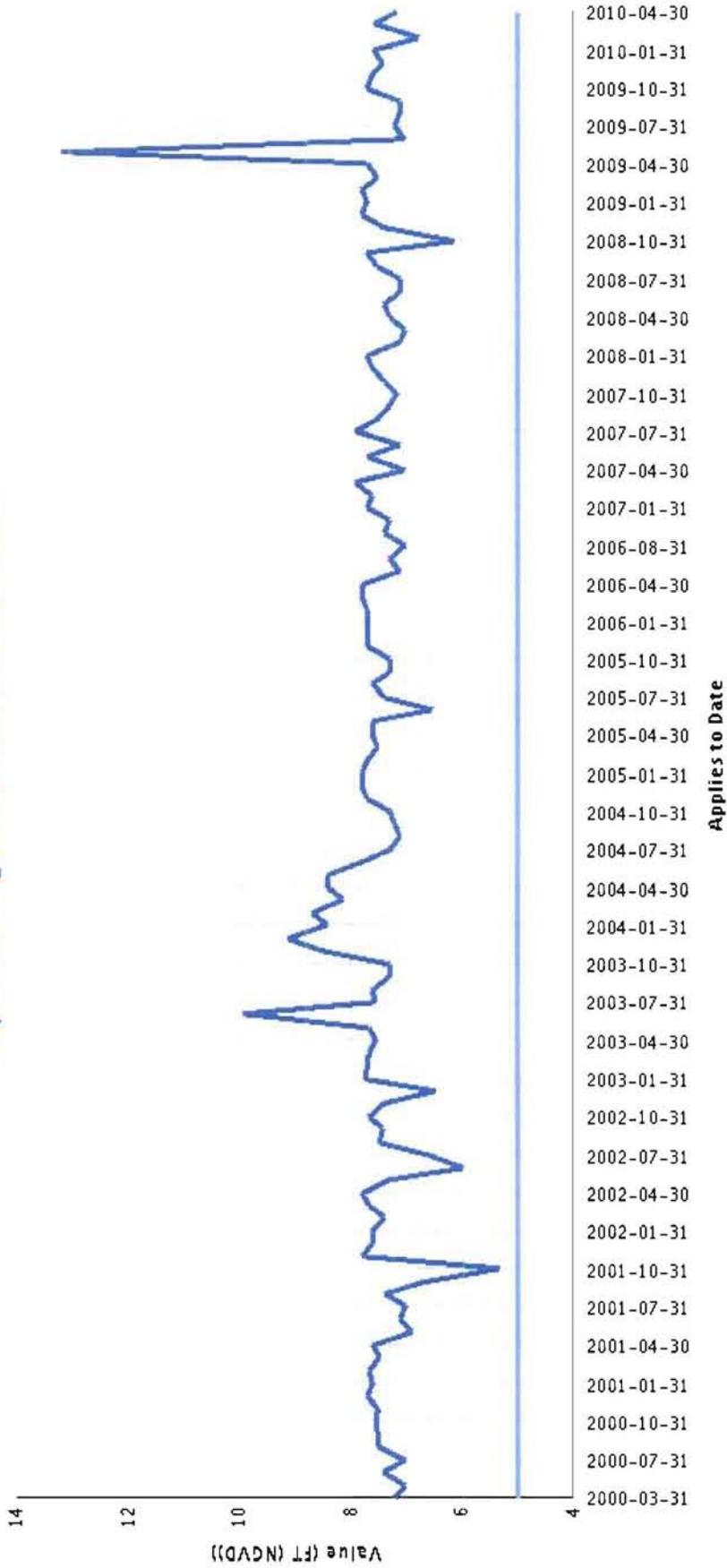
Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: ground water level for F275



Spec 1: Low Value 4 FT (NGVD)

EXHIBIT 10A

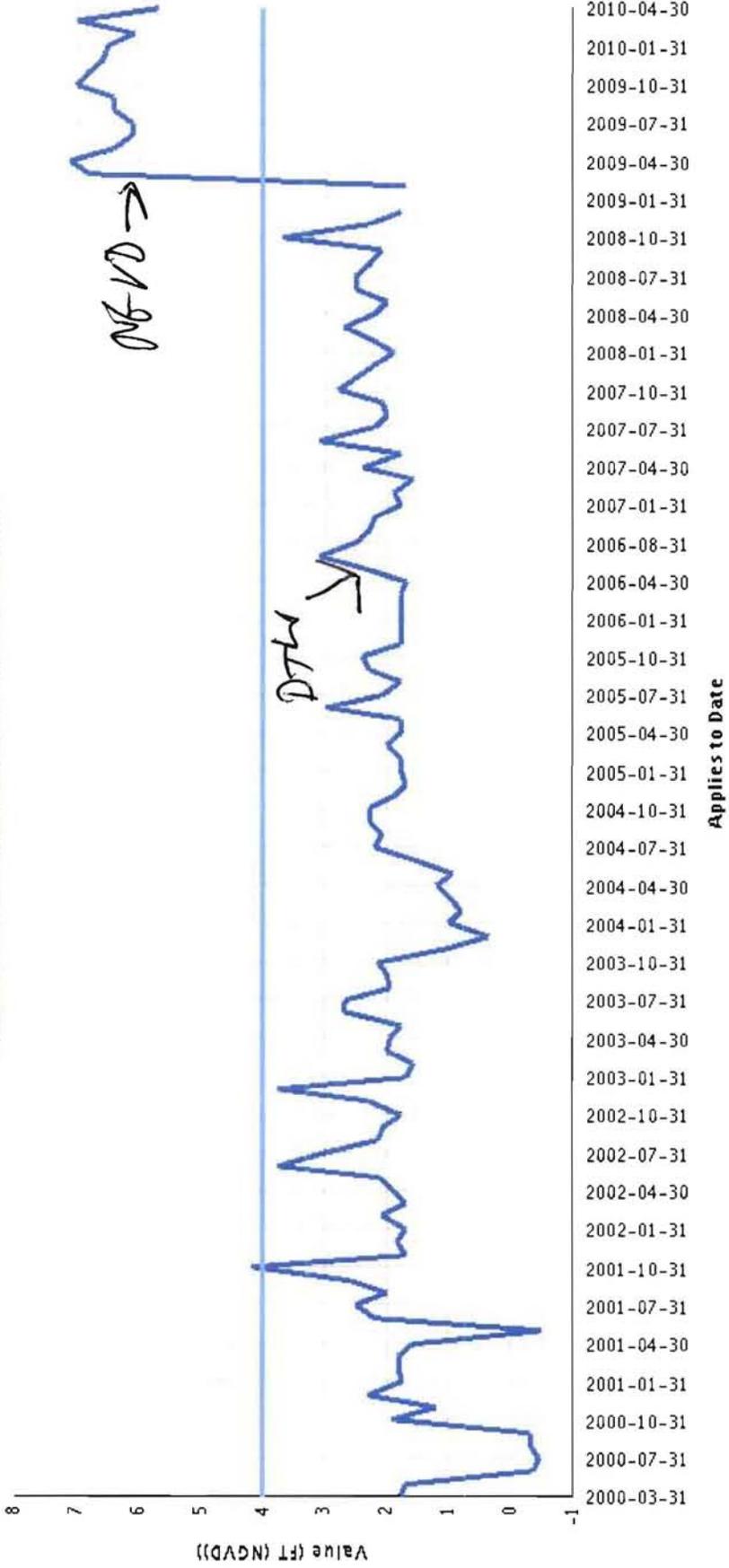
Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: ground water level for G3224



Spec 1: Low Value 5 FT (NGVD)

EXHIBIT 10C

Permit #: 13-00059-W Project Name: CITY OF NORTH MIAMI
Requirement: Water Level from well G-894



Spec 1: Low Value 4 FT (NGVD)

Memo

To: File

From: Thomas Tessier, PG

Thomas L. Tessier

CC: J. Penkosky

Date: May 21, 2008

Re: City of North Miami Water Use Permit Application, Floridan Aquifer Water Use

As requested by Metcalf & Eddy, ARCADIS has performed analytical modeling to define the area encompassed by the 1-foot drawdown contour resulting from anticipated withdrawals from prospective public water supply wells tapping the Floridan Aquifer in the City of North Miami.

The Winflow groundwater flow model was used to simulate a Floridan Aquifer withdrawal of 12.0 million gallons per day (mgd). To address South Florida Water Management District (SFWMD) Basis of Review criteria, it was anticipated that 10 wells would each withdraw 833.3 gallons per minute (1.2 mgd or 160,428 cubic feet per day) for 90 days. Winflow is capable of simulating withdrawals from a single layer with a leaky confining unit which are conditions found in the upper Floridan Aquifer from which the City of North Miami is anticipating to withdraw water.

As no test wells or aquifer testing has been conducted in the Floridan Aquifer in the vicinity of the prospective wells, ARCADIS assumed that the aquifer coefficients established by testing for the City of Hollywood's Water Use Permit (SFWMD Water Use Staff Review Summary, Exhibit 9, City of Hollywood Application #910614-6) would be reasonably accurate. The following aquifer coefficients were established: hydraulic conductivity (permeability), 60.16 feet/day; storage coefficient, 0.0002; aquifer thickness, 400 feet; leakance, 0.00014 foot/day-foot.

To apply leakance in the Winflow model, leakance must be converted to a "leakage factor" which is calculated to be 13,111 feet. According to the Water Use Staff Review Summary for the City of North Miami Beach Application #060207-8, the aquifer coefficients utilized to assess the City of Hollywood's water use also were used to assess the City of North Miami Beach's Floridan Aquifer water use.

As shown on the attached figure, the 1-foot drawdown contour extends approximately 6 miles from the center of the wellfield. An inventory of existing permitted Floridan Aquifer users within the 1-foot drawdown contour was provided by the South Florida Water Management District. Only 4 Floridan Aquifer wells owned by the City of North Miami Beach (WUP # 13-00060-W) were identified. Permitted Miami-Dade wells are located outside the 1-foot drawdown contour.

Maximum drawdown in the aquifer is estimated to be about 27.5 feet below the background static water level which is expected to be about 30 feet above sea level. Maximum drawdown at the nearest North Miami Beach well is about 4 feet (see figure). This magnitude of drawdown is not expected to impair the use of the North Miami Beach wells, which are to be equipped with pumps, according to the inventory.

SCANNED 08/26/2010 15:57 54

Accompanying this memo is a drawdown map, and Winflow input file. Also included are e-files of the Winflow model (FL1003MG.WFL) and the complete input and output file (I-O File FL12mgd.rtf).

Attach: Drawdown map, Input file
CD containing FL12MGD.WFL and I-O File FL12mgd.rtf

EXHIBIT 11 B

SCANNED 08/24/2010 13:37 44

Aquifer Properties

.... Transient Flow Model

Permeability.....= 60.160000 [L/T]
Porosity.....= 0.200000
Storage.....= 0.000200
Leakage factor.....= 13111.000000
Elevation of Aquifer Top...= -1000.000000
Elevation of Aquifer Bottom.= -1400.000000
Uniform Regional Gradient...= 0.000000
Angle of Uniform Gradient...= 0.000000

Model Results Computed at Time = 90.000000

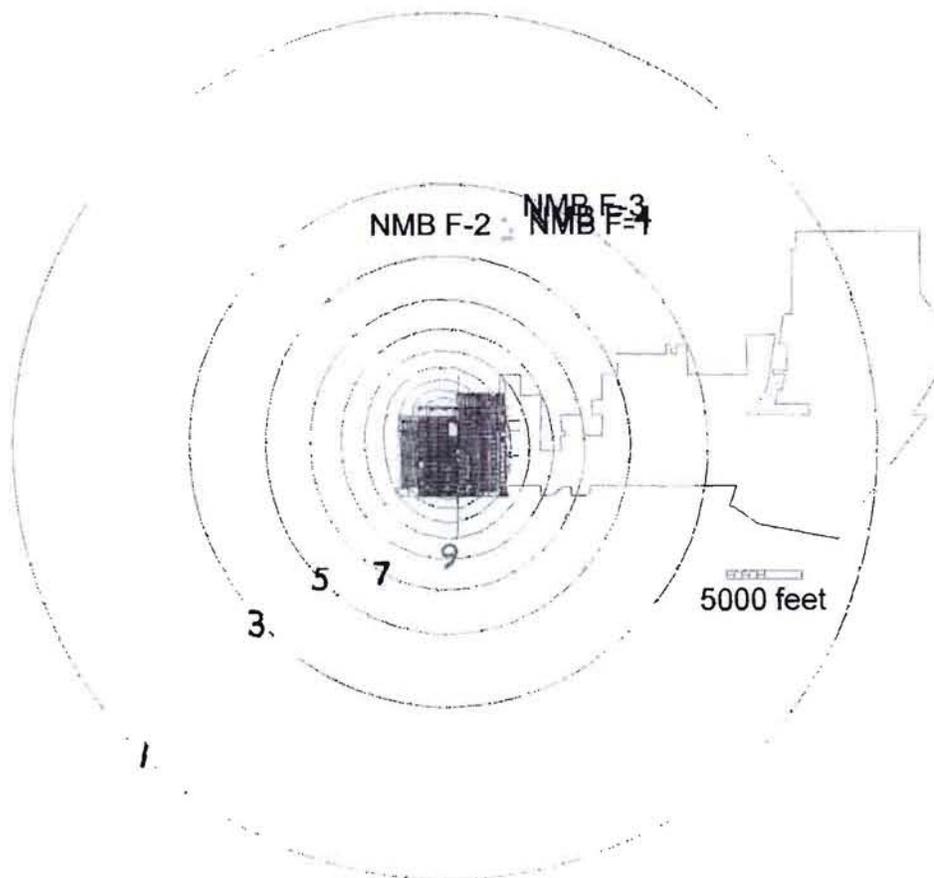


EXHIBIT 11C

SCANNED 08/24/2010 13:57 54

Model Entities

Number of Linesinks Defined by Infiltration Rate = 0

Number of Linesinks Defined by Head = 0

Number of Ponds = 0

Number of Wells = 14

Well #1
Center of Well -- x: 911009.187500 y: 571855.437500
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -25.094185

Well #2
Center of Well -- x: 909802.062500 y: 571933.625000
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -26.089970

Well #3
Center of Well -- x: 908499.375000 y: 571950.937500
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -24.409866

Well #4
Center of Well -- x: 911252.375000 y: 573305.750000
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -25.942717

Well #5
Center of Well -- x: 909767.312500 y: 573140.750000
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -27.009951

Well #6
Center of Well -- x: 910531.562500 y: 576036.875000
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -27.233213

Well #7
Center of Well -- x: 910557.625000 y: 576879.250000
Radius = 1.000000
Pumping Rate = 160428.000000

EXHIBIT 11 D

SCANNED 09/24/2010 15:33:44

Head at Well Radius = -26.858379
Well #8
Center of Well -- x: 909793.375000 y: 576931.375000
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -27.490433
Well #9
Center of Well -- x: 908890.125000 y: 576948.750000
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -26.783321
Well #10
Center of Well -- x: 908082.500000 y: 576974.812500
Radius = 1.000000
Pumping Rate = 160428.000000
Head at Well Radius = -25.089821
Well #11
Center of Well -- x: 914032.000000 y: 588133.000000
Radius = 1.000000
Pumping Rate = 0.000000
Head at Well Radius = -4.067492
Well #12
Center of Well -- x: 913635.000000 y: 588117.000000
Radius = 1.000000
Pumping Rate = 0.000000
Head at Well Radius = -4.127573
Well #13
Center of Well -- x: 913672.000000 y: 589392.000000
Radius = 1.000000
Pumping Rate = 0.000000
Head at Well Radius = -3.618148
Well #14
Center of Well -- x: 914080.000000 y: 588645.000000
Radius = 1.000000
Pumping Rate = 0.000000
Head at Well Radius = -3.854856

Reference Head = 0.000000 Defined at -- x: 746342.875000 y: 564397.000000

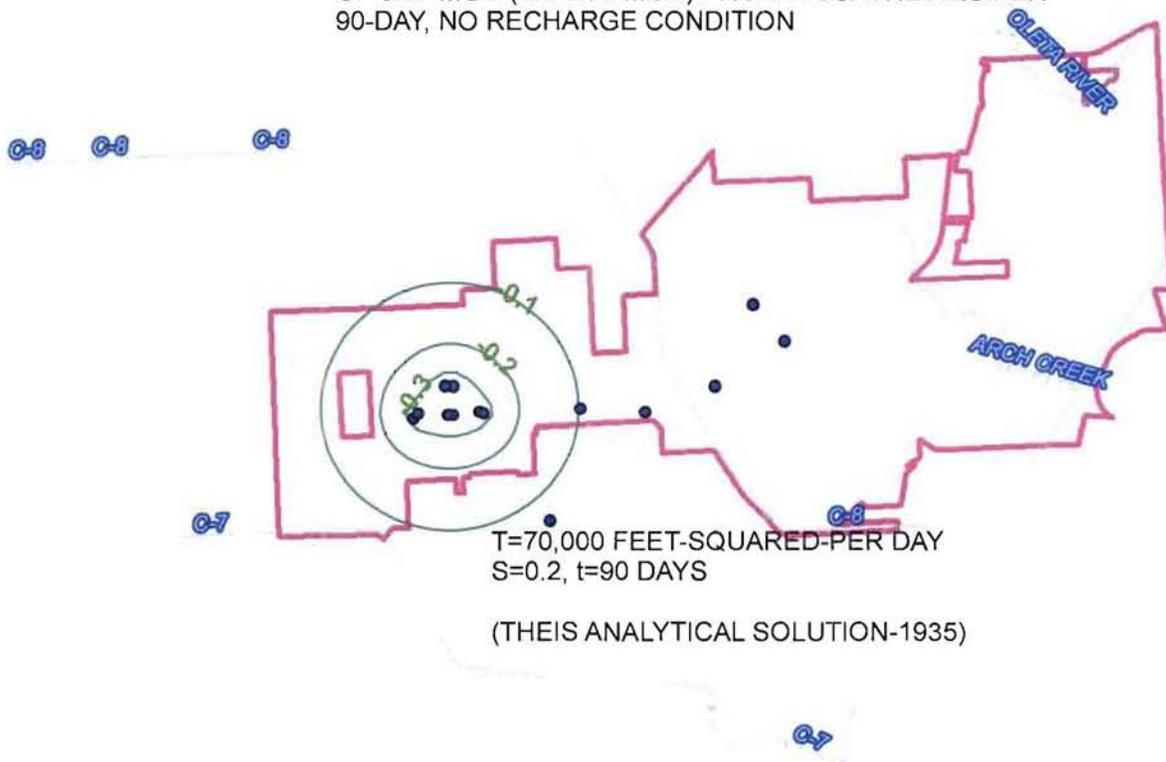
EXHIBIT 11E

071012-6 - CITY OF NORTH MIAMI

INTRACOASTAL WATERWAY

071012-6 - CITY OF NORTH MIAMI

DRAWDOWN RESULTING FROM INCREMENTAL INCREASE OF 0.57 MGD (9.3-8.73 MGD) FROM BISCAIYNE AQUIFER 90-DAY, NO RECHARGE CONDITION



T=70,000 FEET-SQUARED-PER DAY
S=0.2, t=90 DAYS

(THEIS ANALYTICAL SOLUTION-1935)

EXHIBIT IIF

Requirement by Limiting Condition Report

App No: 071012-6

Expiration Date: 23-AUG-30

Permit No: 13-00059-W

Project Name: CITY OF NORTH MIAMI

Issued Date:

Limiting Condition No: 17		Limiting Condition Code: WUSTD021-8					
Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq	
WELL - Winson 1	Calibration report for WELL Winson 1	03-SEP-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 2	Calibration report for WELL Winson 2	03-SEP-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 3	Calibration report for WELL Winson 3	03-SEP-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 4	Calibration report for WELL Winson 4	03-SEP-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 5	Calibration report for WELL Winson 5	15-JAN-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 6	Calibration report for WELL Winson 6	15-JAN-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 7	Calibration report for WELL Winson 7	03-SEP-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - Winson 8	Calibration report for WELL Winson 8	03-SEP-14	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-1	Calibration report for WELL FL-1	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-2	Calibration report for WELL FL-2	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-3	Calibration report for WELL FL-3	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-4	Calibration report for WELL FL-4	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-6	Calibration report for WELL FL-6	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-7	Calibration report for WELL FL-7	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-8	Calibration report for WELL FL-8	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-9	Calibration report for WELL FL-9	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	
WELL - FL-10	Calibration report for WELL FL-10	28-FEB-11	01-SEP-10	31-JUL-30	Every Five Years	Every Five Years	

Limiting Condition No: 18		Limiting Condition Code: WUSTD022-1					
Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq	
WELL - Winson 1	Monthly withdrawal for WELL Winson 1	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	
WELL - Winson 2	Monthly withdrawal for WELL Winson 2	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	
WELL - Winson 3	Monthly withdrawal for WELL Winson 3	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	
WELL - Winson 4	Monthly withdrawal for WELL Winson 4	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	
WELL - Winson 5	Monthly withdrawal for WELL Winson 5	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	
WELL - Winson 6	Monthly withdrawal for WELL Winson 6	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	
WELL - Winson 7	Monthly withdrawal for WELL Winson 7	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly	

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - Winson 8	Monthly withdrawal for WELL Winson 8	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-1	Monthly withdrawal for WELL FL-1	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-2	Monthly withdrawal for WELL FL-2	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-3	Monthly withdrawal for WELL FL-3	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-4	Monthly withdrawal for WELL FL-4	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-6	Monthly withdrawal for WELL FL-6	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-7	Monthly withdrawal for WELL FL-7	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-8	Monthly withdrawal for WELL FL-8	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-9	Monthly withdrawal for WELL FL-9	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - FL-10	Monthly withdrawal for WELL FL-10	31-JAN-11	01-SEP-10	31-JUL-30	Monthly	Quarterly
Limiting Condition No: 21 Limiting Condition Code: WUPWS003-1						
Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Unaccounted for Distribution Losses for PERMIT	31-AUG-12	01-SEP-10	31-JUL-30	Yearly	Yearly
Limiting Condition No: 23 Limiting Condition Code: WUPWS008-2						
Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Ten-Year Water Use Compliance Report for CITY OF NORTH MIAMI	31-JUL-30	01-SEP-10	31-JUL-30	Every Ten Years	Every Ten Years
Limiting Condition No: 24 Limiting Condition Code: WUPWS006-1						
Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
PERMIT	Water Conservation Plan Ordinances A, B, D, and F.	31-AUG-10	31-AUG-10	23-AUG-30	One time Only	One time Only
Limiting Condition No: 27 Limiting Condition Code: WUWC004-1						
Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - FL-1	Updated Table A for WELL FL-1	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-2	Updated Table A for WELL FL-2	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-3	Updated Table A for WELL FL-3	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-4	Updated Table A for WELL FL-4	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-5	Updated Table A for WELL FL-5	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-6	Updated Table A for WELL FL-6	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only

Requirement by Limiting Condition Report

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - FL-7	Updated Table A for WELL FL-7	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-8	Updated Table A for WELL FL-8	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-9	Updated Table A for WELL FL-9	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only
WELL - FL-10	Updated Table A for WELL FL-10	01-MAR-11	01-SEP-10	31-JUL-30	One time Only	One time Only

Limiting Condition No: 28 Limiting Condition Code: WUDWT008-1

Facility Name	Requirement Name	Due Date	Start Date	End Date	Col Freq	Sub Freq
WELL - F-275	Ground Water Level for Well F-275	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - F-275	Chloride for Well F-275	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - F-279	Ground Water Level for Well F-279	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - F-279	Chloride for Well F-279	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - G-3224	Ground Water Level for Well G-3224	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - G-3224	Chloride for Well G-3224	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - G-894	Ground Water Level for Well G-894	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - G-894	Chloride for Well G-894	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
Gratigny Well	Ground Water Level for Well Gratigny Monitor Well	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
Gratigny Well	Chloride for Well Gratigny Monitor Well	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 1	Chloride for Well Winson 1	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 2	Chloride for Well Winson 2	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 3	Chloride for Well Winson 3	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 4	Chloride for Well Winson 4	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 5	Chloride for Well Winson 5	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 6	Chloride for Well Winson 6	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 7	Chloride for Well Winson 7	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - Winson 8	Chloride for Well Winson 8	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly
WELL - G-297 (121 & 4th)	Chloride for Well G-297	30-NOV-10	01-SEP-10	31-JUL-30	Monthly	Quarterly

STAFF REPORT DISTRIBUTION LIST

CITY OF NORTH MIAMI

Application No: 071012-6

Permit No: 13-00059-W

INTERNAL DISTRIBUTION

- X John A. Lockwood, P.G.
- X Permit File
- X R. Karafel
- X WU Compliance - C. Thompson

EXTERNAL DISTRIBUTION

- X Permittee - City Of North Miami
- X Agent - City Of North Miami
- X Other Interested Party - Borgognoni & Guitierrez, Llp

GOVERNMENT AGENCIES

- X City of Homestead
- X Dept of Environmental Protection -West Palm Beach
- X Miami-Dade County -DERM (Carlos Espinosa, PE)
- X Miami-Dade County Engineer Public Works
Department

OTHER INTERESTED PARTIES

- X B.F. Sewell

Exhibit No:13

SCANNED 09/24/2010 13:53:58

Appendix F

Miami Dade Water and Sewer Department
2015 Water Supply Facilities Work Plan Update

Available Online at
<http://www.miamidade.gov/water/library/20-year-water-supply-facilities-work-plan.pdf> (as of 3/3/15)

Appendix G

City of North Miami

Winson WTP Upgrades 100% Permitting Cost Estimate

North Miami BP 3 Permit Set Cost Estimate Jun 2013
100% Permitting Set

DESCRIPTION		VALUE	PROGRAM SUMMARY			
ITEM 1 - GENERAL		\$1,705,000			BP 1: FILTER REHABILITATION	\$3,676,000
ITEM 2 - SITEWORK		\$595,000			BP 3: WTP REHABILITATION PROJECT	\$12,956,329
ITEM 3 - PIPING AND VALVES		\$1,224,000			BP 4: NEW WATER STORAGE TANKS ³	\$1,950,000
ITEM 4 - CONCRETE AND STRUCTURAL		\$952,329			CONSTRUCTION COST	\$18,582,329
ITEM 5 - ARCHITECTURAL		\$1,196,000			ENGINEERING AND MANAGEMENT (18%)	\$3,345,000
ITEM 6 - EQUIPMENT		\$2,767,000			TOTAL PROGRAM COST	\$21,927,329
ITEM 7 - ELECTRICAL		\$1,704,000			ESTIMATE MARCH 2012 (20% ENG) ⁴	\$18,562,950
ITEM 8 - INSTRUMENTATION		\$908,000			NET ⁵	(\$3,364,379)
ITEM 9 - HVAC AND PLUMBING		\$727,000				
SUBTOTAL		\$11,778,329				
ESTIMATING CONTINGENCY		\$1,178,000	10%			
TOTAL ESTIMATED BP 3 PROJECT COST ¹		\$12,956,329				
BP 3 WTP REHABILITATION PROJECT						
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	INSTALLATION ²	TOTAL
ITEM 1 - GENERAL						
	BONDS AND INSURANCE	1.5%	%	\$10,073,329	-	\$152,000
	MOBILIZATION	1	LS	\$50,000	-	\$50,000
	GENERAL CONDITIONS AND SEQUENCING	18	MO	\$15,000	-	\$270,000
	SURVEY AND LAYOUT	1	LS	\$10,000	-	\$10,000
	WATER PURCHASES DURING WTP SHUTDOWN	15	days	\$14,285	-	\$214,275
	CITY OF NORTH MIAMI PERMIT FEES	1	LS	WAIVED	-	\$0
	INDEMNIFICATION	1	LS	\$100	-	\$100
	UNFORESEEN CONDITIONS (ALLOWANCE -RECOMMENDED - NIC)	0.0%	%	\$10,073,329	-	\$0
	CONTRACTOR OVERHEAD AND PROFIT	10.0%	%	\$10,073,329	-	\$1,008,000
					SUBTOTAL	\$1,704,375
ITEM 2 - SITEWORK						
	LANDSCAPE AND IRRIGATION					
	TREES AND PALMS					
	Green Buttonwood	14	EA	\$200.00	1.00	\$2,800
	Spanish Stopper	19	EA	\$375.00	1.00	\$7,125
	Crape Myrtle	4	EA	\$200.00	1.00	\$800
	Southern Live Oak	4	EA	\$375.00	1.00	\$1,500
	Florida Royal Palm	20	EA	\$600.00	1.00	\$12,000
	Sabal Palm	49	EA	\$250.00	1.00	\$12,250
	Crinum	35	EA	\$40.00	1.00	\$1,400
	SHRUBS AND GROUNDCOVER					
	Red Tip Cocoplum	327	EA	\$37.50	1.00	\$12,263
	Purple Coneflower	761	EA	\$12.00	1.00	\$9,132
	Green Island Ficus	556	EA	\$12.00	1.00	\$6,672
	Pink Muhly Grass	283	EA	\$12.00	1.00	\$3,396
	Wild Coffee	223	EA	\$12.50	1.00	\$2,788
	Sand Cord Grass	7,300	EA	\$5.00	1.00	\$36,500
	Bulbine	417	EA	\$6.25	1.00	\$2,606
	St. Augustine Sod	10,850	SF	\$0.40	1.00	\$4,340
	Topsail for all planting areas and sod areas	1	LS	\$9,000.00	1.00	\$9,000
	IRRIGATION SYSTEM	23,278	SF	\$1.00	1.10	\$25,606
	Furnish & Install (2) Landscape Uplights at 4 Corner locations	8	EA	\$1,000.00	1.00	\$8,000
	Furnish and install (1) sign uplight on west side Site Sign	1	EA	\$1,200.00	1.00	\$1,200
	REMOVAL OF LEAD CONTAINING PAINT (1.5 MG Tank)	1	LS	\$25,000	1.20	\$30,000
	REMOVAL OF ASBESTOS (HSPS)	1	LS	\$25,000	1.20	\$30,000
	PAVING, GRADING & DRAINAGE					
	CONTRACTOR STAGING AREA (12' OF COMPACTED ROCK)	280	SY	10.40	1.10	\$3,203
	REMOVAL OF CONTRACTOR STAGING AREA	92	CY	7.93	1.10	\$803
	ASPHALT PAVEMENT DEMOLITION (BREEZEWAY)	965	SY	5.20	1.10	\$5,520
	CONCRETE PAVEMENT DEMOLITION (BREEZEWAY)	58	SY	14.10	1.10	\$900
	SWALE EXCAVATION	276	CY	15.00	1.10	\$4,554
	DRAINAGE PIPE - 15" RCP (Includes Trenching and Backfilling)	410	LF	50.00	1.10	\$22,550
	MANHOLES - 48" DIAMETER	2	EA	5,000.00	1.10	\$11,000
	CATCH BASIN - TYPE C	4	EA	2,750.00	1.10	\$12,100
	CATCH BASIN - TYPE D	1	EA	3,200.00	1.10	\$3,520
	WATER QUALITY STRUCTURE	1	EA	13,000.00	1.10	\$14,300
	DEWATERING AT MASTER PUMP STATION AND CLEARWELL EXTENSION	100	LF HDR	815.00	1.10	\$89,650
	EXCAVATION FOR NEW ADMIN BUILDING FOUNDATION	560	CY	10.90	1.10	\$6,714
	EXCAVATION FOR MASTER PUMP STATION AND CLEARWELL EXTENSION	402	CY	10.90	1.10	\$4,820
	EXCAVATION FOR WASTE LIME SLUDGE PS WETWELL AND VALVE VAULT	92	CY	10.90	1.10	\$1,103
	EXCAVATION FOR SODIUM HYPOCHLORITE BUILDING	125	CY	10.90	1.10	\$1,499
	STRUCTURAL FILL AND COMPACTION FOR NEW ADMIN BLDG.	655	CY	16.00	1.10	\$11,528
	STRUCTURAL FILL AND COMPACTION FOR MASTER PUMP STATION	300	CY	16.00	1.10	\$5,280
	STRUCTURAL FILL AND COMPACTION FOR LIME SLUDGE PS	200	CY	16.00	1.10	\$3,520
	STRUCTURAL FILL AND COMPACTION FOR SODIUM HYPO BLDG.	52	CY	16.00	1.10	\$915
	SIDEWALKS AROUND ADMIN BLDG AND CHEMICAL HANDLING BLDG	530	LF	22.00	1.10	\$12,826
	PAVERS (DECORATIVE)	1,116	SF	10.00	1.10	\$12,276
	ASPHALT PAVEMENT (INCLUDES SUBGRADE AND BASE)	1,765	SY	55.00	1.10	\$106,783
	TYPE D CURB	335	LF	15.00	1.10	\$5,528
	TYPE F CURB AND GUTTER	215	LF	22.50	1.10	\$5,321
	CONCRETE PAVEMENT FOR BREEZEWAY (INC. SUBGRADE & BASE)	110	LF	22.00	1.10	\$2,662
	MILL AND RESURFACING NEARBY THE AERATOR	175	SY	23.00	1.10	\$4,428
	SILT FENCE	1,050	LF	1.25	1.10	\$1,444
	DITCH BOTTOM INLET PROTECTION (PROTECT FROM SEDIMENT)	3	EA	10.00	1.10	\$33
	TRAFFIC STRIPING	1	LS	2,500.00	1.10	\$2,750
	STOP SIGNS	2	EA	300.00	1.10	\$660
	FIRE LANE DO NOT PARK SIGN	1	EA	150.00	1.10	\$165
	PROJECT SIGN	1	EA	250.00	1.10	\$275
	PARKING BY DISABLED PERMIT ONLY SIGN	1	EA	350.00	1.10	\$385
	CARPOOL SIGN	1	EA	150.00	1.10	\$165
	RESERVED SIGN	1	EA	150.00	1.10	\$165
	ENTRANCE SIGN	1	EA	5,000.00	1.10	\$5,500
	PRECAST CONCRETE WHEEL STOPS	23	EA	75.00	1.10	\$1,898
	FLAP VALVE	1	EA	500.00	1.10	\$550
	MODIFY EXISTING CATCH BASIN TO INSTALL PIPE AND FLAP VALVE	1	EA	600.00	1.10	\$660
	BOLLARDS	6	EA	700.00	1.10	\$4,620
	TREE PROTECTION BARRIERS	5	EA	400.00	1.10	\$2,200
					SUBTOTAL	\$594,148
ITEM 3 - PIPING AND VALVES						
	YARD PIPING ³					
	RAW WATER WELL 1					
	Demolition 6-inch Main	100	LF	\$18	1.20	\$2,160
	10" DIP	100	LF	\$40	1.20	\$4,800
	10" DIP 90 deg bend	2	EA	\$500	1.20	\$1,200
	RAW WATER WELL 2					
	Demolition 10-inch Main	150	LF	\$22	1.20	\$3,960
	10" DIP	150	LF	\$40	1.20	\$7,200
	Line Stop	1	EA	\$1,500	1.20	\$1,800
	AERATOR FEED LINE					
	Demolition 24-inch Main	20	LF	\$30	1.20	\$720
	24" DIP	20	LF	\$90	1.20	\$2,160
	RAW WATER OFF-SITE TO AERATOR					
	Demolition 20-inch Main	20	LF	\$30	1.20	\$720
	20" DIP	20	LF	\$80	1.20	\$1,920
	BYPASS LINE - EASTERN					

North Miami BP 3 Permit Set Cost Estimate Jun 2013
100% Permitting Set

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	INSTALLATION ²	TOTAL
	Demolition 16-inch Main	150	LF	\$25	1.20	\$4,500
	Line Stop	1	EA	\$1,500	1.20	\$1,800
	BYPASS LINE - MID-PLANT					
	Demolition 20-inch Main	300	LF	\$30	1.20	\$10,800
	BYPASS LINE - WESTERN					
	Demolition 10-inch Main	260	LF	\$22	1.20	\$6,864
	INTERCONNECT (0.75 MG to 1.5 MG Tanks)					
	Demolition 16-inch Main	30	LF	\$25	1.20	\$900
	INTERCONNECT (1.5 MG Tank to HSPS)					
	Demolition 24-inch Main	90	LF	\$30	1.20	\$3,240
	INTERCONNECT (0.75 MG to NEW HSP)					
	24" DIP	200	LF	\$90	1.20	\$21,600
	TRENCH EXCAVATION	1,614	LF	\$18	1.20	\$34,862
	TRENCH DEWATERING	1,614	LF	\$15	1.20	\$29,052
	YARD PIPING UNFORESEEN CONDITIONS CONTINGENCY	1	LS	\$250,000	1.20	\$300,000
	MECHANICAL PIPING					
	RAW WATER WELLS 1 AND 2					
	10" DIP	40	LF	\$40	1.10	\$1,760
	10" DIP 90 deg bend	6	EA	\$500	1.10	\$3,300
	10" Check Valves	2	EA	\$4,000	1.10	\$8,800
	10" DI BFV	2	EA	\$2,500	1.10	\$5,500
	10" DIP tee	6	EA	\$650	1.10	\$4,290
	2" Combination valve	4	EA	\$1,500	1.10	\$6,600
	LIME CONTACTOR					
	14" DIP	20	LF	\$60	1.10	\$1,320
	14" DIP 90 deg bend	4	EA	\$1,200	1.10	\$5,280
	12" DIP	40	LF	\$50	1.10	\$2,200
	12" DIP 90 deg bend	1	EA	\$1,000	1.10	\$1,100
	12" DIP TEE	1	EA	\$1,600	1.10	\$1,760
	12" DIP 45 deg bend	1	EA	\$800	1.10	\$880
	8" DIP	20	EA	\$30	1.10	\$660
	4" DIP	50	LF	\$15	1.10	\$825
	4" DIP 90 deg bend	6	EA	\$150	1.10	\$990
	4" DIP tee	2	EA	\$300	1.10	\$660
	4" Gate Valves	4	EA	\$500	1.10	\$2,200
	3" DIP	40	LF	\$13	1.10	\$550
	3" Ball Valves	2	EA	\$650	1.10	\$1,430
	3" DIP 90 deg bend	2	EA	\$150	1.10	\$330
	1" CPVC	80	LF	\$10	1.10	\$880
	1" DIP 90 deg bend	6	EA	\$50	1.10	\$330
	MASTER PUMP STATION - HS PUMPS					
	24" DIP	80	LF	\$90	1.10	\$7,920
	24" DIP 90 deg bend	1	EA	\$5,250	1.10	\$5,775
	24" x 16" 20" DIP red	5	EA	\$6,000	1.10	\$33,000
	20" DIP 90 deg bend	4	EA	\$3,372	1.10	\$14,837
	20" Check Valve	4	EA	\$5,000	1.10	\$22,000
	20" DI BFV	8	EA	\$4,000	1.10	\$35,200
	20" DIP tee	5	EA	\$3,130	1.10	\$17,215
	16" Check Valve	4	EA	\$7,500	1.10	\$33,000
	16" Butterfly Valve	5	EA	\$7,000	1.10	\$38,500
	MASTER PUMP STATION - BW & TR PUMPS					
	36" DIP	50	LF	\$300	1.10	\$16,500
	36" DIP 90 deg bend	2	EA	\$8,000	1.10	\$17,600
	36" DIP Tee	4	EA	\$11,000	1.10	\$48,400
	30" DIP Butterfly Valves	4	EA	\$12,000	1.10	\$52,800
	24" DIP	60	LF	\$90	1.10	\$5,940
	24" DIP 90 deg bend	4	EA	\$5,250	1.10	\$23,100
	24" Tee	4	EA	\$5,452	1.10	\$23,989
	24" DI BFV	4	EA	\$8,610	1.10	\$37,884
	30" DI Butterfly Valve	2	EA	\$15,000	1.10	\$33,000
	36" DI Butterfly Valve	2	EA	\$20,000	1.10	\$44,000
	24" Check Valve	4	EA	\$7,500	1.10	\$33,000
	20" DIP	25	LF	\$80	1.10	\$2,200
	20" DIP 90 deg bend	2	EA	\$3,372	1.10	\$7,418
	CHEMICAL HANDLING FACILITY - ANTI-COAGULANT					
	2" DIP	80	LF	\$12	1.10	\$1,056
	1" DIP 90 deg bend	8	EA	\$20	1.10	\$176
	1" CPVC	150	LF	\$10	1.10	\$1,650
	3/4" CPVC	30	LF	\$8	1.10	\$264
	3/4" Ball Valves	8	EA	\$90	1.10	\$792
	2" Kamlock	3	EA	\$50	1.10	\$165
	1" DIP 90 deg bend	12	EA	\$10	1.10	\$132
	CHEMICAL HANDLING FACILITY - COAGULANT AID					
	2" DIP	30	LF	\$12	1.10	\$396
	2" DIP 90 deg bend	2	EA	\$20	1.10	\$44
	1" CPVC	30	LF	\$10	1.10	\$330
	3/4" CPVC	30	LF	\$8	1.10	\$264
	3/4" Ball Valves	8	EA	\$90	1.10	\$792
	2" Kamlock	2	EA	\$50	1.10	\$110
	3/4" DIP 90 deg bend	15	EA	\$10	1.10	\$165
	Eyewash / Shower	1	EA	\$1,500	1.10	\$1,650
	CHEMICAL HANDLING FACILITY - FLUORIDE					
	2" DIP	50	LF	\$12	1.10	\$660
	2" DIP 90 deg bend	2	EA	\$20	1.10	\$44
	3/4" CPVC	50	LF	\$8	1.10	\$440
	3/4" Ball Valves	8	EA	\$90	1.10	\$792
	2" Kamlock	2	EA	\$50	1.10	\$110
	3/4" DIP 90 deg bend	20	EA	\$10	1.10	\$220
	3" Secondary Contained Piping	300	LF	\$33	1.10	\$10,814
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	CHEMICAL HANDLING FACILITY - AMMONIA					
	2" BSP	50	LF	\$150	1.10	\$8,250
	3/4" Ball Valves	8	EA	\$90	1.10	\$792
	3" Secondary Contained Piping	300	LF	\$33	1.10	\$10,814
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	INTERIM CHEMICAL FEED FACILITY					
	2" DIP	150	LF	\$12	1.10	\$1,980
	2" DIP 90 deg bend	20	EA	\$20	1.10	\$440
	3/4" CPVC	600	LF	\$8	1.10	\$5,280
	3/4" Ball Valves	10	EA	\$90	1.10	\$990
	Eyewash / Shower	1	EA	\$1,500	1.10	\$1,650
	WASTE LIME PUMP STATION					
	10" DIP	50	LF	\$40	1.10	\$2,200
	10" DIP 90 deg bend	2	EA	\$500	1.10	\$1,100
	10" DI Plug Valves	4	EA	\$1,200	1.10	\$5,280
	10" DIP tee	2	EA	\$650	1.10	\$1,430
	10" Check Valve	2	EA	\$5,000	1.10	\$11,000
	BACKWASH BASINS 1 & 2					
	4" DIP	50	LF	\$15	1.10	\$825
	4" DIP 90 deg bend	2	EA	\$500	1.10	\$1,100
	4" DI Gate Valves	4	EA	\$1,200	1.10	\$5,280

North Miami BP 3 Permit Set Cost Estimate Jun 2013
100% Permitting Set

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	INSTALLATION ²	TOTAL
	4" DIP tee	2	EA	\$300	1.10	\$660
	4" Check Valve	2	EA	\$1,800	1.10	\$3,960
	HYPOCHLORITE FACILITY					
	3" Secondary Contained Piping	300	LF	\$33	1.10	\$10,814
	1 1/2-inch CPVC Pipe	20	LF	\$12	1.10	\$264
	2-inch CPVC Pipe	300	LF	\$15	1.10	\$4,950
	1 1/2" CPVC Ball Valve	2	EA	\$167	1.10	\$367
	1 1/2" CPVC 90° Bend	2	EA	\$25	1.10	\$55
	1 1/2" CPVC Tee	2	EA	\$36	1.10	\$79
	2" CPVC 90° Bend	54	EA	\$30	1.10	\$1,782
	2" CPVC 45° Bend	3	EA	\$32	1.10	\$106
	2" CPVC Tee	4	EA	\$40	1.10	\$176
	2" CPVC Wye	3	EA	\$96	1.10	\$317
	2" CPVC Diaphragm Valve	8	EA	\$522	1.10	\$4,594
	2" CPVC Ball Valve	2	EA	\$225	1.10	\$495
	2" CPVC Ball Check Valve	2	EA	\$266	1.10	\$585
	2" Kamlock	2	EA	\$50	1.10	\$110
	2" Flange Insert Check Valves	2	EA	\$2,000	1.10	\$4,400
	4" CPVC Pipe	30	LF	\$41	1.10	\$1,353
	4" CPVC 90° Bend	4	EA	\$140	1.10	\$616
	PIPE SUPPORTS	1	LS	\$50,000	1.10	\$55,000
	Eyewash / Shower - Admin Bldg Lab	1	EA	\$1,500	1.00	\$1,500
					SUBTOTAL	\$1,223,442
	ITEM 4 - CONCRETE AND STRUCTURAL					
	ADMINISTRATION BUILDING					
	CONCRETE FOUNDATION	109	CY	\$300	1.10	\$35,970
	FIRST FLOOR SLAB	107	CY	\$300	1.10	\$35,310
	COLUMNS	36	CY	\$1,100	1.10	\$43,560
	BEAMS	72	CY	\$1,000	1.10	\$79,200
	ELEVATED SLABS	181	CY	\$650	1.10	\$129,415
	CMU	8,547	SF	\$15	1.10	\$141,026
	AERATOR ACCESS STAIR/PLATFORM	1	LS	\$90,000	1.10	\$99,000
	AERATOR PLATFORM STRUCTURAL REINFORCEMENT	1	LS	\$10,000	1.10	\$11,000
	FILTER STAIRS	1	LS	\$20,000	1.10	\$22,000
	CHEMICAL HANDLING/HIGH SERVICE PUMP STATION					
	DEMOLITION	1	LS	\$5,000	1.20	\$6,000
	CONCRETE FLOOR	34	CY	\$300	1.20	\$12,240
	CONCRETE COLUMNS	5	CY	\$1,100	1.20	\$6,600
	CONCRETE BEAMS	3	CY	\$1,000	1.20	\$3,600
	CMU	1,022	SF	\$15	1.20	\$18,396
	INTERIOR PAINT	2,564	SF	\$5	1.20	\$15,384
	PRE-CAST CONCRETE BOX FOR CHEMICAL FILL STATIONS	2	EA	\$5,000	1.10	\$11,000
	MASTER PUMP STATION					
	CONCRETE SLABS	89	CY	\$300	1.10	\$29,370
	CONCRETE SEALS	6	CY	\$300	1.10	\$1,980
	RCP	70	LF	\$170	1.10	\$13,090
	GROUT	16	CY	\$300	1.10	\$5,280
	CLEARWELL EXTENSION					
	CONCRETE	29	CY	\$1,100	1.20	\$38,280
	BACKWASH BASINS 1 & 2					
	INTERIOR COATING	2,392	SF	\$10	1.20	\$28,704
	CONCRETE	10	CY	\$300	1.10	\$3,300
	GUARDRAILS	182	LF	\$60	1.10	\$12,012
	HYPOCHLORITE FACILITY					
	CONCRETE FOUNDATION SLAB, BASES, CURBS	82	CY	\$300	1.10	\$27,060
	FRP GRATING	147	SF	\$60	1.10	\$9,702
	PRE-ENGINEERED METAL STRUCTURE	450	SF	\$30	1.10	\$14,850
	PRE-CAST CONCRETE BOX FOR CHEMICAL FILL STATIONS	1	EA	\$5,000	1.10	\$5,500
	CHEMICAL INJECTION VAULT	1	LS	\$10,000	1.10	\$11,000
	SLUDGE PUMP STATION	1	LS	\$70,000	1.10	\$77,000
	LIME SLAKER COVER	1	LS	\$5,000	1.10	\$5,500
					SUBTOTAL	\$952,329
	ITEM 5 - ARCHITECTURAL					
	DECORATIVE HANDRAIL	60	LF	\$100	1.00	\$6,000
	ROUGH CARPENTRY	1	LS	\$5,000	1.00	\$5,000
	PLYWOOD SHEATHING	6,400	SF	\$1	1.00	\$8,000
	FINISH CARPENTRY	30	LF	\$150	1.00	\$4,500
	SHELVING	40	LF	\$75	1.00	\$3,000
	GLASS AGGREGATE COUNTERTOPS	60	SF	\$200	1.00	\$12,000
	VAPOR BARRIER	3,830	SF	\$1	1.00	\$3,830
	EXTERIOR INSULATION SYSTEM	6,500	SF	\$8	1.00	\$52,000
	FIRESTOPPING	1	LS	\$3,000	1.00	\$3,000
	BUILT-UP ROOFING	2,680	SF	\$4	1.00	\$10,720
	ROOF INSULATION	3,830	SF	\$7	1.00	\$26,810
	SPANISH TILE	3,150	SF	\$15	1.00	\$47,250
	FLASHING AND ACCESSORIES	900	LF	\$22	1.00	\$11,000
	SEALANTS AND CAULKING	7,500	LF	\$2	1.00	\$15,000
	STEEL DOORS AND FRAMES	11	EA	\$700	1.00	\$7,700
	FRP DOORS	6	EA	\$1,000	1.00	\$6,000
	WOOD DOORS AND FRAMES	26	EA	\$600	1.00	\$15,600
	ROLL-UP DOORS	1	LS	\$8,500	1.00	\$8,500
	ALUMINUM WINDOWS	770	SF	\$75	1.00	\$57,750
	FINISH HARDWARE	43	EA	\$600	1.00	\$25,800
	METAL STUD FRAMING SYSTEM	6,400	SF	\$2	1.00	\$12,800
	STUCCO	1	LS	\$6,000	1.00	\$6,000
	GYPSON DRYWALL SYSTEM	12,000	SF	\$5	1.00	\$60,000
	CERAMIC TILE	3,500	SF	\$8	1.00	\$26,250
	CARPET	1,800	SF	\$4	1.00	\$7,704
	ACOUSTICAL CEILING SYSTEM	5,300	SF	\$4	1.00	\$20,034
	RESILIENT FLOORING	3,400	SF	\$6	1.00	\$18,700
	REMOVAL OF LEAD CONTAINING PAINT	1	LS	\$25,000	1.00	\$25,000
	PAINTING - ADMIN BLDG	25,000	SF	\$2	1.00	\$50,000
	SPECIALTY CONCRETE COATINGS	1	LS	\$25,000	1.00	\$25,000
	TOILET PARTITIONS	4	EA	\$1,200	1.00	\$4,800
	LOUVERS	1	LS	\$7,000	1.00	\$7,000
	SIGNAGE	1	LS	\$10,000	1.00	\$10,000
	METAL LOCKERS	20	LS	\$500	1.00	\$10,000
	BENCH	8	LF	\$25	1.00	\$200
	FIRE EXTINGUISHERS	10	LS	\$150	1.00	\$1,500
	TOILET ACCESSORIES	48	EA	\$150	1.00	\$7,200
	ELEVATOR	1	LS	\$52,000	1.10	\$57,200
	LABORATORY CABINETS (UPPER)	16	LF	\$300	1.00	\$4,800
	LABORATORY CABINETS	32	LF	\$600	1.00	\$19,200
	OFFICE FURNITURE	1	LS	\$75,000	1.00	\$75,000
	BREAKROOM EQUIPMENT	1	LS	\$5,000	1.00	\$5,000
	LABORATORY EQUIPMENT	1	LS	\$30,000	1.00	\$30,000
	EXISTING FACILITY PAINT - EXTERIOR	1	LS	\$100,000	1.10	\$110,000
	CHEMICAL HANDLING FACILITY (HIGH SERVICE PUMP STATION REHAB)					
	SIGNAGE	1	LS	\$2,000	1.20	\$2,400
	SPECIALTY COATINGS	1	LS	\$15,000	1.20	\$18,000
	EXISTING FACILITY PAINT - EXTERIOR	56,500	SF	\$3	1.20	\$203,400
	LEED DOCUMENTATION AND PROCEDURES	1	LS	\$55,000	1.00	\$55,000

**North Miami BP 3 Permit Set Cost Estimate Jun 2013
100% Permitting Set**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	INSTALLATION ²	TOTAL
	LEED COMMISSIONING	1	LS	\$54,000	1.00	\$54,000
					SUBTOTAL	\$1,195,648
ITEM 6 - EQUIPMENT						
	RAW WATER WELL PUMPS 1 & 2	2	EA	\$30,000	1.10	\$66,000
	ACCELERATOR AND BLOW-OFF VALVE REHABILITATION	1	LS	\$600,000	1.20	\$720,000
	LIME SLAKER AND SILO REHAB ADDITIONAL UNIT	1	LS	\$150,000	1.20	\$180,000
	MASTER PUMP STATION - HIGH SERVICE PUMPS	4	EA	\$100,000	1.10	\$440,000
	MASTER PUMP STATION - TRANSFER PUMPS	2	EA	\$125,000	1.10	\$275,000
	MASTER PUMP STATION - BACKWASH PUMPS	2	EA	\$150,000	1.10	\$330,000
	CHEMICAL HANDLING FACILITY - DEMOLITION	1	LS	\$35,000	1.20	\$42,000
	CHEMICAL HANDLING FACILITY - AMMONIA					
	Bulk Ammonia Storage Tank (Welded Steel)	1	EA	\$10,000	1.10	\$11,000
	Ammonia Feed Pump Skid	1	EA	\$30,000	1.10	\$33,000
	Identifying Devices	1	LS	\$2,000	1.10	\$2,200
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	CHEMICAL HANDLING FACILITY - FLUORIDE					
	Bulk Fluoride Storage Tanks	1	EA	\$10,000	1.10	\$11,000
	Fluoride Transfer Pumps	1	EA	\$6,500	1.10	\$7,150
	Fluoride Day Tank	1	EA	\$3,000	1.10	\$3,300
	Fluoride Feed Pump Skid	1	EA	\$25,000	1.10	\$27,500
	Identifying Devices	1	LS	\$2,000	1.10	\$2,200
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	CHEMICAL HANDLING FACILITY - COAGULANT AID					
	Package Dilution System	1	EA	\$90,000	1.10	\$99,000
	Fluoride Feed Pump Skid	1	EA	\$25,000	1.10	\$27,500
	Identifying Devices	1	LS	\$2,000	1.10	\$2,200
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	CHEMICAL HANDLING FACILITY - ANTI-COAGULANT AID (TOTES)					
	Anticoagulant Feed Pump Skid	1	EA	\$25,000	1.10	\$27,500
	Identifying Devices	1	LS	\$2,000	1.10	\$2,200
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	SODIUM HYPOCHLORITE STORAGE TANKS					
	Storage Tanks	2	EA	\$27,000	1.10	\$59,400
	Transfer Pump	1	EA	\$3,000	1.10	\$3,300
	Distribution Pump Skid	2	EA	\$30,000	1.10	\$66,000
	Identifying Devices	1	LS	\$2,000	1.10	\$2,200
	Eyewash / Shower	2	EA	\$1,500	1.10	\$3,300
	MIST ELIMINATOR PANELS FOR AERATOR	1	LS	\$5,000	1.10	\$5,500
	WASTE LIME SLUDGE PUMPS	2	EA	\$20,000	1.10	\$44,000
	DECANT RETURN PUMPS	2	EA	\$10,000	1.10	\$22,000
	BACKWASH SLUDGE HOLDING BASIN PUMPS	2	EA	\$6,000	1.10	\$13,200
	WASTE BACKWASH HOLDING SLUICE GATES	2	EA	\$10,000	1.10	\$22,000
	MOTORIZED VALVE OPERATORS	9	EA	\$3,000	1.10	\$29,700
	SOLENOID VALVE OPERATORS	10	EA	\$2,000	1.10	\$22,000
	PORTABLE SUMP PUMPS	3	EA	\$1,500	1.10	\$4,950
	SAMPLE PUMPS	3	EA	\$3,000	1.10	\$9,900
	PROTECTIVE COATINGS - EQUIPMENT AND PIPING	1	LS	\$125,000	1.10	\$137,500
					SUBTOTAL	\$2,766,900
ITEM 7 - ELECTRICAL						
	MANHOLES	8	EA	\$8,000	1.10	\$70,400
	PULL BOXES	6	EA	\$3,000	1.10	\$19,800
	UTILITY DUCT BANK - 6W4	150	LF	\$150	1.10	\$24,750
	POWER DUCT BANK	320	LF	\$200	1.10	\$70,400
	CONTROL DUCT BANK	320	LF	\$150	1.10	\$52,800
	SITE LIGHTING	35	EA	\$2,000	1.10	\$77,000
	MAIN CIRCUIT BREAKER	1	LS	\$15,250	1.10	\$16,775
	AUTOMATIC TRANSFER SWITCH	1	LS	\$20,800	1.10	\$22,880
	MAIN SWITCHBOARD	1	EA	\$26,000	1.10	\$28,600
	VFD (200 HP)	4	EA	\$25,000	1.10	\$110,000
	VFD (125 HP)	2	EA	\$17,600	1.10	\$38,720
	VFD (100 HP)	2	EA	\$16,700	1.10	\$36,740
	MOTOR CONTROL CENTER	1	LS	\$60,000	1.10	\$66,000
	TRANSFORMER 150KVA	2	EA	\$5,200	1.10	\$11,440
	PANELBOARDS	7	EA	\$3,500	1.10	\$26,950
	ADMINISTRATION BUILDING GENERAL ELECTRICAL / FIRE ALARM	7,500	SF	\$13	1.10	\$107,250
	LIGHTNING PROTECTION	1	LS	\$30,000	1.10	\$33,000
	DISCONNECT SWITCHES (30 Amp)	19	EA	\$1,100	1.10	\$22,990
	DISCONNECT SWITCHES (60 Amp)	2	EA	\$1,500	1.10	\$3,300
	DISCONNECT SWITCHES (100 Amp)	2	EA	\$1,800	1.10	\$3,960
	DISCONNECT SWITCHES (200 Amp)	4	EA	\$2,810	1.10	\$12,364
	DISCONNECT SWITCHES (400 Amp)	4	EA	\$6,020	1.10	\$26,488
	CABLE AND CONDUIT	1	LS	\$393,750	1.10	\$433,125
	MISC. MATERIALS	1	LS	\$70,000	1.10	\$77,000
	DEMOLITION	1	LS	\$30,000	1.10	\$33,000
	TELEPHONE SYSTEM	1	LS	\$20,000	1.10	\$22,000
	COMCAST / ATT	1	LS	\$45,000	1.10	\$49,500
	GATE AND DOOR SYSTEM	1	LS	\$20,000	1.10	\$22,000
	FPL CONTINGENCY FOR MOVING INCOMING SERVICE POLE	1	LS	\$50,000	1.10	\$55,000
	SECURITY SYSTEM	1	LS	\$2,200	1.00	\$2,200
	EQUIPMENT AND WIRING RELOCATIONS	1	LS	\$25,000	1.10	\$27,500
	LOCAL CONTROL PANELS	6	EA	\$13,000	1.00	\$78,000
	CONTROL / SIGNAL TERMINAL BOXES	10	EA	\$2,000	1.10	\$22,000
					SUBTOTAL	\$1,703,932
ITEM 8 - INSTRUMENTATION						
	INSTRUMENTS					
	LEVEL SWITCHES (FLOAT)	15	EA	\$500	1.10	\$8,250
	LEVEL GAUGE/LEVEL SWITCHES	5	EA	\$5,000	1.10	\$27,500
	PRESSURE GAUGES DIAPHRAGM SEALS	9	EA	\$2,000	1.10	\$19,800
	PRESSURE GAUGES	11	EA	\$1,000	1.10	\$12,100
	PRESSURE SWITCHES DIAPHRAGM SEALS	5	EA	\$2,000	1.10	\$11,000
	PRESSURE SWITCHES	12	EA	\$1,000	1.10	\$13,200
	PRESSURE INDICATING TRANSMITTERS	11	EA	\$1,500	1.10	\$18,150
	PRESSURE INDICATING TRANSMITTERS DIAPHRAGM SEALS	5	EA	\$2,000	1.10	\$11,000
	ROTAMETERS	1	EA	\$2,500	1.10	\$2,750
	ULTRASONIC LEVEL INDICATING TRANSMITTERS	5	EA	\$2,000	1.10	\$11,000
	RADAR LEVEL INDICATING TRANSMITTERS	1	EA	\$5,000	1.10	\$5,500
	GUIDED WAVE RADAR LEVEL INDICATING TRANSMITTERS	1	EA	\$5,000	1.10	\$5,500
	BULK SOLIDS LEVEL SWITCHES	2	EA	\$1,500	1.10	\$3,300
	SUBMERSIBLE LEVEL (PRESSURE) SENSOR	2	EA	\$2,500	1.10	\$5,500
	TANK SCALE INDICATING TRANSMITTERS	1	EA	\$2,000	1.10	\$2,200
	MAG METER (2")	1	EA	\$2,500	1.10	\$2,750
	MAG METER (6")	1	EA	\$4,500	1.10	\$4,950
	MAG METER (10")	2	EA	\$7,000	1.10	\$15,400
	MAG METER (20")	1	EA	\$12,000	1.10	\$13,200
	MAG METER (24")	2	EA	\$14,000	1.10	\$30,800
	pH ANALYZER	3	EA	\$3,000	1.10	\$9,900
	TURBIDITY ANALYZER	1	EA	\$3,000	1.10	\$3,300
	CHLORINE RESIDUAL ANALYZER	3	EA	\$4,000	1.10	\$13,200
	AMMONIA/MONOCHELORINE ANALYZER	1	EA	\$17,000	1.10	\$18,700

**North Miami BP 3 Permit Set Cost Estimate Jun 2013
100% Permitting Set**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	INSTALLATION ²	TOTAL
	FLUORIDE ANALYZER	1	EA	\$6,100	1.10	\$6,710
	COMPUTERS / NETWORK EQUIPMENT					
	WORKSTATION	5	EA	\$2,500	1.10	\$13,750
	SCADA SERVER	2	EA	\$7,500	1.10	\$16,500
	TERMINAL SERVER	1	EA	\$7,500	1.10	\$8,250
	ETHERNET SWITCHES	4	EA	\$2,500	1.10	\$11,000
	NETWORK EQUIPMENT RACK	4	EA	\$1,000	1.10	\$4,400
	PRINTERS	1	EA	\$800	1.10	\$880
	FIBER OPTIC CABLE	1,750	LF	\$6	1.10	\$11,550
	FIBER OPTIC TRANSCEIVERS	9	EA	\$1,200	1.10	\$11,880
	NETWORK RACKS	4	EA	\$1,200	1.10	\$5,280
	UPS	1	LS	\$15,000	1.10	\$16,500
	PROGRAMMABLE LOGIC CONTROLLERS (PLC)					
	CPU / POWER SUPPLY / RACK / ENCLOSURE	3	EA	\$15,000	1.10	\$49,500
	TOUCH PANELS	2	EA	\$3,000	1.10	\$6,600
	DIGITAL I/O MODULE	14	EA	\$2,500	1.10	\$38,500
	ANALOG I/O MODULE	8	EA	\$3,000	1.10	\$26,400
	POWER SUPPLIES / TERMINAL BLOCKS / INTERPOSING RELAYS	1	LS	\$6,000	1.00	\$6,000
	SOFTWARE					
	OPENENTERPRISE SCADA SERVER	2	EA	\$12,000	1.00	\$24,000
	OPENENTERPRISE CLIENT NODE	5	EA	\$7,500	1.00	\$37,500
	OPENENTERPRISE HISTORIAN SERVER	1	EA	\$12,000	1.00	\$12,000
	PLC PROGRAMMING SOFTWARE	1	EA	\$3,000	1.00	\$3,000
	TRAINING / CALIBRATION / DOCUMENTATION SERVICES					
	TRAINING	2	WKS	\$7,500	1.00	\$15,000
	INSTRUMENT CALIBRATION	1	WKS	\$7,500	1.10	\$8,250
	SUBMITTALS	2	LS	\$5,000	1.00	\$10,000
	O&M MANUALS	2	LS	\$5,000	1.00	\$10,000
	CHEMICAL UNLOADING CONTROL PANEL	3	EA	\$7,500	1.10	\$24,750
	WASTE LIME PUMP STATION LCP	1	EA	\$9,000	1.10	\$9,900
	PROGRAMMING SERVICES (HMI, HISTORIAN)	1	LS	\$120,000	1.00	\$120,000
	PROGRAMMING SERVICES (PLC, OIT)	1	LS	\$75,000	1.00	\$75,000
	RELOCATION OF TELEMETRY AND VIDEO SERVERS	1	LS	\$5,000	1.00	\$5,000
	SPARE PARTS	1	LS	\$50,000	1.00	\$50,000
					SUBTOTAL	\$907,050
ITEM 9 - HVAC AND PLUMBING						
	ELECTRICAL ROOM AC UNITS	2	EA	\$90,000	1.10	\$198,000
	ROOF TOP AC UNITS	5	EA	\$20,000	1.10	\$110,000
	CONTROL ROOM AC UNIT	1	EA	\$15,000	1.10	\$16,500
	ELEVATOR ROOM AC UNIT	1	EA	\$5,000	1.10	\$5,500
	STAIRWELL HP UNIT	1	EA	\$1,500	1.10	\$1,650
	ELEVATOR VENT	1	EA	\$1,000	1.10	\$1,100
	DRYWELL	2	EA	\$400	1.10	\$880
	REFRIGERANT PIPE	400	LF	\$33	1.10	\$14,304
	HVAC PIPE INSULATION	400	LF	\$5	1.10	\$2,200
	CPVC PIPE	125	LF	\$45	1.10	\$6,188
	FLEXIBLE DUCTWORK	160	LF	\$12	1.10	\$2,152
	DUCTWORK	3,382	LB	\$6	1.10	\$20,833
	INTAKE/RELIEF VENT	1	EA	\$1,125	1.10	\$3,200
	DUCT INSULATION	3,645	SF	\$5	1.10	\$18,043
	FANS	4	EA	\$1,675	1.10	\$6,930
	AIR DEVICES	40	EA	\$394	1.10	\$17,325
	WORKSTATION	1	EA	\$3,375	1.10	\$3,713
	CONTROL WIRING	4	CLF	\$93	1.10	\$408
	NETWORK MANAGER/TEMPERATURE CONTROLLERS	1	LS	\$21,938	1.10	\$24,131
	TESTING/ADJUSTING/COMMISSIONING	1	LS	\$36,563	1.10	\$40,219
	SUMP PUMP	1	EA	\$800	1.10	\$880
	SUMP PUMP CONTROL	1	EA	\$788	1.10	\$866
	EMERGENCY SHOWER AND EYEWASH	1	EA	\$16,875	1.10	\$18,563
	TEMPERED WATER SYSTEM	1	EA	\$22,500	1.10	\$24,750
	SHOWERS	2	EA	\$1,913	1.10	\$4,208
	MOP SERVICE BASINS	2	EA	\$2,250	1.10	\$4,950
	SINKS	1	EA	\$2,363	1.10	\$2,599
	TRAP PRIMERS	8	EA	\$225	1.10	\$1,980
	LAVATORIES	6	EA	\$1,688	1.10	\$11,138
	FLOOR DRAINS	8	EA	\$1,913	1.10	\$16,830
	COPPER PIPE	300	LF	\$25	1.10	\$8,250
	COPPER FITTINGS	50	EA	\$55	1.10	\$3,032
	VALVES	20	EA	\$38	1.10	\$833
	DWV PIPING	450	LF	\$35	1.10	\$17,167
	DWV FITTINGS	65	EA	\$61	1.10	\$4,360
	ACID NEUTRALIZATION SUMP	1	EA	\$281	1.10	\$309
	PLUMBING PIPE INSULATION	500	LF	\$5	1.10	\$2,750
	WALL HYDRANTS	3	EA	\$675	1.10	\$2,228
	TESTING/ADJUSTING/COMMISSIONING	1	LS	\$20,000	1.10	\$22,000
	WATER HEATERS	2	EA	\$1,125	1.10	\$2,475
	WATER CLOSETS	6	EA	\$2,250	1.10	\$14,850
	URINALS	1	EA	\$1,125	1.10	\$1,238
	ROOF DRAINS	4	EA	\$2,531	1.10	\$11,138
	ELECTRIC WATER COOLERS	2	EA	\$7,875	1.10	\$17,325
	SUBMITTALS	1	LS	\$10,000	1.10	\$11,000
	O&M MANUALS	1	LS	\$10,000	1.10	\$11,000
	SPARE PARTS	1	LS	\$15,000	1.10	\$16,500
					SUBTOTAL	\$726,492
	¹ INCLUDES 15% ESTIMATING CONTINGENCY					
	² NEW = 1.10, FOR REHABILITATION WORK = 1.2. (EXCEPT FOR ADMIN BLDG UNIT PRICE = 1.0)					
	³ ASSUMES TWO NEW 1.25 MG PRESTRESSED CONCRETE TANKS @ \$0.60 PER GALLON PLUS 30% FOR TANK IMPROVEMENTS. BASE SITE PREPARATION BY CITY. COSTS NOT INCLUDED HERE					
	⁴ ESTIMATE FROM MAR 2012 (\$20,660,000) REDUCED BY \$2,097,050 FOR WELL NOS. 3 THROUGH 8 FUNDING NOT INCLUDED IN THIS SCOPE. ALSO SEE NOTE 5 BELOW					
	⁵ FINAL PROJECT INCLUDES ADDITIONS TO SCOPE NOT ORIGINALLY CONTEMPLATED - NEW AND LARGER ADMIN BLDG (+2000 SF), NEW CHEMICAL FACILITIES, ADDITIONAL WATER STORAGE TANKS AT NEW SITE					

Appendix H

City of North Miami

Possible Reuse Water Projects Letter to MDWASD



City of North Miami

776 Northeast 125th Street, North Miami, Florida 33161

file

(305) 893-6511

December 6, 2007

Mr. Doug Yoder
Deputy Director
Miami-Dade Water & Sewer Department
PO Box 330316
Miami, Fl. 33233-0316

Re: Requested Possible Reuse Water Projects

Dear Mr. Yoder,

Below is a list of possible projects that the City of North Miami would consider undertaking provided the County would assist.

- 1.) Irrigation of the existing North Miami stadium located on NE 151 Street.
- 2.) The Public Works Department has been trying to purchase a vehicle wash system at the Motorpool located at 1855 NE 142 Street and if approved would consider using reuse water to clean the vehicles.
- 3.) The City has strongly recommended that the Biscayne Landings project utilize reuse water for irrigation. They have also discussed utilizing the reuse water in all new construction of condominiums to flush toilets and sprinklers.
- 4.) If the County were to construct a main reuse water line from Biscayne Blvd. west to NW 17 Avenue the City would consider using the reuse water to irrigate the two (2) large park facilities located at 135 Street NE 8 Avenue and 135 Street NW 13 Avenue. The City would also recommend to the Miami-Dade School Board to utilize reuse water at there new facilities being constructed at 135 Street NE 7-8 Avenue.
- 5.) The City would promote use of reuse water to all residents and businesses throughout the City.

I hope this information is helpful. Please let me know if you would like to get together and discuss any of these possible projects or any others that you may have in mind. I can be reach at (305) 895-9831 extension 12211 Monday through Friday from 7:30 a.m. to 4:00 p.m.

Sincerely,

A handwritten signature in cursive script, appearing to read "Mark E. Collins".

Mark E. Collins
Public Works Director



TETRA TECH

Tetra Tech Inc.
150 West Flagler St.
Suite 1625
Miami, FL 33130

tetratech.com