BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

ORIGINAL

In re: Applications For An Amendment Of Certificate For An Extension Of Territory And For an Original Water And Wastewater Certificate (for a utility in existence and charging for service)	)	Docket No. 992040-WS
In re: Application by Nocatee Utility Corporation for Original Certificates for Water & Wastewater Service in Duval and St. Johns Counties, Florida	)	Docket No. 990696-WS

PREFILED DIRECT TESTIMONY OF

JIM MILLER

ON BEHALF OF INTERCOASTAL UTILITIES, INC.

(7)

PREFILED DIRECT TESTIMONY OF JIM MILLER

Q. Mr. Miller, please state your full name and employment address.

A. My name is James H. Miller, Jr. and I am employed by PBS&J at 7785 Baymeadows Way, Suite 202, Jacksonville, Florida 32256.

Q. By whom are you employed and in what capacity?

A. I am employed by PBS&J. I am a vice president and senior program manager for the Jacksonville water and wastewater program.

A. Please list your professional and educational experience post-high school.

Q. I am a registered professional engineer in Florida since 1979 (#24398), North Carolina since 1985 (#12802), and Alabama since 1985 (#15020). I hold and active Florida Engineering Society Certificate of Continuing Professional Development and am current with my required continuing education for both North Carolina and Alabama. I attended Georgia Institute of Technology, Atlanta, Ga., majoring in Civil engineering (1963-1967). I am an active member of the Florida Engineering Society, National Society of Professional Engineers, American Water Works Association, Water Environment Federation, Society of American Military Engineers, and Florida Water Resources Association. I have worked continuously in Jacksonville, Florida area since 1968. I was employed at RS&H as a project engineer/computer modeler from 1968-1972. In that capacity, I served as a project engineer for the 1968 City of Jacksonville Water Study, and various other water system studies for the City of Tallahassee, U.S. Navy, and City of North Miami Beach. I participated on the design team for the City of Jacksonville Water Improvement Program in 1969-1972, which included design of numerous water transmission main extensions and water treatment plants. From 1972-1979, I served as the water and wastewater project manager for Fred Wilson & Associates. My primary

clients included the Town of Orange Park, University of Florida, and U.S. Navy. During my tenure at Fred Wilson and Associates, I was project engineer/manager for both water and waterwater studies, plant expansions, and transmission, distribution, and collection mains. In 1979 I joined PBS&J as a project manager in their Jacksonville office and was responsible for several water and wastewater projects for the City of Panama City Beach, completion of the Cedar Hills Pumping Station for the City of Jacksonville, 201 Facilities Plan for the City of Panama City Beach, and water and sewer systems for Honeymoon Island State Park.

I was employed by Flood Engineers, as an associate vice president and project manager from 1981 to 1983 and continued to serve a project manager for the City of Panama City Beach, as well as clients such as the City of St. Augustine and U.S. Navy. Projects included water and wastewater studies, treatment system design, and transmission/distribution system design. In 1983, I joined the firm of Connelly & Wicker, Inc. as one of the three principals and executive vice president in charge of company wide production. During my tenure at Connelly & Wicker, I served as project manager for all General Development Utility projects including plant design, low pressure sewer system design and rehabilitation, studies, and transmission/distribution systems. In 1990, I sold out my interest in Connelly & Wicker and rejoined PBS&J as a vice president and senior program manager to reopen the Jacksonville office. During my tenure at PBS&J, I have managed water and wastewater projects for the City of Jacksonville and later JEA, City of Jacksonville Beach, City of Neptune Beach, City of Jasper, as well as numerous other private clients.

Q. Are you familiar with Intercoastal's application in this matter?

A. Yes, I have reviewed the application and other related documents.

Q. Do you believe those applications are reasonable, true and correct with regard to their

engineering representations?

A. Yes, the data contained in the applications appear to be consistent with the engineering data contained in the Conceptual Master Plan and other data provided to PBS&J by Intercoastal Utilities.

Q. Please identify the document which has been marked as JM-1.

A. Document JM-1 is the "Intercoastal Utilities, Inc. Conceptual Master Plan", prepared by PBS&J, dated December 1999.

Q. Are the representations in that document reasonable, true and correct to your knowledge?

A. Yes, I believe that all representations in the document are true, correct, and based on sound engineering standards. Assumptions related to flow/usage were based on actual Intercoastal records and/or accepted engineering values, where applicable. The opinions of estimated cost were based on values obtained from PBS&J cost information files, data obtained from suppliers or contractors, and other information available to PBS&J. All representations are based on "conceptual" planning of the service area.

Q. Please explain to the Commission what Intercoastal proposes by its application.

A. Intercoastal Utilities, Inc. proposes to amend its certificate to provide water, wastewater, and reclaimed water service to the "Westerly Certificate Area", identified in Figure 3-1 of the Conceptual Master Plan. Potable water, wastewater, and reclaimed water systems will generally follow the capacities and phasing outlined in the Conceptual Master Plan, subject to projected growth rates. Phase 1 of each of these systems is described graphically on Figures Nos. 3-2 through 3-4.

Q. Please identify the maps which Intercoastal has included within its application, and which are set forth within Exhibit JM-1 and identify each.

A. Eight (8) maps developed by PBS&J have been included in the application:

Figure 2-1 – Intercoastal Utilities Easterly Certificate Area

Figure 2-2 – Intercoastal Utilities Existing Water System

Figure 2-3 – Intercoastal Utilities Existing Sewer System

Figure 3-1 – Intercoastal Utilities Westerly Certificate Area (both application and Conceptual Master Plan)

Figure 3-1 – Intercoastal Utilities Easterly and Westerly Certificate Area (not included in Conceptual Master Plan)

Figure 3-2 – Intercoastal Utilities West Phase 1 Water System

Figure 3-3 – Intercoastal Utilities West Phase 1 Sewer System

Figure 3-4 – Intercoastal Utilities West Phase 1 Reclaimed Water System

These maps are based on data provided to PBS&J by Intercoastal Utilities, data obtained from St. Johns County, and planning data prepared by PBS&J.

Q. Have certain assumptions in Exhibit JM-1 been based on documents obtained from Nocatee Utility Corporation?

A. Yes, growth projections and phasing data obtained from Nocatee Utility Corporation were used for flow projections. PBS&J also concurs with and utilized ERC unit flow assumptions from the Nocatee Utility documents. The flow assumptions in the Nocatee Utility documents are reasonable and with the accepted range of sound engineering standards. PBS&J accepted the growth projections provided by Nocatee Utility Corporation, their engineers and planners.

Q. Are all of the estimates, costs, and projections reflected in JM-1 reasonable and accurate based upon your independent judgement and verification?

A. Projections reflected in the Conceptual Master Plan closely follow the projections by the Nocatee Utility Corporation. While growth projections are dependent on many factors, including the financial climate, PBS&J accepts the data provided by Nocatee Utility

Corporation, their engineers, and planners. However, as with most new developments, planning is a continual process through "build-out". The phasing proposed by Intercoastal Utilities is very adaptable to modifications and changes in growth patterns throughout the life of the project. The opinions of estimated cost presented by PBS&J in the Conceptual Master Plan are reasonable and accurate based on the current construction market within the area.

Q. Please summarize you conclusions and analyses as reflected in Exhibit JM-1 for the Commission.

A. Based on our analyses and conclusions, Intercoastal Utilities cannot cost-effectively provide service via an extension of its existing system east of the Intracoastal Waterway. However, a "stand-alone" system, with the potential for interconnection to the existing system can easily be provided in the westerly service area. This facilities can be phased and constructed to meet system growth and provide "state of the art" design features to enhance operational effectiveness. They will provide a level of service that meets or exceeds that of other area public or private utilities. Materials of construction and selection of process and equipment will be consistent with the features of other area "regional" facilities. This proposed expansion of the Intercoastal Utilities system will not only provide that level of service envisioned for this development west of the Intracoastal Waterway (ICWW), but will also enhance the level of service for ICU's customers, east of the ICWW by providing for a much larger customer base and ultimately lowering operation and maintenance costs within the systems.

Q. Do you believe Intercoastal will be able to carry out the activities and the project proposed by its application for the costs reflected in Exhibit JM-1.

A. I believe the costs presented in the Conceptual Master Plan are reasonable based on current area construction costs. The proposed system planning is flexible enough to

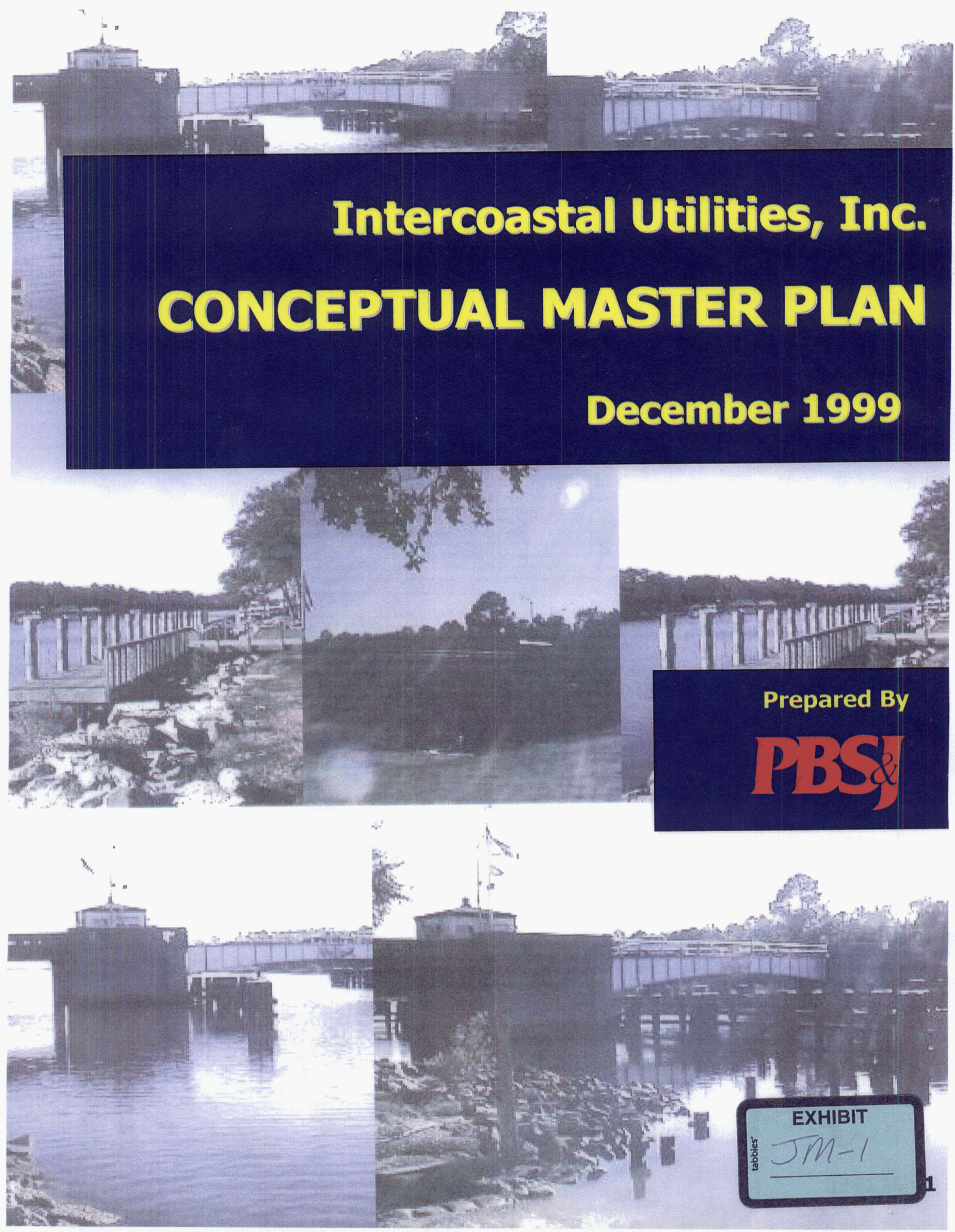
adapt to changes in growth patterns, which will likely occur during the build-out of this project, without significant unit cost changes.

Q. In your opinion, and in your knowledge of Intercoastal and the utility facilities existing and proposed in these areas, do you believe Intercoastal can build and operate the utility services to serve these territories as reliable, as cost-efficiently, and as cost-effectively as any other alternative provider?

A. Yes, the reliability of system will certainly meet or exceed the level of service of any alternative provider. Operation should be, at worst, equal to or better than an alternative provider, due to the existing customer base. I also stated in Exhibit JM-1, that Intercoastal has the flexibility, to explore and implement other alternatives including the use of a bulk or wholesale provider. With the Intercoastal customer base, they can certainly provide a cost-effective alternative under this scenario if the opportunity avails itself.

Q. Does this conclude your prefiled direct testimony?

A. Yes



Intercoastal Utilities, Inc.

CONCEPTUAL MASTER PLAN

December 1999

Prepared By

PBS&J

EXHIBIT

tabbies

JM-1

completed and placed in service by December 30, 1999. After the new facilities are placed in operation, the utility will be permitted to discharge 0.30 mgd AADF of reclaimed water to the Sawgrass Golf and Country Club and 1.2 mgd AADF to the ICWW.

Intercoastal Utilities, Inc.

CONCEPTUAL MASTER PLAN

December 1999

Prepared By

PBS&J

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1.0 Introduction

1.1 General (Location, General Description)

Intercoastal Utilities began operation in 1983 with the acquisition of the Sawgrass Utility System from the Arvida Corporation. Beginning as a system primarily serving the Sawgrass PUD, the utility has expanded and extended facilities to serve the high growth in the northeast are of St Johns County. The system currently encompasses a service area of approximately 4,500 acres and extends from the Atlantic Ocean in the North and East to the Intracoastal Waterway in the South and West.

The system primarily serves upscale single family and condominium/apartment communities with an expanding commercial area. Current growth is in the west and southwest toward the Intracoastal Waterway and is expected to remain relatively stable. The utility is currently expanding the water and wastewater facilities to meet growth in the service area and upgrading the wastewater treatment process to meet new regulatory requirements.

With a majority of the existing service area earmarked for planned development and the Guana Preserve restricting growth to the south on the east side of the Intracoastal Waterway, the utility recognized that the County Road 210 (CR210) corridor west of the Intracoastal would be the next area for further development. In 1996, the utility submitted a Water Supply Needs and Sources Assessments (WSNSA) plan through the year 2020 to the St Johns Water Management District (SJRWMD). The WSNSA addressed future needs on both the east and west sides of the facility.

1.2 Scope and Objectives (20 year focus)

Under this Scope of Work, PBS&J reviewed development plans and evaluated alternatives to meet the 20 year needs of the existing Intercoastal East and the proposed Intercoastal West service areas. This evaluation relied on existing conditions, existing flow and demand projections, and existing developer plans for the CR210 corridor. The recommendations of this report are intended to be a conceptual master plan for future development of the utility.

The objectives of the conceptual master plan include the following::

1. Develop recommendations for providing water, wastewater, and reclaimed water services to Intercoastal West, while continuing to provide for service and growth in Intercoastal East the for the 20 year planning horizon.

2. Concentrate on facilities that are needed to serve the developments, rather than providing service within the developments.

3. Develop recommendations for the time sensitive initial phases of the strategy.

2.0 Background

2.1 Intercoastal East (St Johns County)

The Intercoastal East service area encompasses approximately 4,500 acres in Northeast St Johns County. A map of the service area is presented in Figure 2-1[a]. As of June 1, 1999, the utility provided water and sewer service to approximately 3,517 active accounts.

The service area is approximately 90 percent high end residential with the remainder being retail and commercial.

2.2 Existing Facilities

Two water treatment plants, located at Sawgrass and The Plantations, provide the potable water supply and treatment for the existing system. Wastewater treatment and disposal for the system is provided by a wastewater treatment plant located at Sawgrass.

2.2.1 Potable Water Facilities

A map of the potable water system, indicating location of treatment facilities and major water lines is shown in Figure 2-2[b].

An inventory of the existing equipment and the associated capacities is summarized in Table 2-1. The rated capacity of the system, using Florida Department of Environmental Protection (FDEP) criteria is approximately 2.81 mgd based on the capacity (limiting factor) of the high service pumps. The rated capacity of the system, and using PBS&J criteria is approximately 1.77 mgd based on the capacity (limiting factor) of the high service pumps.

Design for the expansion of the potable water system is currently underway. The proposed additions to the facility are summarized in Table 2-2. The expansion is expected to be completed by the end of the year 2000.

On completion of the expansion, the rated capacity of the system, using FDEP criteria will be approximately 5.00 mgd based on the capacity (limiting factor) of the high service pumps. The rated capacity of the system, using PBS&J criteria will be approximately 3.70 mgd based on the capacity (limiting factor) of the high service pumps.

2.2.2 Wastewater Facilities

A map of the wastewater system, indicating the wastewater treatment plant, gravity sewers, lift stations, and force mains, is shown in Figure 2-3[c].

The wastewater treatment facility is operated under Permit Number FL0117897 issued by FDEP on July 31, 1997. The permit authorizes the utility to operate a 0.8 mgd Annual Average Daily Flow (AADF) extended aeration treatment plant and to construct and operate a new 1.5 mgd AADF advanced secondary treatment plant with a new 1.2 mgd AADF outfall to the Intracoastal Waterway (ICWW). The new facilities will be

[a] Based on Intercoastal Utilities, Inc. service area descriptions provided to PBS&J.
[b] Based on Intercoastal system maps provided to PBS&J.
[c] Based on Intercoastal system maps provided by PBS&J.

Table 2-1[d]

Intercoastal Utilities
Existing Water Supply and Treatment Facilities

Plant Component	Sawgrass		Plantation		Total	
Supply Wells (gpm)	1 @ 1,104		1 @ 1,500 1 @ 1,500			
Total	**1,104**		**3,000**			**4,104**
Rated Well Capacity (gpm)	552	491	1,500	1,333	2,052	1,842
Aeration (gpm)	**2,300**		**2,300**			**4,600**
Rated Aeration Capacity (gpm)	1,150	1,022	1,150	1,022	2,300	2,044
Storage (gallons)	**500,000**		**500,000**			**1,000,000**
Rated Storage Capacity (gpm)	1,389	1,389	1,389	1,389	2,778	2,778
High Service Pumps (gpm)	2 @ 780 1 @ 600		1 @ 1,500 1 @ 1,000 1 @ 1,250 1 @ 1,900			
Total	**2,160**		**5,650**			**7,810**
Rated Pumping Capacity (gpm)	540	307	1,413	833	1,953	1,229
Limiting Factor (gpm)	**540**	**307**	**1,150**	**833**	**1,953**	**1,229**
Plant Throughput	**1,317**	**1,062**	**1,617**	**1,296**	**3,060**	**2,398**
Fire Flow Capacity	**4,187**	**3,618**	**4,492**	**3,852**	**9,060**	**7,731**

Rated Capacity (mgd)	FDEP	PBS&J
Supply Wells	2.95	2.62
Aerator	3.31	2.94
Storage	4.00	4.00
High Service Pumps	2.81	1.77
Plant Throughput	4.40	3.45
Fire Flow Capacity	13.0	11.1

Throughput = (Limiting Capacity + (Storage/240))/ Max Day Factor

Fire Flow = ((Limiting Capacity –500) +(Storage/60))/Max Day Factor

Rated Capacity	FDEP Criteria	PBS&J Criteria
Wells	max day of 200% adf	Max day of 225% adf with largest well out of service
Aerators	max day flow rate of 200% adf	max day flow rate of 225% adf
Storage	16 hour flow rate of 150% and 4 hours detention time	16 hour flow rate of 150% and 4 hours detention time
High Service Pumps	peak hour flow rate of 400%	peak hour flow rate of 450% adf with largest pump out of service

Calculations of the plant capacities are summarized in Appendix C.

[d] Compilation of Waitz & Moye, Inc. data provided to PBS&J.

Table 2-2[e]

Intercoastal Utilities
Year 2000 Water Supply and Treatment Facilities

Plant Component	Sawgrass		Plantation		Total	
Supply Wells (gpm)	1 @ 1,104 1 @ 1,000		4 @ 1,500			
Total	**2,104**		**6,000**		**8,104**	
Rated Well Capacity (gpm)	1,052	935	3,000	1,800	4,052	2,935
Aeration (gpm)	**2,300**		**7,500**		**9,800**	
Rated Aeration Capacity (gpm)	1,150	1,022	3,750	3,333	4,900	4,355
Storage (gallons)	**500,000**		**1,000,000**		**1,500,000**	
Rated Storage Capacity (gpm)	1,389	1,389	2,778	2,778	3,472	3,472
High Service Pumps (gpm)	1 @ 2,350 2 @ 1,175		3 @ 1,500 2 @ 2,350			
Total	**4,700**		**9,200**		**13,900**	
Rated Pumping Capacity (gpm)	1,175	1,044	2,300	1,522	3,475	2,566
Limiting Factor (gpm)	**1, 052**	**935**	**2,300**	**1,522**	**3,472**	**2,566**
Plant Throughput	**1,569**	**1,341**	**3,233**	**2,528**	**4,861**	**3,918**
Fire Flow Capacity	**4,443**	**3,897**	**9,233**	**7,862**	**12,636**	**12,029**

Rated Capacity (mgd)	FDEP	PBS&J
Supply Wells	5.83	4.23
Aerator	7.06	6.27
Storage	5.00	5.00
High Service Pumps	5.00	3.70
Plant Throughput	7.00	5.64
Fire Flow Capacity	18.20	17.32

Throughput = (Limiting Capacity + (Storage/240))/ Max Day Factor

Fire Flow = ((Limiting Capacity –500) +(Storage/60))/Max Day Factor

Rated Capacity	FDEP Criteria	PBS&J Criteria
Wells	max day of 200% adf	Max day of 225% adf with largest well out of service
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High Service Pumps	peak hour flow rate of 400%	peak hour flow rate of 450% adf with largest pump out of service

[e] Compilation of Waitz & Moye, Inc. data provided to PBS&J.

Table 2-1[d]

Intercoastal Utilities
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Plant Component	Sawgrass		Plantation		Total	
Supply Wells (gpm)	1 @ 1,104		1 @ 1,500 1 @ 1,500			
Total	**1,104**		**3,000**			**4,104**
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Rated Aeration Capacity (gpm)	1,150	1,022	1,150	1,022	2,300	2,044
Storage (gallons)	**500,000**		**500,000**		**1,000,000**	
Rated Storage Capacity (gpm)	1,389	1,389	1,389	1,389	2,778	2,778
High Service Pumps (gpm)	2 @ 780 1 @ 600		1 @ 1,500 1 @ 1,000 1 @ 1,250 1 @ 1,900			
Total	**2,160**		**5,650**			**7,810**
Rated Pumping Capacity (gpm)	540	307	1,413	833	1,953	1,229
Limiting Factor (gpm)	**540**	**307**	**1,150**	**833**	**1,953**	**1,229**
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Calculations of the plant capacities are summarized in Appendix C.

[d] Compilation of Waitz & Moye, Inc. data provided to PBS&J.

Table 2-2[e]

Intercoastal Utilities
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Plant Component	Sawgrass		Plantation		Total	
Supply Wells (gpm)	1 @ 1,104 1 @ 1,000		4 @ 1,500			
Total	**2,104**		**6,000**			**8,104**
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Aeration (gpm)	**2,300**		**7,500**			**9,800**
Rated Aeration Capacity (gpm)	1,150	1,022	3,750	3,333	4,900	4,355
Storage (gallons)	**500,000**		**1,000,000**			**1,500,000**
Rated Storage Capacity (gpm)	1,389	1,389	2,778	2,778	3,472	3,472
High Service Pumps (gpm)	1 @ 2,350 2 @ 1,175		3 @ 1,500 2 @ 2,350			
Total	**4,700**		**9,200**			**13,900**
Rated Pumping Capacity (gpm)	1,175	1,044	2,300	1,522	3,475	2,566
Limiting Factor (gpm)	**1, 052**	**935**	**2,300**	**1,522**	**3,472**	**2,566**
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Storage	16 hour flow rate of 150% and 4 hours detention time	16 hour flow rate of 150% and 4 hours detention time
High Service Pumps	peak hour flow rate of 400%	peak hour flow rate of 450% adf with largest pump out of service

[e] Compilation of Waitz & Moye, Inc. data provided to PBS&J.

2.3 Development Plans and Demand Projections

The existing service area is essentially built out. While a portion of the currently undeveloped area may be redeveloped from single family residences at 2 units per acre to cluster homes with a higher density per acre, significant additional growth is not planned or expected.

2.3.1 Wastewater Flow Projections

As of June 1, 1999, Intercoastal had 3,142 metered accounts. These accounts discharged an average wastewater flow of approximately 800,000 gpd to the Sawgrass Wastewater Treatment Plant or approximately 255 gpd/metered account[f].

The WWTP has a permitted treatment and disposal capacity of 1,500,000 gpd. Based on and Equivalent Residential Connection ERC of 255 gpd, the system has a build out wastewater capacity of approximately 5,882 ERC's or metered accounts. Thus, as of June 1, 1999, the service area was approximately 53.4 percent occupied.

Based on a historical rates of growth, the system will reach buildout between the 2005 and 2006 at a 10 percent growth rate and between 2009 and 2010 at a growth rate of 6 percent. The flow and account projections are summarized in Table 2-3.

Table 2-3

INTERCOASTAL EAST
WASTEWATER FLOW PROJECTIONS

Parameter	1999	2005	2006	2009	2010
Accounts @ 6 %/year	3,142	4,457	4,724	5,627	5,964
Flow, gpd @ 6 %/year	800,000	1,113,481	1,202,904	1,432,678	1,518,638
Accounts @ 10 %/year	3,142	5,556	6,123	---	---
Flow, gpd @ 10 %/year	800,000	1,417,248	1,558,973	---	---

2.3.2 Water Demand Projections

As of June 1, 1999, Intercoastal had 3,517 metered water accounts. The accounts included 3,142 water and wastewater accounts and 375 water only accounts. Based on a service area occupancy of 53.4 percent, the existing territory has an estimated build out capacity of approximately 6,586 metered accounts[g].

Based on a historical rates of growth, the system will reach buildout between the 2005 and 2006 at a 10 percent growth rate and between 2009 and 2010 at a growth rate of 6 percent. The flow and account projections are summarized in Table 2-4.

[f] Intercoastal customer/account data provided to PBS&J
[g] Intercoastal customer/account data provided to PBS&J

Table 2-4

INTERCOASTAL EAST
WATER FLOW PROJECTIONS

Parameter	1999	2005	2006	2009	2010
Accounts @ 6 %/year	3,517	4,989	2,288	6,298	6,676
Flow, gpd @ 6 %/year[(a)]	1,230,950	1,746,126	1,850,894	2,204,444	2,336,711
Flow, gpd @ 6 %/year[(b)]	1,834,116	2,601,728	2,757,832	4,757,223	5,232,946
Accounts @ 10 %/year	3,517	6,321	6,854	---	---
Flow, gpd @ 10 %/year[(a)]	1,230,950	2,180,703	2,398,773	---	---
Flow, gpd @ 10 %/year[(b)]	1,834,116	3,249,247	3,574,172	---	---

(a) Flow based on 350 gpd/ERC or Account as an Annual Average.
(b) Flow based on 350 gpd/ERC or Account as an Annual Average plus 49 percent based on historical irrigation flows.

2.3.3 Reclaimed Water Demands

Intercoastal currently provides 0.3 mgd of reclaimed water to the Sawgrass Country Club for irrigation of the Sawgrass golf course. This is the only use of reclaimed water currently allowed by the FDEP permit.

The Plantations development currently use stormwater for irrigation of the Plantations golf course, but has recently requested that the St Johns River Water Management District (SJRWMD) permit a irrigation well as a backup source of water. The District, as part of the permit for the new well, is expected to require that the Plantations use reclaimed water from Intercoastal as the primary backup supply[h]. Intercoastal has agreed to provide a connection to the Plantations for this backup supply. However, since this is a backup supply to the stormwater irrigation supply, the reclaimed water demand for the Plantations will be minimal. With no other potential sites for using reclaimed water, Intercoastal will have approximately 1.0 to 1.2 mgd of excess reclaimed water that will be discharged to the Intracoastal Waterway.

[h] Letter to M.L. Forrester (Intercoastal), dated 9/24/99 from Jay C. Lawrence, P.G. (SJRWMD).

3.0 Proposed Franchise Expansion

3.1 Intercoastal West (St Johns and Duval Counties)

In response to planned development, Intercoastal is proposing to expand its franchise area to serve new Planned Unit Developments (PUD) west of the ICWW. The proposed new franchise area is presented in Figure 3-1[a]. Major new developments are discussed below.

3.2 Development Plans

Major proposed developments west of the ICWW include the following:

- Walden Chase
- Marsh Harbour
- Nocatee

The Walden Chase PUD will cover approximately 346 acres and will include the following:

- 585 Single Family Residences
- 160 Multi Family Residences
- 170,000 square feet of office space
- 100,000 square feet of commercial space
- 280,000 square feet of light industrial space
- 65 Acres of preserved wetlands
- 10 acres of park land.

Development is scheduled to begin sometime in the year 2000 with completion in the year 2008.

The Marsh Harbour PUD will cover approximately 123 acres and include 76 Single Family Residences and 5 acres reserved for future commercial development. Development is scheduled to begin sometime in the year 2000 with completion in the year 2006.

The Nocatee development covers approximately 16,000 acres planned as mixed use community on the level of a new town. Plans for the area include the following[b]:

- 10,217 Single Family Residences
- 3,960 Multi Family Residences
- 1,000,000 square feet of retail/commercial space
- 4,118,000 square feet of office space
- 250,000 square feet of light industrial space
- 591,500 square feet of institutional and school space
- 650 hotel rooms
- 2,000 acres of the Nocatee Preserve
- 5,000 acres of greenway
- 160 acres of recreation complex
- 600 acres of parks

[a] Based on description of franchise area provided to PBS&J by Intercoastal.
[b] St. Johns County – PUD Records

2.3 Development Plans and Demand Projections

The existing service area is essentially built out. While a portion of the currently undeveloped area may be redeveloped from single family residences at 2 units per acre to cluster homes with a higher density per acre, significant additional growth is not planned or expected.

2.3.1 Wastewater Flow Projections

As of June 1, 1999, Intercoastal had 3,142 metered accounts. These accounts discharged an average wastewater flow of approximately 800,000 gpd to the Sawgrass Wastewater Treatment Plant or approximately 255 gpd/metered account[f].

The WWTP has a permitted treatment and disposal capacity of 1,500,000 gpd. Based on and Equivalent Residential Connection ERC of 255 gpd, the system has a build out wastewater capacity of approximately 5,882 ERC's or metered accounts. Thus, as of June 1, 1999, the service area was approximately 53.4 percent occupied.

Based on a historical rates of growth, the system will reach buildout between the 2005 and 2006 at a 10 percent growth rate and between 2009 and 2010 at a growth rate of 6 percent. The flow and account projections are summarized in Table 2-3.

Table 2-3

INTERCOASTAL EAST
WASTEWATER FLOW PROJECTIONS

Parameter	1999	2005	2006	2009	2010
Accounts @ 6 %/year	3,142	4,457	4,724	5,627	5,964
Flow, gpd @ 6 %/year	800,000	1,113,481	1,202,904	1,432,678	1,518,638
Accounts @ 10 %/year	3,142	5,556	6,123	---	---
Flow, gpd @ 10 %/year	800,000	1,417,248	1,558,973	---	---

2.3.2 Water Demand Projections

As of June 1, 1999, Intercoastal had 3,517 metered water accounts. The accounts included 3,142 water and wastewater accounts and 375 water only accounts. Based on a service area occupancy of 53.4 percent, the existing territory has an estimated build out capacity of approximately 6,586 metered accounts[g].

Based on a historical rates of growth, the system will reach buildout between the 2005 and 2006 at a 10 percent growth rate and between 2009 and 2010 at a growth rate of 6 percent. The flow and account projections are summarized in Table 2-4.

[f] Intercoastal customer/account data provided to PBS&J
[g] Intercoastal customer/account data provided to PBS&J

Table 2-4

INTERCOASTAL EAST
WATER FLOW PROJECTIONS

Parameter	1999	2005	2006	2009	2010
Accounts @ 6 %/year	3,517	4,989	2,288	6,298	6,676
Flow, gpd @ 6 %/year[(a)]	1,230,950	1,746,126	1,850,894	2,204,444	2,336,711
Flow, gpd @ 6 %/year[(b)]	1,834,116	2,601,728	2,757,832	4,757,223	5,232,946
Accounts @ 10 %/year	3,517	6,321	6,854	---	---
Flow, gpd @ 10 %/year[(a)]	1,230,950	2,180,703	2,398,773	---	---
Flow, gpd @ 10 %/year[(b)]	1,834,116	3,249,247	3,574,172	---	---

(a) Flow based on 350 gpd/ERC or Account as an Annual Average.
(b) Flow based on 350 gpd/ERC or Account as an Annual Average plus 49 percent based on historical irrigation flows.

2.3.3 Reclaimed Water Demands

Intercoastal currently provides 0.3 mgd of reclaimed water to the Sawgrass Country Club for irrigation of the Sawgrass golf course. This is the only use of reclaimed water currently allowed by the FDEP permit.

The Plantations development currently use stormwater for irrigation of the Plantations golf course, but has recently requested that the St Johns River Water Management District (SJRWMD) permit a irrigation well as a backup source of water. The District, as part of the permit for the new well, is expected to require that the Plantations use reclaimed water from Intercoastal as the primary backup supply[h]. Intercoastal has agreed to provide a connection to the Plantations for this backup supply. However, since this is a backup supply to the stormwater irrigation supply, the reclaimed water demand for the Plantations will be minimal. With no other potential sites for using reclaimed water, Intercoastal will have approximately 1.0 to 1.2 mgd of excess reclaimed water that will be discharged to the Intracoastal Waterway.

[h] Letter to M.L. Forrester (Intercoastal), dated 9/24/99 from Jay C. Lawrence, P.G. (SJRWMD).

3.0 Proposed Franchise Expansion

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- 280,000 square feet of light industrial space
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- 10 acres of park land.

Development is scheduled to begin sometime in the year 2000 with completion in the year 2008.

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[a] Based on description of franchise area provided to PBS&J by Intercoastal.
[b] St. Johns County – PUD Records

Table 3-5
Anticipated Water Treatment Plant Capacities
(Maximum Day Flow)

Year End	Water ADF (mgd)	Water Max Day (mgd)
2002	0.103	0.206
2003	0.206	0.412
2004	0.309	0.617
2005	0.412	0.823
2006	0.649	1.297
2007	0.886	1.771
2008	1.123	2.245
2009	1.422	2.843
2010	1.721	3.442
2011	1.989	3.978
2012	2.324	4.648
2013	2.659	5.319
2014	2.995	5.989
2015	3.330	6.659
2016	3.665	7.330
2017	4.000	8.000
2018	4.335	8.670
2019	4.670	9.341
2020	5.006	10.011
2021	5.341	10.682
2022	5.609	11.218
2023	5.877	11.754
2024	6.078	12.156
2025	6.279	12.559
2026	6.480	12.961
2027	6.614	13.229
2028	6.749	13.497
2029	6.883	13.765
2030	7.017	14.033

3.5.2 Water System Phasing

Based on the anticipated plant capacities (maximum day flows) indicated in Table 3-5 the following potable water facilities is proposed:

- Phase 1 (Year 2002) – Provide a 2.0 mgd water treatment plant, including three (3) supply wells (750 gpm each[g]), 1.5 mg ground storage reservoir, with 12-inch and 16-inch transmission mains for connection to developer provided distribution systems. **Maximum day capacity = 2.0 mgd**

- Phase 2 (Year 2006) – Expansion of the water treatment plant to 5.0 mgd capacity with the addition of additional supply wells and 2.0 mg ground storage reservoir. **Maximum day capacity = 5.0 mgd**

- Phase 3 (Year 2011) – Addition of second water treatment plant (WTP #2) complete with supply wells, transmission mains, and 2.0 mg ground storage reservoir. **Maximum day capacity = 9.0 mgd**

- Phase 4 (Year 2018) – Expansion of WTP #2 with new supply wells and 2.0 mg ground storage reservoir. **Maximum day capacity = 12.0 mgd**

- Phase 5 (Year 2024) – Additional supply wells and well headers. **Maximum day capacity = 14.0 mgd**

Preliminary opinion of the estimated construction costs are shown in Section 4.0.

3.6 Wastewater System

Table 3-6 summarizes projected wastewater flows from Year 2002 through anticipated buildout in Year 2030.

3.6.1 Evaluation of Alternatives for Wastewater System

Two basic alternatives were also examined during the conceptual planning for the wastewater system to serve the westerly franchise area:

- Provide initial service from the existing easterly Intercoastal system, with future service provided by new facilities west of the Intracoastal Waterway (ICWW)
- Provide new facilities for initial and future phases

As with the potable water facilities, each alternative the design concepts were consistent with all regulatory requirements, including the EPA, OSHSA, FDEP, etc. The facility(s) anticipated for this westerly franchise area will provide, at a minimum, the same level of service that could be expected from a governmental entity providing the same service.

[g] Supply well capacity and development based on "Nocatee Groundwater Supply Development Plan", England, Thims and Miller, Inc. / CH2Mhill, May 1999

Table 3-6
Projected Wastewater Flows

Year End	Walden Chase		Marsh Harbour		Nocatee		Wastewater ADF (mgd)
	Total ERC's	ADF (mgd)	Total ERC's	ADF (mgd)	Total ERC's	ADF (mgd)	
2002	88.5	0.025	14	0.004	596.2	0.167	0.196
2003	88.5	0.025	14	0.004	596.2	0.167	0.391
2004	88.5	0.025	14	0.004	596.2	0.167	0.587
2005	88.5	0.025	14	0.004	596.2	0.167	0.783
2006	88.5	0.025	14	0.004	596.2	0.167	0.978
2007	88.5	0.025	14	0.004	596.2	0.167	1.174
2008	88.5	0.025	14	0.004	596.2	0.167	1.369
2009	88.5	0.025			596.2	0.167	1.561
2010	88.5	0.025			596.2	0.167	1.753
2011					905.0	0.253	2.006
2012					905.0	0.253	2.260
2013					905.0	0.253	2.513
2014					905.0	0.253	2.767
2015					905.0	0.253	3.020
2016					905.0	0.253	3.273
2017					905.0	0.253	3.527
2018					905.0	0.253	3.780
2019					905.0	0.253	4.034
2020					905.0	0.253	4.287
2021					473.7	0.133	4.420
2022					473.7	0.133	4.552
2023					473.7	0.133	4.685
2024					473.7	0.133	4.818
2025					473.7	0.133	4.950
2026					473.7	0.133	5.083
2027					473.7	0.133	5.215
2028					473.7	0.133	5.348
2029					473.7	0.133	5.481
2030					473.7	0.133	5.613

Utilizing excess capacity in the Sawgrass Wastewater Treatment Plant was evaluated, and similar to the evaluation for the use of easterly potable water capacity, was found not to be a cost-effective alternative. In order to provide initial service from the Sawgrass WWTP a new force main and master lift station east of the ICWW, as well as, a subaqueous force main under the ICWW would be required. This alternative, at most, could provide three to four years capacity, based on project growth of both the easterly and westerly areas. The estimated cost for this alternative approached $3 million and provides no permanent plant capacity.

Again it was determined that the most cost-effective alternative was to provide a "standalone" facility to serve the westerly franchise area. The conceptual plan for the facility provides for an advanced wastewater treatment facility providing a high level disinfected reclaimed water for reuse throughout the area. A wet weather discharge will be provided to the ICWW, should reclaimed water discharge exceed the reclaimed usage and storage capacity during seasons of high rainfall and low irrigation. This facility will be staged in five phases, unless growth rates require adjustment to the proposed phasing. The basic facility design will include a series of sequential batch reactors (SBR's) with a pretreatment unit, flow equalization, filtration, and disinfection utilizing ultraviolet lights or sodium hypochlorite. Complete operations building and laboratory will be provided. Emergency generation equipment and provisions for remote monitoring will be provided to insure Class I reliability. It is anticipated that the facility will be centrally located within Nocatee near C.R. 210. Master lift stations and force mains have been included to serve Walden Chase, Marsh Harbour, and Nocatee.

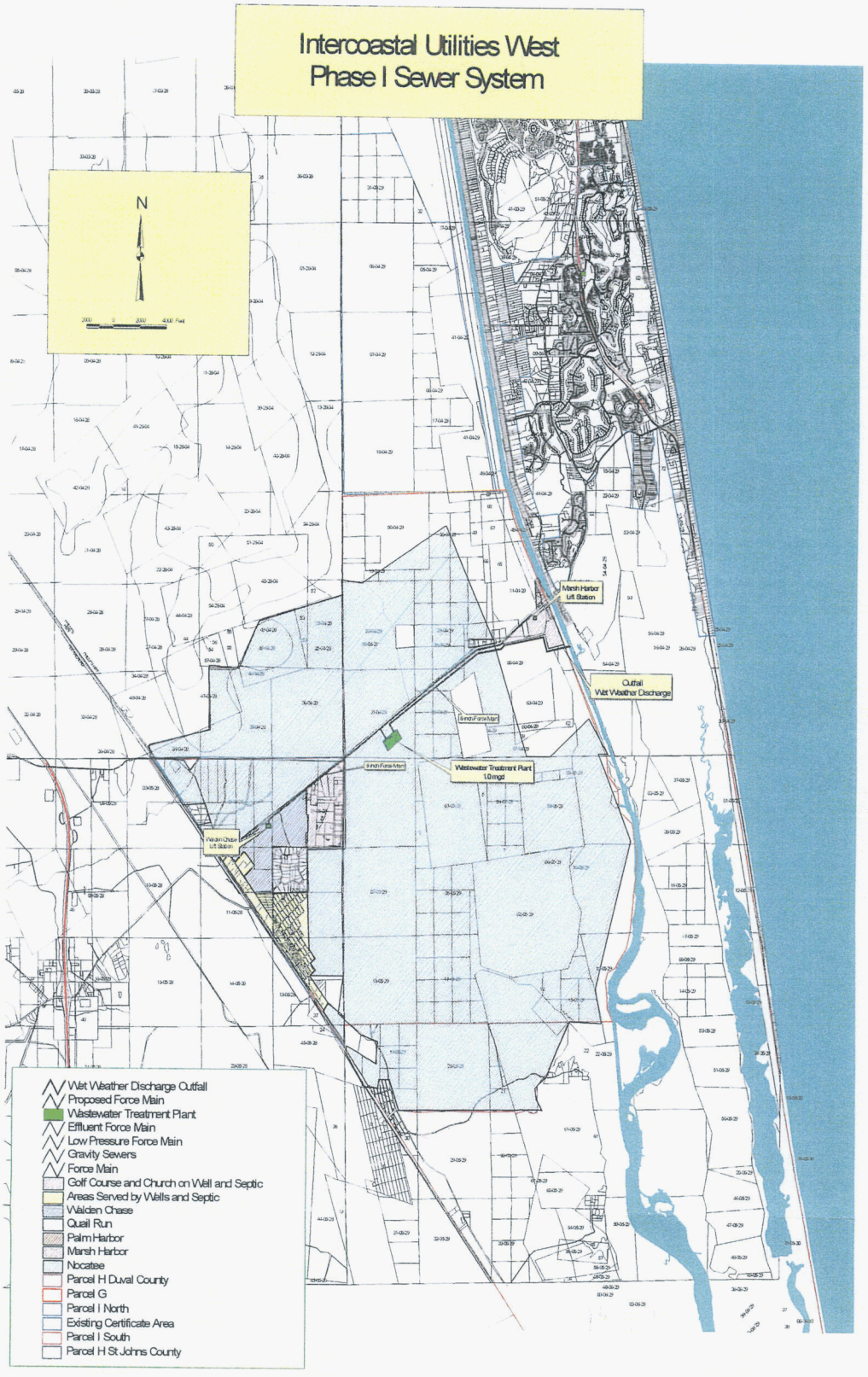
A map of the initial (Phase 1) water facilities in shown in Figure No. 3-3.

3.6.2 Wastewater System Phasing

Wastewater system development should generally follow the phasing summarized below:

- Phase 1 (Year 2002) – Provide a 1.0 mgd wastewater treatment plant, complete with two master lift stations, force mains, and outfall. **WWTP Capacity = 1.0 mgd**
- Phase 2 (Year 2007) – Expansion of the wastewater treatment plant to 2.5 mgd capacity with the addition of additional master lift station. **WWTP Capacity = 2.5 mgd**
- Phase 3 (Year 2013) – Expansion of the wastewater treatment plant to 4.0 mgd capacity with the addition of master lift station. **WWTP Capacity = 4.0 mgd**
- Phase 4 (Year 2019) – Expansion of the wastewater treatment plant to 5.0 mgd capacity. **WWTP Capacity = 5.0 mgd**
- Phase 5 (Year 2024) – Expansion of the wastewater treatment plant to 6.0 mgd capacity. **WWTP Capacity = 6.0 mgd**

Preliminary opinion of the estimated construction costs are shown in Section 4.0.



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Proposed Sewer System

3-3

3.7 Reclaimed Water System

Table 3-7 summarizes projected reclaimed water demands for Nocatee, Walden Chase, and Marsh Harbour from Year 2002 through anticipated buildout in Year 2030. Also shown is the reclaimed water available from the wastewater treatment plant and additional reclaimed water needs.

Table 3-7
Projected Reclaimed Water Demands

Year End	Total ERC's	Reclaimed Water ADF (mgd)	Golf Course Irrigation (mgd)	Total Reclaimed Water (mgd)	Reclaimed Available (mgd)	Additional Reclaimed Needs (mgd)
2002	699	0.203	0.300	0.503	0.196	0.307
2003	1397	0.405	0.300	0.705	0.391	0.314
2004	2096	0.608	0.300	0.908	0.587	0.321
2005	2795	0.810	0.300	1.110	0.783	0.328
2006	3493	1.013	0.300	1.313	0.978	0.335
2007	4192	1.216	0.300	1.516	1.174	0.342
2008	4891	1.418	0.300	1.718	1.369	0.349
2009	5576	1.617	0.300	1.917	1.561	0.356
2010	6260	1.815	0.300	2.115	1.753	0.363
2011	7165	2.078	0.600	2.678	2.006	0.672
2012	8070	2.340	0.600	2.940	2.260	0.681
2013	8975	2.603	0.600	3.203	2.513	0.690
2014	9880	2.865	0.600	3.465	2.767	0.699
2015	10785	3.128	0.600	3.728	3.020	0.708
2016	11690	3.390	0.600	3.990	3.273	0.717
2017	12595	3.653	0.600	4.253	3.527	0.726
2018	13501	3.915	0.600	4.515	3.780	0.735
2019	14406	4.178	0.600	4.778	4.034	0.744
2020	15311	4.440	0.600	5.040	4.287	0.753
2021	15784	4.577	0.900	5.477	4.420	1.058
2022	16258	4.715	0.900	5.615	4.552	1.063
2023	16732	4.852	0.900	5.752	4.685	1.067
2024	17205	4.990	0.900	5.890	4.818	1.072
2025	17679	5.127	0.900	6.027	4.950	1.077
2026	18153	5.264	0.900	6.164	5.083	1.082
2027	18627	5.402	0.900	6.302	5.215	1.086
2028	19100	5.539	0.900	6.439	5.348	1.091
2029	19574	5.676	0.900	6.576	5.481	1.096
2030	20048	5.814	0.900	6.714	5.613	1.100

3.7.1 Evaluation of Alternatives for the Reclaimed Water System

Utilization of excess reclaimed water from the easterly discharge was considered to supplement the reclaimed water demands of the westerly franchise area. Again the distance and ICWW presented financial obstacles to this alternative in addition to the supply main a reclaimed water repump station and subaqueous crossing will be required. Preliminary opinion of costs for this alternative approached $800,000. This cost far exceeds the cost to provide a auxiliary supply well for providing additional reclaimed water.

The alternative selected for the westerly franchise area includes lined storage ponds, providing a minimum of three (3) days storage, adjacent to the wastewater treatment plant site, irrigation pumping station, and reclaimed water transmission mains. This system will be designed to comply with all local, state, and federal regulations and provide Class I reliability service to the area for residential, public area, and golf course irrigation.

Although the addition of reclaimed water to stormwater storage ponds would be permitted by FDEP[h], it is our opinion that the resultant solids concentration would cause considerable problems in residential reuse systems (i.e. small orifice sprinkler heads).

Filtration the stormwater to a solids concentration of the reclaimed water would not be cost-effective. We, therefore, have not considered the use of stormwater as a supplemental supply to the reclaimed water system. However, stormwater, supplemented with reclaimed water for public access irrigation (i.e. golf courses with larger orifice sprinkler heads) could be implemented.

A map of the proposed reclaimed water system is shown on Figure No. 3-4.

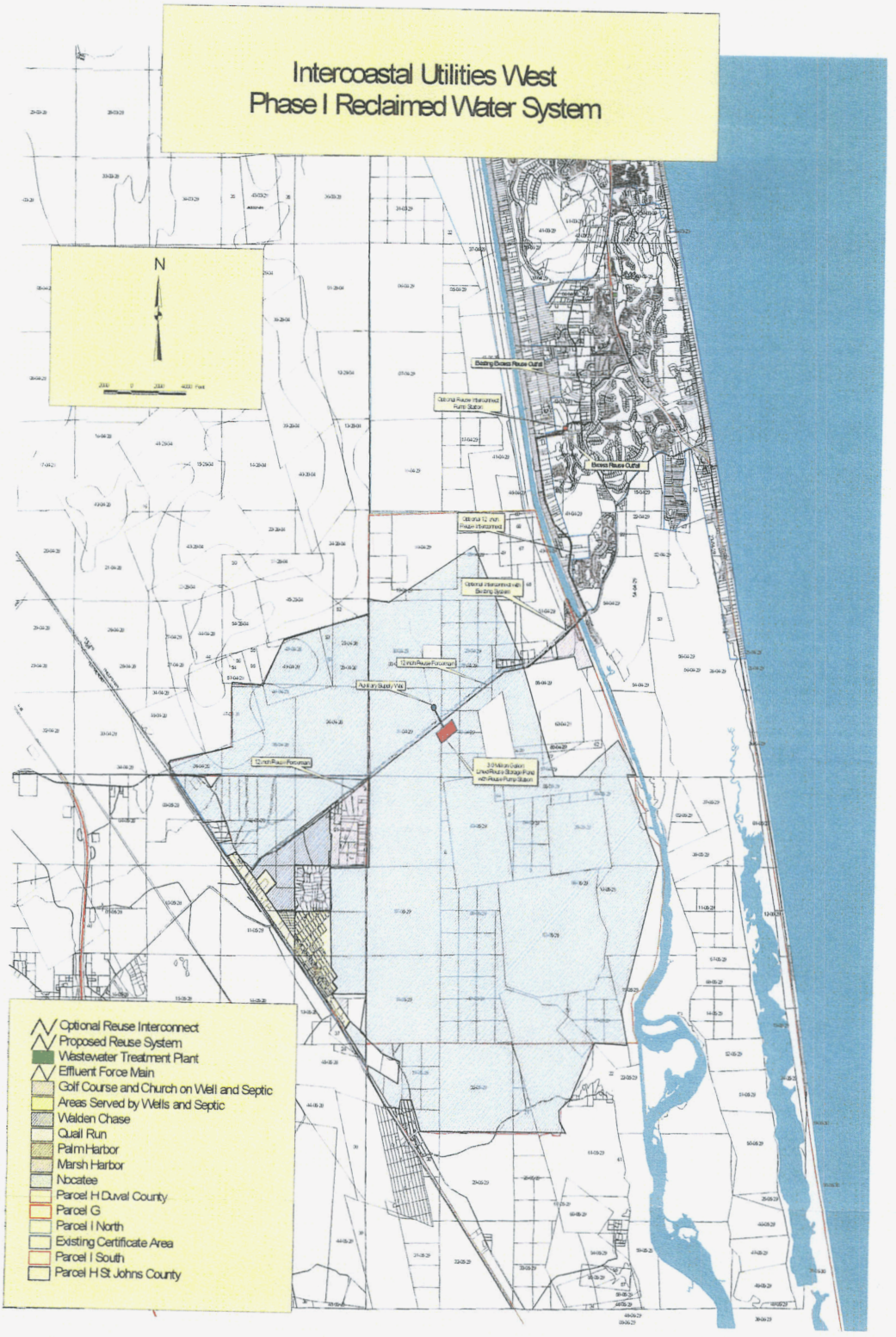
3.7.2 Reclaimed Water System Phasing

The reclaimed water system will generally follow the phasing summarized below:

- Phase 1 (Year 2002) – Provide a 3.0 mg storage pond, reclaimed water pumping station, and backup supply well (750 gpm). **Reclaimed Water Capacity = 1.0 mgd**
- Phase 2 (Year 2006) – Expansion of the reclaimed water storage ponds to 6.0 mg with additional reclaimed water pumping. **Reclaimed Water Capacity = 2.0 mgd**
- Phase 3 (Year 2011) – Expansion of the reclaimed water storage ponds to 12.0 mg with additional reclaimed water pumping. **Reclaimed Water Capacity = 4.0 mgd**
- Phase 4 (Year 2017) – Expansion of the reclaimed water storage ponds to 18.0 mg with additional reclaimed water pumping. **Reclaimed Water Capacity = 6.0 mgd**

An opinion of the estimated costs for the reclaimed water system is presented in Section 4.0

[h] Letter from Ernest Frye, P.E., FDEP to Juanita B. Clem, P.E. (England, Thims and Miller, Inc.), dated 7/8/99



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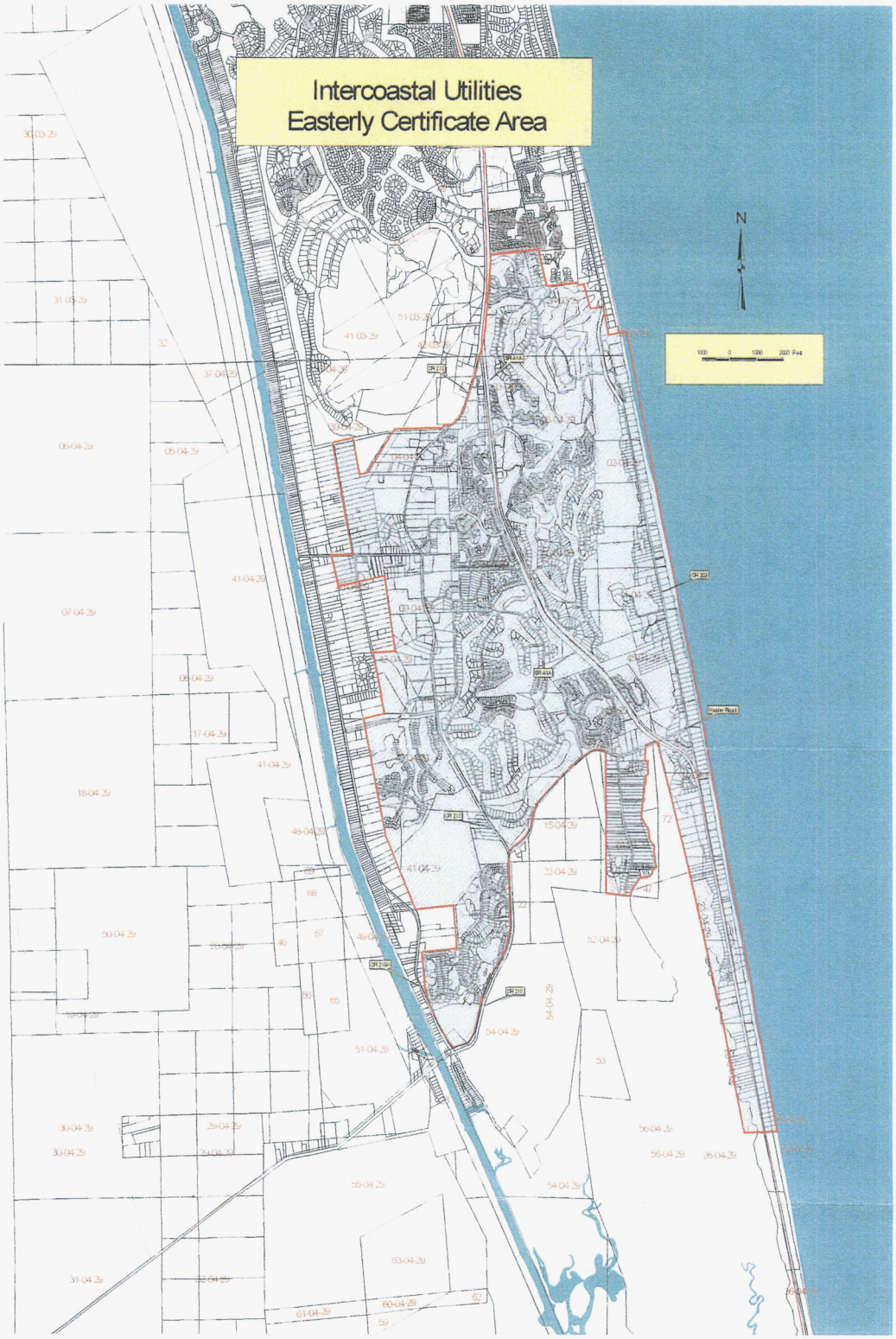
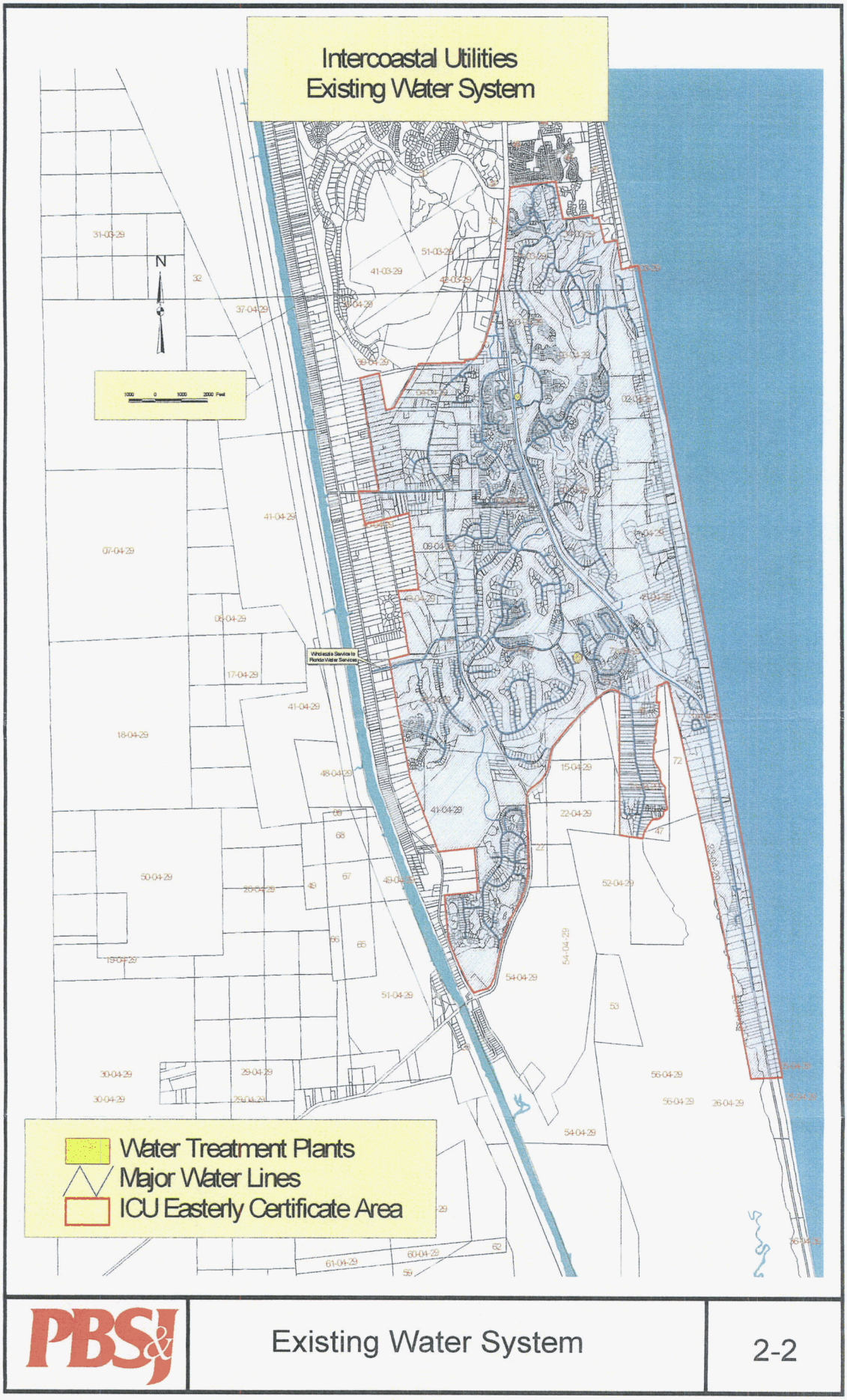
Proposed Reuse System

3-4



PBS&J	Easterly Certificate Area	2-1



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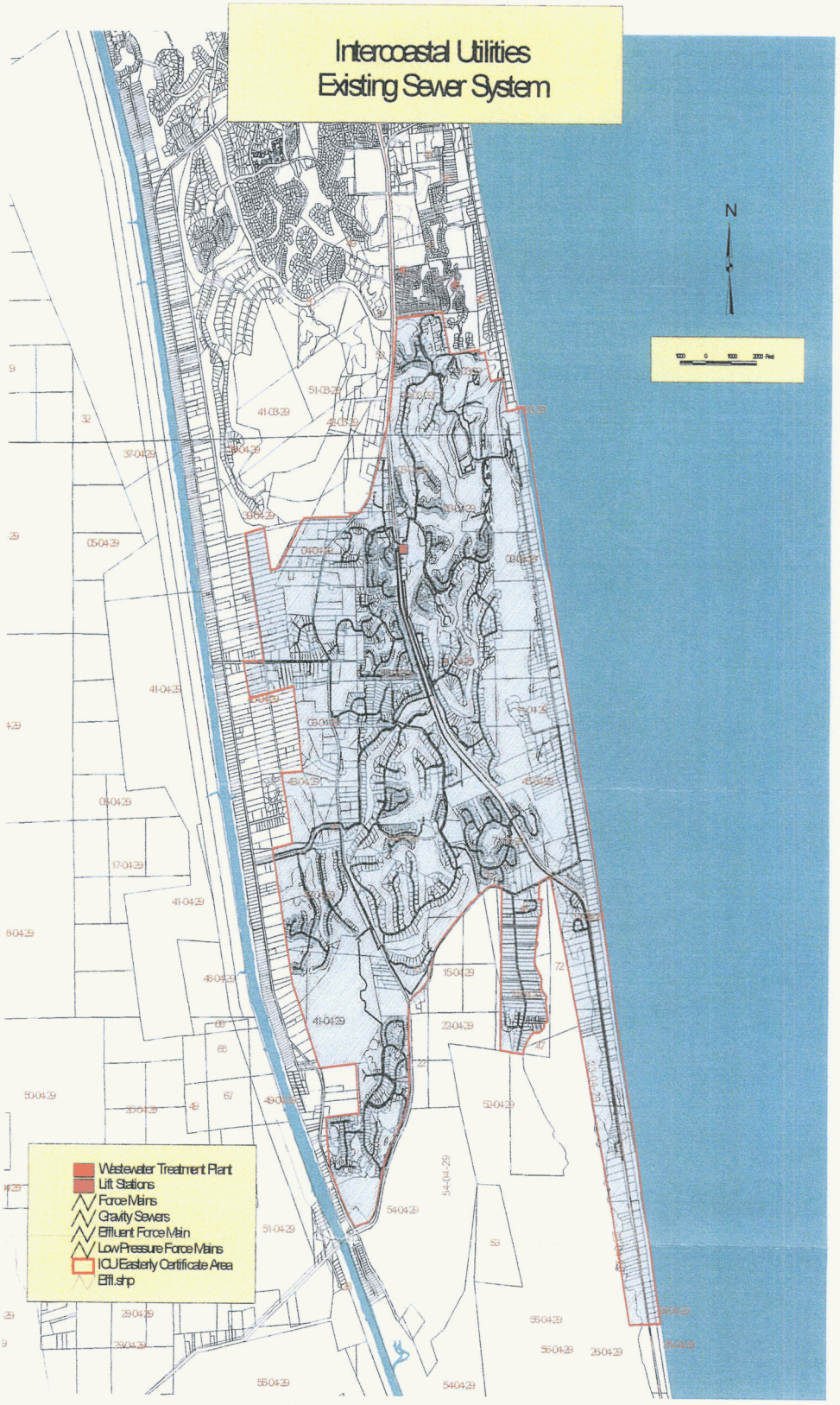
Existing Water System

2-2



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Existing Sewer System

2-3

4.0 Opinion of Estimated Cost

4.1 Basis for Cost Estimates

Costs presented in this section are based on our opinion of current (1999) costs for construction of water, wastewater, and reclaimed water facilities in northeast Florida. A contingency factor of 10% and engineering cost of 15% has been added to the cost for each construction phase.

A tabulation of estimated costs are shown in Table Nos. 4-1through 4-3.

In reviewing this cost opinion, please be aware that the costs are presented in 1999 dollars and are based on the phasing (capacity increments) shown in the master plan.

Table 4-1

Potable Water System

Description	Quantity	Units	Unit Price			Extended Total
			Material	Labor	Total	
Phase 1 (2002)						
12" PVC Water Main	13500	LF			$ 30	$ 405,000
16" PVC Water Main	16000	LF			$ 38	$ 608,000
750 GPM Supply Wells	3	EA			$ 50,000	$ 150,000
12" PVC Well Header	3000	LF			$ 30	$ 90,000
1.5 MG Reservoir w/Aerator	1	LS			$ 500,000	$ 500,000
Pump Sta #1 Complete	1	LS			$ 1,400,000	$ 1,400,000
Land	10	Ac			$ 10,000	$ 100,000
Subtotal						$ 3,253,000
Contingency (10%)						$ 325,300
Engineering (15%)						$ 487,950
Total Phase 1						**$ 4,066,250**
Phase 2 (2006)						
2.0 MG Reservoir w/Aerator	1	LS			$ 700,000	$ 700,000
Expand Pump Station #1	1	LS			$ 600,000	$ 600,000
750 GPM Supply Wells	3	EA			$ 50,000	$ 150,000
12" PVC Well Header	2000	LF			$ 30	$ 60,000
16" PVC Well Header	1000	LF			$ 38	$ 38,000
Subtotal						$ 1,548,000
Contingency (10%)						$ 154,800
Engineering (15%)						$ 232,200
Total Phase 2						**$ 1,935,000**
Phase 3 (2011)						
16" PVC Water Main	6000	LF			$ 38	$ 228,000
750 GPM Supply Wells	5	EA			$ 50,000	$ 250,000
12" PVC Well Header	3000	LF			$ 30	$ 90,000
16" PVC Well Header	2000	LF			$ 38	$ 76,000
2.0 MG Reservoir w/Aerator	1	LS			$ 700,000	$ 700,000
Pump Sta #2 Complete	1	LS			$ 1,400,000	$ 1,400,000
Land	10	Ac			$ 10,000	$ 100,000
Subtotal						$ 2,844,000
Contingency (10%)						$ 284,400
Engineering (15%)						$ 426,600
Total Phase 3						**$ 3,555,000**
Phase 4 (2018)						
2.0 MG Reservoir w/ Aerator	1	LS			$ 700,000	$ 700,000
Expand Pump Station #2	1	LS			$ 600,000	$ 600,000
750 GPM Supply Wells	3	EA			$ 50,000	$ 150,000
12" Well Header	3000	LF			$ 30	$ 90,000
Subtotal						$ 1,540,000
Contingency (10%)						$ 154,000
Engineering (15%)						$ 231,000
Total Phase 4						**$ 1,925,000**
Phase 5 (2024)						
750 GPM Supply Wells	2	EA			$ 50,000	$ 100,000
12" Well Header	20000	LF			$ 30	$ 600,000
Subtotal						$ 700,000
Contingency (10%)						$ 70,000
Engineering (15%)						$ 105,000
Total Phase 5						**$ 875,000**

Table 4-2

Wastewater System

Description	Quantity	Units	Unit Price Material	Unit Price Labor	Unit Price Total	Extended Total
Phase 1 (2002)						
Lift Station (Marsh Harbour)	1	LS			$ 70,000	$ 70,000
Lift Station (Walden Chase)	1	LS			$ 115,000	$ 115,000
6" PVC Force Main	13500	LF			$ 21	$ 283,500
8" PVC Force Main	13500	LF			$ 23	$ 310,500
1.0 MGD WWTP	1	LS			$ 5,000,000	$ 5,000,000
12" PVC Outfall	15000	LF			$ 30	$ 450,000
Land	25	Ac			$ 10,000	$ 250,000
Subtotal						$ 6,479,000
Contingency (10%)						$ 647,900
Engineering (15%)						$ 971,850
Total Phase 1						**$ 8,098,750**
Phase 2 (2007)						
1.5 MGD WWTP Expansion	1	LS			$ 6,750,000	$ 6,750,000
Lift Station Nocatee	1	LS			$ 115,000	$ 115,000
8" PVC Force Main	5000	LF			$ 23	$ 115,000
Subtotal						$ 6,980,000
Contingency (10%)						$ 698,000
Engineering (15%)						$ 1,047,000
Total Phase 2						**$ 8,725,000**
Phase 3 (2013)						
1.5 MG WWTP Expansion	1	LS			$ 6,750,000	$ 6,750,000
Lift Station Nocatee	1	LS			$ 115,000	$ 115,000
8" PVC Force Main	5000	LF			$ 23	$ 115,000
Parallel 12" PVC Outfall	15000	LF			$ 30	$ 450,000
Land	25	AC			$ 10,000	$ 250,000
Subtotal						$ 7,680,000
Contingiency (10%)						$ 768,000
Engineering (15%)						$ 1,152,000
Total Phase 3						**$ 9,600,000**
Phase 4 (2019)						
1.0 MG WWTP Expansion	1	LS			$ 4,500,000	$ 4,500,000
Subtotal						$ 4,500,000
Contingency (10%)						$ 450,000
Engineering (15%)						$ 675,000
Total Phase 4						**$ 5,625,000**
Phase 5 (2027)						
1.0 MG WWTP Expansion	1	LS			$ 4,500,000	$ 4,500,000
Subtotal						$ 4,500,000
Contingency (10%)						$ 450,000
Engineering (15%)						$ 675,000
Total Phase 5						**$ 5,625,000**

Table 4-3

Reclaimed Water System

Description	Quantity	Units	Unit Price			Extended Total
			Material	Labor	Total	
Phase 1 (2002)						
12" PVC Reuse Main	27000	LF			$ 30	$ 810,000
Reuse Transfer Pump Station	1	LS			$ 250,000	$ 250,000
3.0 MG Lined Effluent Storage Pond	24000	CY			$ 15	$ 360,000
Supply Well (1500 gpm)	1	LS			$ 110,000	$ 110,000
Land	10	AC			$ 10,000	$ 100,000
Subtotal						$ 1,630,000
Contingency (10%)						$ 163,000
Engineering (15%)						$ 244,500
Total Phase 1						**$ 2,037,500**
Phase 2 (2007)						
12" PVC Reuse Main	10000	LF			$ 30	$ 300,000
Expand Reuse Transfer P.S.	1	LS			$ 100,000	$ 100,000
3.0 MG Lined Effluent Storage Pond	24000	CY			$ 15	$ 360,000
Land	10	AC			$ 10,000	$ 100,000
Subtotal						$ 860,000
Contingency (10%)						$ 86,000
Engineering (15%)						$ 129,000
Total Phase 2						**$ 1,075,000**
Phase 3 (2013)						
Expand Reuse Transfer P.S.	1	LS			$ 75,000	$ 75,000
6.0 MG Lined Effluent Storage Pond	48000	CY			$ 15	$ 720,000
Land	20	AC			$ 10,000	$ 200,000
Subtotal						$ 995,000
Contingency (10%)						$ 99,500
Engineering (15%)						$ 149,250
Total Phase 3						**$ 1,243,750**
Phase 4 (2019)						
Expand Reuse P.S.	1	LS			$ 75,000	$ 75,000
6.0 MG Lined Effluent Storage Pond	48000	CY			$ 15	$ 720,000
Land	20	AC			$ 10,000	$ 200,000
Subtotal						$ 995,000
Contingency (10%)						$ 99,500
Engineering (15%)						$ 149,250
Total Phase 4						**$ 1,243,750**

5.0 Summary

5.1 Overview

In our review of the Intercoastal Utilities, Inc. system in northeast St. Johns County, it is our opinion that the existing system is operated and maintained in a condition that meets or exceeds many non-regulated systems throughout the State. While the current excess capacity in the existing system cannot be cost-effectively used to provide initial service to the westerly franchise area, we feel that the economy of operation and the existing customer base will substantially benefit both the existing customers in the existing system, as well as future customers in the proposed system.

Our review of documents provided by the developer(s) form much of the basis for our conclusions and recommendations. While planning projects are always somewhat unpredictable, we see no reason to criticize or modify projections developed be planners who have spent hundreds of hours of effort on the project. Our review of documents, such as the Nocatee Water Resources Study, also indicate the amount of effort and study that have gone into this planning effort. We are confident from the review this document that adequate investigations have been made to assure that the proposed development will not adversely effect the water resources in the area.

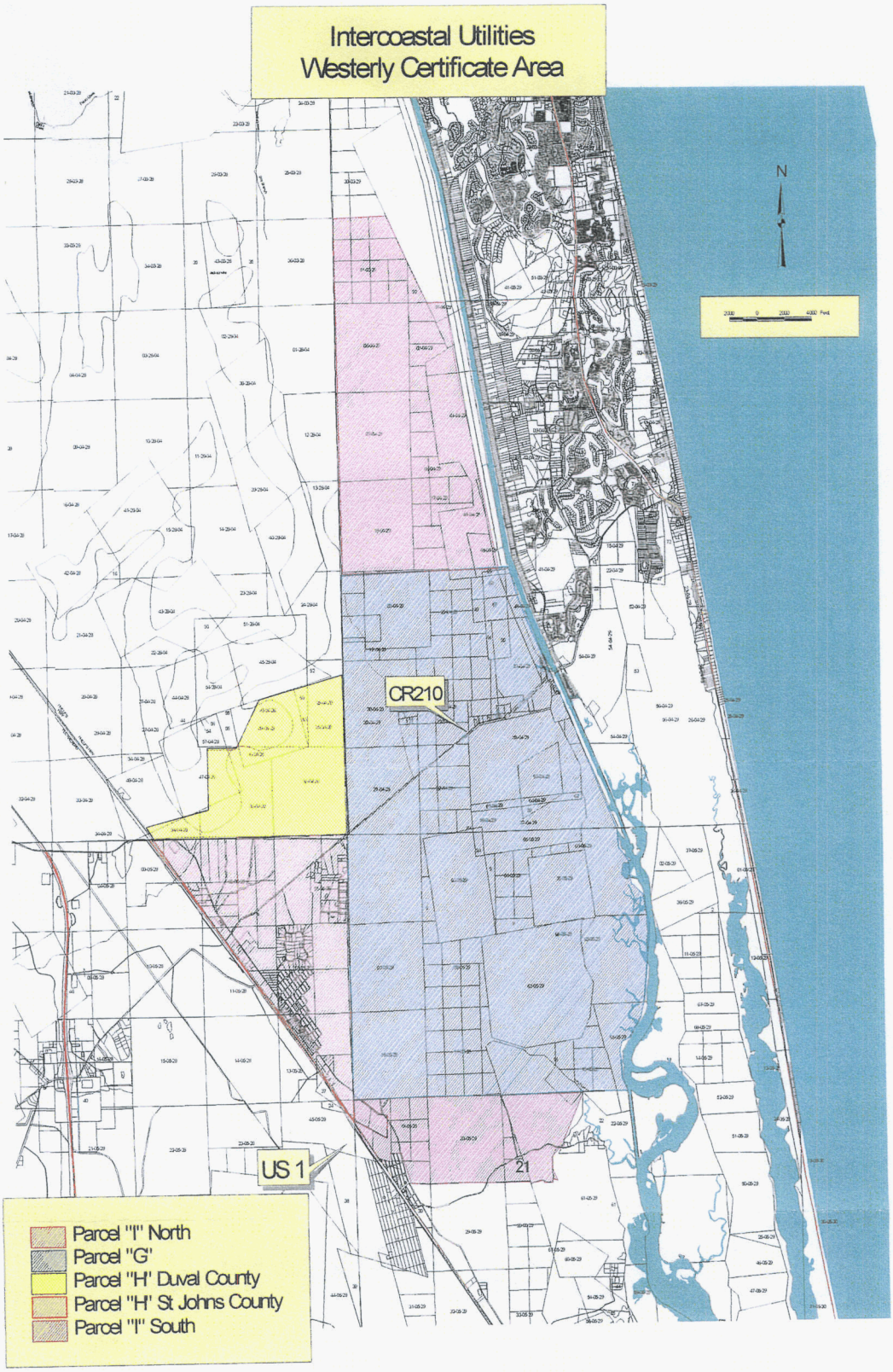
The conceptual planning by PBS&J and resulting cost opinions provide for facilities that are intended to provide "state of the art" design features to enhance operational effectiveness. These facilities will also incorporate the necessary emergency generation and backup/equipment to assure the highest level of reliability, that meets or exceeds current regulations. When these facilities are placed into operation, they will provide a level of service that meets or exceeds that of other area public or private utilities.

While our recommendations focus on providing on-site facilities to serve this area, Intercoastal can easily and cost-effectively adapt the planning effort to utilize wholesale service from an off-site supplier, should that option become available. Because of Intercoastal's existing customer base and scale of operation, they are in the unique position to be able to cost-effectively adapt to various service scenarios, that benefit both existing and future customers in Intercoastal's system.

5.2 Recommendations

We recommend that Intercoastal Utilities, Inc. use this Conceptual Master Plan as the initial tool for the development of utility systems to serve the westerly franchise area, while continuing to maintain the current high level of service in the existing system. As the westerly area begins to grow, Intercoastal should update the planning for both systems and look towards beginning to integrate the two systems into a single system.

Because of the dynamic growth predicted for the area, the utility planning must be closely monitored (and modified when necessary) to maintain cost-effective service to the area.

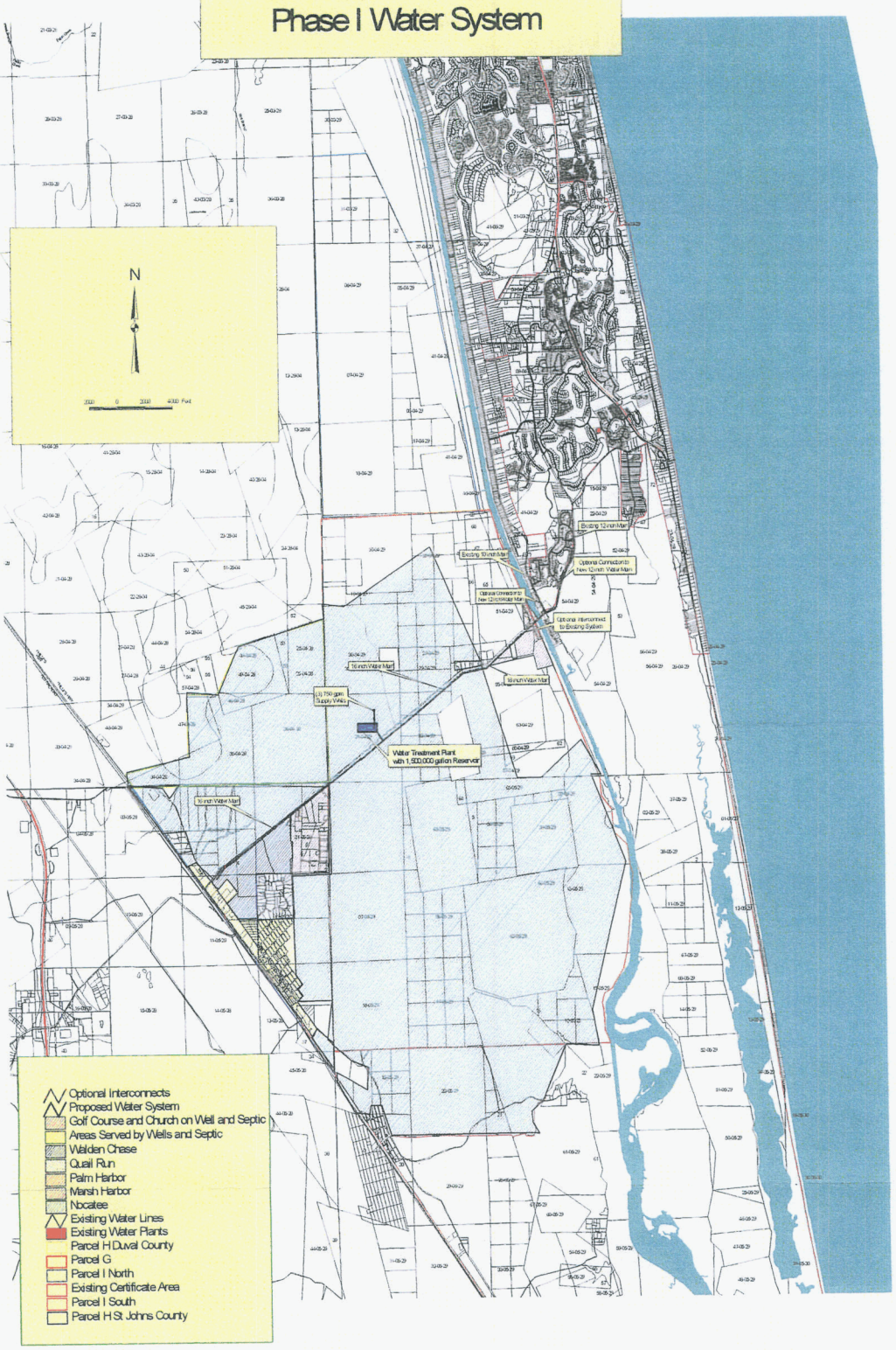


PBS&J

Proposed Westerly Certificate Area

3-1

Intercoastal Utilities West Phase I Water System



PBS&J

Proposed Water System

3-2

Development of the Nocatee community is expected to begin in the year 2002 and is expected to proceed in five, five year phases over a period of 25 years. The development phases, as summarized in the ADA Pre-application[c] are summarized in Table 3-1 below:

Table 3-1
ADA Pre-Application Phasing Data

	Units	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Residential	DU	1,200	1,793	4,026	3,549	3,609
Retail/Commercial	GLSF	168,000	84,800	289,200	186,500	271,500
Hotel	Number	---	---	325	162	163
Office/Light Industrial	SF	400,000	100,000	1,518,000	1,285,000	1,115,000

Additional properties in the proposed franchise area that currently employ septic tanks and wells include Quail Run, Palm Harbor, and individual properties along County Road 210 between the ICWW and US 1. These properties are not included in this master plan but may be offered service as the system develops.

For the purposes of master planning, the following Utility Conceptual Phasing information was utilized. This information is based on the most recent information provided to PBS&J[d] and shown in Table 3-2:

Table 3-2
Nocatee Utility Company
Utility Conceptual Phasing

Phase	Residential (Units)	Commercial (SF)	Average Daily Flow		
			Water (ADF)	Wastewater (ADF)	Reuse (ADF)
Phase 1 (2002 – 2010)	4,400	1,773,000	1,777,900	1,502,400	1,229,300
Phase 2 (2010-2020)	5,200	3,606,300	2,534,100	2,226,300	3,546,300
Phase 3 (2020-2030)	4,600	38,800	1,642,700	1,326,400	1,918,200
Total Phases	**14,200**	**5,418,100**	**5,954,700**	**5,055,100**	**6,693,800**

Notes: ADF = Average Daily Flow (gallons)
SF = Square Feet

3.3 Equivalent Residential Connection (ERC) Projections

Projections for growth in the westerly certificate area were taken directly from planning documents supplied by the developer(s) and/or St. Johns County records. The areas or communities considered in the projections include Nocatee, Walden Chase, and Marsh Harbour. Table 3-3 summarizes the total Equivalent Residential Connections (ERC's) anticipated over the planning (build-out) period for this area.

[c] May 1999 ADA Preapplication
[d] England, Thims and Miller, Inc. "Nocatee Utility Company Utility Conceptual Phasing" , dated 10/14/99.

For the purposes of conceptual planning non-residential land uses (i.e. commercial, industrial) were estimated at 4.3 ERC's per acre. This value was derived by comparing accepted estimated values for single-family flow or demand versus the same for the commercial or industrial flow or demand. Again, for planning purposes, the ERC's assigned to each phase of development were equally divided over the number of years anticipated for the particular phase. For Walden Chase and Marsh Harbour only one phase was anticipated, based on the data provided to PBS&J. Therefore, the ERC's were projected over a straight-line growth over the anticipated community build-out period.

Table 3-3
ICU West
Projected ERC's

Estimated ERC's					
Year End	**Walden Chase**	**Marsh Harbour**	**Nocatee**	**Annual**	**Total**
2002	88.5	14	596.2	698.7	698.7
2003	88.5	14	596.2	698.7	1397.4
2004	88.5	14	596.2	698.7	2096.1
2005	88.5	14	596.2	698.7	2794.8
2006	88.5	14	596.2	698.7	3493.5
2007	88.5	14	596.2	698.7	4192.1
2008	88.5	14	596.2	698.7	4890.8
2009	88.5		596.2	684.7	5575.5
2010	88.5		596.2	684.7	6260.2
2011			905.0	905.0	7165.3
2012			905.0	905.0	8070.3
2013			905.0	905.0	8975.3
2014			905.0	905.0	9880.4
2015			905.0	905.0	10785.4
2016			905.0	905.0	11690.4
2017			905.0	905.0	12595.5
2018			905.0	905.0	13500.5
2019			905.0	905.0	14405.5
2020			905.0	905.0	15310.6
2021			473.7	473.7	15784.3
2022			473.7	473.7	16258.0
2023			473.7	473.7	16731.7
2024			473.7	473.7	17205.4
2025			473.7	473.7	17679.1
2026			473.7	473.7	18152.9
2027			473.7	473.7	18626.6
2028			473.7	473.7	19100.3
2029			473.7	473.7	19574.0
2030			473.7	473.7	20047.7

3.4 Design Criteria

Criteria used for flow projections for the westerly certificate area include the following [e]:

- Potable Water Demand – 350 gallons per day per ERC
- Wastewater Flow – 280 gallons per day per ERC
- Reclaimed Water Usage – 290 gallons per day per ERC

A factor of 200% of the average daily flow has been used for maximum day usage. The peak hour flow rate for both water and wastewater has been estimated at 350% of the average daily flow. For reuse or reclaimed water a peak hour flow rate of 600% has been assigned due to the normal duration of irrigation.

Other special demands or uses include the following:

- Fire Flow
  - 750 gallons per minute for two hour duration (residential)
  - 1500 gallons per minute for two hour duration (commercial)

Fire flow demand criteria is based on standard accepted criteria, in lieu of any special demands that may be prescribed later by particular land usage, type construction, etc. However, final design of any system components will be in accordance with any special fire flow requirements.

- Golf Course Irrigation – 300,000 gallons per day per golf course (annual average)

This design criteria is consistent accepted design standards and with the criteria provided for the Nocatee community, with the exception of golf course irrigation usage. An annual usage of 300,000 gallons per day is the normal usage in north Florida. Should additional irrigation flows be needed, the proposed system can easily accommodate the additional flows.

[e] England, Thims and Miller, Inc., "Nocatee Preliminary Project Flows", June 2, 1999

3.5 Water System

Table 3-4 summarizes projected potable water demands from Year 2002 through anticipated buildout in Year 2030.

Table 3-4
Projected Potable Water Demands

Year End	Walden Chase		Marsh Harbour		Nocatee		Water ADF (mgd)
	Total ERC's	ADF (mgd)	Total ERC's	ADF (mgd)	Total ERC's	ADF (mgd)	
2002	88.5	0.031	14	0.005	596.2	0.209	0.245
2003	88.5	0.031	14	0.005	596.2	0.209	0.489
2004	88.5	0.031	14	0.005	596.2	0.209	0.734
2005	88.5	0.031	14	0.005	596.2	0.209	0.978
2006	88.5	0.031	14	0.005	596.2	0.209	1.223
2007	88.5	0.031	14	0.005	596.2	0.209	1.467
2008	88.5	0.031	14	0.005	596.2	0.209	1.712
2009	88.5	0.031			596.2	0.209	1.951
2010	88.5	0.031			596.2	0.209	2.191
2011					905.0	0.317	2.508
2012					905.0	0.317	2.825
2013					905.0	0.317	3.141
2014					905.0	0.317	3.458
2015					905.0	0.317	3.775
2016					905.0	0.317	4.092
2017					905.0	0.317	4.408
2018					905.0	0.317	4.725
2019					905.0	0.317	5.042
2020					905.0	0.317	5.359
2021					473.7	0.166	5.525
2022					473.7	0.166	5.690
2023					473.7	0.166	5.856
2024					473.7	0.166	6.022
2025					473.7	0.166	6.188
2026					473.7	0.166	6.354
2027					473.7	0.166	6.519
2028					473.7	0.166	6.685
2029					473.7	0.166	6.851
2030					473.7	0.166	7.017

3.5.1 Evaluation of Alternatives for Potable Water System

Two basic alternatives were examined during the conceptual planning for the potable water system to serve the westerly franchise area:

- Provide initial service from the existing easterly Intercoastal system, with future service provided by new facilities west of the Intracoastal Waterway (ICWW)
- Provide new facilities for initial and future phases

In each alternative the design concepts were consistent with all regulatory requirements, including the Safe Drinking Water Act, Ten States Standards, OSHSA, FDEP, etc. The facility(s) anticipated for this westerly franchise area will provide, at a minimum, the same level of service that could be expected from a governmental entity providing the same service.

Anticipated water treatment plant capacities (based on maximum day flow) are summarized on Table 3-5 on the following page. These design flows are the key to the phasing of the water treatment plant facilities to serve this area. Every effort has been made to provide cost effective phasing, while minimizing overbuilding of facilities resulting from a lower growth rate than anticipated in the development plans.

To minimize initial capital expenditures until a growth pattern was established, we examined the alternative for providing initial service from the current excess capacity in the existing ICU system east of the ICWW. Based on system pressure and flow tests[f] obtained from ICU, PBS&J analyzed the ability of the existing system to provide the necessary flows and pressures to service the initial development west of the ICWW. This analysis indicated that existing system has the ability to provide "off-peak" flows to the west to provide supply to storage reservoir(s), but repumping would be required to meet fire flow and pressure requirements. This concept would require not only a 16-inch supply main from the east, crossing under the ICWW, but would require storage and repump in the westerly franchise area. It was quickly determined that the cost to provide a transmission main from the east with a subaqueous crossing at the ICWW, would far exceed the cost to provide supply wells at a westerly facility. Based on this analysis the second alternative was selected and conceptual planning continued based on a separate facility to serve the westerly franchise area. This, however, does not rule out a future interconnection to the easterly system to provide even more system reliability and backup for customers on both sides of the ICWW.

A map of the initial (Phase 1) water facilities in shown in Figure No. 3-2.

[f] W.W. Gay Fire Protection, Inc. – Fire Hydrant Flow Tests – Various dates 1997 - 1999