

Public Facilities Report

October 2018



Dunes Community Development District
101 Jungle Hut Road
Palm Coast, FL 32137

Developed in Accordance with Florida Statutes 189.415

Prepared by: Timothy B. Sheahan, P.E.
Utility Manager
Dunes Community Development District
101 Jungle Hut Road
Palm Coast, FL 32137

I. PURPOSE AND SCOPE

This Special District Public Facilities Report has been prepared for the Dunes Community Development District (the District) to comply with the requirements of 189.415, Florida Statutes. This report is intended to provide a general description of all public facilities owned and operated by the District along with facility expansion program needs underway or proposed within the next five (5) years.

II. GENERAL INFORMATION

The District, located in Palm Coast, Florida and established in 1985, provides stormwater management, wastewater treatment and collection, water treatment and distribution and reclaimed water service to the residents of the District. The District is approximately 5.5 miles in length and encompasses approximately 2,200 acres. The District is comprised of four communities: Hammock Dunes (908 acres), Ocean Hammock (435 acres), Hammock Beach (364 acres) and Yacht Harbor Village (92 acres). The District owns and operates a 500,000 gallon per day (GPD) wastewater treatment plant, a 1,440,000 GPD water treatment plant, a reclaimed water treatment and distribution system serving public access landscape irrigation service area comprised of residential and common areas and golf courses totaling approximately 1,000 acres and having a rated disposal capacity of 7.74 Million GPD, the stormwater management system, the Hammock Dunes Toll Bridge, the roadways Camino del Mar and Hammock Dunes Pkwy and all the structures, piping, pumps, and appurtenances necessary to operate and maintain these systems.

The general description of the boundaries of the four communities serviced by the District is as follows: Hammock Dunes is generally bounded on the north by Jungle Hut Road; to the east by the Atlantic Ocean; to the west by State Road A1A north of Island Estates and by the Intracoastal Waterway in Island Estates; and to the south by the southernmost point of Island Estates west of State Road A1A and to the south by Varn Park east of State Road A1A. Ocean Hammock and Hammock Beach are bounded to the south by Jungle Hut Road, to the east by the Atlantic Ocean, to the north by Malacompra Road, and to the west by State Road A1A. Yacht Harbor Village is bounded by State Road A1A to the east, the Hammock Dunes Toll Bridge to the south, the Intracoastal Waterway to the west, and Jungle Hut Road to the north.

Development within the District has proceeded in accordance with a planned, phased approach. The District is largely comprised of single-family residential, multi-family residential, common areas (roadway islands, scenic sidewalk routes, etc.) and recreational areas (e.g. golf courses). The phases of development are as follows:

Phase I, Hammock Dunes:

This development phase encompasses the Hammock Dunes and Island Estates communities, which account for approximately 1,256 residential units, of which 1,152 are platted and/or permitted and 104 are planned but not platted/permitted. There are 727 single-family residential home sites (688 platted/permitted and 39 planned) and 529 condominiums units (464 platted/permitted and 65 planned). This phase has a total area of approximately 908 acres. There is an estimated total of 578 acres of residential and common areas requiring irrigation. The 96-acre Hammock Dunes Golf Course also requires irrigation. The infrastructure has been completed and the development is at approximately 88% of build-out (1,008 residential units out

of planned/permitted total of 1,152 units). The transportation and utility infrastructure elements are complete except for small improvements solely serving new planned but not platted/permitted developments.

Phase II, Ocean Hammock and Phase III, Hammock Beach:

Phase II encompasses the Ocean Hammock community, which accounts for approximately 609 residential units. This phase has a total area of approximately 435 acres. The 124-acre Ocean Hammock Golf Course runs throughout both the Ocean Hammock and Hammock Beach communities. This development includes approximately 314 single-family residential home sites, 20 hotel units and 275 condominiums units.

Phase III encompasses the Hammock Beach community, which accounts for approximately 975 residential units. This phase has a total area of approximately 364 acres. The Hammock Beach and Ocean Hammock communities have approximately 201 acres under irrigation. The 124-Acre Ocean Hammock Golf Course, which runs throughout both the Ocean Hammock and Hammock Beach communities, is irrigated as well. The Hammock Beach development includes approximately 489 single-family residential home sites and 486 condominiums units. The infrastructure is complete in Phase II and Phase III and development is at approximately 81% of build-out (1,276 residential units out of a potential of 1,584 units). The transportation and utility infrastructure are complete.

Phase IV, Yacht Harbor Village:

This development phase encompasses the Yacht Harbor Village community, which accounts for approximately 293 residential units. This phase has a total area of approximately 92 acres. This development includes 205 single-family residential home sites and 88 condominiums units. The infrastructure has been completed and the development is at approximately 48% of build-out (140 residential units out of a potential of 293 units). The transportation and utility infrastructure are complete. This phase also includes a marina with 210 boat slips.

III. EXISTING PUBLIC FACILITIES

A. Potable Water Facilities

1. The District's raw water comes from two wells located adjacent to its water and wastewater treatment facility on 101 Jungle Hut Road and a third well located at 302 Hammock Park Ln. Water from these wells is treated by a reverse osmosis water treatment facility. The water treatment facility was completed in August 2007. The District previously purchased potable water from the City of Palm Coast. The District and the City of Palm Coast have entered into an Interlocal Agreement that provides an interconnection between the two potable water systems in the event of emergencies or other planned system maintenance activities.
2. The District's water treatment facility is currently rated and permitted to produce up to 1,440,000 GPD or 1.44 million gallons per day (MGD) of potable water. The Dunes CDD water treatment plant capacity was increased from 0.72 MGD to 1.44 MGD in May 2015. It is expected that this capacity addition is sufficient to fulfill the

potable water needs of the build-out community. The District realizes a potable water storage capacity of 750,000 gallons with a ground storage tank located at the water treatment facility.

3. The District has a Consumptive Use Permit (CUP) from the St. Johns River Water Management District (SJRWMD) that extends to the year 2024. This permit was modified most recently in August 2016. Currently, the CUP allows the District to withdraw up to 838,000 GPD on an annual average basis for potable water use. The amount of groundwater withdrawn to produce the current average day demand is 72% of the amount allowed by the CUP for the current year.

The permitted groundwater withdrawal allocations increase incrementally each year based on projected growth rates expected to occur within the District's water service area. The current permit provides an allowable groundwater withdrawal allocation of 891,000 GPD (annual average) in the year 2024. The District expects that the amount of water permitted for withdrawal from the wells to be enough to meet our potable water needs through 2024. The next CUP compliance report is due in 2019 at which time the amount of water allocation will once again be reviewed by the SJRWMD.

4. Water distribution facilities are located throughout the District and consist of approximately 150,000 linear feet of various sized piping ranging from 2, 4, 6, 8, 10, 12, and 16-inch diameter pipes together with valves and fittings. Individual service to residential clusters or neighborhoods is served by mains less than ten (10) inches in diameter. Generally, potable watermain facilities are located within the road right of ways and are offset from the edge of the pavement. When potable water facilities are located outside of District owned property or lie outside of road rights of way, easements are granted by the developers of the District authorizing the District to access these facilities for maintenance and operational purposes. The District also currently owns and operates 234 fire hydrants and 246 potable water valves.
5. The most current annual average daily demand for potable water treatment and production is approximately 522,000 GPD. The use is comprised of residential consumption, non-residential consumption, potable irrigation, and system flushing. The current annual period average daily demand represents 36% of the total rated production capacity of the treatment plant.

B. Wastewater, Reclaimed Water, and Irrigation Water Facilities

1. Wastewater collection facilities are located throughout the District and consists of approximately 113,555 linear feet of 8, 10, and 12-inch diameter gravity sewers, 617 wastewater manholes, 23 lift stations with various sized pumps having pumping rates ranging from 40 to 500 gallons per minute, 1 small, grinder lift station serving a toll booth on the Island and approximately 47,256 linear feet of force mains ranging from 3 to 12-inches in diameter.
2. The Wastewater Treatment facility, designed to accommodate 500,000 GPD of domestic wastewater, is located on a dedicated utility site of 23 acres located at 101 Jungle Hut Road. Treatment processes include pretreatment (screening and flow measurement), secondary wastewater treatment (sequencing batch reactors), filtration, and high-level disinfection. Current annual average daily wastewater treatment plant flow is approximately 351,400GPD or 70% of the permitted capacity.

3. Wastewater Disposal/Reclaimed facilities, capable of providing 3,200,000 GPD of reclaimed water for irrigation service are located at the utility site. These facilities consist of 3,200,000 GPD sand media filtration and high-level disinfection capacity, and 17,800,000 gallons of reclaimed water storage in four on-site lined lagoons.
4. In addition to processing the wastewater into reclaimed water for irrigation of residential lots, common areas and two golf courses, the District purchases reclaimed water treated to advanced secondary standards suitable for public access reuse from the City of Palm Coast. The District utilizes its 12-inch reclaimed transmission main, which connects the District and the City of Palm Coast's wastewater treatment plants. The District has an interlocal agreement with the City of Palm Coast for procurement of up to a maximum of 2,600,000 GPD. The current annual average daily flow from the City of Palm Coast is approximately 1,583,530 GPD.
5. Due to the imbalance in amount of reuse water available and irrigation water demand, the District further supplements reclaimed water with brackish groundwater from the Floridian aquifer. The District operates an on-site well which withdraws groundwater for blending with reclaimed water and storage in the on-site lagoons. The District has a SJRWMD Consumptive Use Permit (CUP) (No. 51136) that authorizes the District to withdraw up to an annual average of 970,000 GPD from groundwater to supplement reclaimed water for reuse. This resource can only be tapped after the use of reclaimed water has been maximized. Besides the permit restricting the use of this resource, the salt content of this brackish water source further limits its use. The current annual average groundwater withdrawal rate is approximately 118,430 GPD. In August of 2016, the SJRWMD modified the District's CUP to allow the use of up to 970,000 GPD of surface water from the storm water collection/retention system to supplement reclaimed water for irrigation. This resource greatly enhances our ability to meet peak irrigation demands. Average daily withdrawal from the storm water system is 8,400 GPD.
6. There are essentially two types of public access irrigation water use: golf course irrigation and landscape irrigation for residential and common areas. Three (3) irrigation water pump stations are employed at the District utility site to transmit reclaimed water to users. The Residential Pump Station owned and operated by the District provides reuse water service to residential and common areas; the Ocean Hammock Golf Course and Hammock Dunes Golf Course pump stations, each of which is owned and operated by the respective golf course management entity, provides reuse irrigation service to each respective golf course facility.

Currently, the irrigation pumping facilities meet an average daily demand of approximately 1,991,000 GPD (Golf Courses: 591,000 GPD; Residential: 1,400,000 GPD).

The residential reclaimed water distribution system consists of approximately 125,148 linear feet of 1.5 through 16-inch diameter reclaimed water main, one reclaimed water booster station, 146 reclaimed valves, and the Residential pump station. As indicated previously the District does not own the golf course pump stations or their distribution systems.

7. The District has installed numerous reuse flushing points and reclaimed water flushing hydrants throughout the District to maintain water quality in the reclaimed water distribution system. Although reuse water is treated to advanced secondary treatment standards that include high level disinfection and filtration, the District utilizes a secondary, disk filtration system at the wastewater plant to improve irrigation water quality provided for landscape irrigation. The current rated capacity of the disk filtration system is approximately 4,800 gallons per minute or 7 MGD.
8. Several of the development parcels have been designed with community irrigation services. That is, the Homeowners Association (HOA) control the irrigation water for the individual lots and common areas within HOA. A portion of the reclaimed water service in the District is supplied via a master irrigation meter. Approximately eighteen neighborhoods have master meters.

C. Storm Water Management

1. The Storm Water Management System completed to date consists of approximately 179 acres of created lakes and approximately 8 acres of fresh water marsh. The lakes and marshes are connected to each other by drainage pipes and various drainage channels. The District owns and operates all public storm drain systems within the District including: catch basins, piping, inlet structures, outlet structures, and water control structures.
2. Currently the District owns the wet areas of the storm water management system. The St. Johns River Water Management District has transferred the permits for operations and maintenance of the storm water management systems to the District.

D. Toll Bridge

1. The toll bridge consists of a two-lane high-level fixed structure across the Atlantic Intracoastal Waterway. The bridge is a sixty-five (65) feet above the mean high water of the Atlantic Intracoastal Waterway and approximately 2,600 feet in length. This facility connects Interstate 95 via Palm Coast Parkway with State Road A1A.
2. The toll plaza associated with the toll bridge is located on the west side of the bridge and consists of two tollbooths and administration offices.
3. A connector road, Camino del Mar, which connects the toll bridge with State Road A1A is also owned and maintained by the District. In January 2015, the Dunes CDD accepted ownership of Hammock Dunes Parkway from Camino del Mar to 16th Road.
4. According to the traffic data in the Hammock Dunes DRI Traffic Analysis Close-Out Report (December 2011), the average annual daily traffic (AADT) volume was 7,500 for 2011. This report included a level of service (LOS) analysis that concluded that the Hammock Dunes Bridge was operating at a LOS of A and this LOS A would be expected to be realized and continue into the foreseeable future.

IV. CURRENTLY PROPOSED EXPANSIONS NEXT FIVE YEARS

A. Potable Water, Wastewater and Irrigation Utilities

1. Potable Water

The water treatment plant capacity was increased in May 2015 from 0.72 MGD to 1.44 MGD. It is not expected that additional capacity will be necessary to serve the potable water needs of the community. However, capacity needs will be revisited again in 2019 when the next Capacity Analysis Report will be submitted to FDEP.

2. Wastewater

The Dunes Community Development District (CDD) currently owns and operates 0.5 million gallon per day (MGD) wastewater treatment plant (WWTP). Current annual average daily wastewater treatment plant flow is approximately 351,400 GPD or 70% of the permitted capacity. Based on the most recent Capacity Analysis Report (CAR) completed in 2013, the permitted capacity of the existing 0.5 MGD AADF wastewater treatment plant will not be exceeded prior to the next CAR report which is due to be submitted to the Florida Department of Environmental Protection (FDEP) in 2019.

However, the Dunes CDD planned and completed design of improvements to provide an additional 0.21 MGD plant capacity which includes adding an additional sequential batch reactor basin, equalization basin and sludge handling improvements. The design of the wastewater treatment plant expansion and improvements was completed in 2017 and construction of the wastewater plant expansion is approximately 30% complete currently. The scheduled completion date is July 2019.

B. Storm Water Management System

The storm water management infrastructure has been completed and requires no expansion to serve the final build out population. The District has accepted responsibility for the ongoing maintenance of the storm water system throughout the District. Preliminary planning and design of improvements necessary to enhance the District's ability to harvest this resource to supplement reclaimed water to meet peak irrigation demands commenced in 2017.

C. Reclaimed Water System

The DCDD and the City of Palm Coast have an existing agreement that spells out the conditions of reclaimed water that is provided by the City of Palm Coast to the DCDD. The agreement includes a provision for the use of the DCDD's reclaimed water transmission main by the City for discharge of effluent to the Intracoastal Waterway (ICWW) especially during periods of wet weather. The City desires to increase its capability to discharge effluent to the ICWW and the DCDD desires to increase the amount of reclaimed water it can obtain from the City. Because of the potential to increase a long term, sustainable supply of irrigation water to the community, DCDD is having discussions with the City while studies to evaluate the feasibility of this approach are explored. If feasible, the DCDD may consider partnering with the City in a project to expand the supply of reclaimed water to the DCDD while enhancing the City's capacity to discharge additional amounts of effluent to the ICWW during wet weather. DCDD is also looking at harvesting stormwater from

its stormwater system to supplement reuse water for landscape irrigation. A study is underway to assess the feasibility and long-term sustainability of this water resource.

D. Toll Bridge

No expansion is planned for the toll bridge facilities. According to projections provided in the Hammock Dunes DRI Traffic Analysis Close-Out Report (December 2011), the AADT will not exceed the threshold for expansion of the bridge (LOS of “C”) at ultimate build-out of the Hammock Dunes DRI. The LOS for the bridge is not expected to operate at a level “C” but will continue to operate at a LOS of “A “for the foreseeable future.

V. RENEWAL/REPLACEMENT OF FACILITIES

Potable Water System

A Water Treatment System Evaluation Report completed in June 2012 recommended that the District make the following improvements to the existing system:

1. Stabilize the finished water by chemical addition, raw water blending or a combination of the two (completed in 2015),
2. Install ground storage tank mixer(s) (completed 2013),
3. Enclose the chemical storage and feed area and install climate control system (Deferred),
4. Construct a metal building to house the high service pumps and control equipment (Deferred, 2018 CIP),
5. Install a gas or diesel driven high service pump with auto-start, (completed in 2015).

The evaluation also indicated that the existing membranes of the RO treatment plant will need to be replaced in three to five years. Review of normalized plant data indicates the existing membranes are not in need of replacement at this time. Monitoring membrane performance will determine when there is a need for replacement. (included in 5 yr. CIP)

Wastewater System

The Wastewater System Evaluation identified several improvements that are either necessary to continue to provide the current level of service or are needed to enhance the current level of service where deemed appropriate. The current system improvements are summarized below:

1. Alter the SBR tanks operation mode to create a continuous flow from the SBR tanks to the filters (completed in 2013)
2. Install flow splitter box and flow metering before the SBR tanks (addressed in design)
3. Construct an Equalization basin (addressed in design)
4. Digester improvements for decanting, sealing walls (addressed in design)
5. Replace liners in two of the reclaimed water ponds (completed in 2014)
6. Booster pumping to alleviate reduced pressure in extremities of reclaimed water system (modeling simulations conclude booster not needed)

7. Improvements to the pumping and transmission system for increasing the reclaimed water delivery capacity to 2.6 MGD from the City of Palm Coast (Deferred, 5 yr. CIP)
8. Installation of remote telemetry units (RTUs) at strategic pump stations in the wastewater collection system (Deferred, 5 yr. CIP)
9. Re-build the mechanical screen at the influent pump station (completed 2013)
10. Addition of auxiliary, stationary, emergency bypass pumping units at two wastewater pumping stations (2018 CIP). Additional units are scheduled to be added at various wastewater pumping stations in the 5-year CIP.

Bridge

A new, modern toll collection system is complete. The biennial inspection of the bridge completed in July 2017 concluded that the bridge has a Sufficiency Rating of 91.1 and a Health Index of 99.84 which are very good and an improvement from the previous inspection conducted in 2015. The next scheduled inspection is scheduled to be performed in 2019.

A study of the existing toll collection facility building conducted recently concluded that improvements to the building were necessary and that additional parking was needed to service customers and provide parking for staff. A consultant has commenced design of the improvements recommended in the study. Design should be completed in 2019.

An intersection traffic capacity and level of service analysis of the intersection of Hammock Dunes Pkwy and Camino del Mar (intersection at eastern end of Hammock Dunes Bridge) is being performed by a consultant to evaluate existing traffic operations and recommended improvements to the existing 4-way stop intersection that would relieve congestion and reduce overall traffic delays.