



**HENDRY COUNTY**

**10-YEAR WATER SUPPLY FACILITIES**

**WORK PLAN**

**2007-2017**

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# HENDRY COUNTY 10-YEAR WATER SUPPLY FACILITIES WORK PLAN

## TABLE OF CONTENTS

Section No.	Title	Page No.
1.0	INTRODUCTION	
1.1	Background and Objective	1-1
2.0	INFRASTRUCTURE – DATA AND ANALYSIS	
2.1	General	2-1
2.2	Potable Water Service Areas	2-1
2.3	Existing Potable Water Systems	2-1
2.3.1	Hendry County Water Systems	2-1
A.	Port LaBelle Utility System (PLUS)	2-1
I.	PLUS Treatment	2-3
II.	PLUS Raw Water Supply	2-3
III.	PLUS Service Area	2-4
IV.	Current PLUS Supply Demands	2-4
B.	Airglades Industrial Park	2-4
C.	West Hendry Area	2-5
2.3.2	Other Water Supply Systems	2-5
A.	South Shore Water Association (SSWA)	2-6
B.	City of Clewiston	2-6
C.	City of LaBelle	2-6
D.	Hendry Correctional Institution	2-6
E.	Remainder of Unincorporated Hendry County	2-7
2.4	Reclaimed Water Systems	2-7
2.5	Existing Conservation Measures	2-7
3.0	Facility Capacity Analysis	
3.1	Introduction	3-1

# HENDRY COUNTY 10-YEAR WATER SUPPLY FACILITIES WORK PLAN

## TABLE OF CONTENTS (CONTINUED)

Section No.	Title	Page No.
3.2	Growth Areas and Population Trends	3-1
3.2.1	PLUS Potable Water Demand Projections	3-1
3.2.2	Airglades Industrial Park Potable Water Demand Projections	3-2
3.2.3	West Hendry Area Potable Water Demand Projections	3-2
3.3	Regional Planning Initiatives	3-3
4.0	10-Year Work Plan	
4.1	Introduction	4-1
4.2	Capital Improvements Schedule	4-1
4.2.2	Raw Water Supply	4-1
4.2.3	Potable Water Treatment	4-3
4.2.4	Reuse System Alternatives	4-4
4.2.5	Conservation Initiatives	4-6

APPENDIX “A” – A Guide for Local Governments in Preparing Water Supply Comprehensive Plan  
Amendments and Water Supply Facility Work Plans

APPENDIX “B” – Consumptive Use Permit

APPENDIX “C” – Impact Analysis – Port LaBelle Utility (SFWMD CUP #26-00096-W)

APPENDIX “D” – Hendry County Water Restriction Ordinance

APPENDIX “E” - Hendry County PLUS Rate Ordinance

APPENDIX “F” - Chapter 62-610, Florida Administrative Code

APPENDIX “G” - Hendry County Utility Master Plan - Level 1 Technical Memorandum

APPENDIX “H” - Proposed Hendry County Utility Zones

APPENDIX “I” - Population Growth and Water Demand Model For Port LaBelle, Florida

# Section 1

## Introduction

### 1.1 Background and Objective

In an effort to demonstrate the ability to provide adequate water supply for the next twenty (20) years, Florida Legislature enacted bills in 2002, 2004 and 2005 to more effectively address the State's water supply situation.

The 2002 legislation added requirements to Chapter 163 of the Florida Statutes (F.S.) for local governments to prepare 10-year water supply facilities work plans and to incorporate certain portions of the work plan into the Comprehensive Plan. The Legislature further amended the plan in 2004 to extend the deadline to prepare a 10-year water supply facilities work plan to December 1, 2006. In 2005, the Legislature enacted Senate Bills 360 and 444, which significantly changes Chapter 173 and 363, F.S. to improve coordination of water supply and land use planning. This legislation strengthened the linkage between the regional water supply plans prepared by water management districts and comprehensive plans prepared by local governments.

More specifically, the legislative changes require local governments to:

1. Coordinate the appropriate portions of the comprehensive plan with the water management district's (South Florida Water Management District) regional water supply plan (Lower West Coast Water Supply plan).
2. Ensure that the Land Use Plan is based on adequate water supplies and public facilities and services.
3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which local government anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving a building permit, to determine whether adequate water supplies will be available to service the development by the date the certificate of occupancy is issued.
4. Revise the appropriate element of the Comprehensive Plan to:
  - a) Identify and incorporate alternative water supply projects selected by the local government
  - b) Identify the traditional and alternative water supply projects and conservation and reuse programs necessary to meet current and future water use demands within the local government's jurisdiction.
  - c) Include a water supply facilities work plan for at least a 10-year planning period for construction of public, private and regional supply facilities which are identified in the element as necessary to serve existing and new development.

5. Revise the Conservation Element as necessary to assess projected water needs and sources for at least a 10-year planning period, considering the appropriate regional water supply plan.
6. Revise the Intergovernmental Coordination Element as necessary to assure coordination of the comprehensive plan with the appropriate regional water supply plan.
7. Address in the Evaluation and Appraisal Report (EAR), the extent to which local government has implemented the 10-year water supply facilities work plan.

Objective: The Work Plan Amendment “should ensure the construction of public, private, and regional water supply facilities, including development of alternative water supplies and conservation and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period”. This work plan has been prepared utilizing the Florida Department of Community Affairs (DCA), Division of Community Planning’s *A Guide for Local Governments in Preparing Water Supply Comprehensive Plan Amendments and Water Supply Facility Work Plans* ([Appendix A](#)). The plan is to be prepared by each local government to address all of the water supply, treatment and distribution facilities that are planned by all entities providing service within its jurisdiction, regardless of ownership or responsibility for the individual facilities. For Hendry County, this jurisdiction includes the Port LaBelle Utility System area and all remaining unincorporated portions of Hendry County, including those unincorporated areas which may be served by either the City of Clewiston or City of LaBelle, but which are not directly in either of the City’s limits. A more thorough description of the service areas and infrastructure within Hendry County is provided in Section 2.

## Section 2

### Infrastructure – Data and Analysis

#### 2.1 General

The majority of the land area in Hendry County is served by individual wells. Central potable water systems include the City of Clewiston, the City of LaBelle, Port LaBelle, and the South Shore Water Association. This section provides a thorough description of the infrastructure, which falls within the jurisdiction of Hendry County, as well as a brief description of the infrastructure, which falls within the service areas for the Cities of Clewiston and LaBelle as well as the South Shore Water Association, the Hendry Correctional Institution and the West Hendry Area.

#### 2.2 Potable Water Service Areas

Provided in [Figure 2-1](#) is a map of Hendry County which displays the service areas for Hendry County, City of LaBelle, Clewiston, South Shores Water Association and the Hendry Correctional Institution. As shown, the service areas for the Cities of Clewiston and LaBelle include primarily each City's limits. In addition, the City Council for the City of LaBelle has approved the service area which extends 5-miles to the west of the City limits, 4-miles to the east (excluding Port LaBelle) and 3-miles to the south. South Shores Water Association has the franchise rights to serve the areas along U.S. 27, west from Flaghole Road to South Bay on the east, excluding the City of Clewiston service area.

Hendry County's service area currently only includes the Port LaBelle area, although they also have customers within a portion of the South Shore Water Association's service area at Airglades Industrial Park. Currently the majority of the West Hendry Area is included within the City of LaBelle's services area, as displayed in [Figure 2-1](#). Only a small portion of this area (approximately 1-mile to the Lee County line) does not fall within the City's service area. Although the City is committed to providing service to the West Hendry Area, consideration for potential development and the ability to meet the potable water needs must be considered within this plan. The needs for all other service areas must be considered within their individual Water Supply Plans.

#### 2.3 Existing Potable Water Systems

##### 2.3.1 Hendry County Systems

As indicated above, Hendry County's service is limited to the Port LaBelle Utility System and the Airglades Industrial Park. In addition, consideration must be given to the area referred to as the West Hendry Area. This area is currently not within a defined or adopted service area of the County or any other utility provider, but consideration must be given to this area, due to its growth potential.

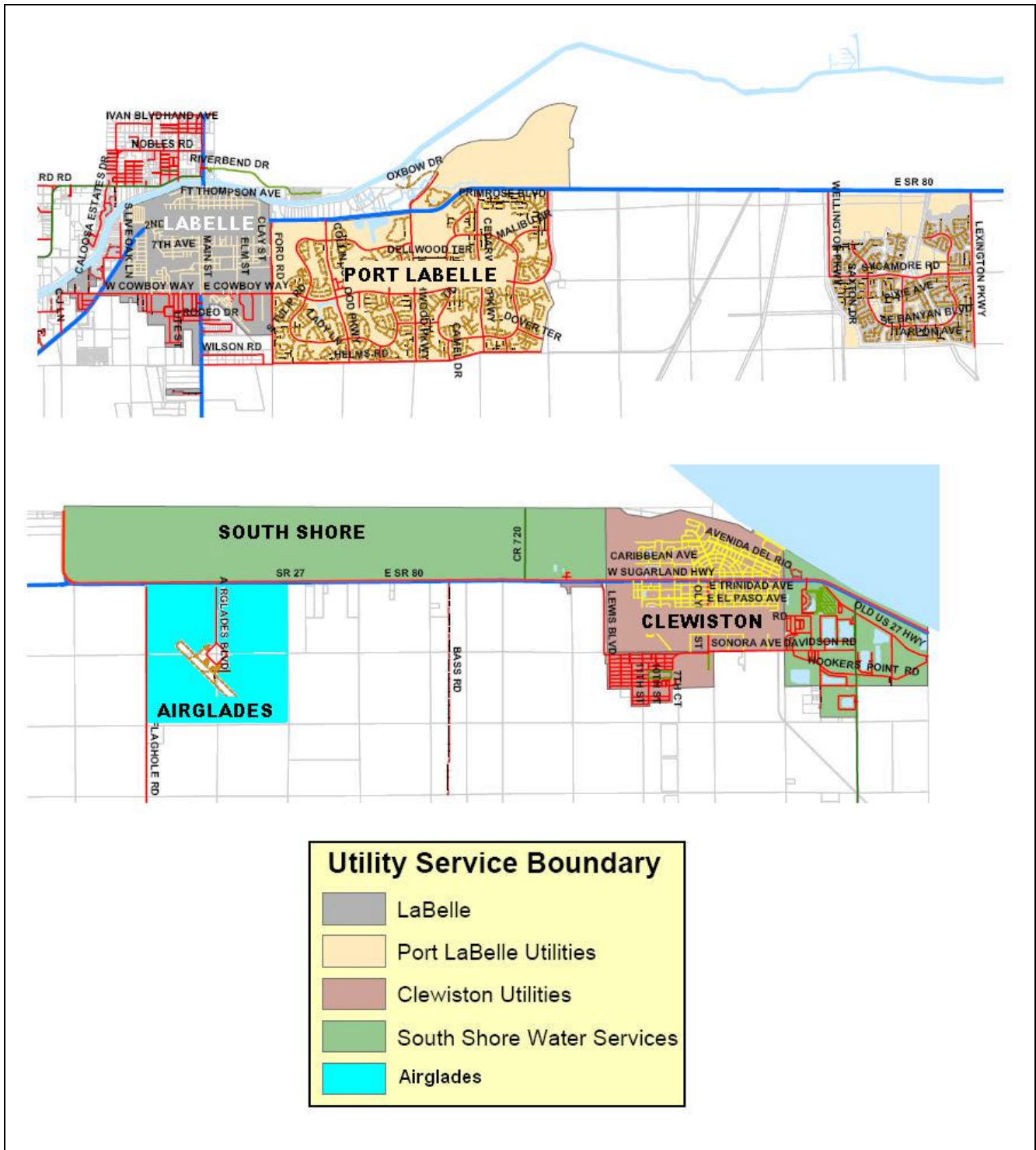


Figure 2-1: Water Supply Utility Service Boundaries in Hendry County.

## A. Port LaBelle Utility System (PLUS)

Hendry County owns and operates the Port LaBelle Utility System (PLUS), which was purchased from General Development Corporation in 1996. The existing system consists of two (2) raw water wells; a recently constructed membrane softening (nano-filtration) water treatment plant (WTP), rated to treat 0.90 million gallons per day (MGD) and expandable to 1.80 MGD; a ground storage reservoir (GSR) which stores finished water prior to being released to the transmission/distribution system; a high service pumping station and approximately 200 linear feet of transmission/distribution piping. The location of the PLUS WTP is displayed in [Figure 2-2](#).

### I PLUS Treatment

The new nano-filtration WTP has a permitted treatment capacity of 0.90 MGD and was designed with a 70-percent recovery. This means that to produce 0.90 MGD of finished water, 1.29 MGD of raw water has to be withdrawn. The new WTP replaced the original Port LaBelle lime softening plant, which was designed to treat 0.50 MGD. The new nano-filtration WTP was also designed to be expandable to 1.80 MGD, as mentioned above. The expanded capacity will allow the County the ability to meet the demands of the Port LaBelle service area for the period of this plan.

Raw water from the two (2) on-site wells is treated with sulfuric acid and scale inhibitor; fed through the cartridge pre-filters and treated by the nano-filtration membrane process. Permeate water from the membrane process is fed through a degasifier (for hydrogen sulfide removal), injected with caustic for pH adjustment and then fed into an on-site clearwell prior to being disinfected and released to the on-site 1.5 MG ground storage reservoir (GSR).

Finished water is delivered by a high service pump station through a 16-inch water transmission main. Concentrate from the treatment process is pumped to the County's PLUS wastewater treatment plant (WWTP) where it is treated and sent to the on-site percolation pond system.

The PLUS transmission/distribution system consists of approximately 200 miles of potable water main, which ranges in size from 6-inches in diameter to 16-inches in diameter. No storage or booster pumping is provided within the distribution system. All storage and pumping is adequately provided at the new WTP.

### II PLUS Raw Water Supply Wells

Raw water is supplied from the two (2) existing on-site raw water wells through a single raw water main to the treatment process. Both wells withdraw water from the Sandstone Aquifer, and are permitted under consumptive use permit (CUP) #26-00096-W. The south well is 300 feet deep, 8-inches in diameter; and has steel casing installed to a depth of 250 feet. The north well is 283 feet deep, 14-inches in diameter; and has steel casing installed to a depth of 220 feet. Both wells have slotted screens at the bottom of the casing. Newly installed stainless steel submersible pumps are utilized to deliver raw water from the wells to the treatment process. The pumps were designed to pump at a rate of 560 gallons per minute (gpm), which is the flow required to feed two (2) of the three (3) treatment trains. As such, both wells are required to operate the WTP at full treatment capacity, with all three (3) treatment trains operating. The County is currently in the process of having a third well designed and constructed to provide redundancy.



As part of the construction of the new WTP, both wells were video-logged and rehabilitated through AirBursting®. AirBursting® is a cleaning procedure which utilizes low volume, high-pressure air to help remove mineral scale and bio-film from the casing and screen. Step-drawdown testing following the rehabilitation has demonstrated both wells have the capacity to pump in excess of that required for the current treatment facility (0.90 MGD), with minimal drawdown.

The current CUP expires November 13, 2007 and has a maximum annual withdrawal of 117 MG (average of 0.321 MGD) and the maximum daily withdrawal of 0.93 MGD. A copy of the current CUP is included in [Appendix B](#). Based on the water demand forecast in Section 3, the maximum annual withdrawal limit in the current CUP will be exceeded and an increase in allocation is required. With the CUP renewal, the County will seek to increase the capacity of withdrawal from the Sandstone Aquifer to 1.20 MGD, which will provide the quantity necessary to produce 0.90 MGD of finished water, with a 75-percent recovery. Withdrawal from the Sandstone Aquifer is important as the current treatment process was designed to treat based on the water quality from this aquifer system. An impact analysis performed by Murray Consultants, Inc. utilizing MODFLOW modeling software confirmed the ability to increase the pumping capacity from the Sandstone Aquifer to 1.20 MGD, without causing adverse affects to the current legal existing users ([Appendix C](#)). The County is in the process of preparing the CUP renewal application and plans on submitting the application prior to the expiration date. With this application, the County will seek to 1) increase the current CUP capacity from 0.321 MGD to 1.20 MGD and 2) allow for the installation of a third well for redundancy.

### III PLUS Service Area

The existing system currently serves the Port LaBelle service area, which includes residences within both Glades and Hendry County. In addition, the County is currently nearing completion on the installation of a 16-inch water transmission main that extends to and throughout Banyan Village located off Wellington Parkway. The Port LaBelle service area was previously displayed in Figure 2-1.

### IV Current PLUS Supply Demands

The current records indicate that the daily water production rate is approximately 0.300 MGD. This production rate is approximately 94-percent of the permitted capacity in the current CUP. The actual demand is higher than this figure as the County has requested assistance from the City of LaBelle for supplying water through an interconnection to the Unit 1 area (Country Village, Country Oaks Elementary areas). The demand in June prior to the switch for Unit 1 was 0.357 MGD.

Currently, the PLUS provides water to 1,585 customers, which consists primarily of single family homes throughout Port LaBelle along with three churches, four condominiums, two schools, a Wastewater Treatment Plant (WWTP), one trailer park and nineteen miscellaneous users. The per capita rate for the PLUS water system is approximately 173 gallons per day (GPD) per residential connection.

#### B. Airglades Industrial Park

Hendry County owns and operates a small system at the Airglades Industrial Park. The location of the Airglades Industrial Park was previously displayed in Figure 2-1. This system is actually within the South Shore Water Association's service area, but the utility infrastructure and customers belong to the

County. The County purchases water directly from the South Shore Water Association to serve this area. Water is stored in a 350,000 gallon ground storage reservoir. Water is disinfected and distributed to the customers through a 10-inch water distribution line. The County provides service to customers within this 220-acre serve area.

### C. West Hendry Area

The area referred to as the West Hendry Area consists primarily of the corridor along State Road (S.R.) 80 (south of the Caloosahatchee River) and S.R. 78 (north of the Caloosahatchee River) from the Lee County line to the City of LaBelle City limits. Within this area, there have been several potential developments which have been presented to Hendry County for planning and ultimately construction purposes. The recognized potential for development within this West Hendry Area led Hendry County to seek an amendment to the comprehensive plan, which would accommodate the potential for development within this area.

Hendry County recently received review comments from the Department of Community Affairs (DCA) and various other external agencies regarding the proposed comprehensive plan amendments for this area. Amongst these comments was the requirement for the County to address how the potable water needs of the area would be met.

As with the majority of Hendry County, the West Hendry Area is currently being served primarily by individual wells or small potable water systems serving specific sources (i.e., RV parks, mobile home parks, etc.). Reclaimed water is currently not available in this area. Individual water use permits have been obtained for agricultural uses, and potable water is also being utilized for urban irrigation.

Hendry County has produced a water and wastewater service plan as detailed in Appendix G. As an alternative to utility service by Hendry County, the City of LaBelle seeks a potable water service area extending to within 1-mile of the Lee County line. Once the City's new WTP has been constructed, and the necessary transmission components have been installed, the City would have capacity to serve potential developments within this area. Currently, Riverbend Motorcoach Resort operates the only private treatment system in this area. Their system withdraws water from the Caloosahatchee River and treats it with an ultrafiltration (UF) process, followed by reverse osmosis. Concentrate from this system is combined with effluent from the facility's on-site WWTP and applied to an on-site percolation pond.

Until a centralized water supply system is completed (estimated completion in late 2009 or early 2010), the area will continue to be served by either individual wells or temporary private WTPs, constructed by developments and either converted into pumping stations or turned over to the City or County for operation.

### 2.3.2 Other Water Supply Systems

There are two (2) municipal public water systems located within Hendry County, the City of LaBelle and the City of Clewiston. In addition, there are two (2) other utility systems which must be accounted for: the South Shore Water Association and the Hendry Correctional Institution. Provided below is a brief description of each of these systems.

#### A. South Shore Water Association (SSWA)

The South Shore Water Association (SSWA) buys water from the US Sugar Corporation. The U.S. Sugar Corporation operates its 6.0 MGD surface water treatment facility in the Clewiston area, and also provides potable water for its own sugar refining operations. The U.S. Sugar Corporation's WTP utilizes surface water from Lake Okeechobee for treatment. Upon completion of the City of Clewiston's new RO WTP, the SSWA will stop purchasing water from the U.S. Sugar Corporation and will begin purchasing water from the City of Clewiston. The U.S. Sugar Corporation will continue to operate its facility for operation of the sugar refining facilities. As displayed in Figure 2-1, the SSWA service area extends from Flaghole Road on the west to the City of South Bay, along U.S. 27.

#### B. City of Clewiston

As with the SSWA, the City of Clewiston currently purchases water from the U.S. Sugar Corporation for supply to its customers. The City of Clewiston's customers are located within the City limits of Clewiston as well as Harlem, as displayed previously in Figure 2-1. The City of Clewiston is in the process of constructing a 3.0 MGD RO WTP which will treat raw brackish water supplied from the Floridan Aquifer. Once startup and testing on the new facility have been completed, the City will no longer purchase water from the U.S. Sugar Corporation. Additionally, the City's new RO WTP will supply water to the SSWA. The City's new RO WTP will meet the demand for the proposed planning period.

#### C. City of LaBelle

The City of LaBelle owns and operates a 1.0 MGD lime softening plant which provides potable water to its current customers within the City limits. Raw water for the existing facility is withdrawn from five (5) Water Table Aquifer wells, ranging in size from 6 to 8 inches in diameter and rated to pump between 140 gpm and 225 gpm.

In order to meet the expanded demand of the recently annexed 5,600 acres South LaBelle Community, the City is in the process of designing a new RO WTP that will have an initial capacity of 2.5 MGD, expandable to a buildout capacity of 8.0 MGD. The new facility is projected to be completed in late 2009 or early 2010. Once the new WTP has been placed into service, the existing WTP will be decommissioned. The City is currently performing exploratory tests on the raw water to determine the water quality and will begin pilot testing shortly. The City's water supply for the new WTP will come from the Floridan Aquifer (Lower Hawthorne) system. The City anticipates utilizing 2-3 wells to supply water to the new facility. The existing LaBelle WTP currently utilizes raw water from the Water Table Aquifer for water supply. The City's new RO WTP will meet the demand for the proposed planning period. This area includes the majority of the West Hendry Area described above.

In addition to the City's existing transmission and distribution system, they are provided with an interconnection to Hendry County's PLUS potable water system. This interconnection provides reliability for both systems during critical or emergency periods.

#### D. Hendry Correctional Institution

The Florida Department of Corrections owns and operates a 0.60 MGD lime softening plant in the southern portion of Hendry County for the sole purpose of service the Hendry Correctional Institution.

The Hendry Correctional Institution is located in a remote location, removed from any other service area. Two (2) 10-inch raw water wells withdraw water from the Sandstone Aquifer to supply the treatment facility. Finished water is stored in an on-site 200,000-gallon elevated storage tank prior to being released to the distribution system. The water treatment and distribution facilities provide service solely to the Hendry Correctional Institution, adjacent work camp and staff housing area. There are currently no plans to expand the facility in the near future.

#### E. Remainder of Unincorporated Hendry County

The remainder of unincorporated Hendry County is provided with water through individual residential wells. As the majority of the population within Hendry County is located in the vicinity of existing service areas, there are no plans to expand service beyond the existing service areas. Population growth trends do not indicate growth within unincorporated areas currently not being served, other than the West Hendry Area discussed above.

## 2.4 Reclaimed Water Systems

Reclaimed water systems are systems which utilize effluent (treated wastewater) from wastewater treatment plants (WWTPs) for a beneficial purpose. Uses include irrigation (lawns, medians, sod fields and golf courses) and for groundwater recharge through rapid infiltration basins (RIBS) or spray fields. The use of reclaimed water can result in a direct decrease in potable water demand for reclaimed water used for irrigation purposes and an increase in available groundwater from groundwater recharging. Provided below is a list of the existing reclaimed water systems in Hendry County and the methods of reuse:

Utility Provider	Capacity (MGD)	Method of Reuse
City of LaBelle	0.75	99-acre RIB system
City of Clewiston	1.50	193-acre restricted access sprayfield, with underdrains that discharge into Sugarland Drainage District's Canal #3
Port LaBelle Utility System	0.50	9-acre RIB system (3 ponds)
Hendry Correctional Institution	0.36	56-acre restricted access spray field and two (2) on-site RIBS

Of the above listed systems, only the Port LaBelle Utility System (PLUS) is owned and operated by Hendry County. The PLUS WWTP treatment system consists of an extended aeration plant, permitted to treat up to 0.500 MGD, annual average daily flow (AADF) through FDEP permit FLA014290. The current treatment facility treats the wastewater to secondary treatment level and basic disinfection level. This level of treatment limits the method of reuse to groundwater recharge through either RIBS or restricted public access effluent spray irrigation fields. Treated effluent is transferred to the on-site percolation/evaporation pond system via approximately \_\_\_\_\_ linear feet of \_\_\_\_\_-inch reclaimed water piping.

## 2.5 Existing Conservation Measures

Hendry County has implemented a water conservation program for the current potable water service area which includes the following:

- 1) Phased Water restrictions – The County has passed an ordinance which restricts water usage during dry conditions for lawn irrigation. A copy of the Water Restriction Ordinance is provided in [Appendix D](#)
- 2) Residential Fixture Improvements – To further promote conservation and reduce water loss from leaking fixtures within residences, the County obtained a grant that was specifically developed to pay plumbing costs for repair of leaking fixtures within residences in the County’s service area.
- 3) Water Utility Maintenance - An on-going preventative maintenance program includes water main replacement/upgrade, valve exercising program, fire hydrant rehab, plant and water supply facility inspections. The County operates a cross-connection control program to ensure that potentially hazardous substances do not contaminate the water distribution system.
- 4) The County replaces all small meters (3/4-inch thru 2 inch) on a 10-year cycle or every 1 MG through the meter, whichever comes first.
- 5) The County recently modified their rates to include a tiered structure designed to promote water conservation. The tiered structure was developed to encourage customers to use less water. As the usage increases, the rates also increase. A copy of the Rate Ordinance is provided in [Appendix E](#)

## Section 3

### Facility Capacity Analysis

#### 3.1 Introduction

Hendry County has developed a water systems improvements program based on historical and projected growth trends for the current and potential service areas. These areas consist of the PLUS service area, the Airglades Industrial Park and the West Hendry Area. Historical projections for Hendry County have utilized information from the Bureau of Economic and Business Research (BEBR) at the University of Florida for population and growth trends. From this data and from historical billing records, the water demands need to be extracted for the individual service areas. Although the overall growth trends may assist in determining the rate at which growth will occur for the overall County, considerations need to be given to the specific service areas based on lot availability and specific historical trends within the individual areas. These trends within the individual services may differ from one another as well as from the overall trends of the County. For instance, specific housing developments which may be proposed in the West Hendry Area will grow at a different pace than single family lots developed by individual property owners in Port LaBelle.

#### 3.2 Growth Areas and Population Trends

The 2000 Census estimated the population in Hendry County to be 36,210; the population growth rate was 40.5% (1990 to 2000) while it was only 23.5% for the State of Florida. This growth rate is expected to be maintained or exceeded during the coming two decades based on growth spillover from neighboring Lee and Palm Beach Counties.

Cities face the same challenge of responding to the same growth trends observed in the County. This problem is dramatic in the Northwest quadrant of Hendry County where the growth from neighboring Lee County is spilling over into Hendry County. By the year 2010, it is estimated that the population in Hendry County will reach approximately 50,875 and 71,479 by the year 2020 based on the growth rate projected between 2000 and 2010. It is conservative to assume that this growth rate will be maintained.

##### 3.2.1 PLUS Potable Water Demand Projections

The PLUS system continually monitors the number of service connections and the number of new service requests made. Based on these data, a detailed population and water use demand model was developed using standard methods adopted by other cities and counties. The population growth and water use demand study for Port LaBelle is provided in Appendix C.

Provided in Table 3-1 is a comparison of the project demand for the PLUS to the available treatment capacity.

**Table 3-1: Demand to Capacity Comparison for PLUS**

	<b>2007</b>	<b>2010</b>	<b>2015</b>	<b>2017</b>
Population Served	5000	6200	8700	9900
Average Daily Demand, GPD (ADD)	460,000	570,400	800,400	910,800
Demand per Capita <sup>1</sup> , GPD	92	92	92	92
Available Facility Capacity, GPD (AFC)	900,000	900,000	900,000	900,000
Facility Capacity Surplus (Deficit) <sup>2</sup>	440,000	329,600	99,600	(10,800)
<i>GPD = Gallons Per Day</i>				
<i><sup>1</sup> per person LOS (Level of Service)</i>				
<i><sup>2</sup> calculated by subtracting ADD from AFC</i>				

As displayed in Table 3-1, and as identified in the Lower West Coast Water Supply Plan, the Port LaBelle Utility System has sufficient capacity to meet the demands of the service area for the 10-year planning period. As will be displayed in Section 4, the County has included an expansion of the newly constructed 0.9 MGD nano-filtration WTP in their CIP in 2011/2012. The expansion will bring the WTP to its maximum capacity of 1.8 MGD, by adding three (3) additional treatment trains, a second degasifier and ancillary components. Water supply for the additional capacity is anticipated to come from brackish water supplies, likely from the Lower Hawthorne Aquifer System. The County will continue to monitor growth and will adjust this schedule as necessary to assure that adequate potable water is supplied to their customers, if the growth rates increase above what is currently projected.

In addition to the potable water system improvements, Hendry County will continue to utilize effluent produced by the Port LaBelle WWTP to recharge the groundwater. At this time, there are no considerations for alternative reclaimed water uses, such as residential or agricultural irrigation. The County will continue to promote water conservation through existing practices and additional practices, such as mailings, fliers, etc. These conservation measures will be described further in Section 4.

### 3.2.2 Airglades Industrial Park Potable Water Demand Projections

The Airglades Industrial Park consists of \_\_\_ acres of available commercial land for development. As described in Section 2, the County currently provides potable water service to seven (7) commercial customers and one (1) residential customer. At build out, the Airglades Industrial Park will be able to provide service to approximately \_\_\_ customers. These customers will be served through the South Shore Water Association (SSWA), as the Airglades Industrial Park is within the SSWA service area. As this system is limited to a small number of customers, the ability to serve should not be an issue and does not need to be considered further.

### 3.2.3 West Hendry Area Potable Water Demand Projections

I have little information on West Hendry. Is there any specific information that will be helpful in terms of growth rates? Should we develop an estimate of demands/growth based on the proposed Future Land Use?

Are there specific developments proposed? When, where, who, how many connections, rate of connections per year, etc. Any commercial? LOS – same or different from PLUS?

Compare rates proposed to BEBR.

**Table 3-2: Demand to Capacity Comparison for West Hendry Area**

	<b>2007</b>	<b>2010</b>	<b>2015</b>	<b>2017</b>
Population Served	10,774	13,019	19,656	23,325
Average Daily Demand, GPD (ADD)	991,169	1,197,739	1,808,377	2,145,857
Demand per Capita <sup>1</sup> , GPD	92	92	92	92
Available Facility Capacity, GPD (AFC)	0	2,500,000	2,500,000	2,500,000
Facility Capacity Surplus (Deficit) <sup>2</sup>	-991,169	1,302,261	691,623	354,143
<i>GPD = Gallons Per Day</i>				
<i><sup>1</sup> per person LOS (Level of Service)</i>				
<i><sup>2</sup> calculated by subtracting ADD from AFC</i>				

### 3.3 Regional Planning Initiatives

Presently, growth within Hendry County is limited primarily to the areas around the communities of LaBelle, Port LaBelle and Clewiston. The local governments associated with each of these areas currently provide potable water service to their individual service areas. In addition, the City of LaBelle and the Port LaBelle Utility System maintain in interconnection for emergency periods. With the exception of the West Hendry Area, the County does not anticipate significant growth within other areas that will result in the need to develop a regional or countywide water supply system. The City of LaBelle and Hendry County have discussed the possibility of developing a regional system for the West Hendry Area, although no agreements have been made.



## Section 4

### 10-Year Work Plan

#### 4.1 Introduction

In order to meet the demands as listed in Section 3 for the PLUS Service area and the West Hendry Area, a work plan covering at least a 10-year period must be prepared and adopted. This work plan was developed to consider the growth potential; water supply facilities necessary to meet the anticipated demands; water conservation measures (in addition to existing measures) which may assist in decreasing demands; and reuse improvements which may also assist in reducing potable water demands and/or assist in groundwater recharge.

#### 4.2 Capital Improvements Schedule

A capital improvements plan (CIP) has been developed for Hendry County based on the demand projections listed in Section 3. As identified in Section 3, the County currently has sufficient components in place to meet the demands of their customers within their current service areas for the next ten (10) years. As a conservative measure, however, the County has developed the following CIP for the Port LaBelle Utility System (PLUS) which will assure that adequate supply will be provided to their customers:

**Table 4-1: Capital Improvement Schedule – Fiscal Year 2008 - 2012**

Fiscal Year	Project Description	Project Costs
2008	Renew WTP Permit, add third well (Sandstone Aquifer)	\$310,000
2008-2009	Expand WWTP and Reuse System – 0.5 MGD to 2.0 MGD	\$3,000,000
2010-2011	Expand WTP from 0.9 MGD to 1.8 MGD	\$1,500,000

More thorough description of the capital projects necessary to assure water demands can be met are provided in the sub-sections below.

##### 4.2.2 Raw Water Supply

The existing Consumptive Use Permit (CUP) for Hendry County's Port LaBelle Utility System expires in November, 2007. As the current permit is limited to an annual allocation of 117 MG (0.321 MGD), the permit allocation will need to be expanded as part of the permit renewal process. The County will be seeking approval for the expanded capacity to be withdrawn from the Sandstone Aquifer system. This expanded capacity will come in part from the two (2) existing wells, and in part from a third well which is also proposed to be installed within the Sandstone Aquifer.

Recent flow testing and impact analysis have shown that the existing wells have sufficient capacity to provide the full current treatment capacity (1.2 MGD raw water supply for a finished water supply of 0.9 MGD with 75-percent recovery), with minimal or no adverse impact to existing users. The

limiting factor on using the existing wells to supply the full raw water to the newly constructed WTP is that the south well has a diameter of 8-inches, which limits the size of the pump that can be installed to a 7-inch diameter well. A 7-inch diameter well cannot pump the water required to run the entire treatment process. As such, two (2) wells must run in order to provide the required flow to the treatment process. The north well, by comparison is 14-inches in diameter and can support a large enough pump to supply the entire treatment process with the 1.2 MGD. When out of service, however, the south well cannot provide full redundancy. As such, a third well is required. As the existing treatment process was designed based on water quality from the existing Sandstone wells, the third well is proposed to also be installed within this same zone. Installation within a different aquifer system would require a change to the treatment process and result in decreased efficiency.

In order to provide for the necessary expanded capacity (to 1.8 MGD), future raw water for the Port LaBelle service area will be provided through alternative sources. The Sandstone Aquifer, where raw water is currently withdrawn from is located within the Intermediate Aquifer System and is considered a “traditional water source”, along with water from the Surficial Aquifer System and fresh water sources such as the Caloosahatchee River.

In accordance with the Lower West Coast Water Supply Plan, alternative water sources will need to be developed for additional water supplies as these traditional sources are being protected to limit saltwater intrusion, wetland impacts and impacts to existing legal users. Alternative or non-traditional sources which need to be considered for future water supply include seawater or brackish water, surface water captured during wet-weather flows, new storage capacity, reclaimed water, storm water for consumptive uses, and other non-traditional uses as may be listed in the Lower West Coast Water Supply Plan. For Hendry County, use of brackish water will be the most compatible and easy to develop for the future expanded raw water supply.

The Upper Floridan Aquifer is the principal source of brackish water supply in the Lower West Coast Planning Area, which includes Hendry County. This supply is not considered to be a limited resource in the Lower West Coast Planning Area. Brackish water typically contains a total dissolved salt concentration between 1,000 mg/L and 10,000 mg/L. (In comparison, seawater typically consists of concentrations in the range of 35,000 mg/L). Refer to Chapter 5 of the Lower West Coast Water Supply Plan for further information.

For the expansion of the raw water supply and ultimately water treatment, the County will likely utilize water from the Upper Floridan Aquifer. With an expansion of 0.9 MGD from 0.9 MGD to 1.8 MGD (finished water capacity), it is likely that two (2) to three (3) wells will be required. Prior to installation of permanent production wells, exploratory testing and modeling will need to be performed to determine water quality, water quantity and drawdown impacts that can be anticipated. This testing will assist in determining the actual number of wells and spacing required. The County can also utilize test data from the City of LaBelle, which is currently being performed for the City’s new RO WTP. Once the exploratory testing has been performed, design, permitting, bidding and well construction will be required. Permitting will be required with both the Florida Department of Environmental Protection (FDEP) (for well and raw water line construction), and the South Florida Water Management District (SFWMD) (for consumptive use permitting). Provided in Table 4-2 is an anticipated schedule for improvements associated with the raw water supply.

**Table 4-2: Raw Water Supply Schedule**

Item	Schedule
<b>I. CUP Permit Renewal</b>	
A. Application Preparation	October 2007
B. Well Design (Third Sandstone Well for Current Treatment)	September 2007
C. Permit Renewal	November 2007
<b>II. Wellfield for Expanded Treatment (to 1.8 MGD)</b>	
A. Exploratory Testing/Impact Modeling	January 2009
B. Well Design	June 2009
C. Permitting (including CUP capacity increase)	July 2009
D. Construction (Complete)	January 2010

### 4.2.3 Potable Water Treatment

The new Port LaBelle WTP was designed with consideration to double the plant’s capacity from 0.9 MGD to 1.8 MGD. To perform the expansion, raw water from the future brackish water wells will be pumped through a new raw water main to three (3) new treatment trains. Space has been provided within the existing treatment facility for the three (3) additional trains. In addition, the existing chemical feed rooms, chemical storage, electrical room, generator, clearwell, on-site storage, and high service pumping systems were all sized with the expansion in consideration. The main treatment improvements will include installation of the three (3) new treatment trains; replacement of the existing treatment membranes to allow blending of the dissimilar raw water supply; electrical, controls and monitoring upgrades for the expanded components; increase in size and/or number of chemical feed pumps; installation of a second degasifier unit; and installation of new components to accommodate the increase in concentrate produced. Currently, concentrate is delivered to the head of the head of the Port LaBelle WWTP where it is treated and released to the on-site percolation pond system. With the increase in quantity and anticipated dissolved salt concentration, an alternate disposal method will need to be considered for concentrate disposal. Deep well injection is the most common and logical disposal method, where high levels of dissolved salt are involved. A review of the concentrated raw water quality will need to be reviewed, however. If feasible, it would be significantly less costly to continue blending the concentrate with the wastewater, either at the head of the plant, or directly at the effluent end of the plant.

The steps required for expansion of the WTP include preliminary design, final design, financial planning, permitting, bidding and construction. For funding, it is anticipated that the County will utilize grant/loan funding from either the United States Department of Agriculture’s (USDA) Rural Development (RD) Division, with possible additional funding from the Florida Department of Environmental Protection’s (FDEP) State Revolving Fund Loan. Additional funding through impact fees, and other available grants will also be considered. An anticipated schedule for the proposed improvements is provided below:

**Table 4-3: Potable Water Treatment Improvement Schedule**

Item	Schedule
<b>I. Financial Planning</b>	
A. Preliminary Cost Estimate/Rate Review	June 2009
B. Begin Loan/Grant Application with USDA & Others	July 2009
<b>II. Preliminary Design</b>	
A. Water Quality Analysis/Membrane Selection	July 2009
B. Preliminary Design Report	August 2009
<b>III. Final Design &amp; Construction</b>	
A. 60-percent Design Completion	December 2009
B. 90-percent Design Completion	February 2010
C. Submit Permit Application to FDEP	February 2010
D. 100-percent Design Completion	April 2010
E. Bidding	June 2010
F. Receive Permit from FDEP	June 2010
G. Construction	August 2007 – April 2011
H. Startup	May 2011
I. Closeout	June 2011

#### 4.2.4 Reuse System Alternatives

As described in Section 2, Hendry County currently utilizes three (3) percolation/evaporation ponds for reuse of reclaimed water from the Port LaBelle WWTP. The Port LaBelle WWTP utilizes an extended aeration process that treats the wastewater to secondary effluent levels with basic level disinfection. This means that the reclaimed water must contain no more than 10 mg/L of total suspended solids (TSS) and not less than 0.5 mg/L of chlorine residual prior to release of the reclaimed water to the reuse system. With this level of treatment, the reuse alternatives are limited to application on rapid infiltration basins (RIBS) (also known as percolation/evaporation ponds), and restricted public access land application systems (pastures, forests, fodder crops or similar areas). Public access to these systems must be restricted. Reclaimed water treated to this level can also be applied to citrus, provided that 1) the access is restricted 2) the reclaimed water does not come in direct contact with the fruit and 3) the fruit is processed prior to human consumption (i.e. the fruit cannot be sold whole at a fruit stand or grocery store, unprocessed).

An alternative to the restricted public access reclaimed water system would be an unrestricted public access reclaimed water system. Unrestricted access reclaimed water can be used for multiple irrigation uses (golf courses, residential lawns, medians, cemeteries, parks, etc.), as well as fire protection, esthetic features (fountains), irrigation of edible crops, and other uses such as dust control at construction sites. With this type of system, the level of wastewater treatment must be increased to ensure that the reclaimed water produced meets elevated treatment levels. These treatment levels include the reduction of TSS concentration to a maximum of 5.0 mg/L, and a chlorine residual level of 1.0 mg/L prior to release to the reuse system. With this type of system, effluent filters with coagulant aid must be installed to assure that the TSS levels will be maintained below 5.0 mg/L. Automated controls and monitoring equipments must also be installed to ensure that only water meeting the

unrestricted public access water quality standards is released to the reuse system. Effluent not meeting this required must be diverted to either a substandard storage tank or released to an alternate system which does not require unrestricted access water quality standards, such as a percolation pond system. In addition, the WWTP treatment must meet Class I reliability, which means complete duplicity within the treatment process. Reclaimed water storage is also required for wet weather period.

The Port LaBelle WWTP will continue to utilize the current wastewater treatment and reuse system methods. To increase the treatment level to meet unrestricted access reclaimed water quality, a second clarifier would have to be added; effluent filters and a coagulant aid system would have to be installed; dual chambered chlorine contact basin would have to be installed; a continuous water quality monitoring system would have to be installed; and a reclaimed water pumping station, complete with a storage facility would have to be constructed. In addition, reclaimed water piping extending to a potential point of application would have to be constructed. The costs of these improvements have not been evaluated, but would be significant, considering an acceptable reuse system is currently located at the WWTP site.

A copy of the applicable portions of Chapter 62-10 of the Florida Administrative Code are provided in [Appendix F](#) for reference on reclaimed water system requirements.

As shown above, the County will need to expand the existing Port LaBelle WWTP as it is nearing its permitting treatment capacity. With this expansion, the existing percolation pond reuse system will also be expanded. The overall site consists of 70 acres, which is sufficient to expand the capacity of the percolation pond system to the proposed expansion capacity. The actual expansion capacity of the WWTP has not been determined but is estimated to be approximately 2.0 MGD.

The new treatment components will consist of new aeration facilities, new clarification components, new chlorine contact facilities, new pumps and blowers and an expanded percolation pond system. At this time, it is anticipated the both the treatment method and level of treatment will remain unchanged.

As with the WTP expansion, it is anticipated that the County will seek funding from either the USDA RD or from the FDEP State Revolving Fund. An anticipated schedule for the proposed improvements is provided below:

**Table 4-4: WWTP/Reclaimed Water Expansion Schedule**

Item	Schedule
<b>I. Financial Planning</b>	
A. Preliminary Cost Estimate/Rate Review	June 2008
B. Begin Loan/Grant Application with USDA & Others	July 2008
<b>II. Preliminary Design</b>	
A. Surveying	August 2008
B. Preliminary Design Report	September 2008
<b>III. Final Design &amp; Construction</b>	
A. 60-percent Design Completion	December 2008
B. 90-percent Design Completion	March 2009
C. Submit Permit Application to FDEP	March 2009
D. 100-percent Design Completion	June 2009
E. Bidding	June 2009
F. Receive Permit from FDEP	June 2009
G. Construction	August 2009 – August 2010
H. Startup	August 2010
I. Closeout	September 2010

#### 4.2.5 Conservation Initiatives

Hendry County will continue exercise their existing conservation initiatives listed above in Section 2.5. In addition, the County has considered initiating additional conservation measures to assist in reducing the potable water demand. These include the following:

- 1) Development of an educational program which would include a series of informational materials made available to the community through distribution at County offices and non-profit agencies. These materials highlight the benefits of water conservation and provide tips for homeowners and businesses to conserve water.
- 2) Making leak detection kits and water conserving hardware available to customers.
- 3) Development of an irrigation system that would utilize excess stormwater within canals for residential lawn irrigation.
- 4) Further development of rates that will promote less water usage through escalating charges at higher consumption levels. The County recently adopted new rates which were set up with a tiered, escalating rate format. The County is also having a rate study performed, which will further consider an appropriate rate structure for water conservation.
- 5) Continued system preventative maintenance, including line replacement, exercising valves, fire hydrant rehab, cross connection control and facility inspections.

- 6) Continued use of water restrictions during dry periods, and consideration for an increase on restrictions to promote lower water usage for irrigation, including potential year round application restrictions; replacement of irrigation systems with low volume spray systems; and promoting the use of native species of vegetation which require less water.
- 7) Continued use replacement of water meters which are over 10 years old or which have metered over 1,000,000 gallons.