

INFRASTRUCTURE ELEMENT

WESTERN ANNEXATION AREA

INVENTORY AND ANALYSIS

Wastewater Treatment System

This section covers the provision of sanitary sewer to the study area. Generally, the City is responsible for providing sewer capacity and sewer mains, while developers provide connections from the sewer mains to their developments.

The City of Port St. Lucie is in the midst of an effort to extend sewer service to the entire city proper. The city proper is divided into 9 utility service areas. These utility service areas were created for the purpose of planning and tracking the extension of sewer service. Currently sewer service extends to all of utility service areas 1-8. Sewer service to utility service area 9, which serves a portion of the Sandpiper Bay area, is expected to be completed in late 2006.

A new sewer facility, the Glades Wastewater Treatment Facility, is currently under development in the western study area north of Glades Cut-Off Road. The Glades Wastewater Treatment Facility is expected to serve the western study area as well as a small area east of I-95. It is expected to be completed by the end of 2006.

The historic lack of sewer service throughout the City previously limited the development potential of commercial and industrial areas. Significant scale commercial and industrial development generally requires adequate sewer capacity to be in place before development begins.

The extension of sewer service to the western study area is expected to be developer driven. All new development in the western study area will be required to have sewer and water connections. Pipelines connecting to sewer mains will be built as development takes place.

Below is a table projecting planned wastewater treatment plant capacity expansions over a 20-year horizon.

Projected Capacity, Sanitary Sewer, Million Gallons per Day

Sanitary Sewer (million gallons per day)	2005	2010	2015	2020	2025
City's Northport Facility	4.00	0.00	0.00	0.00	0.00
City's Westport Facility	4.00	8.00	12.00	16.00	16.00
City's Southport Facility	2.80	1.00	0.00	0.00	0.00
City's Glades Facility	0.00	12.00	18.00	24.00	30.00
Total of City Facilities	10.80	21.00	30.00	40.00	46.00
% TMADF to Total City Capacity	62%	70%	78%	75%	75%
Reserve	0.18	0.18	0.18	0.18	0.18
St. Lucie West	1.00	1.00	1.00	1.00	1.00
Grand Total Capacity	11.98	22.18	31.18	41.18	47.18

TMADF=Three Month Average Daily Flow

Source: Port St. Lucie Utility Systems Department, 2005, for City Facilities.

In accordance with Florida Department of Environmental Protection regulations, the City's wastewater treatment facility capacity must exceed projected wastewater flows by no less than 20%. When a facility's projected flows reach 80% of treatment capacity, expansion of that facility must be under design.

Relevant Segments of Current City Policy

Objective 4A.1.3: The City will review and revise as needed, provisions in the Land Development Code to control and discourage the use of septic tanks and promote and require the use of central wastewater treatment facilities in order to discourage sprawl and maximize the use of existing facilities.

Needs Assessment

The level of service standard adopted by the City of Port St. Lucie for sanitary sewer facilities in all Planning Areas is 85% of the following Potable Water LOS:

- Single and multi-family/All Planning Areas, 100 gallons/capita/day
- Commercial, 125 gallons per day per 1000 square feet
- Hotel/Motel, 112.5 gallons per day per room
- Industrial, 150 gallons per day per 1000 square feet
- Office/School/Institutional, 120 gallons per day per 1000 square feet

Below is a table projecting wastewater flows:

Projected Demand, Sanitary Sewer, Million Gallons per Day

Year	ERC #	Projected Wastewater Flows	
		ADF (mgd)	TMADF (mgd)
<i>Total Service Area</i>			
2005	33,830	6.1	6.7
2010	73,968	13.3	14.6
2015	117,451	21.1	23.3
2020	150,758	27.1	29.9
2025	174,263	31.4	34.5
<i>Southport Service Area</i>			
2005	13,203	2.4	2.6
2010	16,811	3.0	3.3
2015	18,881	3.4	3.7
2020	20,450	3.7	4.0
2025	21,691	3.9	4.3
<i>Westport Service Area</i>			
2005	5,920	1.1	1.2
2010	17,070	3.1	3.4
2015	26,454	4.8	5.2
2020	34,968	6.3	6.9
2025	39,982	7.2	7.9
<i>Northport Service Area</i>			
2005	12,340	2.2	2.4
2010	18,633	3.4	3.7
2015	24,010	4.3	4.8
2020	29,534	5.3	5.8
2025	34,300	6.2	6.8
<i>Glades Service Area</i>			
2005	2,368	0.4	0.5
2010	21,454	3.9	4.2
2015	48,106	8.7	9.5
2020	65,806	11.8	13.0
2025	78,290	14.1	15.5

Source: Port St. Lucie Utility Systems Department, 2005, for City Facilities.

If current targets for sewer expansion are met, adequate wastewater treatment capacity will be available citywide. The Utilities Department has completed a capacity analysis to forecast future wastewater treatment needs and ensure adequate capacity as new development comes on line.

New sewer mains will need to be installed throughout the study area. Sewer mains will be installed concurrently with development.

Potable Water

The City of Port St. Lucie is in the midst of an effort to extend water service to all of the city proper. The city proper is divided into 9 utility services areas. These utility service areas were created for the purpose of planning and tracking the extension of public water service. Currently, water service extends to all of utility service areas 1-8. Water service to utility service area 9, which will provide water service to Bay St. Lucie and Vikings Lookout, is expected to be completed in 2006.

The James E. Anderson RO Water Treatment Plant was completed in February of 2005 and will open with a capacity of 6.0 million gallons per day. An expansion to 22.5 million gallons per day of treatment capacity is under design.

The historic lack of water service throughout the City previously limited the development potential of commercial and industrial areas. Significant scale commercial and industrial development generally requires adequate sewer capacity to be in place before development begins.

The extension of water service to the western study area is expected to be developer driven. All new development in the western study area will be required to have sewer and water connections. Pipelines connecting to water mains will be built as development takes place.

Below is a table projecting planned potable water treatment plant capacity expansions over a 20-year horizon.

Projected Capacity, Potable Water (million gallons per day)

Potable Water	2005	2010	2015	2020	2025
Prineville WTP	19.15	19.15	19.15	19.15	19.15
James E Anderson RO WTP	6.00	22.50	22.50	22.50	22.50
Range Line Road WTP	0.00	10.00	20.00	30.00	30.00
Total Capacity - City Facilities	26.15	51.65	61.65	71.65	71.65
% MDF to Total City Capacity	65%	59%	71%	72%	78%
St. Lucie West	1.00	1.00	1.00	1.00	1.00

MDF=Maximum Daily Flow

Source: Port St. Lucie Utility Systems Department, 2005, for City Facilities.

In accordance with Florida Department of Environmental Protection regulations, the City’s water treatment facility capacity must exceed projected water flows by no less than 20%. When a facility’s projected flows reach 80% of treatment capacity, expansion of that facility must be under design.

Relevant Segments of Current City Policy

GOAL 4D.1: THE PROVISION OF SAFE, HEALTHY, AND DEPENDABLE POTABLE WATER TO ALL RESIDENTS OF PORT ST. LUCIE.

Objective 4D.1.3: The City will review and revise as needed, provisions in the Land Development Code to control and discourage the use of individual on-site wells for potable water supply and promote and require the use of central water treatment facilities in order to discourage sprawl and maximize the use of existing facilities.

Needs Assessment

The level of service standard adopted for potable water facilities is as follows:

- Single and multi-family/All Planning Areas, 100 gallons/capita/day
- Commercial, 125 gallons per day per 1000 square feet
- Hotel/Motel, 112.5 gallons per day per room
- Industrial, 150 gallons per day per 1000 square feet
- Office/School/Institutional, 120 gallons per day per 1000 square feet

Projected Demand, Potable Water, (million gallons per day)

Year	ERC #	Projected gpd/ERC	
		ADF (mgd)	MDF (mgd)
2005	54,798	12.1	16.9
2010	99,494	21.9	30.6
2015	142,958	31.5	44.0
2020	168,240	37.0	51.8
2025	182,128	40.1	56.1

Notes:

- ADF=Average Daily Flow
- MDF=Maximum Daily Flow (1.4 x ADF)
- ERC=Equivalent Residential Connection

Source: Port St. Lucie Utility Systems Department, 2005.

The Utilities Department has completed a capacity analysis to forecast future potable water needs and to ensure adequate capacity as new development comes on line.

Drainage and Groundwater Recharge

Drainage is provided primarily by a canal system developed in the 1960’s. The canal system primarily serves the purpose of drainage and irrigation supply and does little to promote groundwater recharge of the natural aquifers. The main drainage features in the study area are the canals C-23, C-23A and C-24,

The PGA Village development plans include plans for stormwater storage adjacent to the right of way along the development’s southern boundary.

Relevant Segments of Current City Policy

GOAL 4.C.1: TO PROVIDE ADEQUATE CITYWIDE DRAINAGE AND STORMWATER MANAGEMENT FOR ALL RESIDENTS OF THE CITY.

GOAL 4.C.2: INCREASE GROUNDWATER RECHARGE WHERE PRACTICABLE THROUGHOUT THE CITY.

Policy 4.C.1.7.1: The levels of service standards for drainage are as follows:

- A) The level of service adopted for stormwater management facilities for existing platted development and surface water management systems in Planning Areas 1-7 is the 3-year frequency, storm event.
- B) The level of service standard adopted for stormwater management facilities in Planning Areas 1-7 (not included above) and in Planning Area 8, St. Lucie West, is the 25-year frequency storm event.
- C) All new development regardless of size must comply with Chapter 17-25, Rule 17-25.025, F.A.C. and Chapter 17-3, Rule 17-3.051, F.A.C for water quality and direct stormwater discharge to Outstanding Florida Waters and Aquatic Preserves.

Needs Analysis

In general, there is a need for slower and higher quality groundwater recharge throughout the City. There is a lack of detention and retention facilities, largely due to the emphasis placed on stormwater conveyance and agricultural irrigation at the time of the original construction of the major canal system (Source: PSL Comprehensive Plan 1998). Groundwater recharge should be increased where practicable throughout the City.

Solid Waste Collection, Disposal, and Recycling

Solid waste collection is an independent and private operation within St. Lucie County and landfills are operated by the County. All solid waste in St. Lucie County currently goes to Glades Road Sanitary Landfill. Glades Road landfill will have up to four phases of expansion of about 25 acres each phase.

Phase I has been closed and capped and phase II is currently under operation. The total estimated capacity of all phases of the landfill in 1999 was 11,560,920 cubic yards (St. Lucie County Comprehensive Plan, 2000).

The current St. Lucie County Comprehensive Plan estimates that the Glades Road Sanitary Landfill has adequate capacity for the next 30 years. However there are two difficulties with this estimate. Firstly, this estimated is based on population projections created in 1989 which may be out of date. Secondly, the City of Fort Pierce ceased using the county landfill in 1992, reducing the total number of users of the landfill.

New estimates for the remaining capacity of the landfill are strongly recommended. These new estimates should be based on the current population using the landfill; the latest population growth projections of these populations; and current trends in garbage production and recycling for this population.

Relevant Segments of Current City Policy

Objective 4.B.1.1: The City has and will continue to compile solid waste background data to quantify solid waste generation. This data will be made available to St. Lucie County.

Objective 4.B.1.2: The City will continue to cooperate with St. Lucie County to insure that development permits are issued only when adequate facility capacity is available to serve development.

Needs Analysis

The level of service standard adopted for solid waste facilities is 3.25 pounds/capita/day.

The following table estimates the total cumulative cubic yards of landfill area that residents of the City of Port St. Lucie will require over the next 20 years. This is based on the current level of service standard and an estimate of 500 pounds per cubic yard of waste.

Projected Demand, Solid Waste

Solid Waste	2005 (estimate)	2010	2015	2020	2025
Population	124,864	184,704	256,538	291,857	305,011
Pounds	405,808	600,288	833,749	948,535	991,286
Cubic Yards/Day	812	1201	1667	1897	1983
Cumulative Cubic Yards	1,481,199	3,672,250	6,715,432	10,177,586	13,795,779

Source: Population Projections from Port St. Lucie Staff; Level of Service Standard from 1998 Port St. Lucie Comprehensive Plan. Assumes 1 cubic yard of solid waste = 500 pounds.

Given 20 year growth projections, the County will likely need to consider a new landfill to replace Glades Road Sanitary Landfill within the next 20 years.

STATEMENT OF NEEDS AND GOALS

The City of Port St. Lucie will ensure that infrastructure is in place to meet the needs of a growing population, while protecting and improving both the quality of life of Port St. Lucie citizens and the natural environment.

Water, sewer, drainage, and solid waste infrastructure must be in place to accommodate the anticipated fast pace of residential and commercial development in the Western Study Area over the next 20 years.

IMPLEMENTATION STRATEGIES

Wastewater and Water

In the past, the lack of provision of sewer and water service to many areas of the City hampered commercial and industrial development. However, the Utilities Department has largely addressed these past deficiencies and is ready to accommodate new development in the western study area. It is estimated that all planned extensions of sewer and water service east of I-95 will be complete in 2006. The only areas that will not have sewer and water service extended to them are areas that are cost-prohibitive for reasons of geography. The provision of sewer and water should no longer be a constraint in the commercial development of the City.

Generally water and sewer infrastructure is provided as development occurs. The City-owned industrial park in the western study area is one area that the City installed infrastructure prior to development in order to attract new industry to the City. Fronting infrastructure costs is one of the mechanisms that local governments can use to attract new industry to their location. State funds to assist in such economic development costs are often available. Also, another consideration is insuring that adequate excess capacity is available in the wastewater and water treatment plants to accommodate a major, new industrial development on short notice. Creating this level of readiness may help attract new industrial development to the City.

The City should continue to extend sewer and potable water conveyance infrastructure to meet the needs of existing and new development.

Stormwater and Groundwater Recharge

- Existing surface water and drainage patterns in the study area should be maintained and preserved in their natural state as far as practicable. Open space requirements can be met in part by incorporating these features.
- Retention and detention facilities should be integrated into the design of open spaces as scenic and recreational features.
- Parks and Recreation should investigate developing lands that are part of the canal system as greenways, to increase access to parks and community facilities and to provide opportunities for biking, walking, and running. The possible recreational opportunities provided by the canals themselves and the lands adjoining them remain largely untapped.
- Swales should be integrated into new right of way roadway designs where practicable.

Solid Waste Collection

- Continue the policy of mandatory recycling of glass, aluminum, plastic, and newsprint. Consider adding additional recyclable materials to the mandatory list, such as office paper.
- Work with the county to anticipate the need for a future landfill as population growth continues.

St. Lucie County Project

#	Project Name	Location	Size	Cost	Num.	Responsible Party	Funding Source	Assumptions
1	New Solid Waste Landfill	County	100 acres	\$3,000,000	1	St. Lucie County	Waste collection fees	*Land cost 30,000 acre

MONITORING AND EVALUATION STRATEGY

Sewer

- Create an annual report on the capacity and demand at each wastewater treatment facility.

Potable Water

- Create an annual report on the capacity and demand at each potable water treatment facility.

Solid Waste

- Publish the estimated cubic yards of waste generated by City of Port St. Lucie residents each year, and the estimated capacity of any existing landfill facilities.

Drainage and Groundwater Recharge

- Continue to cooperate with the SFWMD, and participate in the monitoring plan to quantify groundwater recharge and discharge rates for natural and artificial recharge/discharge systems.

MONITORING AND EVALUATION PROCEDURES

Sewer

- Create an annual report on the capacity and demand at each wastewater treatment facility.

Potable Water

- Create an annual report on the capacity and demand at each potable water treatment facility.

Solid Waste

- Publish the estimated cubic yards of waste generated by City of Port St. Lucie residents each year, and the estimated capacity of any existing landfill facilities.

GOALS, OBJECTIVES, AND POLICIES

Note: all goals, objectives, and policies are new unless otherwise noted.

Policy 4.C.1.6.3: Stormwater swales will be integrated into the right-of-way design of new roadways where practicable.

Policy 4.C.2.3.2: The City will endeavor to integrate existing surface water and drainage patterns into the design of new conservation areas, open spaces, and parks into annexed areas.

Policy 4.D.1.1.6: The City will coordinate projections of future water supply and consumption with the South Florida Water Management District.

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