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Miami-Dade  
Water and Sewer Department

**Miami-Dade Consolidated PWS  
Water Use Permit No. 13-00017-W**

**Alternative Water Supply Plan  
and Reuse Feasibility Plan  
Annual Progress Report**

**January 1, 2008 Through December 31, 2008**

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**Miami-Dade  
Water and Sewer Department  
P.O. Box 33-0316, Miami, FL 33233-0316**

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## **SECTION I INTRODUCTION**

On November 15, 2007, the South Florida Governing Board (SFWMD) approved the Miami-Dade Consolidated PWS Water Use Permit (WUP).

Limiting Condition 37 of the WUP requires that the permittee provide annual updates per limiting condition 47, of the status of all alternative water supply (AWS) projects. The status report shall include work completed to date, expenditures, and any anticipated changes in the timelines.

Limiting Condition 50 of the WUP requires that the Miami-Dade Water & Sewer Department (MDWASD) provide the District with annual updates by March 15<sup>th</sup> of each year, describing the activities associated with the implementation of the approved reuse feasibility plan including the following information: (1) the status of distribution system construction, including location and capacity of a) existing reuse lines; b) proposed reuse lines to be constructed in the next five years; (2) a summary of uncommitted supplies for the next five years; (3) the status of reuse plan implementation including status of pilot projects, plan design construction, volume of reuse available, volume of wastewater disposed of; and (4) the status/copies of any ordinances related to reuse; (5) any proposed changes to the reuse plan set forth in Exhibit 30.

MDWASD hereby submits the second Alternative Water Supply Plan and Reuse Feasibility Plan Annual Progress Report summarizing the County's actions and efforts to comply with Limiting Conditions 37 and 50 of the WUP.

## **SECTION II STATUS OF REUSE DISTRIBUTION SYSTEM CONSTRUCTION**

**The status of distribution system construction, including location and capacity of a) existing reuse lines b) proposed reuse lines to be constructed in the next five years:**

### **Existing Reuse Lines**

Currently MDWASD has a distribution line to Florida International University's (FIU) Biscayne Bay Campus located at 3000 N.E. 151st Street, North Miami, Florida. The capacity of the existing reuse system for FIU irrigation is 1.5 MGD. MDWASD currently delivers an annual average flow of 0.092 MGD for irrigating 40 acres of landscape.

Installation of reclaimed water piping in the Village of Key Biscayne has been completed. The maximum capacity of the Village of Key Biscayne piping is 3 MGD.

### **Proposed Reuse Lines**

On May 20, 2008 the Miami-Dade Board of County Commissioners (BCC) approved a Professional Services Agreement to design the pipeline from the Central District Water Reclamation Plant (CDWRP) to the Village of Key Biscayne, with a connection to the Crandon Golf Key Biscayne. The consultant has completed 90% design, and pipe alignment has been selected based on the Basis of Design Report (BODR) recommendations. Lining of the existing pipe for the Bear Cut crossing was not successful, therefore the consultant is being asked to provide quotes for directional drilling of a new pipe and MDWASD staffs are evaluating a bridge crossing for installation of piping across Bear Cut. Construction of the pipeline is anticipated to be completed by January 2012.

On May 20, 2008, the BCC approved a contract with A&P Consulting Transportation Engineers Corp. to design the pipeline from the South District Water Reclamation Plant (SDWRP) to the Miami Metrozoo, where the reclaimed water will replenish the groundwater. The consultant has prepared the BODR for the pipeline and an alternative for the pipeline route has been selected. Use of the SFWMD canal right-of-way, or a portion of the right-a-way for the pipeline route, will result in significant cost savings to MDWASD. The pipeline will be installed by December 2013.

MDWASD's Engineering Division is re-designing the North District reclaimed water pipeline. The capacity of the pipeline is being re-evaluated since the Cities of North Miami and North Miami Beach have informed MDWASD that they are unable to provide the previously agreed upon reclaimed water distribution facilities. The pipeline will run from the south entrance gate of the North District Wastewater Treatment Plant (NDWWTP), heading south along the FIU Stadium Road, turning west along NE 151<sup>st</sup> Street and continuing west along NE 151<sup>st</sup> Street to the entrance of Biscayne Landing.

## **SECTION III SUMMARY OF UNCOMMITTED REUSE SUPPLIES**

### **Summary of uncommitted supplies for the next five years:**

MDWASD has met with retail customers including Biscayne Landings, Miami-Dade Parks and Recreation Department, Miami-Dade General Services Administration, Fisher Island, and the Village of Key Biscayne, to discuss the use of reclaimed water and is working on developing service agreements with future customers.

The consultant selected to design the Central District Water Reclamation Plant will evaluate the feasibility of adding reclaimed water users along the pipeline from the Plant to the Village of Key Biscayne, as well as to Fisher Island.

It is not anticipated that MDWASD will have any uncommitted reuse supplies in the next five years.

## **SECTION IV STATUS OF ALTERNATIVE WATER SUPPLY AND REUSE PLAN IMPLEMENTATION**

**The status of both the alternative water supply plan, and the reuse plan implementation including status of pilot projects, plan design construction, volume of reuse available, volume of wastewater disposed of, is described below:**

On July 14, 2005, MDWASD issued a Notice to Proceed to Ecology & Environment, Inc. to update the Reuse Feasibility Study (RFS). On June 13, 2006, the MDWASD received joint comments from the Florida Department of Environmental Protection (FDEP) and the SFWMD on the draft RFS Update. On September 18, 2006, the MDWASD held a workshop with the regulatory agencies to further discuss their comments and on May 3, 2007, the MDWASD submitted the Final Reuse Feasibility Study Update. On May 10, 2007, MDWASD submitted an Alternative Water Supply (AWS) Plan to the SFWMD and the FDEP. On November 1, 2007, MDWASD submitted the final AWS Plan and schedule to the SFWMD, incorporating comments from FDEP and the SFWMD.

Individual projects are described below:

### **Hialeah Floridan Aquifer Reverse Osmosis (RO) Water Treatment Plant**

On July 26, 2007, the Miami-Dade BCC approved a Joint Participation Agreement (JPA) between Miami-Dade County and the City of Hialeah for this project. On October 25, 2007, the City of Hialeah provided MDWASD with a tentative schedule for the construction of the RO plant. Miami-Dade County Mayor Carlos Alvarez and City of Hialeah Mayor Julio Robaina signed the JPA on December 27, 2007.

On February 7 and February 8, 2008, MDWASD attended a workshop hosted by the City of Hialeah's consultant, Parsons, regarding the design and construction of the Hialeah Floridan Aquifer Reverse Osmosis Water Treatment Plant.

On March 26, 2008, the City issued a Request for Proposals (RFP) for the drilling, construction and testing of Floridan aquifer test well systems for the Project. On April 24 and May 13, 2008, the City extended the deadlines for the RFP submittals. Parsons and other City consultants are currently working to obtain a permit for the discharge of drilling, well development and pump test water.

On June 5, 2008, the City of Hialeah held a non-mandatory Pre-Request for Qualifications (Pre-RFQ) meeting for interested firms for the design, construction, start-up, testing, commissioning and operation of the Reverse Osmosis Water Treatment Plant and Wellfield System. On September 3, 2008, the Committee met for the ranking of the companies who responded to the Request for Qualifications. On September 5, 2008, Mayor Julio Robaina recommended that the City Council select three responding companies, American Water-Pridesa, LLC, Inima USA Corp. and Veolia Water North American-South, LLC, as sufficiently qualified to respond to the forthcoming Request for Proposal, when advertised.

On November 19, 2008, the City of Hialeah received the Request for Proposals for the installation of Floridan test wells. On December 23, 2008 the City Council approved the contract with Diversified Drilling Corporation. It is anticipated that the City will issue a Notice to Proceed

in the near future.

The City of Hialeah is tracking all expenditures.

### **Upper Floridan Aquifer Blending**

Starting in 2006, MDWASD began blending water from the Floridan aquifer with Biscayne aquifer water at the Alexander Orr Water Treatment Plant. Concerns about the finished water quality arose during blending. Sodium and chloride levels nearly tripled, and the total dissolved solids (TDS) doubled. This change in water quality impacted the water distribution system that is serviced by 40 to 60 year old, 2" galvanized water mains. The baseline number of water quality complaints rose from an average of 27 complaints per month before blending, to 107 complaints per month during blending of Floridan aquifer water. The number of complaints for the Hialeah/Preston service area, which was not blending, remained unchanged at an average of 17 per month.

Based on the complaints, MDWASD assigned Carollo Engineers to evaluate the water quality impacts of the blending. On November 12, 2008, MDWASD presented the results of the investigation to the SFWMD. Based on the presentation, the SFWMD administratively approved reduction of blending at Alexander Orr.

MDWASD has completed design of the wells for Upper Floridan Aquifer blending at Hialeah/Preston. However this project, if implemented, may also result in adverse water quality impacts in the potable water distribution system. On December 5, 2008, MDWASD requested that the project be postponed until an alternative plan can be submitted to the District for approval. At this time, water demands are significantly lower than the Biscayne aquifer water use limitation in the WUP. MDWASD estimates that with a two-day per week irrigation Ordinance, potable water demand per capita will remain near the current level.

Expenditures for the Upper Floridan Blending project, through December 31, 2008, include \$375,000 for the design and permits of the blending wells, and \$20,000 for the Water Quality Evaluation.

### **South District Water Reclamation Plant**

On June 26, 2007, the BCC approved the Request to Advertise for the design and construction management services for the water reclamation project associated with the South District Wastewater Treatment Plant. The award contract for the design of the new South District Water Reclamation Plant (SDWRP) was approved by the BCC on December 4, 2007.

The consultant is on schedule and is currently developing the preliminary design. The new SDWRP will be constructed west of the South District Wastewater Treatment Plant. On November 20, 2008 the BCC approved the purchase of the property and approved a resolution authorizing the construction of the SDWRP on the property.

On May 20, 2008, the BCC approved a contract with A&P Consulting Transportation Engineers Corp. to design the pipeline from the SDWRP to the Miami Metrozoo, where the reclaimed water will replenish the groundwater. The consultant has prepared the BODR for the pipeline and an alternative for the pipeline route has been selected. Use of the SFWMD canal right-of-way, or a portion of the right-a-way for the pipeline route, will result in significant cost savings to

MDWASD.

The consultant has completed a Phase 1 Environmental Site Assessment (ESA) for the proposed water reclamation site and the recharge area at Miami Metrozoo. A Phase 2 ESA at the water reclamation plant site is currently underway. A conceptual site plan has also been completed by the consultant.

The geotechnical field work and surveying work, which are required to support the preliminary design of the recharge facilities and the groundwater modeling at the Miami Metrozoo site, have been completed. The groundwater flow model and the development of design criteria for the different recharge options are nearing completion.

On-site irrigation and in-plant use of reclaimed water resulted in 5.106 MGD of water reclamation at the SDWWTP in FY2008. The estimated capacity of the current SDWWTP reuse system is 4.173 MGD.

Expenditures through December 31, 2008 for the SDWRP Plant and Pilot are \$1,891,211.35. Expenditures through December 31, 2008 for the SDWRP Pipeline are \$140,942.13.

### **West District Water Reclamation Plant**

On January 30 and May 13, 2008, MDWASD met with the District to discuss potential available lands where the West District Water Reclamation Plant (WDWRP) could be located. MDWASD has conducted basic site screening of potential locations for the WDWRP. On July 10, 2008, ERM Southeast, Inc. was selected to assist in the site screening. On July 23, 2008, the consultant was approved to establish evaluation criteria and methodology, and to evaluate and rank potential sites for the West District plant. The consultant has met with various federal, state and local agencies as part of the site evaluation process. The site selection recommendation from the consultant is scheduled for June 2009.

MDWASD staff continues to work on preliminary sizing and design for the proposed WDWRP. Currently various alternatives, including plant capacity associated with reclaimed water opportunities, are being developed in conjunction with system-wide wastewater transmission and treatment facilities planning and the ocean outfall legislation implementation.

Expenditures through this reporting period, for the WDWRP were approximately \$118,000.

### **North District Wastewater Treatment Plant Reuse Projects**

On June 26, 2007, the BCC approved the Request to Advertise, for design and construction management services for the water reclamation project at the North District Wastewater Treatment Plant (NDWWTP). On November 6, 2007 the BCC approved a Professional Services Agreement to design the North District Water Reclamation Plant. A Notice to Proceed was issued to the consultant on December 7, 2007. Survey and geotechnical investigations have been completed.

As part of the planning and design phases of the 7 MGD North District Water Reclamation Plant (NDWRP), several meetings were held with representatives from the cities of North Miami and North Miami Beach. Both Cities have indicated that they are unable to provide the previously agreed upon reclaimed water distribution facilities from MDWASD's proposed point of delivery



on the west side of Biscayne Boulevard, even if MDWASD provides reclaimed water at no cost. Additionally, MDWASD is evaluating water reclamation projects for the NDWWTP in light of the recently enacted ocean outfall legislation.

For these reasons MDWASD requested that the SFWMD approve a modification to the NDWWTP project. On September 16, 2008, the SFWMD approved the implementation of a 3.5 MGD reclaimed water project at NDWWTP, to be completed by January 1, 2012, and requested that MDWASD submit additional information addressing a larger reuse project at the NDWWTP, to the SFWMD no later than March 15, 2009.

On August 27, 2008 the consultant submitted a technical memo to MDWASD, on the design of a 3.5 MGD water reclamation plant. The design of the pipeline is being revised by MDWASD staff. MDWASD is also evaluating whether the project can be completed in advance of the December 2011 construction deadline.

The NDWWTP currently has a reuse capacity of 4.44 MGD. In FY2008, 2.88 MGD of wastewater was treated and reused for in-plant processes at NDWWTP. Irrigation at Florida International University's Biscayne Bay campus accounted for an additional 0.092 MGD of reuse from the NDWWTP.

Expenditures through December 31, 2008, for the NDWRP Plant are \$763,884.32, and \$86,475 for the NDWRP pipeline.

### **Central District Wastewater Treatment Plant Reuse Projects**

On June 26, 2007, the BCC approved the Request to Advertise, for design and construction management services of the Water Reclamation Plant at the Central District Wastewater Treatment Plant (CDWWTP). The selected consultant for the design was approved by the BCC on December 4, 2007. The Notice to Proceed was issued on December 28, 2007, and on January 15, 2008, a kick-off meeting with the consultant was held to discuss the initial work order for the project. The consultant has submitted a "Regulatory and Practical Reviews" technical report, along with technical memorandums discussing distribution pipe diameter, plant storage and treatment options. Geotechnical work has been completed. In order to initiate early procurement of the microfiltration membranes, a Request for Information was forwarded to the various membrane manufacturers to determine if equipment complies with design parameters and the membrane procurement process is underway. 30% design drawings have been reviewed by the department and the BODR has been finalized.

On May 20, 2008, the BCC approved a Professional Services Agreement to design the pipeline from the Central District Water Reclamation Plant (CDWRP) to the Village of Key Biscayne, with a connection to the Crandon Golf Key Biscayne. The consultant has completed 90% design, and pipe alignment has been selected based on the BODR recommendations. Lining of the existing pipe for the Bear Cut crossing was not successful, therefore the consultant is being asked to provide quotes for directional drilling of a new pipe.

Installation of reclaimed water piping was initiated on June 29, 2007 in the Village of Key Biscayne. On May 13, 2008, MDWASD gave a presentation to the Village of Key Biscayne Council on the CDWRP and the associated piping project. Additionally, on May 13, 2008, the Village Council awarded a contract to Conquest Engineering Group, for the construction of the reclaimed water distribution system within the Village, utilizing funding from Miami-Dade County and Alternative Water Supply Funding from the SFWMD. The reclaimed water piping in the

Village of Key Biscayne has been installed.

In FY2008, the CDWWTP used 5.9 MGD of reclaimed water for in-plant processes. The CDWWTP has an estimated maximum reuse capacity of 7.878 MGD.

Expenditure as of December 31, 2008 for the both the CDWRP plant and pipeline are \$1,495,764.40.

### **FPL Turkey Point 14 MGD and 70 MGD**

MDWASD staff is meeting monthly with representatives from Florida Power and Light (FPL). Four (4) main alternatives were considered for providing the reuse water. MDWASD developed cost estimates for these alternatives, and the selected alternative will provide up to 90 MGD of HLD-treated water from the SDWWTP for FPL use. Additionally, MDWASD will build and operate a pipeline which will deliver the water to Turkey Point. The construction of the pipeline is scheduled to be complete in 2017.

Expenditures for the FPL Turkey Point Reuse Project, through December 31, 2008, are approximately \$100,400.

### **Aquifer Recharge Pilot Project**

The Aquifer Recharge Pilot project at the former US Coast Guard's Richmond Heights Complex, was evaluated for its possible use for the full scale South District Water Reclamation Plant (SDWRP), however it was decided it would best to conduct the pilot at the South District Wastewater Treatment Plant (SDWWTP).

Permits for the pilot plant at the SDWWTP, have been received, and construction has started. Preparations are underway for pilot testing the treatment technology. On October 23, 2008, MDWASD requested that the FDEP waive the pilot testing requirements for the Aquifer Recharge Pilot. On December 31, 2008, FDEP responded to MDWASD's request. FDEP asked that MDWASD complete a plan of study for the pilot testing, and submit the plan to FDEP for permitting evaluation.

Expenditures for the original Aquifer Recharge Pilot Plant, for design and permitting, totaled \$486,409.28. Costs associated with the pilot at SDWWTP are included in the SDWRP costs.

### **Biscayne Bay Coastal Wetlands Rehydration Pilot Project**

On November 10, 2007, MDWASD submitted a conceptual plan and basis of design for the revised project to the SFWMD. The Notice to Professional Consultants requesting project proposals was advertised on May 12, 2008. On May 22, 2008, MDWASD received comments on the Conceptual Plan from the SFWMD. On May 27, 2008 Miami-Dade County held a RFP Pre-Submittal Project Briefing for the Project. The recommendation for the consultant selection is scheduled to go before the Board of County Commissioners (BCC) on January 22, 2009. The Agreement with FIU for ecological and aquatic toxicity testing is being scheduled for BCC review in March 2009.

Expenditures through December 31, 2008, for the BBCWRP were \$1,550,870.22.

## **SECTION V STATUS OF REUSE ORDINANCES**

MDWASD is currently evaluating reuse rates for both wholesale and retail customers.

## **SECTION VI PROPOSED CHANGES TO EXHIBIT 29 AND 30**

As part of the planning and design phases of the 7 MGD North District Water Reclamation Plant, several meetings were held with representatives from the cities of North Miami and North Miami Beach. Both Cities have indicated that they are unable to provide the previously agreed upon reclaimed water distribution facilities from MDWASD's proposed point of delivery on the west side of Biscayne Boulevard, even if MDWASD provides reclaimed water at no cost. Additionally, MDWASD is evaluating water reclamation projects for the NDWWTP in light of the recently passed ocean outfall legislation.

For these reasons MDWASD requested that the SFWMD approve a modification to the NDWWTP project. On September 16, 2008, the SFWMD approved the implementation of a 3.5 MGD reclaimed water project at NDWWTP, to be completed by January 1, 2012, and requested that MDWASD submit additional information addressing a larger reuse project at the NDWWTP, to the SFWMD no later than March 15, 2009.

Additionally, MDWASD requested that the Upper Floridan aquifer blending project at Hialeah-Preston be postponed until an alternative plan can be submitted to the District for approval.

At this time MDWASD is not asking for a change to Exhibit 29 or 30, but may need to revise the NDWRP project capacity and/or timeline in the future.

## **APPENDIX A ANNUAL REUSE REPORTS**