



Indian River County 2030 Comprehensive Plan

Chapter 3A

Sanitary Sewer Sub-Element

Indian River County Community Development Department
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TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
Purpose	1
DEFINITIONS	2
BACKGROUND	4
History	4
County Utilities Department	4
Centralized Regional System	5
EXISTING CONDITIONS	8
Sanitary Sewer Process	8
Private Sewer Systems	18
Septic Tanks	18
REGULATORY FRAMEWORK	22
Federal	22
State	22
Local	22
ANALYSIS	24
Collection System	24
Treatment	31
Effluent Disposal	35
Summary of Analysis	36
GOAL, OBJECTIVES, AND POLICIES	37
PLAN IMPLEMENTATION	45
EVALUATION AND MONITORING PROCEDURES	49
Appendix A, Sanitary Sewer and Potable Water, 5 Year CIP	53

LIST OF FIGURES

FIGURE		<u>PAGE</u>
3.A.1	Indian River County Wastewater Service Area	6
3.A.2	WWTF Capacity vs. Demand	33

LIST OF TABLES

TABLE		<u>PAGE</u>
3.A.1	Sanitary Sewer Facilities in Indian River County	7
3.A.2	County Regional Wastewater Treatment Systems	15
3.A.3	Subdivisions with Increased Health Risks And/Or Increased Probability of Groundwater Contamination Associated with Continued Septic Tank System Use	21
3.A.4	Regulation of Sewage	23
3.A.5	Typical Concentrations of Household Wastewater, Septic Tank Effluent, and Wastewater Treatment Plant Effluent	27
3.A.6	Sanitary Sewer Sub-Element Implementation Matrix	46
3.A.7	Sanitary Sewer Sub-Element Evaluation Matrix	50
3.A.8	Water and Waste Water Connection Matrix for a New Development	51

INTRODUCTION

Wastewater is a term used to describe water leaving a site as sewage. Generally, this includes water from the kitchen and bathroom sinks, toilets, dishwashers, clothes washers, and bath tubs/showers. Each day, every person within Indian River County produces an average of 100 gallons of wastewater.

This wastewater has three possible destinations. First, it may enter an on-site treatment disposal system, usually a septic tank, where it receives a minimum level of treatment. Second, it may go to a private sewage treatment plant, generally located near the dwelling unit or other structure. Private treatment plants usually provide a greater degree of treatment than septic systems. The third possible destination for wastewater is a regional treatment plant. Such regional plants may be located many miles from the structure where wastewater is generated. These plants generally provide a consistently greater degree of treatment than either septic systems or private plants.

Wastewater treatment systems are comprised of three components; these are collection, treatment, and disposal. The importance of each of these three components varies with the type of wastewater system. This document will address the collection, treatment, and disposal characteristics of septic systems, private treatment plants, and regional treatment systems.

PURPOSE

The purpose of the Sanitary Sewer Sub-Element is to:

- identify existing and projected demand and need (demand - supply = need) for sanitary sewer facilities based on the county's population, existing and future land use, capacity of existing facilities and any future changes to these facilities;
- identify the operational responsibilities, geographic service areas and levels of service provided by each facility;
- identify those areas where public sewer will and will not be provided; and
- identify environmentally sound methods of disposing of treated wastes and sludge from treatment plants.

This sub-element will provide direction for the county in planning for the collection, treatment, and disposal of wastewater in a manner consistent with federal, state and local laws. In addition, the Sanitary Sewer Sub-Element will identify proposed locations and levels of service of sanitary sewer facilities. Finally, this element will establish sanitary sewer policies that complement the county's future land use pattern and serve as a means of directing future growth in the county.

DEFINITIONS

Wastewater means untreated sewage.

Effluent means the liquid by-product of the wastewater treatment process.

Wastewater Collection Network means the system of pipes which convey the untreated wastewater from individual homes and other establishments to the treatment plant.

Wastewater Interceptors are defined as parts of the collection system which connect directly to and convey sewage to the treatment plant.

Wastewater Trunk Mains are components of the collection system which connect directly to and convey sewage to the interceptors through a gravity system.

Pump Stations are mechanical devices used to pump sewage through the collection network (force mains) for the purpose of transporting the untreated wastewater to the treatment plant.

Force Main means a pressurized segment of the collection system.

Wastewater Treatment Plant means the facility which functions to remove solid and organic materials from the wastewater.

Wastewater Treatment Process is the means by which solid and organic materials are removed from the untreated wastewater.

Level of Wastewater Treatment is defined by the proportion of solid and organic materials removed from the wastewater. The most common levels of treatment are: primary, secondary, and tertiary.

Primary Treatment removes between 30 and 35 percent of the organic material and up to 50 percent of the solids from the sewage. Because screens and settling tanks are the most common methods used to remove the solids, this process is also referred to as physical treatment.

Secondary Treatment removes between 80 and 90 percent of the total organic material and suspended solids from the sewage. This level of treatment generally requires multiple steps involving one biological process and one or more physical processes for removal of suspended solids.

Tertiary Treatment is a level of wastewater treatment which removes the organic material and suspended solids, synthetic organic compounds and inorganic chemicals. If not removed, these agents may cause pollution problems. Tertiary treatment adds steps to the primary and

secondary processes which will remove these pollutants. The most common tertiary processes remove compounds of phosphorus and nitrogen. The effluent from advanced treatment processes often approaches the quality of drinking water.

Septic Tank Systems are small scale wastewater treatment systems consisting of two components. Those components are a septic tank where solids settle out and biological action occurs, and a drainfield where the remaining liquid is discharged. Septic tank systems provide a minimal level of wastewater treatment.

Regional Wastewater Treatment Systems are large scale sanitary sewer systems comprised of three components: collection of raw sewage; treatment of the sewage; and the disposal of the treated sludge and effluent.

Package Wastewater Treatment Plants are small treatment systems designed and built in modular units and having components similar to larger regional treatment facilities.

Infiltration means water, other than wastewater, that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections or manholes.

Inflow means water, other than wastewater, that enters a sewer system (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters or drainage.

BACKGROUND

An important aspect of wastewater or sanitary sewer planning involves examining existing conditions. Prior to that, however, it is helpful to consider the background or history of the wastewater system in the county. That provides a perspective regarding county policy on this matter. Instead of a static view of current conditions as the existing conditions section provides, the background section identifies recent trends in this area.

HISTORY

A review of recent history shows that Indian River County has owned and operated sanitary sewer facilities for only a relatively short time. Prior to the 1970's, the use of centralized facilities which provide the highest level of treatment and efficiency was limited to the densest and most intensely developed urban areas of the county. Those areas were located within or adjacent to the City of Vero Beach. While centralized sewer service has been available to the City of Vero Beach since 1926, the rest of the county did not have access to such service until the late 1970's.

In the past, the use of privately owned sewer facilities provided the county with an alternative to publicly owned, centralized sewer services. Private sewer facilities are operated by private companies which are given the authority to provide wastewater service to specified areas. Most private wastewater systems provide service only to an individual subdivision or development.

Prior to the establishment of the County Utilities Department in 1972, the regulation of wastewater facilities rested with several state and federal agencies and often focused on the permitting of new and the expansion of existing treatment facilities. By 1972, the regulatory agencies were becoming more intent on discouraging the use of individual septic tanks and small package systems.

COUNTY UTILITIES DEPARTMENT

Authorized to develop procedures and standards for utilities in the county, the County Utilities Department also issues utility permits. Initially formed to regulate privately owned utility systems, the Utilities Department was also charged with establishing a countywide utilities system. At the time that the utility department was created, centralized sewer services in the county were provided by the City of Vero Beach, by private utility companies, and by private systems serving individual buildings and developments. A majority of residential developments in the unincorporated county, however, relied on individual septic tanks for wastewater treatment and disposal.

In 1973, a master sewage plan was developed for the county. That plan identified the need for publicly owned and operated regional facilities to protect the public health and prosperity of the community. The plan outlined proposed service areas in the eastern portion of the county as well as the necessary facilities and capitalization required to implement the plan. The plan also recommended eventually incorporating private sewer treatment facilities into the county system.

Also in 1973, the County and the City of Vero Beach entered into an agreement regarding the provision of sanitary sewer services. This agreement established boundaries for areas in the county that would receive services from the city.

CENTRALIZED REGIONAL SYSTEM

The county's first direct provision of wastewater treatment services took place in 1978, as the result of problems at two private sewer systems. The Gifford system (later to be known as the Central Plant) and Ixora Park facilities had experienced system failures that resulted in the release of raw sewage into the surrounding areas. Because of these problems and their environmental impacts, the County Utilities Department assumed responsibility for the operation of these plants. The Central Plant has since been expanded, while the Ixora plant has been decommissioned.

In 1982, county wastewater services expanded when the Utilities Department took over the operation of the Vista Royale and Vista Royale Gardens plants in the southern part of the county. This expansion continued with construction of the West Regional Wastewater Treatment Plant which began operation in 1986. Located south of SR 60 and east of I-95, the West Regional Plant provides wastewater service for the rapidly growing SR 60 Corridor area.

Utilities system expansion continued in the 1990's. In 1990, the county completed construction of the North County Plant. Then, the County acquired the South County Plant from General Development Utilities in 1993. In 1995, the county purchased the City of Sebastian's utilities system.

In 1987, Indian River County adopted a Wastewater Master Plan which has been updated several times since then, most recently in December 2004. That plan identified a system of wastewater treatment facilities to accommodate the anticipated growth of the county. The Master Plan identifies five sewer service areas. Those areas are North, West, Central, South, and City of Vero Beach.

One publicly owned and operated regional wastewater treatment plant exists within each of the five service areas. In addition to public facilities, septic tanks and private treatment facilities currently exist and will continue to exist in the county. Table 3.A.1 lists existing wastewater treatment plants in Indian River County with their capacity and service area.

Figure 3.A.1

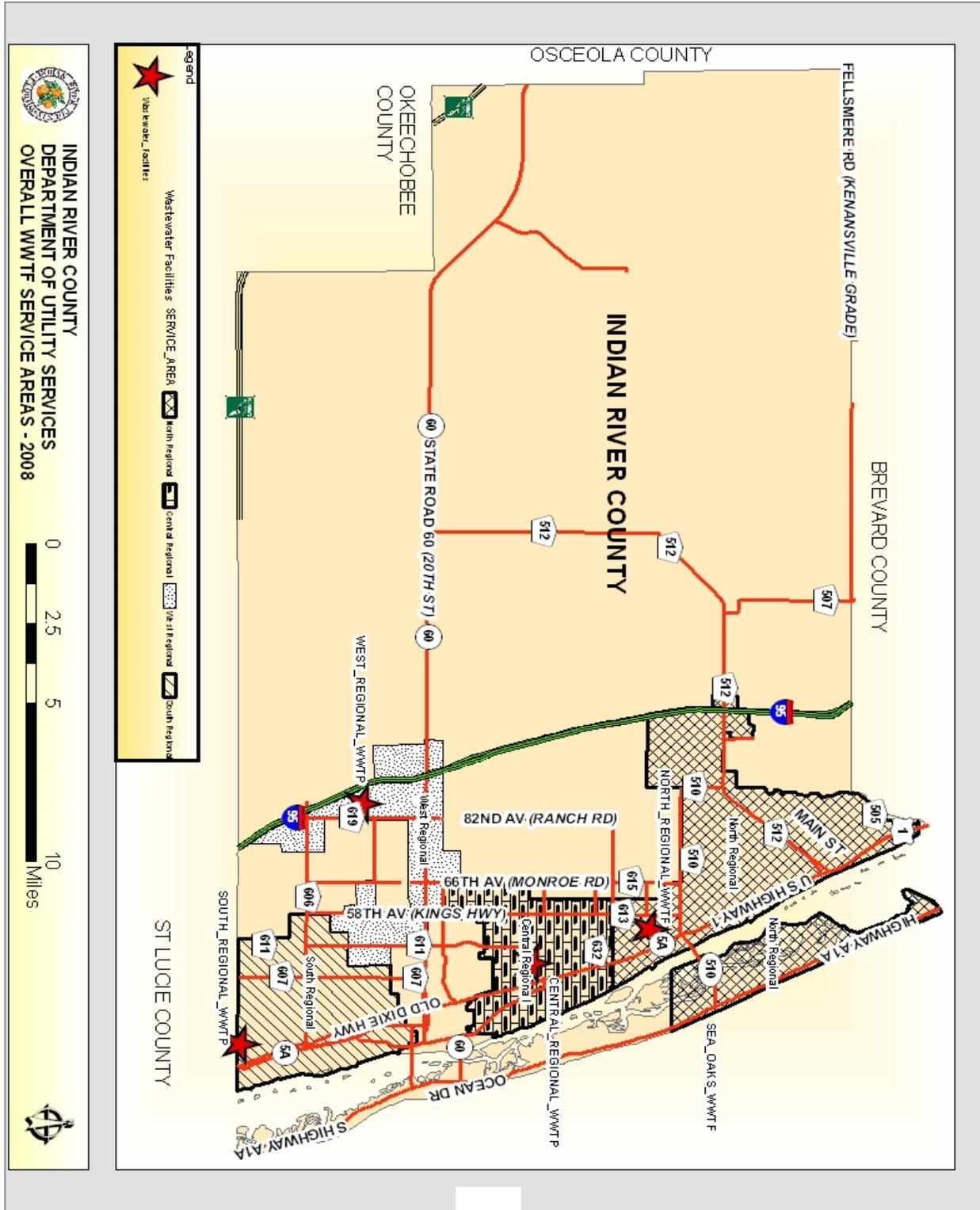


TABLE 3.A.1

SANITARY SEWER FACILITIES
IN INDIAN RIVER COUNTY

FACILITY	PUBLIC OR PRIVATE	OPERATING ENTITY	PACKAGE OR REGIONAL	SERVICE AREA	DESIGN CAPACITY IN GALLONS/DAY
1. North County	public	IRC	regional	North of 77 th Street to North County Line & North Barrier Island	850,000
2. Central County	public	IRC	regional	26 th Street and Vero Beach City limits to 69 th Street	4,000,000
3. West County	public	IRC	regional	South of 26 th Street and west of City of Vero Beach	6,000,000
4. S. County	public	IRC	regional	Southeast mainland	2,000,000
5. Vero Beach	public	Vero Beach	regional	Vero Beach, Ind. Riv. Shores, S. Barrier Island	4,500,000
6. Blue Cypress	public	IRC	package	Blue Cypress Improvement Dist.	20,000
7. Sun-Ag MHP	private	Sun-Ag Co.	package	Sun-Ag Mobile Home Park near Fellsmere	50,000
8. Sun-Ag Packing-house	private	Sun-Ag Co.	package	Sun-Ag Packinghouse near Fellsmere	2,500
9. Su-Rene Mobile Home Park	private	Su-Rene	package	Su-Rene Mobile Home Park	5,000
10. Royal Oak Mobile Home Park	private	Royal Oak	package	Royal Oak Mobile Home Park	5,000

SOURCE: Indian River County Utilities Department

EXISTING CONDITIONS

In assessing existing conditions, it is necessary to address the sanitary sewer system on several levels. First, it is necessary to differentiate among the various types of systems in the county. This involves separate consideration of the publicly-owned sewer systems, the privately-owned sewer systems, and individual septic systems. Second, it is necessary to identify individual service areas for both the public system and private systems. Finally, it is necessary to assess each type of system and service area in terms of collection, treatment, and disposal.

SANITARY SEWER PROCESS

Within the county, there are various sanitary sewer systems and service areas. Although specific aspects of the sanitary sewer process vary with the type of system, certain characteristics are the same, regardless of system type.

Collection

Once wastewater is generated by residences, businesses, industries, and other land uses, it is then conveyed from an individual establishment to a wastewater treatment plant by the collection network. Alternatively, the wastewater may go to an individual septic tank for on-site treatment. Where a centralized system is involved, however, the collection network is generally laid out in a pattern roughly comparable to the branching pattern of a tree. Whereas the smallest sewer pipes connect individual establishments to components of the collection system called trunk mains and interceptors, interceptors and trunk mains connect with and convey wastewater directly to the treatment plant.

Treatment

After being collected, wastewater is processed by a wastewater treatment plant. Presently, both Indian River County and the City of Vero Beach maintain regional wastewater treatment plants. In addition to those five regional facilities, there are four private package wastewater treatment facilities and the one public package treatment facility (the Blue Cypress Lake wastewater treatment plant) in the county. The existing wastewater treatment plants use a variety of methods to treat wastewater.

Once at the treatment plant, the wastewater is treated to remove solid and organic materials. The level of processing of the wastewater is either primary, secondary, advanced secondary, or tertiary. Overall, the treatment level is based on the treatment method and the proportion of materials removed from the wastewater.

In addition to differences in the methods of treating wastewater, the existing wastewater treatment plants also differ in the capacity of the facilities. Expressed in terms of gallons of wastewater per day, the capacity of a wastewater treatment plant is the number of gallons of wastewater that the plant can treat on an average daily basis.

By-Product Disposal

The by-products of the treatment process are effluent, screenings and grit, as well as sludge and septage. Effluent is liquid waste. At county operated wastewater treatment facilities, effluent is usually disposed of through either discharge to a percolation pond or by reuse. Reuse is an effluent disposal method involving spray irrigation.

Screenings and grit are the accumulated coarse sewage solids retained by the screening process. Screenings and grit are disposed of at the county landfill.

Sludge and septage are the biological organisms that accumulate in the plant. Prior to final disposal, sludge is usually subjected to an additional biological treatment process to remove pathogens. It is also subject to physical dewatering processes which facilitate transportation and disposal. Sludge and septage are disposed of at a special facility at the County landfill.

PUBLIC SEWER SYSTEM

The five geographic areas comprising the county public sewer system are: the south regional area, the west regional area, the central regional area, the north regional area, and the City of Vero Beach service area. Within the county system, the south county regional plant is connected to the west county regional plant; the north county regional plant is connected to the central county regional plant; and there is a limited connection between the central regional plant and west regional plant. Because the county's regional wastewater treatment plants are interconnected, there is flexibility as to which plant or plants will need to be expanded to accommodate future demand.

At the county's central plant, the county also treats the City of Fellsmere's sewage for a bulk rate. Currently, the city's average daily sewer flow is about 71,000 gallons per day, with a maximum flow of 100,000 gallons per day.

Besides its regional plants, Indian River County also operates the Blue Cypress Lake package treatment facility.

In 2006, 21,349 (44.30%) of the unincorporated county's 48,188 residential units were connected to the regional sewer system. At that time all customers of the county's system, including those living in municipalities, totaled 24,250.

South Regional Sewer Service Area

The South Regional Sewer Service Area is located in the southeast portion of the mainland and contains the South Regional Wastewater Treatment Facility (SRWWTF). The SRWWTF is a 2,000,000 GPD facility which uses biological nutrient removal to provide a tertiary filtration level of treatment. Effluent from the SRWWTF is reused at various county sites.

In addition to force mains along US 1, the South Regional Service Area collection system currently extends to the Vero Shores, Garden Grove, and Grove Isle developments, portions of the Vero Beach Highlands residential subdivision, and other subdivisions within the southern portion of the county.

South Regional Plant	
Public or Private	Public
Operating Entity	Indian River County
Geographic service area	South County Area
Design capacity in GPD	2,000,000
Current demand in GPD	1,634,000
Level of Service	250 GPD/ERU
Projected facility needs	1,850,000 gal./day 2030
Effluent Disposal Method	Reuse
Effluent Disposal Site	Various
Level of Treatment	Tertiary Filtration
Treatment Method	Biological Nutrient Removal
Screenings/Grit Disposal Site	Landfill
Sludge and Septage Disposal Site	Sludge Facility at Landfill

West Sewer Service Area

The West Regional Service Area includes the unincorporated SR 60 corridor area and the area southwest of Vero Beach. Within the West Service Area, there is one wastewater treatment plant. The West Regional Wastewater Treatment Facility (WWTF) is located south of 8th Street, north of 4th Street, and between 90th Avenue and 82nd Avenue.

This plant, with a 6,000,000 GPD capacity, uses biological nutrient removal to provide a tertiary filtration level of treatment. Presently, effluent from this treatment facility is reused for spray irrigation or discharged into a ±165 acre man-made wetland on the treatment plant site.

The West Regional Service Area force mains extend from the West Regional WWTF along the SR 60 corridor and along 66th Avenue from SR 60 to 4th Street. Force mains also extend from the West County Plant along 82nd Avenue to the Oslo Road/74th Avenue commercial/industrial node and to the SR 60/I-95 commercial/industrial node. The system serves the Heritage Village, Countryside, Cambridge Park, Indian River Estates, Village Green, Vista Plantation, Lake in the Woods, Sixty Oaks, and Rivera Estates residential developments.

West Regional Plant	
Public or Private	Public
Operating Entity	Indian River County
Geographic service area	SR 60 Corridor west of 58 th Avenue
Design capacity in GPD	6,000,000
Current demand in GPD	1,950,000
Level of Service	250 GPD/ERU
Projected facility needs	4,850,000 gal./day (2030)
Effluent Disposal Method	Reuse Irrigation/Wetlands Treatment
Effluent Disposal Site	Golf Courses & West Reg. Wetlands
Level of Treatment	Tertiary Filtration
Treatment Method	Biological Nutrient Removal
Screenings/Grit Disposal Site	Landfill
Sludge and Septage Disposal Site	Sludge Facility at Landfill

Central Sewer Service Area

The Central Regional Sewer Service Area includes the portion of the mainland generally bounded by I-95 on the west, 69th Street on the north, the Indian River Lagoon on the east, and the City of Vero Beach and 26th Street on the south. This plant located north of 49th Street, in the unincorporated community of Gifford. The Central Regional Wastewater Treatment Facility (WWTF) is located within the service area.

This plant, with a 4,000,000 GPD capacity, uses contact stabilization and extended aeration to provide a tertiary filtration level of treatment. Presently, effluent from the treatment facility is discharged into percolation ponds or reused for spray irrigation.

Collection lines extend from the plant along 49th Street, between 58rd Avenue and US 1, along 58th Avenue from 26th Street to 65th Street, along 53rd Street from 58th Avenue to the Lateral H canal and along US 1 from 69th street to Indian River Memorial Hospital. The system also extends to the Bent Pine and Grand Harbor residential developments, and to much of the Gifford community.

The Central Regional WWTF is presently accepting flow from the North Regional Wastewater Treatment Facility, which is temporarily on stand-by. The flow is being transferred from the north facility to the central facility via a 16” transmission force main located along Old Dixie Highway from 77th Street to 53rd Street, then into the Central Regional WWTF along the Lateral H canal.

Central Regional Plant	
Public or Private	Public
Operating Entity	Indian River County
Geographic service area	Vero Beach City Limits to 69 th St.
Design capacity in GPD	4,000,000
Current demand in GPD	1,834,000
Level of Service	250 GPD/ERU
Projected facility needs	4,250,000 gal./day (2030)
Effluent Disposal Method	Reuse Irrigation/Rib Basin
Effluent Disposal Site	Various Golf Courses
Level of Treatment	Tertiary Treatment
Treatment Method	Contact Stabilization/Extended Aeration
Screenings/Grit Disposal Site	Landfill
Sludge and Septage Disposal Site	Sludge Facility at landfill

North Sewer Service Area

The North Sewer Service Area lies north of 77th Street and encompasses the area between I-95 and the Atlantic Ocean. Within this service area, there is one wastewater treatment plant operated by the county. This plant is the North Regional Wastewater Treatment Facility (WWTF).

The North County Plant is an 850,000 GPD facility which uses an oxidation ditch and extended aeration to provide a tertiary filtration level of treatment. Effluent from the North County Plant is discharged into percolation ponds or reused for spray irrigation.

North Regional Plant	
Public or Private	Public
Operating Entity	Indian River County
Geographic service area	77 th Street to North County Line
Design capacity in GPD	850,000
Current demand in GPD	Flow transferred to Central Regional Plant
Level of Service	250 GPD/ERU
Projected facility needs	4,850,000 gal./day (2030)
Effluent Disposal Method	Percolation Pond/Spray Irrigation
Effluent Disposal Site	Golf Courses
Level of Treatment	Tertiary Filtration
Treatment Method	Oxidation Ditch/Extended Aeration
Screenings/Grit Disposal Site	Landfill
Sludge and Septage Disposal Site	Sludge Facility at landfill

Collection lines extend south from the North County Plant along Old Dixie Highway to 73rd Street. From there, the lines extend east into the Copeland's Landing residential development. To the north, lines extend along the US 1 corridor to the county line. A force main runs along CR 512, from US 1 to I-95, and north along Roseland Road from CR 512 to approximately ¼ mile north of Main Street. Another force main extends west along Main Street from US 1 to approximately halfway to Roseland Road. Collection lines, including a force main along the north two miles of Roseland Road, extend to the Roseland area. Collection lines also extend to several residential developments on the north barrier island, including Sea Oaks, Windsor, and the Town of Orchid.

Presently, the North Regional WWTF is temporarily shut down, and the flow is being transferred to the Central Regional WWTF via a 16' force main along Old Dixie Highway from 77th Street to 53rd Street and then along the Lateral H canal into the Central Regional WWTF.

City of Vero Beach Sewer Service Area

The City of Vero Beach sewer service territory encompasses the City of Vero Beach, most of the Town of Indian River Shores (one multiple-family residential complex is excluded), and the portion of the barrier island south of the City of Vero Beach. In addition, it serves some of the unincorporated county area around the city.

The Vero Beach Wastewater Treatment Plant has a design capacity of 4,500,000 GPD. The method of treatment consists of complete mix activated sludge, followed by water reclamation processes that include tertiary filtration and high level disinfection. Most effluent from this plant is used for irrigation by golf courses and residential developments. During and immediately after periods of extremely high rainfall, however, some effluent is discharged into the Indian River Lagoon. Sludge disposal is by land application on agricultural properties for beneficial reuse.

City of Vero Beach Plant	
Public or Private	Public
Operating Entity	City of Vero Beach
Geographic service area	City of Vero Beach; Town of Indian River Shores; South Barrier Island
Design capacity in GPD	4,500,000
Current demand in GPD	3,500,000
Level of Service	250 GPD/ERU
Projected facility needs	4,000,000 gal./day (2030)
Effluent Disposal Method	Reuse/Wet Weather Discharge
Effluent Disposal Site	Residential Landscapes/Golf Courses
Level of Treatment	Secondary/High Level Disinfection
Treatment Method	Activated Sludge/Filtration
Screenings/Grit Disposal Site	Landfill
Sludge and Septage Disposal Site	Sludge facility at landfill

Table 3.A.2 summarizes the county regional wastewater treatment system.

COUNTY REGIONAL WASTEWATER TREATMENT SYSTEMS
TABLE 3.A.2

SERVICE AREA	TREATMENT PLANT	DESIGN CAPACITY IN GPD	2009 DEMAND IN GPD	TYPES OF LAND USES SERVED	TREATMENT METHOD	TREATMENT LEVEL	EFFLUENT DISPOSAL METHOD	PROPORTIONAL ALLOCATION
NORTH	North County	850,000	Flow transferred to Central Plant	residential, commercial, industrial	oxidation ditch and extended aeration	tertiary	percolation pond and spray irrigation	60% Sebastian, 30% IRC, 10% Fellsmere
CENTRAL	Central County	4,000,000	1,834,000 includes flow from north regional	residential, commercial, industrial	contact stabilization and extended aeration	tertiary	percolation pond and spray irrigation	100% IRC
WEST	West County	6,000,000	1,950,000	residential, commercial, industrial	biological nutrient removal	tertiary	spray irrigation and on-site wetland	100% IRC
SOUTH	South County	2,000,000	1,634,000	residential, commercial, industrial	Biological nutrient removal	tertiary	spray irrigation, percolation pond and West Regional Wetland	100% IRC
VERO BEACH	City of Vero Beach	4,500,000	3,500,000	residential, commercial, industrial	complete mix activated sludge and high level disinfection	tertiary	spray irrigation	65% Vero Bch., 24% IRC, 11% Indian River Shores
TOTAL		17,350,000	8,918,000					

Finance

Financially, the Indian River County Utilities Department is an enterprise system. That means that there is no general tax money allocated for the construction or expansion of utility services. Instead, the County Utilities Department's revenue comes from sources such as water sales, meter installation charges, hydrant maintenance tax, sewer service charges, effluent reuse sales, penalties, service charges, capacity charges, and other sources which make the utility department financially self-sufficient.

According to County regulations, most parcels within 200 feet of a county sewer line must connect to the county system. Upon connection, a customer incurs certain charges. Those charges generally cover the costs of capacity producing facility capital improvements. Some charges, however, can be incurred even before connection. Because unused capacity can be reserved for future development, wastewater treatment plants are developed with excess capacity. Since maintaining that excess capacity increases operation and maintenance costs, a monthly base facility charge applies to capacity reserved for future development.

Other charges include the following:

- Waste water treatment charges
- volume charges
- customer charges
- connection charges
- meter re-reads and leak inspection charges
- delinquency charges
- general service call charges
- meter calibration charges
- damage repair charges
- engineering services charges
- deposits required upon opening
- charges for transferring or reconnecting a service
- additional charges for complex connections

Some charges, such as connection fees, vary based on meter size or type of commercial use. The Utilities Department may use these revenues to expand facilities or to modify the existing system. These funds can be used for either capital or operating needs.

Another source of revenue, which can be used only to offset a portion of the capital cost of expanding system capacity, is the capacity charge. Capacity charges pay for certain necessary improvements that must be made in order to provide added capacity to meet the needs of new

residents as well as industrial and business establishments anticipated in future years. The remaining capital cost is recouped through monthly charges.

As a payment option for extension of the sewer collection system, the county allows a contribution in aid of construction. After the installation of sewage collection facilities by a developer, title to those facilities is transferred to the county. The referenced facilities may be “on-site” or “off-site.” These options are discussed below.

- **On-Site Facilities**

Each developer is responsible for the design, installation, inspection, and testing of the complete sewage collection system located within the boundaries of the developer’s property.

- **Off-site Facilities**

The location, size or proposed density or intensity of a development project may make service to the property dependent upon the extension of off-site sewage collection facilities. Off-site facilities are those mains, sewage collection lines, sewage force mains, and/or pumping stations adequate in size to transmit sewage collected on the developer’s property to a treatment plant or disposal site.

The county’s policy is to expand its sewer system in an orderly and economical manner. That expansion schedule, however, does not always coincide with a developer’s plans. In cases where the county does not plan to expand its system to serve a project in the timeframe required by a developer, the developer is required to construct or pay the cost of off-site facilities associated with that project when the following conditions exist:

- such an extension would require an extraordinary expenditure by the county for transmission facilities; and
- such expenditure would cost more than the county’s standard capacity charge.

In that event, the county may negotiate an agreement which enumerates the following:

- the county’s responsibility to provide service to the development and possibly reimburse the developer for oversized facilities; and
- the developer’s responsibility to construct and dedicate to the county the off-site facilities (possibly oversized to meet future demands).

Refundable Advances

In addition to a contribution in aid of construction of off-site facilities, the county may require a refundable advance by a developer to further temporarily defray the cost of any “off-site” extension of water and/or sewer mains and pumping stations necessary to connect the developer’s property to the county’s water and sewer facilities. This provision recognizes instances in which a developer may be required to advance funds to construct off-site facilities sized in accordance with the County’s Master Plan. All amounts expended by a developer pursuant to such an agreement, over and above the developer’s need for off-site facilities, may be refunded to the developer in accordance with the terms and conditions of a refunding agreement which the county executes with the developer. When the county deems it to be in the best interest of the county utility system, the County may assume a portion of the material cost of such projects. Generally, refund agreements provide for a plan of refund based upon the connection of other properties served by the “off-site” facilities installed by the developer.

Assessment

Another funding option available to the county is assessment. With this method, the Board of County Commissioners may assess benefitting property owners a proportional share of the cost of any county project, including utility line extensions. Assessment projects may be initiated by either the Board or property owners. For utility line extensions, main transmission or collection lines (Master Plan lines) are not included in the assessment calculations. Those lines are funded through other sources. Generally, assessments may be financed for up to 10 years, with assessment interest rates set by the Board of County Commissioners in January of each year. Usually, the Board adopts the prime rate.

PRIVATE SEWER SYSTEMS

Indian River County has four active private sewer systems, each of which uses package treatment plants. Two of the county’s private plants are operated by the Sun-Ag company. Those plants are located near the City of Fellsmere, outside of the county’s service area. One of those plants serves a mobile home park, while the other serves a packinghouse. Both of those facilities use extended aeration to provide a secondary level of treatment. Effluent at those plants is disposed of through a percolation pond.

The county’s other private systems are located at the Su-Rene mobile home park and Royal Oak mobile home park in the unincorporated county. Those facilities use extended aeration to provide a secondary level of treatment. Effluent at those plants is disposed of through a percolation pond.

SEPTIC TANKS

The third type of sanitary sewer system utilized in the county is the individual system or septic tank. Septic systems are generally small and designed to serve one or a limited number of land uses.

Despite major expansion of the wastewater collection network, many residents within the unincorporated portion of the county do not have access to regional wastewater treatment facilities or package treatment plants. For those land uses, wastewater treatment and disposal is provided by individual septic systems. According to the Indian River County Health Department (IRCHD), there were an average of 658 new septic systems constructed annually within the unincorporated county between 1995 to 2006. Of those septic tanks, 5% to 8% were for commercial uses. Most of the residential septic systems are concentrated in Roseland, Sebastian, Vero Lake Estates, and the older platted subdivisions south of the City of Vero Beach.

Septic tank systems provide on-site wastewater treatment for both residential and small-scale commercial developments. Generally, residential septic tanks range in capacity from 900 to 1000 gallons. Commercial septic tanks usually have a larger capacity. Since effluent from septic tanks is discharged to a drainfield where it is allowed to percolate into the soil, soil permeability and depth to the water table are limiting factors for septic tank use. To ensure adequate performance and protection of groundwater quality, elevation of septic tank drainfields is often required.

A septic tank system consists of two components. One is the septic tank, while the other is the drainfield. The tank receives sewage from the dwelling unit or commercial establishment and provides a period of settling, during which time a significant portion of the solids settle out. The treatment process is accomplished by bacteria which gradually decompose the solids which have settled to the bottom of the septic tank. The remaining liquids are discharged through underground drainage pipes into the drainfield and percolate into the soil. Once in the soil, microorganisms and filtration processes purify the liquids. Every three to five years, the accumulated solids must be removed from the septic tank. These solids, called septage, are generally transported to regional sanitary sewer facilities for treatment prior to disposal.

According to the IRCHD, Indian River County is a difficult county in which to install septic tank systems. There are several factors which account for this difficulty. These factors are:

- a high water table found in almost all areas of the county; and
- soil conditions consisting of an underlying hardpan strata in much of the county.

While a high water table impedes the discharge of liquids into the drainfield, an underlying hardpan strata may prevent the filtration of effluent into the soil.

There are also other soil conditions that hinder the use of septic tank systems. Overall, though, most of the land area within the county is poorly drained and has severe septic tank system limitations. There are, however, two areas of the county in which the soils are better suited for the installation of septic tank systems. These areas are as follows:

- Areas of South Florida Coastal Strand on the barrier island; and
- Areas on the mainland in the vicinity of the Atlantic Coastal Ridge.

The areas of the county having “Excessively Drained Soils” and “Moderately Drained Soils” are better suited for septic tank systems. As shown on Figure 3.E.1 of the Stormwater Management Sub-Element, even these two soil types have limitations with respect to septic tank system suitability. While moderately drained soils have a severe limitation rating for septic tank system suitability, excessively drained soils percolate so rapidly that they provide very poor filtration. Septic tanks on these soils have a potential for causing groundwater contamination.

Currently, the IRCHD requires that a septic tank system have a minimum of 42 inches of well draining soil below the infiltrating surface of the drainfield. During the months of June through October, the season of greatest rainfall, the water table in much of the county may be only 24 inches below this infiltrating surface. Therefore, fill material is often placed on top of existing soil. This fill material, which provides the depth necessary for the proper operation of the septic tank system, is usually a highly porous sand that can purify the liquids discharged into the drainfield.

In low density areas with adequate soils where septic tanks are appropriate, there can still be problems if septic tanks are not maintained. Generally, septic tanks need to be pumped on a regular basis. While there are private septic tank service companies which empty septic tanks and haul away septage, it is the septic tank owner who is responsible for initiating maintenance activities.

Even when fill material is placed on a residential lot, there are still areas of the county in which there are problems with septic tank systems. Besides soil and groundwater conditions, these problems may be due to inadequate separation between septic tank drainfields and wells. Without adequate separation, the potential of contamination from septic tanks seeping into wells is greatly increased.

Presently, the IRCHD requires a minimum separation of 75 feet between wells and septic tanks. Generally, the IRCHD requires that new lots utilizing well and septic tank systems be a minimum of ½ acre (approximately 20,000 square feet). If a lot is served by a public water system, a septic tank may be used even if the lot is as small as ¼ acre (approximately 10,000 square feet).

There are many areas of the county in which existing subdivisions contain lots which do not meet the minimum acreage requirements for well and septic tank systems. Nevertheless, residential lots that do not meet those standards may be able to utilize septic tank systems without increased health risks or increased probability of groundwater contamination if soil and groundwater conditions are favorable. That is particularly applicable to residential lots that are connected to the regional potable water system. Table 3.A.3 lists subdivisions in the county urban service area with increased health risks and/or increased probability of groundwater contamination associated with continued septic tank system use.

Like regional and private wastewater treatment facilities, septic systems also produce effluent and a solid by-product called septage. While septic tank effluent is discharged into a drainfield and percolates into the groundwater, the septage is deposited in the septic tank. Periodically, the septage must be removed from the tank. For residential septic systems, the interval between removal is typically three to five years. For land uses which generate large quantities of wastewater, the interval between removal times may be as frequent as once a month. The size of the septic tank, however, also influences how often removal occurs. When septage is removed from septic tanks, private contractors must haul the septage to the county’s sludge and septage disposal facility at the county landfill.

TABLE 3.A.3
INDIAN RIVER COUNTY
SUBDIVISIONS WITH INCREASED HEALTH RISKS AND/OR INCREASED
PROBABILITY OF GROUNDWATER CONTAMINATION ASSOCIATED WITH
CONTINUED SEPTIC TANK SYSTEM USE

1. Oslo Park
2. Paradise Park
3. Stevens Park
4. Durrance Place

Source: Indian River County Health and Utilities Departments

REGULATORY FRAMEWORK

The wastewater collection, treatment, and disposal system is regulated by various agencies at all levels of government. Table 3.A.4 shows the state and local agencies involved in wastewater regulation and the types of activities in which they are involved.

FEDERAL

The Federal Water Pollution Control Act of 1972 (PL 92-500) and its amendments through the Clean Water Acts of 1977 (PL 95-217) and 1981 (PL 97-117) are the basis for pollution control regulation in the nation. The goal of these acts is the restoration and/or maintenance of the chemical, physical, and biological integrity of the nation's water. The act established a national policy of implementing areawide wastewater treatment and management programs to ensure adequate control of sources of pollution. Under a provision of PL 92-500, grants are made available to local governments to construct facilities to treat "point sources" of pollution, including effluent from sewage treatment processes. The U.S. Environmental Protection Agency is responsible for implementing the act.

STATE

The Florida Department of Environmental Protection (DEP) is the agency responsible for ensuring that the State carries out the requirements of PL 92-500. In response to PL 92-500, DEP has adopted Chapters 17-3 and 17-6, FAC. These chapters regulate wastewater facilities which treat flows exceeding 10,000 GPD.

Within the State, the Florida Department of Health (DOH) regulates septic tanks and drainfield installations. In each county, the DOH has an office to regulate septic systems. These regulations have been adopted by rule in Chapter 64E-6. While 64E-6 does not set the criteria for septic tank effluent quality, it does require that septic tanks be installed in such a manner that, with reasonable maintenance, they will not create a health hazard or endanger the safety of any domestic water supply.

In addition to regulating wastewater facilities, 64E-6 also establishes criteria for mandatory connections to wastewater and potable water systems. According to that regulation, land uses that are within 500 feet of a gravity line or 1000 sq. ft. of low pressure forcemain with accessibility to that line through public rights-of-way must connect to the utilities system.

LOCAL

In 1984, Indian River County adopted an ordinance that established the utility rate structure and a mandatory hookup policy for both residential and non-residential development. County policy generally states that any development located within 200 feet of a wastewater collection line must connect. In addition to that ordinance, the Utilities Department also has developed and

adopted design standards and review procedures to ensure that all connections to the system are compatible with the system’s design.

TABLE 3.A.4
REGULATION OF SEWAGE

Agency	Statutory Authority	Scope	Activity
DEP	Ch 403 FS 17-6 FAC	Responsible for all wastewater treatment plants, and wastewater flows greater than 10,000 GPD.	Permits & inspection of wastewater plants over 10,000 GPD.
DOH; County Health Department	Ch 381 FS 64E-6 FAC	Responsible for all onsite disposal systems less than 10,000 GPD.	Inspects, tests, and enforces all systems less than 10,000 GPD. Responds to all public complaints.
County Utilities Dept.	Local Ordinance Home Rule	Responsible for review and construction of the public wastewater system. Regulates franchise of private wastewater plants.	Inspects all work on county public wastewater system. Regulates franchise package facilities. Will not permit package plants under 20,000 GPD capacity.

Source: Indian River County Utilities Department

ANALYSIS

The analysis of the Sanitary Sewer Sub-Element focuses on the three components of the sanitary sewer system: collection, treatment, and disposal.

COLLECTION SYSTEM

The principal components of the sanitary sewer collection system are pipes and pump stations. Because Indian River County has a relatively new sanitary sewer system, those pipes and pump stations are generally in good condition. Overall, most of the major lines are in place and sized to accommodate future growth.

The county's long range plan for growth and development is reflected in the Future Land Use Element of the comprehensive plan. That element defines where the community will grow and where growth will be limited. As indicated in the Future Land Use Element, the urban service area is the area deemed appropriate for future urban type development. Accordingly, it is within the urban service area that utility lines and other infrastructure components will be available.

Although regional sanitary sewer service should generally be limited to lands within the urban service area, there should be some exceptions. Historically, the county has allowed sites contiguous to the urban service area boundary to connect to the regional sanitary sewer system, and that is appropriate.

There are also other types of development allowed outside the urban service area, where regional sanitary sewer service is appropriate and in some cases necessary. These include clustered development in agricultural planned development projects, new town projects, traditional neighborhood design projects, agricultural businesses, and agricultural industries. For these uses, the county should allow connection to the regional sanitary sewer system or construction of a privately owned system, where connection to the public system is not feasible. In those cases where a privately owned system is allowed, the county should require that a franchise be obtained from the county and that any plants and collection systems be built to county standards and, where deemed appropriate by the county, be dedicated to the county without compensation.

The major collection system issues include service area, system evaluation and maintenance, system expansion related to serving areas presently served by septic tank systems, and system expansion to serve new development.

Service Area

Although the sanitary sewer service areas for the county and the City of Vero Beach have been set for many years, recent events have initiated interest in reconsideration of those service areas. Of particular concern are the unincorporated areas and the Town of Indian River Shores served by the City of Vero Beach.

Currently, Vero Beach serves those areas outside its corporate limits based on interlocal agreements with the county and the Town of Indian River Shores. While those agreements expire in 2017, the county and/or Town must provide notice to the City by 2012 if either the county or the Town wants to terminate its agreement on the 2017 termination date.

In the past, neither the county nor the Town had considered terminating its service area agreement with the City. Recently, however, the City indicated that water and sewer rates would increase significantly in the next few years. Also, due to a surcharge of the rates used to offset the city's general fund, customers became disenchanted with the management of the City of Vero Beach utility system. Besides the rate increases, the lack of representation in City utilities rate setting is also a concern for unincorporated county and Town residents. Unlike city residents, customers living outside the city limits cannot vote in city council elections and therefore have no representation on utility matters.

For the reasons outlined above, the county's policy should be to maintain a dialogue with the City and the Town regarding utility service areas and to initiate a study to assess the financial feasibility of consolidating utility services or terminating the City of Vero Beach service area agreement in 2017. That study should address the costs and revenues associated with consolidating utility services or absorbing city utility customers in the unincorporated area and the Town into the county system.

System Evaluation and Maintenance

The sanitary sewer collection system is evaluated with each application for new development, and as each package treatment plant is decommissioned. That evaluation is done using a computer modeling program, known as the "WaterCad" model that evaluates several factors, including pipe capacity, lift station capacity, horse power requirements for pumps, and hydraulic pump pressure. In contrast to the City of Vero Beach, which is largely built-out and has provided utility service for many decades, sewer service is still relatively new to the rapidly growing unincorporated county. Consequently, the county's collection system is constantly evaluated.

Within the county's service area, the major collection system problem is low velocity in force mains. In particular, the 24 inch, 20 inch, and 12 inch force mains in the US 1 corridor have low velocities even at peak flows. The low velocity is caused by oversized lines and a lack of wastewater generated. Where the velocity is less than 2 feet/second, solids will settle in pipelines. Settled solids decrease hydraulic capacity.

Another problem occurs when a mass of accumulated solids become "unsettled" and reaches a treatment plant in an unexpectedly large concentration. In the past, this situation has resulted in sewage spills. While increased pipeline maintenance is necessary to prevent a reoccurrence of such spills, the recent installation of numerous automatic air release valves has corrected the problem by relieving gases that were preventing the normal flow of sewage through influent

pipes. In the future, the county's policy should be to continue to install automatic air release valves in all new lines.

Service to New Development

Through the Utilities Department Wastewater Master Plan, the county has identified main lines that must be installed along major corridors. Unlike other collection lines, "Master Plan" lines usually do not connect directly to a wastewater generator. While master plan lines are paid for by the Utilities Department with revenue from capacity charges and other sources, non-master plan lines are paid from other sources.

Besides capital improvements programming and the assessment process, another way to expand the collection system is through the platting and site plan approval requirements of new development. For example, current comprehensive plan policies and land development regulations mandate that each new subdivision within the Urban Service Area connect to the centralized wastewater service system, if the proposed subdivision meets either of the following criteria.

- It is within one-quarter of a mile of existing wastewater lines; or
- It contains 25 or more lots.

For non-residential projects, only those located more than ¼ mile from the existing system and generating less than 2000 gallons per day are not required to connect to the regional system. Even non-residential projects meeting those requirements must connect if the system expands to within ¼ mile of the project.

Those requirements need to be maintained to ensure that expansion of the regional sanitary sewer system occurs and to ensure that the costs of that expansion are paid by the beneficiaries of the expansion. Even when a development project does not meet the above criteria, the project must connect to the regional sanitary sewer system if the project is deemed unacceptable for septic tank system use due to increased health and groundwater contamination risks.

There are several reasons for requiring nearly all new development to connect to the regional system. Those reasons are listed below.

- Regional systems are less likely to fail.
- Regional systems are better regulated and inspected.
- Regional systems provide a higher level of treatment. That higher level of treatment allows the effluent to be reused, rather than injected into the ground where the effluent increases the risk of groundwater contamination.

- Regional systems are economically more efficient to build and operate, but only if all new development connects to the system.

Septic Tanks

Between 1995 and 2006, 7,239 septic tanks (average of 658 per year) were permitted within the county.

Generally, septic tanks are a potential source of groundwater contamination, especially in areas where they are densely concentrated and the water table is high. According to the IRCHD, there are many cases on record of a well’s water source becoming polluted due to septic tank discharges. As indicated in Table 3.A.5, septic tank effluent is of poor quality by today’s wastewater treatment standards. Consequently, effluent discharges can cause detrimental increases in nitrogen, chloride, sodium, other ions, total dissolved solids, and the microbiological levels of the local groundwater.

TABLE 3.A.5
TYPICAL CONCENTRATIONS FOR HOUSEHOLD WASTEWATER,
SEPTIC TANK EFFLUENT AND WASTEWATER TREATMENT PLANT EFFLUENT

PARAMETER	CONCENTRATION		
	HOUSEHOLD WASTEWATER	SEPTIC TANK EFFLUENT	WASTEWATER TREATMENT PLANT
Biochemical Oxygen Demand, 5-day (BOD ₅), mg/l	430	150	20
Total Suspended Solids, mg/l	370	50	20
Fecal Coliform (per 100ml)	7.5 X10 ⁵	5X10 ⁵	200
Total Nitrogen, mg/l	84	30	30
Ammonia Nitrogen, mg/l	64	25	N/A
Total Phosphate, mg/l	61	12	6

Source: Indian River County Wastewater Master Plan

Generally, the current system of septic tank maintenance is acceptable, particularly for newer septic tanks meeting current regulations. For older septic tanks, however, lack of maintenance can be a problem, and there is no program requiring regular maintenance of these septic tanks. According to the County Health Department, a required septic tank maintenance program could reduce septic tank failures and associated adverse impacts; however, such a program would be costly and difficult to implement. In the future, the focus of the county and the IRCHD should be on providing public education programs on the proper use, inspection, and maintenance of septic tanks.

Several features inherent to the operation of septic tank systems make them prone to contaminating groundwater without any visual indication. For example, septic tanks that are undersized or not emptied often enough can accumulate sludge and scum, resulting in a poorer quality effluent. If high groundwater conditions (within 3 to 4 feet of drainfield elevation) exist, additional fill is needed. Once a septic tank system is installed and buried, these and other operating problems cannot be recognized until the entire system fails and raw (untreated) sewage backs up into the house plumbing or seeps above ground. Thus, a septic tank system that appears to be functioning properly may, in reality, be providing very poor “treatment”. This problem is more likely to occur in areas of higher residential density and in areas with a high concentration of commercial/industrial use.

According to the United States Department of Agriculture’s Soil Conservation Service, most of Indian River County’s soil has severe limitations for the use of septic tank systems. Combined with the County’s high water table, this creates a high potential for groundwater contamination problems.

For those reasons, the IRCHD requires that the bottom of drainfields be at least 42 inches above the water table. To meet this requirement, fill material or an approved sand filter may be added to the site. Also, a minimum separation requirement between wells and septic tank system drainfields and a minimum lot size requirement must be met. Under those conditions, septic tank performance is considered adequate for developments within the County.

Another problem with septic tank systems is the possibility of wastewater leachate from a septic tank entering open bodies of water in the County. This problem must be examined carefully, especially on the barrier island, in areas near the Indian River Lagoon, in areas near the St. Sebastian River, and in areas adjacent to canals, lakes or wetlands.

To summarize, the problems with septic tank systems are listed below:

- Physical limitations existing in Indian River County
 - A high water table is found in almost all areas of the county, especially during the months of June through October.

- Ninety-three percent of the county's soil has an underlying spodic horizon (a restrictive layer often comprised of sandy clay loam) and, therefore, is not suitable for septic tanks. This problem can be solved in areas with a low residential density by some modification of design and construction of septic tanks.
- Health and safety
 - Poor quality of septic tank effluent compared to wastewater treatment plant effluent.
 - High risk of groundwater contamination and spread of communicable disease.
 - Cost and insufficiency of monitoring process.
 - Inappropriate septage disposal.
- Environmental Consideration
 - Groundwater contamination.
 - Leachate to surface water bodies.

For those reasons, there is a need to expand the regional wastewater treatment system to areas where existing or future land uses, soil and groundwater conditions, proximity to surface water bodies, and/or lot size make continued use of septic systems unacceptable due to increased health and groundwater contamination risks.

With this in mind, the county should always allow the voluntary expansion of the regional sanitary sewer system to existing developments within the urban service area. Additionally, the county must determine under what conditions to impose retrofitting on existing development. As indicated in the finance section of this element, a major portion of the cost of service expansion to existing subdivisions is funded through assessments. In the past, some residents have objected to the costs of such assessments, often citing an inability to pay.

Throughout the county, many older residential subdivisions contain lots smaller than the IRCHD's current ½ acre minimum. Because these subdivisions generally contain households in the lower portion of the county's income range, retrofitting those subdivisions with centralized sewer service would cost those households a greater portion of their income than would be associated with the average county household.

Under certain conditions, the increased health and groundwater contamination risks associated with septic tank systems may be insignificant. This is often the case in residential developments that are connected to a regional potable water system. If conditions are favorable and the units are connected to a regional potable water system, even residential developments with lots smaller than 1/2 acre may be served by septic tank systems without significantly increasing health and

groundwater contamination risks. Therefore, expanding the system to include all existing residential subdivisions with lots smaller than 1/2 acre is not needed.

Instead, the county must establish criteria to differentiate between areas where retrofitting is required and areas where retrofitting is allowed. Because the cost of retrofitting projects within the urban service area is relatively constant, the most appropriate criteria to use to identify areas to retrofit are increased health risks and increased groundwater contamination risks. When any of the following conditions exist and the IRCHD verifies that the health and groundwater contamination risks cannot be sufficiently reduced by any means other than connecting to the regional system, retrofitting must occur.

- Areas with small lot sizes. Where units are not connected to a regional potable water system, this refers to lots of 1/2 acre or less.
- Areas with intense land uses. Intense land uses means commercial/industrial uses or residential uses greater than 6 units/acre.
- Environmentally Sensitive Areas. This means areas within 500 feet of aquifer recharge zones, as identified in the Aquifer Recharge Sub-Element of this plan; within 500 feet of any public water supply well; within 500 feet of the Indian River Lagoon, the St. Sebastian River, or any body of water that drains into them.
- Areas identified by the IRCHD as potential threats to public health or a history of septic tank failures.
- New developments on oceanfront and riverfront lots

For planning purposes, a history of septic tank failures is defined as follows:

For subdivisions of 10 or fewer lots, this means 20% failures in five years. For subdivisions of 11 to 75 lots, this means 10% failures in eight years. For subdivisions of more than 75 lots, this means 2% failures in ten years. Residential subdivisions that meet those criteria are identified in Table 3.A.3.

Generally, the most effective and efficient way to correct the wastewater problem of those subdivisions is to connect them to the regional system. Other options could involve adding fill and/or pumping the wastewater to another septic tank. Although the costs and effectiveness of these options vary due to specific circumstances, they seldom justify not connecting to the regional system. In the future, the county should continue to offer its assessment program that provides sanitary sewer to the neighborhoods where individuals benefiting from the connection to the sanitary sewer system pay for the cost of service expansion.

TREATMENT

In addition to septic tank systems, public and private treatment plants provide wastewater treatment within the county. In Indian River County, large regional public treatment plants now predominate. Consequently, major treatment issues in the county relate primarily to ensuring sufficient capacity (either on-site or off-site) to accommodate projected growth.

If wastewater demand were allowed to exceed the county's treatment capacity, untreated sewage would have to be discharged. That would result in health hazards and environmental degradation of surface water bodies. To prevent such an occurrence, the county must continue its policy of approving new development only when sufficient capacity will be available. In this regard, the county's computerized concurrency management system and its capital improvements plan ensure that capacity will be available to serve new development concurrent with demand.

Public Treatment Plants

Besides producing high quality effluent, all public treatment plants currently have more than enough capacity to accommodate existing demand. The following sections discuss the county's future wastewater treatment needs and alternatives to meet those needs.

Projection of Future Demand

Assumptions

The comprehensive planning process is an opportunity for the county to complete an assessment of its long range sanitary sewer needs. Such a needs assessment must consist of an analysis that is more than a straight line linear projection. Future projections should utilize certain assumptions based on past trends, present conditions, and future desires. The main assumptions utilized in the sanitary sewer needs assessment are as follows:

- The county will be the primary provider of sanitary sewer collection, treatment, and disposal;
- The City of Vero Beach will continue to serve the City of Vero Beach, the Town of Indian River Shores and a portion of the unincorporated county; and
- 90% to 95% of future new development will connect to the regional sewer system.

The county will continue to maintain these policies and evaluate the feasibility of regional system versus package treatment plants for the above referenced type of developments.

The existing conditions section of this sub-element provides a discussion of the existing capacity of centralized wastewater treatment facilities, with an emphasis on the county system. That discussion addresses the supply side of the wastewater treatment system. This section considers the demand side.

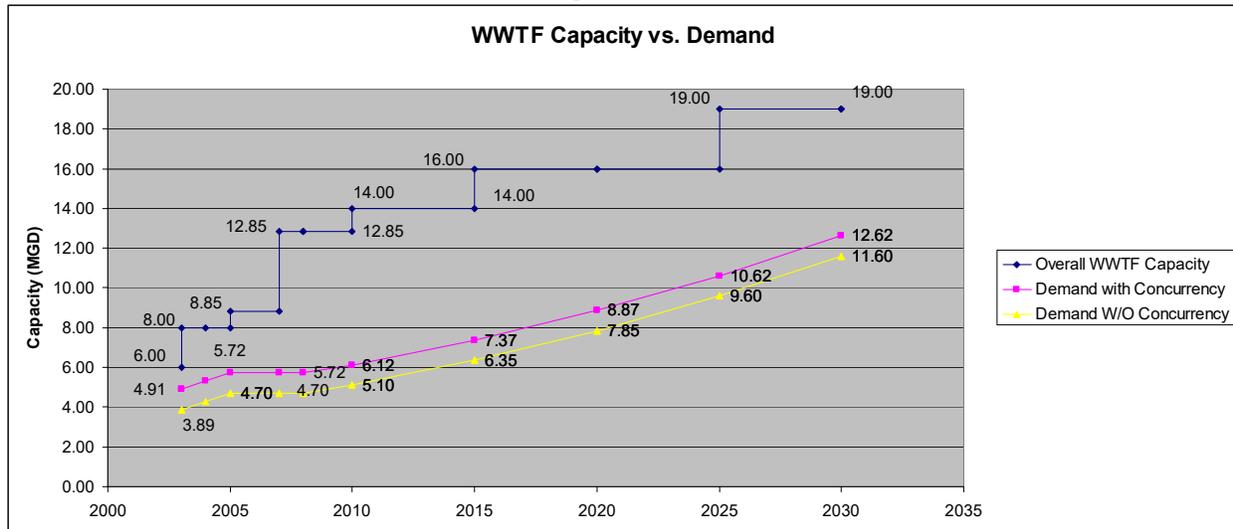
The information for this section is based on the permanent and functional population projections contained in the Introductory Element and on the projected land use patterns contained in the Future Land Use Element. That information is also consistent with the county utilities master plan. To develop these projections, the county used data such as historic growth, population estimates, number and type of dwelling units, and developed commercial/industrial acreage.

As with other facility analyses, planning for wastewater treatment facility expansion requires a rational approach to projecting growth over a finite planning period. Past experience has shown that using the historic growth of existing facilities in conjunction with population projections is the most accurate method of projecting wastewater generation rates for future treatment facility expansions.

Capital Improvements

According to the county sanitary sewer master plan, the total design capacity of the county sanitary sewer system in 2030 is projected to be 19 million gallons per day (MGD), while total demand is projected to be about 12.62 million gallons per day (MGD). To get to a 19 million per day capacity, either the north county regional plant and/or the west regional plant will be expanded in each of the following years: 2010, 2015, and 2025. The increases will be: 2 mgd in 2010; 2 mgd in 2015; and 3 mgd in 2025. This information is shown in the graph below. Because all of the plants in the county system are interconnected, there is flexibility as to which plant or plants will be expanded to accommodate future demand.

Figure 3.A.2



To ensure sufficient capacity through 2030, the county should take the following steps:

- Begin planning and preliminary design for expansion when a plant’s Average Daily Demand is projected to equal or exceed its capacity within 5 years;
- Prepare plans and specifications for expansion when a plant’s Average Daily Demand is projected to equal or exceed its capacity within 4 years;
- Submit a complete construction permit application to the Florida Department of Environmental Protection (DEP) for expansion when a plant’s Average Daily Demand is projected to equal or exceed its capacity within 3 years; and
- Submit an application for an operation permit for the expanded facility to DEP when a plant’s Average Daily Demand is projected to equal or exceed its capacity within 6 months.

Taking these steps within the referenced timeframes will ensure that the county has sufficient time to design, permit, and construct needed plant capacity. At the same time, these timeframes decrease the chances that plants will have many years of unused capacity.

A list of sanitary sewer capital improvements is provided in the Capital Improvements Element (CIE) of the county’s comprehensive plan and provided in Appendix “A” of this sub-element. Since the county’s CIE must be updated annually, projects completed will be dropped from the list of capital improvements and new projects will be added as needed.

Within the county, a number of existing residential developments are not connected to the county sanitary sewer system. If all unserved developments were connected to the regional sanitary sewer system, there would be significant additional wastewater treatment demand. For a number of reasons, however, most unserved developments will never connect to the regional system.

In many cases, septic systems are adequate to accommodate individual single family houses, and there is no need to retrofit existing subdivisions with sanitary sewer lines. Where subdivisions are served by a centralized potable water system, there are seldom problems caused by lots having individual septic tanks. Given the high cost of retrofitting existing subdivisions with sanitary sewer lines and given the limited benefits of connecting, it is unlikely that many existing subdivisions will be retrofitted with sewers in the future.

There are, however, some circumstances where connecting existing subdivisions to the sanitary sewer system would be beneficial. Those circumstances mostly relate to a subdivision's proximity to a waterbody. Because septic tanks can leach pollutants and those pollutants can impact the ocean, the Indian River Lagoon, the St. Sebastian River, or other surface water bodies, the county has an interest in promoting the connection of waterfront subdivisions to the sanitary sewer system.

In the future, the county should continue to offer its assessment program that provides sanitary sewer to those neighborhoods where individuals benefiting from the connection to the sanitary sewer system pay for the cost of service expansion.

Wastewater Needs and Land Use

With the 1990 adoption of the comprehensive plan, the county established its urban service area. The intent of the comprehensive plan is to direct most growth into that area and to provide urban type services to development in the urban service area.

Since adoption of the 1990 comprehensive plan, the regional wastewater collection system has been extended to all commercial/industrial areas in the county, including the three I-95 commercial/industrial nodes. As a result of that expansion, the development potential of land within the urban service area has greatly increased for both residential and commercial/industrial projects.

Although the regional sanitary sewer system service area has been greatly expanded, there are still several areas such as Oslo Park, Vero Lake Estates, Paradise Park and other areas which are not yet served. In the future, the county should evaluate whether or not unserved areas should be connected to the regional sanitary sewer system.

Private Treatment Plants

As indicated in the background section of this Sub-Element, the reason that the County started direct provision of wastewater treatment services was due to problems at private package treatment facilities. In many cases, the problems with private plants were due to the operational aspects of the plant, rather than with the plant itself. Because of those problems and their environmental impacts, the County Utilities Department has decommissioned all but four private plants. Customers formerly served by private plants that have been decommissioned have been connected to the county system.

To avoid a repeat of past problems, to ensure the financial viability of the regional system, and to discourage urban sprawl, new package treatment plants are generally prohibited within the urban service area. Consistent with the provisions of the Future Land Use Element of this plan, package treatment plants or connection to the regional system may be allowed outside of the urban service area to serve development projects that meet the following specific criteria:

- clustering of residential development within agricultural areas;
- clustering of residential development within privately owned upland conservation areas;
- clustering development within mixed use districts; or
- traditional neighborhood design communities.
- agricultural businesses and industries (including biofuel facilities)

In the future, the county will continue to maintain and enforce the above referenced policies.

EFFLUENT DISPOSAL

Another wastewater treatment issue concerns long range plans for effluent disposal. With respect to effluent disposal, the county has several alternatives. Those alternatives include requiring new commercial and/or residential development to use reuse water, retrofitting existing development to use reuse water, or creating wetlands with reuse water.

While retrofitting existing development is, by a large margin, the most expensive of these options, requiring that new development accommodate reuse water is somewhat less expensive. In fact, new commercial areas are currently required to accommodate reuse lines. Even some single-family and multiple-family residential developers, although not required to, have chosen to incur the extra expense of building their projects to accommodate reuse water.

Currently, reuse through spray irrigation is the county's primary effluent disposal method. This method is consistent with the county's emphasis to conserve potable water. For that reason, the

county utilities department is planning to modify the county's sanitary sewer system connection regulations to require that all new subdivisions of 25 or more lots within one-quarter of a mile of an existing re-use line connect to the re-use line for irrigation purposes.

Perhaps the most successful and efficient effluent reuse method currently used by the county is at the West County Plant. At that site, a ±165 acre man-made wetland has been created and maintained with effluent from the plant. Besides the creation of habitat for many species of plants and animals, the benefits of that method of effluent disposal include greatly decreased operating costs.

Although the wetland at the West County Plant is adjacent to the plant, such man-made wetlands are not required to be located near a treatment plant. If not located near a plant, however, they must be located near a reuse water transmission line.

Because the long term benefit of developing such wetlands may outweigh the initial land acquisition and construction costs, the county should begin studying the feasibility of developing additional wetlands.

SUMMARY OF ANALYSIS

Currently, the county's sanitary sewer system is meeting the needs of the community. There is, however, a need to expand the regional wastewater treatment system. That expansion is needed to meet the demand of projected population growth through 2030, and is currently planned to occur with incremental plant expansions.

While the county's wastewater system works well, septic tanks are still an issue. In the future, the county needs to ensure that even fewer new units use septic tanks, while also connecting existing septic tank users to the regional system where problems exist. To address the thousands of existing septic tanks, the county and Health Department need to evaluate the feasibility of establishing a mandatory septic tank maintenance system.

Although the county has successfully extended sewer lines within the urban service area, the county needs to continue to expand its collection system to serve the entire urban service area. Along with that, the county needs to expand its reuse system.

GOAL, OBJECTIVES AND POLICIES

GOAL

Indian River County shall have an efficient system of sanitary sewer disposal that prevents degradation of existing resources, promotes orderly growth and development, and meets existing and projected demands.

OBJECTIVE 1 Service Concurrent with Development

Through the time horizon of the plan, there will be sufficient capacity in the regional sanitary sewer system to accommodate all new development within the urban service area.

POLICY 1.1: New development within the unincorporated portion of Indian River County shall be approved only when capacity is available, either on-site or off-site, to provide needed sanitary sewer service.

POLICY 1.2: The county utilities department, on an annual basis, shall inspect all private wastewater treatment plants in Indian River County.

POLICY 1.3: The county hereby adopts a sanitary sewer level of service standard of 250 gallons per day per equivalent residential unit with a peak monthly flow factor of 1.25. That standard shall be utilized for determining the availability of facility capacity and the demand generated by a development.

POLICY 1.4: Through its computerized permit tracking and its concurrency management system, the county shall continue to implement procedures to update facility demand and capacity information as development orders and permits are issued.

POLICY 1.5: The Planning Division, on an as needed basis, shall provide summary reports containing capacity and demand information for each public wastewater treatment plant within the county service area.

POLICY 1.6: Consistent with the county's water and wastewater connection matrix, the county shall continue to allow the use of septic tank systems in rural areas for single-family units and for domestic waste disposal by small retail establishments. The use of septic tank systems must be approved by the Health Department and be consistent with Rule 64E-6, FAC.

OBJECTIVE 2 Regional System Expansion/Correction of Deficiencies

By 2015, at least 50% of all existing residential units in the county will be connected to a regional sanitary sewer system. This will be an increase from 44% in 2006.

POLICY 2.1: The county shall continue to offer the utility assessment program to areas with septic service within the County Utilities Department service area.

POLICY 2.2: The county shall continue to offer up to 10 year financing for all utility assessments.

POLICY 2.3: The county shall give a priority for the provision of public sanitary sewer services to the subdivisions on the list of subdivisions designated as requiring sanitary sewer service due to public health threats.

POLICY 2.4: The county shall provide sanitary sewer service to areas where the lack of such service is determined to be a public health threat. The county shall recover costs through those connecting to the system and directly benefitting from the improvement.

POLICY 2.5: Consistent with its interlocal agreements with the City of Sebastian and the Town of Orchid, the county shall provide sanitary sewer services to those municipalities.

POLICY 2.6: Prior to 2011, the County will coordinate with the City of Vero Beach and the Town of Indian River Shores to prepare a financial analysis of options related to the possibility of consolidation of utility services. This analysis may consist of, but is not limited to: the possibility of the County serving utilities to the Town of Indian River Shores, currently served by the City of Vero Beach and the Unincorporated area of the South Barrier Island, currently served by the City of Vero Beach, full consolidation of the City of Vero Beach Utility with the Indian River County Utility or making no changes in the existing utility service areas. Based on the results of a financial analysis of the various service options, the Board of County Commissioners will consider implementing the results that show the best financial and operational benefits.

OBJECTIVE 3 Surface Water and Groundwater Quality

Through the time horizon of the plan, the county will have no instances of sanitary sewer facilities contaminating surface water or groundwater resources.

POLICY 3.1: The IRCHD shall conduct annual inspections of septic tanks that are associated with heavy commercial, industrial, and manufacturing uses. The results of these inspections shall be used to prioritize sanitary sewer service expansion.

POLICY 3.2: The county shall regularly monitor all centralized sanitary sewer facilities to ensure that they do not contaminate surface water or groundwater resources.

POLICY 3.3: To ensure that hazardous waste is not discharged into ground or surface water, the IRCHD shall conduct random samplings of on-site sewage systems for businesses which have been identified as hazardous waste generators. Violators shall be prosecuted according to federal, state and/or local regulations.

OBJECTIVE 4 Water Conservation

Through the time horizon of the plan, 100% of the wastewater effluent produced by the county centralized sanitary sewer facilities will be reused.

POLICY 4.1: The county shall continue to reuse wastewater by spray irrigation, with percolation ponds and wetlands as back-up.

POLICY 4.2: The county shall require large volume irrigation users, such as developments with golf courses, to use reuse water for spray irrigation.

POLICY 4.3: The county shall continue to enforce Land Development Regulations that require developments that use treated wastewater for spray irrigation to construct and dedicate to the county the effluent transmission lines needed to transport the effluent to the development.

POLICY 4.4: The county shall require all new subdivisions or residential projects of 25 or more lots/units within one-quarter of a mile of an existing re-use line to connect to the re-use line.

OBJECTIVE 5 Capital Improvements

By 2014, the county will have completed the sanitary sewer improvements listed in the county's 5 year Capital Improvements Program in order to maximize the use of existing facilities and discourage urban sprawl (current Five Year Capital Improvements Plan shown in Appendix A).

POLICY 5.1: In conformance with the review process for the Capital Improvements Element of this plan, the county shall maintain a five-year schedule of capital improvement needs for public facilities.

POLICY 5.2: Proposed capital improvement projects shall be evaluated and ranked according to the following three priority level guidelines:

- Level One - whether the project is needed to protect public health and safety, to fulfill the county's legal commitment to provide facilities and services, or to preserve or achieve full use of existing facilities.
- Level Two - whether the project increases efficiency of use of existing facilities, prevents or reduces future improvement costs, provides service to developed areas lacking full service or promotes in-fill development.
- Level Three - whether the project represents a logical extension of facilities and services within the urban service area.

POLICY 5.3: In order to guarantee provision of more than the minimum level of service, the county shall take the following steps:

- begin planning and preliminary design for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 5 years;
- prepare plans and specifications for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 4 years;
- submit a complete construction permit application to the Florida Department of Environmental Protection for expansion when a plant's Average Daily Demand is projected to equal or exceed its capacity within 3 years; and
- submit an application for an operation permit for the expanded facility to DEP when a plant's Average Daily Demand is projected to equal or exceed its capacity within 6 months.

POLICY 5.4: The county shall treat sanitary sewer provision as an enterprise system which is financially self-supporting.

POLICY 5.5: The County Utilities Department shall fund sanitary sewer capital improvements and expansions through user fees, impact fees, developer's agreements, assessments and other appropriate fees and funding mechanisms.

POLICY 5.6: The county shall pursue state and federal sources of funding available for the improvement and expansion of utility services.

POLICY 5.7: All improvements, replacement, expansion, or increase in capacity of county facilities shall be consistent with adopted level of service standards for facilities.

POLICY 5.8: Consistent with the policies of the Future Land Use Element of this plan, provision of centralized sanitary sewer service shall be limited to the following areas:

- Areas within the Urban Service Area;
- Areas where the county has legal commitments to provide facilities and services as of the date of adoption of this plan;
- Areas outside of the Urban Service Area where at least a portion of the site is contiguous to an Urban Service Area boundary as depicted on the Official Future Land Use Map or where located no more than 500 feet from an existing sanitary sewer line that is part of the county sanitary sewer system, or where an approved place of worship or camp/retreat use existed on January 1, 2016 and is approved for water and/or sewer service by Utility Services in conjunction with a utility construction/connection permit filed with Utility Services on or before June 30, 2016. These areas are subject to the following provisions:
 - The maximum density of such land shall be as shown on the Future Land Use Map, and the provision of centralized sanitary sewer service shall not be justification for an increase in maximum density; and
 - Any and all costs associated with connecting a property to the sanitary sewer system, including costs associated with survey, design, permitting, line extensions, construction, pumps and lift stations, restoration, inspections, and certification, shall be borne by the owner of the property.
- Development projects located outside of the Urban Service Area that meet the criteria of the policies of the Future Land Use Element for:
 - clustering of residential development within agricultural;
 - clustering of residential development within privately owned upland conservation areas;
 - clustered development within mixed use districts;
 - traditional neighborhood design communities;
 - public facilities such as public schools; and
 - agricultural businesses and industries (including biofuel facilities)
- Areas where, consistent with Sanitary Sewer Sub-Element Policy 2.4, the lack of centralized sanitary sewer service is determined to be a public health threat.

POLICY 5.9: The county shall install automatic air release valves in all new sewer lines.

OBJECTIVE 6 Package Treatment Plants

Through the time horizon of the plan, there shall be no instances of package treatment plant failures, or illegal or unsafe package treatment plant discharges.

POLICY 6.1: The county shall limit the use of package wastewater treatment systems to areas that meet the following criteria governing connection to the county sanitary sewer system:

- Development served by existing package treatment plants may continue to treat their sewage in that manner until centralized service becomes available. At that time, all development within ¼ mile of a county sewer line shall be connected to the county system. Development whose sewage treatment systems causes a public health problem must connect to the regional system regardless of the distance to sewer lines.
- Package treatment plants shall be allowed in areas of development outside of the Urban Service Area when such development meets the criteria of policies of the Future Land Use Element for:
 - clustering of residential development within agricultural areas;
 - clustering of residential development within privately owned upland conservation areas;
 - clustering development within mixed use districts;
 - tradition neighborhood design communities; or
 - agricultural businesses and industries (including biofuel facilities)

POLICY 6.2: The county shall ensure that, prior to the issuance of development orders or permits, the applicant has demonstrated that the project complies with applicable federal, state, and local permit requirements for package treatment plants.

POLICY 6.3: The county shall require that issuance of permits for replacement or expansion of existing package treatment plants be conditioned upon compliance with the most updated version of DEP regulatory requirements and Federal and State water quality standards as identified in the “Regulatory Framework” section of the sub-element.

POLICY 6.4: To ensure proper maintenance and operation, the Utilities Department shall inspect all package treatment plants on an annual basis.

POLICY 6.5: The county shall require all new package wastewater treatment plants to be built according to current federal, state, and county requirements. In addition to obtaining a county permit demonstrating compliance with county regulations, any developer building and operating a package wastewater treatment plant must obtain a state permit demonstrating compliance with state and federal regulations. Those regulations include but are not limited to the Federal Water Pollution Control Act of 1972 (PL 92-500) and its amendments through the Clean Water Acts of 1977 (PL 95-217) and 1981 (PL 97-117), Chapters 381 and 403 of the Florida Statutes, and Rules 17-3 and 17-6 of the Florida Administrative Code. Both state and county permits are required for the construction of a plant, and for any future expansion or modification of a plant.

POLICY 6.6: At the time the county approves any new package treatment plants, the county will require, that at the time deemed appropriate by the county, the package treatment plant and associated sewer collection system shall be dedicated to the county for operation and maintenance without compensation.

POLICY 6.7: The county shall continue to enforce ordinances requiring pre-treatment of commercial and industrial waste before discharge into the county system.

POLICY 6.8: The county shall require all future connections to the regional sanitary sewer system to be consistent with the attached water and wastewater connection matrix.

OBJECTIVE 7 Septic Tank Systems

By 2020, the number of new septic tank systems permitted annually will not exceed 450.

POLICY 7.1: The county shall limit the use of septic tank systems to areas that meet the following criteria governing connection to the county sanitary sewer system:

- With the exception of those identified in Table 3.A.3, residential subdivisions served by existing septic tank systems may continue to treat their sewage in that manner.
- Commercial/industrial uses and residential subdivisions identified in Table 3.A.3 may continue to treat their sewage with existing septic tank systems until centralized sewer service lines are extended to within ¼ mile of the site. At that time, all residential units in those subdivisions and all commercial/industrial uses shall be connected to the county system. Developments whose sewage treatment systems cause a public health problem must connect to the regional system regardless of the distance to sewer lines.

- Use of septic tank systems for new development shall be prohibited unless:
 - such development meets the criteria set on the water and wastewater connection matrix; or
 - such development consists of clustered residential development within privately owned upland conservation (C-3) areas. Even under those circumstances, no individual septic tank systems may be associated with individual residential units. If located outside of any conservation designated areas or areas that are environmentally sensitive or significant, however, centralized community septic tank systems may be provided to each pod of clustered residential development.
 - Septic tank systems shall be allowed in areas of development outside of the Urban Service Area when such development meets the criteria of policies of the Future Land Use Element for:
 - clustered residential development within agricultural planned development projects;
 - clustered development within new town projects;
 - traditional neighborhood design communities; and
 - agricultural businesses and industries (including biofuel facilities)

POLICY 7.2: The county shall ensure that, prior to the issuance of development orders or permits for projects to be served by septic tank systems, the applicant has demonstrated that the project complies with Florida Department of Health and Rule 64E-6, FAC, permit requirements for septic tank systems.

POLICY 7.3: The county shall require that issuance of permits for replacement of existing septic tank systems be conditioned upon compliance with the most updated version of DEP regulatory requirements and Federal and State water quality standards as identified in the “Regulatory Framework” section of the Sub-element.

POLICY 7.4: The county, in coordination with the IRCHD, shall establish public education programs on the proper use, inspection requirements, maintenance, and abandonment of septic tanks. The tank abandonment process shall be based on current state and local regulations.

PLAN IMPLEMENTATION

An important part of any plan is its implementation. Implementation involves execution of the plan's policies. It involves taking actions and achieving results.

For the Sanitary Sewer Sub-Element, implementation involves various activities. While some of these actions will be ongoing, others are activities that will be taken by certain points in time. For each policy in this element, Table 3.A.6 identifies the type of action required, the responsible entity for taking the action, the timing, and whether or not the policy necessitates a capital expenditure.

To implement the Sanitary Sewer Sub-Element, several different types of actions must be taken. These include: expansion of plant capacity, extension of the collection network, enforcement of land development regulations and ordinances, execution of interlocal agreements, coordination, and preparation of studies and evaluation and monitoring reports.

Overall plan implementation responsibility will rest with the planning department. Besides its responsibilities as identified in Table 3.A.6, the planning department has the additional responsibility of ensuring that other entities discharge their responsibilities. This will entail notifying other applicable departments of capital expenditures to be included in their budgets, notifying other departments and groups of actions that must be taken, and assisting other departments and agencies in their plan implementation responsibilities.

TABLE 3.A.6
SANITARY SEWER SUB-ELEMENT
IMPLEMENTATION MATRIX

POLICY#	TYPE OF ACTION	RESPONSIBILITY	TIMING	CAPITAL EXPEND.
1.1	Land Development Regulations	Planning	Ongoing	NO
1.2	Monitoring Procedures	Utilities	Ongoing	NO
1.3	Land Development Regulations	Planning	Ongoing	NO
1.4	Monitoring Procedures	Utilities/Planning	Ongoing	NO
1.5	Summary Reports	Planning	As Needed	NO
1.6	Land Development Regulations	Utilities/IRCHD	Ongoing	NO
2.1	Service Provision	Utilities	Ongoing	YES
2.2	Service Provision	Utilities	Ongoing	NO
2.3	Evaluation Process/ Service Provision	Utilities/IRCHD	Ongoing	YES
2.4	Evaluation Process/ Service Provision	Utilities/IRCHD	Ongoing	YES
2.5	Coordination	Utilities/BCC	Ongoing	NO
2.6	Feasibility Study	Utilities/Planning	Ongoing	NO
3.1	Annual Inspections	IRCHD	Ongoing	NO
3.2	Monitoring Procedures	Utilities	Ongoing	NO
3.3	Monitoring Procedures	IRCHD	Ongoing	NO
4.1	Reuse Water by Spray Irrigation	Utilities	Ongoing	NO
4.2	Land Development Regulations	Utilities	Ongoing	NO
4.3	Land Development Regulations	Utilities	Ongoing	NO
4.4	Land Development Regulations	Utilities	Ongoing	NO
5.1	CIP Maintenance	Finance/Utilities	Ongoing	NO

Comprehensive Plan

Sanitary Sewer Sub-Element

5.2	CIP Evaluation & Prioritization	Finance/Utilities	Ongoing	NO
5.3	Capacity Monitoring & Plant Expansion	Utilities	Ongoing	YES
5.4	Land Development Regulations	Finance/Utilities	Ongoing	NO
5.5	Land Development Regulations	Utilities	Ongoing	YES
5.6	Funding Mechanism	Utilities/Finance	Ongoing	NO
5.7	Improvement/ Replacement/Expansion	Utilities	Ongoing	YES
5.8	Land Development Regulations	Utilities/Planning	Ongoing	NO
5.9	Installation of Air Release Valves	Utilities	Ongoing	Yes
6.1	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.2	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.3	Land Development Regulations	Utilities/Planning/ IRCHD	Ongoing	NO
6.4	Plant Inspections	Utilities	Ongoing	NO
6.5	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.6	Land Development Regulations	Utilities/Planning	Ongoing	NO
6.7	Land Development Regulations	Utilities	Ongoing	NO
6.8	Land Development Regulations	Utilities/Planning	Ongoing	NO
7.1	Land Development Regulations	Utilities/Planning	Ongoing	NO
7.2	Land Development Regulations	Utilities/Planning/ IRCHD	Ongoing	NO
7.3	Land Development Regulations	Utilities/Planning/ IRCHD	Ongoing	NO
7.4	Public Education Program	Utilities/ IRCHD	Ongoing	NO

EVALUATION AND MONITORING PROCEDURES

To be effective, a plan must not only provide a means for implementation; it must also provide a mechanism for assessing the plan's effectiveness. Generally a plan's effectiveness can be judged by the degree to which the plan's objectives have been met. Since objectives are measurable and have specific timeframes, the plan's objectives are the benchmarks used as a basis to evaluate the plan.

Table 3.A.7 identifies each of the objectives of the Sanitary Sewer Sub-Element. It also identifies the measures to be used to evaluate progress in achieving these objectives. Most of these measures are quantitative. Besides the measures, Table 3.A.7 also identifies timeframes associated with meeting the objectives.

The utilities department staff will be responsible for monitoring and evaluating the Sanitary Sewer Sub-Element. This will involve collection of data and compilation of information regarding facility capacity, expansion, and new development permitted. This will be done on a regular basis. As part of the county's concurrency management system, the county will continually monitor facility capacity to ensure that wastewater level-of-service standards will be maintained.

While monitoring will occur on a continual basis, formal evaluation of the Sanitary Sewer Sub-Element will occur every five years in conjunction with the formal evaluation and appraisal of the entire comprehensive plan. Besides assessing progress, the evaluation and appraisal process will also be used to determine whether the Sanitary Sewer Sub-Element objectives should be modified or expanded. In this way the monitoring and evaluation of the Sanitary Sewer Sub-Element will not only provide a means of determining the degree of success of the plan's implementation; it will also provide a mechanism for evaluating needed changes to the plan element.

TABLE 3.A.7
 SANITARY SEWER SUB-ELEMENT
 EVALUATION MATRIX

OBJECTIVE #	MEASURE	TIMEFRAME
1	Availability of Sufficient Capacity	Through the time horizon of the plan
2	% connected to regional system	By 2015
3	# of instances of sanitary sewer facilities contaminating surface water or groundwater resources	Through the time horizon of the plan
4	% of wastewater effluent reused	Through the time horizon of the plan
5	Completed improvements	Through the time horizon of the plan
6	# of package treatment plant failures and # of illegal or unsafe package treatment plant discharges	Through the time horizon of the plan
7	# of new septic tank systems permitted annually	By 2020

**TABLE 3.A.8
WATER & WASTEWATER CONNECTION MATRIX FOR NEW DEVELOPMENT**

	Inside of the Urban Service Area	
	Connect	Not Connect
Single Family:		
Within 200' of system	X	
Outside of 200' of system		X**
Residential Projects: Subdivision, multi-family, site plan, PD, DRI		
Within ¼ mile of the system		
25 units or more	X	
Less than 25 units	X	
Outside of ¼ mile of system		
25 units or more	X	
Less than 25 units		X**
Non-Residential Projects: Subdivision, site plan, PD, DRI		
Within ¼ mile of system		
2,000 gallons daily flow or more*	X	
Less than 2,000 gallons daily flow*	X	
Outside of ¼ mile of system		
2,000 gallons daily flow or more*	X	
Less than 2,000 gallons daily flow*		X**

* Daily flow refers to water consumption or sewer generation.

**The applicant for any development project, where such project will not connect to a centralized system, must sign a developer's agreement with the Indian River County Utilities Department to operate on a private system with a commitment to connect to the regional system when service is available. These agreements shall be conditioned upon demonstration of compliance with applicable federal, state, and local permit requirements. When using a private system or on-site facilities, the developer must construct a dry line or wet line at the time of construction, if required by the Utilities Department. The final determination for the type of

non-residential establishment which can utilize a private system shall be made by the Utilities Department, Community Development Department, and Environmental Health Department.

System Availability: A system is considered available when a collection or distribution line exists in a public easement or right-of-way.

Distance Determination: Distance determinations are made from the nearest point of the project (area of development) to the public facility directly through public easements or public rights-of-way.

Indian River County Five Year Schedule of Improvements						
Appendix A: Sanitary Sewer and Potable Water 5 Year CIP						
Revenue	FY 2009/10	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	Total
Capacity Charges & User Fees	\$ 17,299,793	\$ 1,200,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 22,999,793
Total Revenue	\$ 17,299,793	\$ 1,200,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 22,999,793

Expenditures	FY 2009/10	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	Total	Revenue Source
Misc Water Improvements	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 1,250,000	Capacity Charges & User Fees
Misc Sewer Improvements	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000	\$ 875,000	Capacity Charges & User Fees
West Reg WWTF Expansion 2.0 to 6.0 MGD	\$ 1,024,382	\$ -	\$ -	\$ -	\$ -	\$ 1,024,382	Capacity Charges & User Fees
77th West of Kings (Tuscanny Lakes)	\$ 112,237	\$ 112,237	\$ 112,237	\$ -	\$ -	\$ 336,711	Capacity Charges & User Fees
12WM 17th St. SW from 27th Av to 43rd Av	\$ -	\$ -	\$ -	\$ 610,000	\$ -	\$ 610,000	Capacity Charges & User Fees
(Convert 8"FM) 16" Reuse Lateral G Conversion	\$ 840,343	\$ -	\$ -	\$ -	\$ -	\$ 840,343	Capacity Charges & User Fees
FM and WM on 4th st from 82nd to 98th ave and on 98th from 4th to 8th	\$ -	\$ -	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000	Capacity Charges & User Fees
Convert North County Brine Line to Reuse Main	\$ 1,295,000	\$ -	\$ -	\$ -	\$ -	\$ 1,295,000	Capacity Charges & User Fees
12" WM on 27th Ave from 13th st SW to 17th St SW (Madera Isles & Echo Lake	\$ -	\$ -	\$ -	\$ 341,000	\$ -	\$ 341,000	Capacity Charges & User Fees
Tie South County Brine Line to Existing FM	\$ 270,000	\$ -	\$ -	\$ -	\$ -	\$ 270,000	Capacity Charges & User Fees
58th Av 65th St to 69th St & along 61st and 69th St	\$ 50,000	\$ 500,000	\$ 450,000	\$ 232,000	\$ -	\$ 1,232,000	Capacity Charges & User Fees
N of Windsor & Polo Club Extension	\$ -	\$ -	\$ 225,000	\$ 20,000	\$ -	\$ 245,000	Capacity Charges & User Fees
Svce Transmission Lines Oslo Pk, Villages of VB Gardens	\$ -	\$ -	\$ -	\$ 700,000	\$ -	\$ 700,000	Capacity Charges & User Fees
Install 12" WM along 66th Ave from 16th St to SR 60 & 16" WM along 16th St.	\$ 609,356	\$ -	\$ -	\$ -	\$ -	\$ 609,356	Capacity Charges & User Fees

Comprehensive Plan

Sanitary Sewer Sub-Element

Install Wells and Piping at North County RO Plant	\$ 1,965,580	\$ -	\$ -	\$ -	\$ -	\$ 1,965,580	Capacity Charges & User Fees
Install Well No.7 st S. Co. RO Plant	\$ 1,200,000	\$ -	\$ -	\$ -	\$ -	\$ 1,200,000	Capacity Charges & User Fees
Falcon Trace Developer's Agreement	\$ 44,502	\$ 44,502	\$ 44,502	\$ -	\$ -	\$ 133,506	Capacity Charges & User Fees
Install 6" FM in Conjunction with 43rd Ave Road Widening	\$ 335,000	\$ -	\$ -	\$ -	\$ -	\$ 335,000	Capacity Charges & User Fees
Install 6" FM along 16th St west of 43rd Ave	\$ 100,000	\$ -	\$ -	\$ -	\$ -	\$ 100,000	Capacity Charges & User Fees
16" WM from Kingshighway Tank to College Lane	\$ 290,450	\$ -	\$ -	\$ -	\$ -	\$ 290,450	Capacity Charges & User Fees
Install 24" WM along 77th St from 66th Ave to 70th Ave then North to CR 510	\$ -	\$ -	\$ 500,000	\$ 880,000	\$ -	\$ 1,380,000	Capacity Charges & User Fees
N. Reg. Reuse Sto. & Repump Facility with Transmission Mains to Barrier Island	\$ 1,501,327	\$ 1,125,038	\$ -	\$ -	\$ -	\$ 2,626,365	Capacity Charges & User Fees
Construct 8" WM on Oslo from 8th Ct. to 9th Ct.	\$ 30,000	\$ -	\$ -	\$ -	\$ -	\$ 30,000	Capacity Charges & User Fees
Construct 12" WM along 53rd St. E/O RR, Lat H Canal	\$ 795,000	\$ -	\$ -	\$ -	\$ -	\$ 795,000	Capacity Charges & User Fees
Construct 20"WM on 66th Av 41st to 77th St	\$ -	\$ -	\$ -	\$ -	\$ 500,000	\$ 500,000	Capacity Charges & User Fees
Construct 20" WM on 66th Av from 20th St. to 41st St.	\$ -	\$ 1,000,000	\$ 1,500,000	\$ -	\$ -	\$ 2,500,000	Capacity Charges & User Fees
Verona Trace Developer's Agreement	\$ 40,100	\$ 40,100	\$ 40,100	\$ -	\$ -	\$ 120,300	Capacity Charges & User Fees
Madera Isle/Echo Lake Dev Agreement	\$ -	\$ -	\$ 97,400	\$ 97,400	\$ -	\$ 194,800	Capacity Charges & User Fees
Upgrade Dataflow System w/Auto Valves	\$ 200,000	\$ -	\$ -	\$ -	\$ -	\$ 200,000	Capacity Charges & User Fees
Total Expenditures	\$ 11,128,277	\$ 3,246,877	\$ 3,394,239	\$ 3,305,400	\$ 1,925,000	\$ 22,999,793	

Comparison of Expenditures to Revenue	FY 2009/10	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	Total
Total Revenue	\$ 17,299,793	\$ 1,200,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 22,999,793
Total Expenditures	\$ 11,128,277	\$ 3,246,877	\$ 3,394,239	\$ 3,305,400	\$ 1,925,000	\$ 22,999,793
Annual Balance	\$6,171,516	-\$2,046,877	-\$1,894,239	-\$1,805,400	-\$425,000	\$0

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