SRF CLEAN WATER FACILITY PLAN

City of LaBelle, FL

Clean Water Facilities and Collection System

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woodardcurran.com

0234532.01
LaBelle, FL
November 2024

CERTIFICATION BY ENGINEER

The information contained in this report is true and correct to the best of his knowledge, the report was prepared in accordance with sound engineering principles, and he discussed the recommendations, costs, and funding approach with the City of Labelle (City) or the City's delegated representative. This Clean Water Facilities Plan was prepared to meet the requirements of the Florida Clean Water State Revolving Fund (CWSRF) Program under Chapter 62-503, F.A.C. and this certification pertains only to the planning analysis presented in this report. Certification for design and construction of the proposed facilities will be completed under a separate CWSRF project.

JUSTIN F. DEMELLO
LICENSE
No. 85668
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Justin deMello, P.E.
Justin deMello, P.E.
I agree to the terms defined by the placement of my signature on this document
2024.12.03
10:50:31-05'00'

12/3/2024
Date

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This item has been electronically signed and sealed by Justin F. deMello, PE on December 3, 2024 using a Digital Signature.

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EXECUTIVE SUMMARY

This planning document was prepared by Woodard & Curran, Inc. (Woodard & Curran) to meet the requirements of the Florida State Revolving Fund (SRF) program for Clean Water Facility Planning. The City of Labelle, Florida, (City) developed this Facilities Plan to evaluate utility needs to support population growth, improve resiliency, and replace or upgrade aging wastewater infrastructure. This Facilities Plan is a planning-level document that defines project needs and estimated costs that will enable the City to apply for grants and low-interest funds for the design and construction of essential wastewater utilities.

This Facilities Plan is based on a 20-year planning period from 2026 to 2046. The evaluation area includes the City of Labelle which is shown in **Figure 1**. The wastewater treatment, collection, and conveyance system consist of a wastewater treatment plant (WWTP), 24 pump stations (two of which are privately owned), approximately 11 miles of force main, and 21 miles of gravity main. The WWTP has a permitted 0.75-million gallons per day (MGD) average daily volumetric flow rate. Wastewater flowing into the WWTP is conveyed by pump stations that are connected by a manifold.

The City's population projection for the 2026-2046 planning period was evaluated based on population growth statistics from the Bureau of Economic and Business Research (BEBR) and the United States (U.S.) Census. The City's population has steadily increased from 2013 to 2022, and the City requires adequate WWTP and wastewater collection and conveyance system capacities to meet future demands.

Five potential projects were evaluated in this Facilities Plan. Three alternatives were evaluated for each of these five potential projects. The first alternative is to make no improvements and other alternatives varied for each potential project. The five potential projects include WWTP, Pump Station 3, Pump Station 4, Master Pump Station, and the wastewater collection system improvements. These potential projects were evaluated because the associated facilities are approaching the end of their useful life. The current WWTP and conveyance system were constructed in or about 2000. The WWTP and wastewater collection and conveyance system have significantly deteriorated. Portions of the wastewater collection system are susceptible to rainwater inflow and groundwater infiltration.

The four alternatives evaluated for the City's WWTP were no infrastructure improvements, rehabilitation and expansion of the existing WWTP, and constructing a new WWTP on another site with a oxidation ditch style biological treatment process and constructing a new WWTP on another site with a packaged style biological treatment process. Alternative 3 has been selected and its associated capital cost is in **Table E-1** below. The three alternatives evaluated for the City's pump stations were no infrastructure improvements, rehabilitation and expansion of the existing Pump Station, and construction of a new Pump Station. Alternative 3 is recommended for all the evaluated pump stations and the associated capital cost is in **Table E-1** below. The three alternatives evaluated for the City's wastewater collection system were no infrastructure improvements, rehabilitation of the existing pipes and replacement of selected pipe segments as outlined in the sewer system evaluation survey (SSES), and the complete replacement of all wastewater collection pipes and manholes that were identified as defective in the SSES. Alternative 2 is recommended and its associated capital cost is in **Table E-1** below.

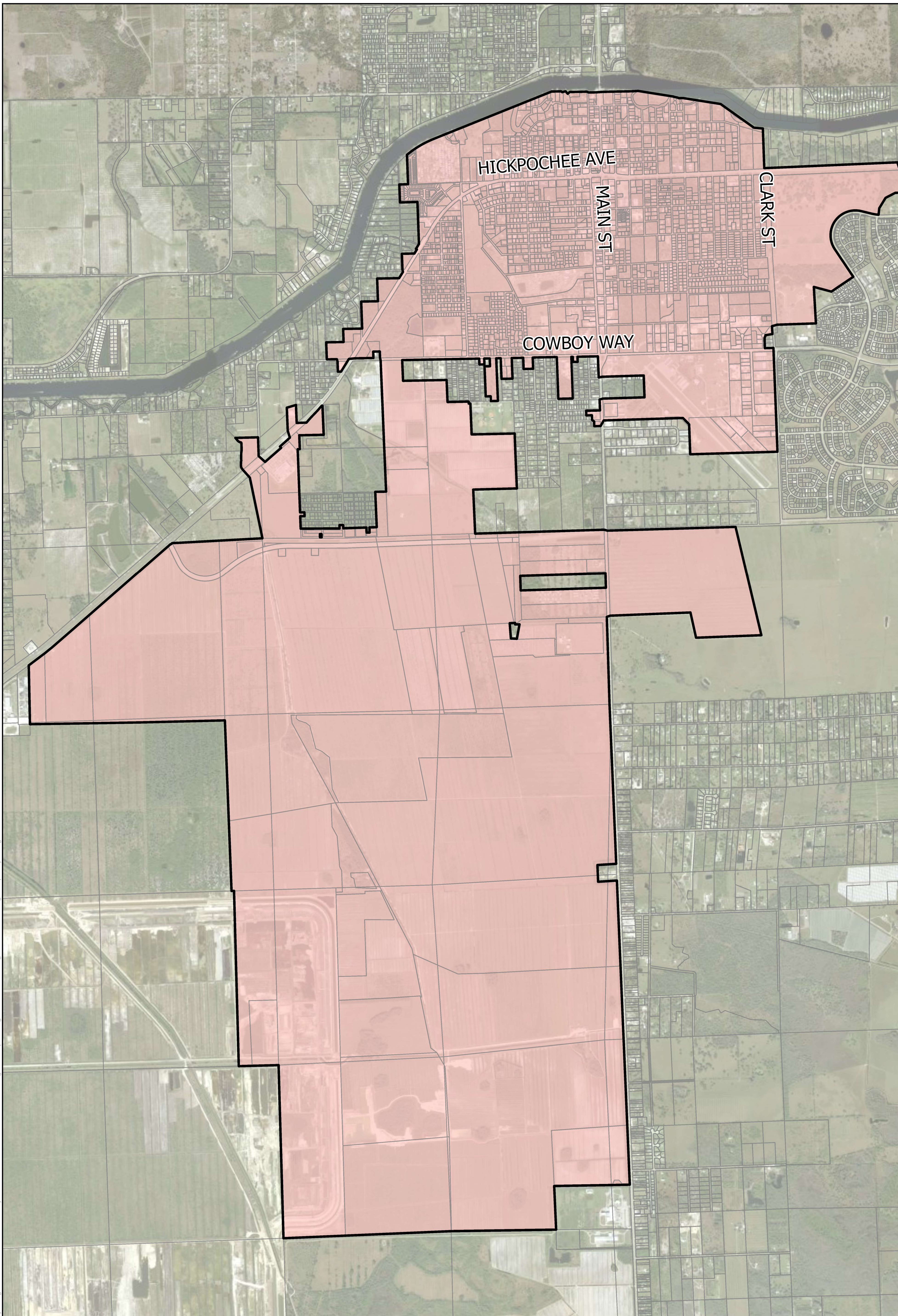

Figure 1: Overview

City of LaBelle, Florida

Legend

Parcels

City Limits

0 1,250 2,500 5,000 Feet

N

Woodard & Curran

Project #: 0234532.01
Map Created: June 2023

Figure Exported: 6/20/2024 By: WStanley Using: \\woodardcurran.net\shared\Projects\0234532.01 LaBelle CW Fac Plan Asst Mgmt Plan\wip\Drawings\GIS\LaBelle AMP Figures\LaBelle AMP Figures.aprx Layout: Figure 1 Overview

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Table ES-1: Facility Plan Alternative Selection and Associated Cost

Project	Alternative Selected	Capital Cost
Wastewater Treatment Plant (WWTP)	Alternative 4: New WWTP	$57,809,000
Lift Station 3	Alternative 3: Lift Station 3 Reconstruction	$844,000
Lift Station 4	Alternative 3: Lift Station 4 Reconstruction	$828,000
Sewer Collection	Alternative 2: Sewer Rehabilitation	$5,908,000

Detailed analysis outlining each of the project's needs, alternatives, capital costs, life cycle costs, and additional information can be found in the following report.

1. PROJECT PLANNING

1.1 LOCATION

The City of LaBelle, Florida (City) is located on the northern boundary of Hendry County and is approximately 30 miles East of Fort Myers, Florida. Hendry County is bordered by Glades County to the North, Palm Beach County to the East, Broward County to the southeast, Collier County to the south, Fort Myers County to the west, and Charlotte County to the northwest. This City has an approximate land area of 12 square miles.

1.2 EXISTING & FUTURE CONDITIONS

1.2.1 Description of Planning Area

The planning area is located within the City Limits of LaBelle, Florida consisting of approximately 9,270 acres. The City of LaBelle is located in northwestern Hendry County, about 32 miles east of Fort Myers and 92 miles west of West Palm Beach. The City of LaBelle is the county seat of Hendry County and provides urban and commercial amenities for surrounding communities in Hendry and Glades counties. The Caloosahatchee River traverses the northern boundary of the City of LaBelle. The City of LaBelle is within the South Florida Water Management District (SFWMD) and Coastal Heartland National Estuary Program area. Two major state roads, State Road (SR) 80 and State Road 29, divide the City. The planning area is depicted in Figure E-1.

1.2.2 Climate

Located in South Florida, the City is within the boundary of Hendry County, Florida. The City's climate is characterized as hot and humid for five months out of the year, from May through October. The City has an average daily high temperature above 87 degrees Fahrenheit during the hot season. The cool season lasts for approximately three months, December through early March. The City has an average low of 52 degrees Fahrenheit during the cool season.

Table 1-1: Summary of Climate Averages

	LaBelle, Florida	United States
Rainfall (inches)	40.1	38.1
Snowfall (inches)	0.0	27.8
Precipitation (days)	136.3	106.2
Average July High (Deg F)	91	85.8
Average Jan. Low (Deg F)	52	21.7
Elevation (feet)	13	2,443

1.2.3 Topography & Drainage

The topography within two miles of LaBelle, Florida is mostly flat, with a maximum elevation change of 23 feet and an average elevation above sea level of 12 feet. The geographical coordinates of LaBelle are 26.762 deg latitude, -81.438 deg longitude. The area within two miles of LaBelle, Florida is covered by artificial surfaces (60%), cropland (26%), and herbaceous vegetation (14%).

According to the United States Fish and Wildlife Service National Wetlands Inventory, the planning area consists of Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetland, Lakes, and Riverine. The average elevation of the City is 13 feet above sea level with only moderate variations in elevation. The drainage of the planning area is comprised of the following:

- 91.2% of soils are characterized as somewhat poorly drained, poorly drained or very poorly drained.
- 1.2% of soil is well drained.

The following section lists detailed information on specific types of soils and drainage class within the planning area.

1.2.4 Geology, Soils, Physiography

The United States Department of Agriculture Natural Resources Conservation Service Soil Survey denotes that planning area is composed of twenty-nine different types of soils, as provided in Table 1-2. Approximately 50% of the land area is composed of soils that are classified as moderately high, high, and very high capacity to transmit water. 30% of the planning area is classified as moderately low to moderately high capacity to transmit water. The remaining percentage is classified as low to moderately low capacity to transmit water.

The most predominant soil types found in the planning area are characterized as sandy and sandy loamy. The surface to ten inches below, upper horizons, of soils in the planning area are classified as 91.7% sand/fine sand, 5.7% as fine sand loamy, and .2% muck. See Appendix A for the Custom Soil Resource Report.

Table 1-2: Soil Types Within the Planning Area

Soil Type	Drainage Class	% of AOI
1) Cypress Lake sand, 0-2% slopes	Poorly drained	10.3
2) Pineda sand, limestone substratum	Poorly drained	5.4
4) Oldsmar sand, 0-2% slopes	Poorly drained	6.0
6) Wabasso sand, 0-2% slopes	Poorly drained	8.4
7) Immokalee sand, 0-2% slopes	Poorly drained	18.7
8) Malabar sand, 0-2% slopes	Poorly drained	3.9
9) Riviera fine sand, 0-2% slopes	Poorly drained	1.9
10) Pineda-Pineda, wet, fine sand, 0-2%slopes	Poorly drained	0.0
14) Wabasso sand, limestone substratum, 0-2% slopes	Poorly drained	7.3%
15) Myakka sand, 0-2% slopes	Poorly drained	0.4%
17) Basinger sand, 0-2% slopes	Poorly drained	3.8%
18) Pompano sand, 0-2% slopes	Poorly drained	3.2%
19) Gator muck, frequently ponded 0-1% slopes	Very poorly drained	0.8%
20) Okeelanta muck	Very poorly drained	0.1%
21) Holopaw sand, 0-2% slopes	Poorly drained	7.3%
22) Valkaria sand	Poorly drained	1.0%
27) Riviera sand, limestone substratum	Poorly drained	6.3%
28) Cypress Lake sand, frequently ponded, 0-1% slopes	Very poorly drained	0.9%
29) Oldsmar sand, limestone substratum	Poorly drained	3.8%
32) Riviera sand, frequently ponded, 0-1% slopes	Very poorly drained	0.7%
34) Chobee fine sandy loan, limestone substratum, depressional	Very poorly drained	0.5%
37) Tuscawilla fine sand, 0-2% slopes	Very poorly drained	0.5%
39) Udifluvents	Very poorly drained	0.1%
45) Pahokee muck, drained, 0-1% slopes	Very poorly drained	0.1%
47) Udorthents	Well drained	1.2%
49) Aquents, organic substratum	Poorly drained	0.2%
53) Adamsville fine sand, 0-2% slopes	Somewhat poorly drained	1.6%
57) Chobee fine sandy loam, frequently ponded, 0-1% slopes	Very poorly drained	5.2%
62) Pineda sand, depressional	Very poorly drained	0.1%
99) Water	N/A	N/A

1.2.5 Surface & Ground Water Hydrology

The Caloosahatchee River flows through the City of LaBelle City Limits and is identified within the Florida Department of Environmental Protection (FDEP) Caloosahatchee River Basin Management Action Plan (BMAP). The Caloosahatchee River and Estuary Watershed are located in Southwest Florida in Charlotte, Glades, Hendry, and Lee Counties. The river runs from Lake Okeechobee through a series of locks to San Carlos Bay. The freshwater segment of the Caloosahatchee is from Lake Okeechobee to the Franklin Lock (S-79). The marine segment extends from the Franklin Lock to Shell Point, adjacent to San Carlos Bay, with Pine Island Sount to the northwest and Estero Bay to the southeast. The Caloosahatchee River and Estuary Watershed is comprised of three subwatersheds and 27 basins.

Because the river and estuary have been exposed to hydrologic, land use, and other anthropogenic modifications, the water quality in the estuary and surrounding tributaries to the Caloosahatchee River has been degraded. FDEP adopted total maximum daily loads (TMDLs) for total nitrogen (TN) and total phosphorus (TP) for waterbodies in the watershed.

The source of drinking water for the planning area is the Upper Floridan Aquifer (UFA). The UFA is typically composed of limestone and dolomite and has high flows near the center of the state where the planning area is located.

1.2.6 Surface & Ground Water Quality

The planning area is located in the West Caloosahatchee Subwatershed. According to the FDEP implementation of the Impaired Waters Rule (IWR), the Caloosahatchee River and Estuary located within the planning area is impaired with a water body classification as 3F, 1. Currently, most surface waters in the Caloosahatchee River and Estuary Watershed are categorized as Class III waters, meaning they must be suitable for recreation and must support fish consumption and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. In 2005, FDEP identified the Caloosahatchee Estuary as impaired for chlorophyll caused by excessive nutrients. Since, FDEP has identified various tributaries to the river, including WBID3237B as impaired for dissolved oxygen (DO). The Caloosahatchee Estuary TMDL was adopted in 2009 for TN.

1.2.7 Water Uses

The UFA is used as the source of drinking water for the City's utility service area. Surface water in the planning area is used for recreational purposes such as boating and fishing.

1.2.8 Source Water Protection

In 2020, an assessment of potential contamination to the source water was completed as part of the Source Water Assessment and Protection Program (SWAPP) with FDEP under the Safe Drinking Water Act (SDWA). The source water protection area is the area encompassed within a five-year groundwater travel time, defined as the area from which water will drain to a well pumping at the average daily permitted rate for a five-year period. In this area all potential sources of contamination were identified and given a susceptibility score and a concern level. Per the 2023 SWAPP, there are three unique potential sources of contamination within the protection areas for the potable water wells operated by the City. Table 1-3 provides the list of potential contamination sources. The potential sources of contamination have a low concern level. The 2023 SWAPP results for the City can be found in Appendix B.

Table 1-3: Summary of Potential Source Water Contamination Sources

Facility Type	Facility Class	Status	Name	Susceptibility Score	Concern Level
Petroleum Storage Tank	Local Government	Open	LaBelle City Well #2	2.77	Low
Petroleum Storage Tank	Local Government	Open	LaBelle City Well #3	2.77	Low
Petroleum Storage Tank	Local Government	Open	LaBelle City Well #2	2.77	Low

1.2.9 Wetlands

According to the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory, the planning area consists of Freshwater Emergent Wetlands, Freshwater Forested/Shrub Wetland, Lakes, and Riverine. It is not anticipated that the proposed project will have any negative effect on wetlands because all proposed upgrades will be done outside of any wetland's boundaries or in existing right-of-way. See Figure 1-1 below.

Wetlands

LaBelle, FL

Legend

- LaBelle City Limits
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

N

0 0.09 0.17 0.34 0.51 0.68 Miles

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1.2.10 Environmentally Sensitive Land

According to the United States Department of Agriculture Natural Resources Conservation Service, 86.2% of the planning area consists of farmland of unique importance, defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. The remainder of soil within the planning area is classified as not prime farmland. Table 1-4 below provides a summary of information on the farmland of unique importance within the planning area.

Table 1-4: Farmland of Unique Importance

Soil Type	Percentage	Acreage
1) Cypress Lake sand, 0-2% slopes	10.3%	949.6
2) Pineda sand, limestone substratum	5.4%	501.3
4) Oldsmar sand, 0-2% slopes	6.0%	552.4
6) Wabasso sand, 0-2% slopes	8.4%	777.8
7) Immokalee sand, 0-2% slopes	18.7%	1,724.9
8) Malabar sand, 0-2% slopes	3.9%	355.8
9) Riviera fine sand, 0-2% slopes	1.9%	179.9
10) Pineda-Pineda, wet, fine sand, 0-2%slopes	0.0%	1.9
14) Wabasso sand, limestone substratum, 0-2% slopes	7.3%	673
15) Myakka sand, 0-2% slopes	0.4%	39.9
17) Basinger sand, 0-2% slopes	3.8%	350.5
19) Gator muck, frequently ponded 0-1% slopes	0.8%	70.3
20) Okeelanta muck	0.1%	9.7
21) Holopaw sand, 0-2% slopes	7.3%	670.3
22) Valkaria sand	1.0%	97
27) Riviera sand, limestone substratum	6.3%	581.5
29) Oldsmar sand, limestone substratum	3.8%	352.4
32) Riviera sand, frequently ponded, 0-1% slopes	0.7%	68.7
45) Pahokee muck, drained, 0-1% slopes	0.1%	10.1
TOTAL:	**80.2%**	**7,966.5**

1.2.11 Plant & Animal Communities

The USFWS Information for Planning and Consultation (IPaC) list includes 12 different species of birds, reptiles, flowering plants, and insects within the planning area. No critical habitats were found within the planning area. Species are classified as candidate, proposed threatened, threatened, or endangered. Table 1-5 below shows the endangered species located in the planning area and the status of each one. Because the proposed project is to take place in previously disturbed areas, the project is not likely to adversely affect resources protected by the Endangered Species Act of 1973. According to the USFWS Consistency Letter dated July 22, 2024, the City of LaBelle proposed project is unlikely to have any detrimental effects to federally listed species or critical habitat and no effect on the species listed below.

The final critical habitat has been identified for the Florida Bonneted Bat, West Indian Manatee, and the Everglade Black Rail bird. According to USFWS Clearence Letter, the Official Species List can be found in Appendix C.

Table 1-5: Endangered Species List within Planning Area

Category	Species Common Name	Species Scientific Name	Status
Mammals	Florida Bonneted Bat	Eumops floridanus	Endangered
	Florida Panther	Puma (=Felis) concolor coryi	Endangered
	Puma Mountain Lion	Puma (=Felis) concolor	Threatened
	Tricolored Bat	Perimyotis subflavus	Proposed Endangered
	West Indian Manatee	Trichechus manatus	Threatened
Birds	Crested Caracara	Caracara plancus audubonii	Threatened
	Eastern Black Rail	Laterallus jamaicensis ssp. jamaicensis	Threatened
	Everglade Snail Kite	Rostrhamus sociabilis plumbeus	Endangered
	Florida Scrub-jay	Aphelocoma coerulescens	Threatened
Reptiles	American Alligator	Alligator mississippiensis	Threatened
	Eastern Indigo Snake	Drymarchon couperi	Threatened
Insects	Monarch Butterfly	Danaus plexippus	Candidate

1.2.12 Archeological & Historical Sites

According to the National Register of Historic Places Catalog, there is one historical site within the City Limits of LaBelle. The proposed project will not have an impact on known historical or archeological sites.

- Name: Caldwell Home Place
- Reference Number: 03000009
- State: Florida
- County: Hendry
- Address: 160 Curry Street
- Area of Significance: Entertainment/ Recreation; Architecture

1.2.13 Floodplains

Flood zones for the planning area are designated in Figure 1-2. Most of the proposed planning area is within a Zone X floodplain with minimal to moderate flood hazard. All flood zones in the planning area are categorized as Zone A, Zone AE or Zone X. The Federal Emergency Management Agency (FEMA) defines Zone A and Zone AE as areas subject to inundation by the one percent (1%) annual chance flood event, base flood elevations or flood depths have been determined for Zone AE. All proposed improvements will be designed and constructed above the 500-Year Floodplain.

FEMA Floodplain

LaBelle, FL

Legend

- LaBelle City Limits
- Effective
- Political Jurisdictions
- Profile Baselines
- Cross-Sections
- Base Flood Elevations
- Levees
- Coastal Transects
- Transect Baselines

General Structures

- Flood Structure
- Bridge
- Dam, Weir, Jetty
- Other Structures
- River Mile Markers
- Limit of Moderate Wave Action

Flood Hazard Boundaries

- Limit Lines
- SFHA / Flood Zone Boundary
- Flowage Easement Boundary

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area with Risk Due to Levee
- Primary Frontal Dunes

N

0 0.13 0.25 0.5 0.75 1 Miles

Woodard & Curran

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1.2.14 Air Quality

Hendry County Air Quality Index was rated "Good" for most days out of the year. According to FDEP, Hendry County is classified as an area of attainment with respect to the National Ambient Air Quality Standards for Ozone.

Emissions from construction vehicles during construction are the only effect on air quality that is anticipated. Construction is anticipated to last 24 months. Project activities will be monitored by the FDEP. There are no anticipated long-term environmental consequences in regard to air quality.

1.2.15 Managerial Capacity

As the utility owner, the City of LaBelle has the sole responsibility and authority to build, operate, and maintain the wastewater system.

1.2.16 Operation & Maintenance Program

The City contracts the wastewater operations and maintenance activities at the wastewater treatment facility to a private firm, Woodard & Curran, Inc. Under this contract, routine monthly inspections and maintenance are provided for the utility. Woodard & Curran manages repairs and any other issues that may arise at the utility. Any repairs beyond the abilities of Woodard & Curran are contracted out to a third-party contractor. Operations and maintenance follow the guidelines established in the FDEP regulatory permit. Woodard & Curran has maintained regulatory compliance over the past year.

1.3 POPULATION TRENDS & PROPOSED DEVELOPMENT

1.3.1 Population Trends

The City has population estimates from the U.S. Census Bureau (USCB) and the University of Florida's Bureau of Economic Business Research (BEBR). The population projection for the 2026-2046 planning period is based on data sets from both sources. The BEBR population estimates listed in **Table 1-6** indicate that the City's population increased by an average 0.87% per year from 2013 to 2023.

Table 1-6: Bureau Of Economic and Business Research City of LaBelle Population Growth

BEBR Data		
Year	**Population Estimate (LaBelle Fl)**	**% Growth**
2013	4,669	-
2014	4,708	0.84%
2015	4,792	1.78%
2016	4,807	0.31%
2017	4,951	3.00%
2018	5,025	1.49%
2019	5,108	1.65%
2020	5,151	0.84%
2021	5,019	-2.56%
2022	5,041	0.44%
	Average Population Growth (per year)	0.87%

The USCB population estimates that are listed in **Table 1-7** indicate that the City's population increased by an average 0.86% for the years 2000, 2010, and 2020.

Table 1-7: USCB Population Estimates in 2000, 2010, and 2020

U.S. Census Data		
Year	**Population (LaBelle Fl)**	**% Growth**
2000	4,210	-
2010	4,640	10.21%
2020	4,966	7.03%
	Average Population Growth (per year)	0.86%

An average population increase of 0.87% per year was applied to estimate future wastewater volumetric flow rates in the City. This average annual growth rate does not include wastewater from future housing developments. For the purposes of this facilities plan, the population projection is 20 years past the anticipated construction completion date. According to FDEP Consent Order No. 22-2259 dated January 18, 2023, a wastewater treatment plant (WWTP) that can meet the City's future needs must be completed by December 2026. The planning period for this Facilities Plan will end in the year 2046. According to BEBR data, the City had a population of 5,041 in 2022. A 0.87% per year population increase over 24 years results in the City's population increasing to 6,094 in 2046.

1.3.2 Proposed Development

The City has agreed to collect, convey, and treat wastewater from a proposed recreational vehicle (RV) resort named "Old Florida RV Resort". The RV resort is located south of State Road 80 and east of the Lee County Line. The property is located outside the limits of the City of LaBelle. Wastewater from the RV resort will be pumped through a force main that runs along State Road 80 and to the existing WWTP. Within the executed developer's agreement (**Appendix D**) the RV resort has been allocated a wastewater volumetric flow rate of 62,339 gallons per day (gpd). Analysis conducted in Section 2.3 of this report indicates that the City's residents generate approximately 124 gallons per day per capita (gpdc) of wastewater. Using these estimates, the Old Florida RV Resort will add approximately 503 people to the wastewater system. The new forcemain and utility extension which extends multiple miles down SR-80 has potential to attract new development leading to additional water and sewer system users located along SR-80.

1.3.3 Planning Period Population Growth

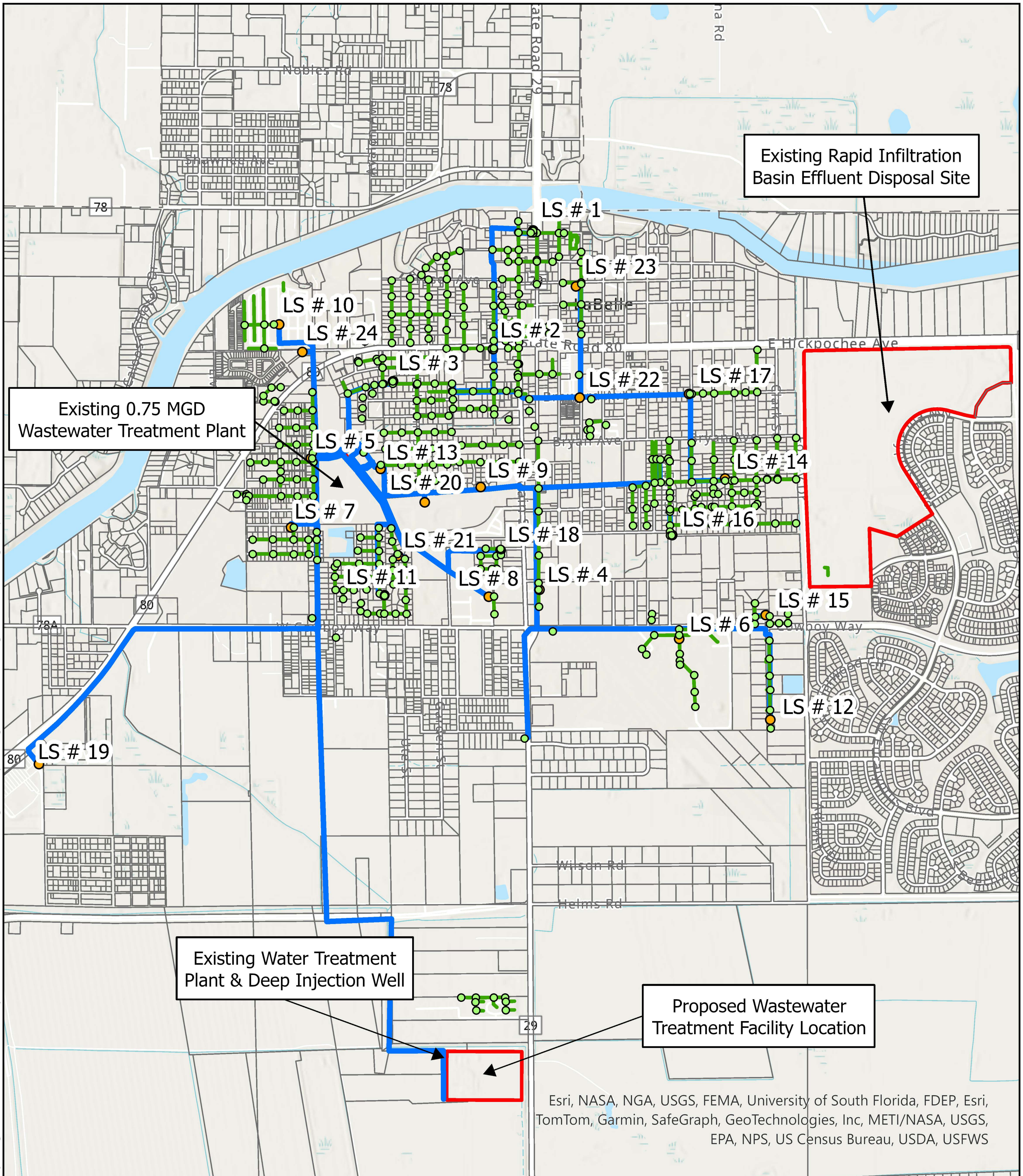
By the end of the planning period, 6,597 people will contribute municipal wastewater to the City's collection, conveyance, and treatment system. This population was determined by a 6,094-population projection in the City of LaBelle in 2046 and 503 people in the Old Florida RV Resort.

2. NEED FOR PROJECT (WASTEWATER TREATMENT PLANT)

The City owns a WWTP that is located at 370 Citrus Street, LaBelle, Florida. The WWTP began operation in 1999 and treats municipal wastewater. It includes screening, sequencing batch reactors (SBRs), chlorine disinfection, aerobic digestion, and a pump station that conveys treated effluent to rapid-infiltration basins (RIBs) or a deep-injection well. The RIBs are located on the corner of Highway 835 (Forrey Drive) and Highway 80 (E. Hickpochee Avenue), and the deep-injection well is at the Water Treatment Plant (WTP), which is located on FL-29, LaBelle, FL. The WWTP, WTP and RIB are all displayed in **Figure 2-1**. The WWTP discharges 0.75 million gallons per day (MGD) on an annual average day (AAD) basis, and the discharge is permitted by FDEP permit number FLA014283. Effluent discharged from the WWTP must comply with the permit limits described in **Table 2-1**. This includes effluent that is discharged through the RIBs and deep-injection well. The RIBs are surrounded by four monitoring wells that include one background well, two compliance wells, and one intermediate well. Samples from these wells are required once every three months (i.e., quarterly). These monitoring wells must comply with the permit criteria described in **Table 2-2**.

Table 2-1: Wastewater Treatment Plant Effluent Permit Limits for City of LaBelle WWTP (FDEP Permit # FLA014283)

Parameter	Units	Max/Min	Limit	Statistical Basis
Carbonaceous 5-day Biochemical Oxygen Demand, at 20°C ($CBOD_5$)	mg/L	Max	20	Annual Average
		Max	30	Monthly Average
		Max	45	Weekly Average
		Max	60	Single Sample
Total Suspended Solids (TSS)	mg/L	Max	20	Annual Average
		Max	30	Monthly Average
		Max	45	Weekly Average
		Max	60	Single Sample
Fecal Coliform	#/100mL	Max	200	Annual Average
		Max	200	Monthly Geometric Mean
		Max	800	Single Sample
pH	s.u.	Min	6.0	Single Sample
		Max	8.5	Single Sample
Total Residual Chlorine	mg/L	Min	0.5	Single Sample
Nitrate (as N)	mg/L	Max	12.0	Single Sample
Volumetric Flow Rate	MGD	Max	0.75	Annual Average



Labelle Wastewater Infrastructure Map

LaBelle, Florida

Figure 2-1

Legend

Existing Lift Station — Existing Force Main — Ex. Gravity Sewer — Ex. Manhole

0 0.1 0.2 0.4 Miles

N

Woodard & Curran

Project #: 0234532.01

Map Created: February 2023

Figure Exported: 7/2/2024 By: WStanley Using: \\woodardcurran.net\shared\Projects\0234532.01 LaBelle CW Fac Plan Asst Mgnt Plan\wip\Drawings\GIS\LaBelle AMP Figures\LaBelle AMP Figures.aprx

Table 2-2: Groundwater Permit Parameters for the City of LaBelle Rapid Infiltration Basins (RIBS) & Ground Water Injection (FDEP Permit # FLA014283)

Parameter	Compliance Well Limit	Units	Sample Type
Water Level Relative to the National Geodetic Vertical Datum (NGVD)	Report	ft	In situ
Nitrate (as N)	10	mg/L	Grab
Total Dissolved Solids (TDS)	500	mg/L	Grab
Arsenic, Total Recoverable	10	µg/L	Grab
Chlorides (as Cl)	250	mg/L	Grab
Cadmium, Total Recoverable	5	µg/L	Grab
Lead, Total Recoverable	15	µg/L	Grab
Fecal Coliform	0	#/100mL	Grab
pH	6.5-8.5	s.u.	In Situ
Sulfate, Total	250	mg/L	Grab
Turbidity	Report	NTU	Grab
Specific Conductance	Report	umhos/com	In Situ
Temperature (C), Water	Report	Deg C	In Situ
Dissolved Oxygen (DO)	Report	mg/L	In Situ
Sodium, Total Recoverable	160	mg/L	Grab

2.1 HEALTH, SANITATION, AND SECURITY

2.1.1 Health and Sanitation

The City of LaBelle WWTP operators have not reported health or sanitation violations. The WWTP has an emergency shower and eye wash station.

2.1.2 Security

The existing WWTP is surrounded by a 6-foot chain link fence with barbed wire. There is a rolling gate at the entrance to the WWTP to allow personnel and vehicles access to the WWTP. The WWTP has lighting.

2.2 EXISTING INFRASTRUCTURE

The existing WWTP receives and treats wastewater from approximately 61% of the City's residents. Data from discharge monitoring reports (DMRs) indicate the WWTP effluent complies with permit limits described in **Table 2-1**. However, according to the FDEP Consent Order number 22-2259, the WWTP has experienced 16 spills of untreated, partially treated, and treated wastewater from October 19, 2019, until December 1, 2022. The RIBs have also experienced 10 groundwater quality exceedances from July 1, 2019, until December 31, 2022. During the 20-year planning period, which ends in 2046, the WWTP is likely to see an increase in average volumetric flow rates as outlined in this report. The WWTP is projected to receive an average annual daily flow of 0.82 MGD and a maximum daily flow of 1.05 MGD. The existing unit processes at the WWTP are described in this section.

Headworks

Municipal wastewater flows to headworks that have a Hycor® Model HS 72-1 static screen. Solids that are captured by the static screen are collected onsite and then disposed of offsite. Screened wastewater flows to a master pump station. According to the WWTP Draft Operation and Maintenance Manual dated April 2001, the static screen has been designed to process a 0.75-MGD annual average daily flow (AADF) and 1.85-MGD peak hour flow (PHF). Wastewater that exceeds a 1.85-MGD volumetric flow rate bypasses the static screen and flows to the Master Pump Station.

Raw Sewage Pump Station (Master Lift Station)

The Master Pump Station contains three submersible pumps, two are duty pumps and one is a supplemental pump. The pumps operate in an alternating fashion (lead-lag) to feed screened wastewater to the SBRs. The duty pumps have 604-gallons per minute (gpm) capacities, which provides for a total 1,208-gpm capacity. The supplemental pump has a 442-gpm capacity and is utilized to convey peak flows.

Secondary Treatment

Screened wastewater is pumped to three SBRs that are configured as a fill-and-draw activated sludge process. The SBRs are sized to treat a 0.75-MGD AADF and 1.125-MGD PHF. Each SBR has been designed to operate with five cycles per day and is 49-feet wide, 49-feet long, and 17-feet deep. The maximum, minimum, and average side water depth in each of these SBRs is 15, 11, and 14 feet, respectively, which corresponds to 0.269, 0.198, and 0.251-million gallons (MG) reaction volumes, respectively.

The SBR phases include:

1. Mix Fill Phase: Screened wastewater flows into an unaerated SBR.
2. React Fill Phase: Screened wastewater flows into an aerated SBR.
3. React Phase: There is no SBR filling during this phase. Mixing and cyclic aeration (i.e., on and off).
4. Settle Phase: During this phase there is no mixing, aeration, or flow into or out of an SBR. This phase allows for liquid and solids separation.
5. Decant and Idle Phase: Treated water flows over a weir and through a decant valve. Treated water flows from the SBR to chlorine contact tanks (CCTs) for disinfection.

The SBRs at the WWTP have phase durations that are listed in **Table 2-3**.

Table 2-3: Sequential Batch Reactor General Operating Times

Phase	Approximate Operating Time
Mix Fill Phase	35 minutes
React Fill Phase	60 minutes
React Phase	85 minutes
Settle Phase	45 minutes
Decant Phase	65 minutes
Idle Phase	0-65 minutes
Waste Sludge Phase	15 minutes

Two positive displacement blowers provide air to meet process oxygen requirements, and floating mixers are utilized to agitate SBR contents. Waste activated sludge (WAS) is pumped to aerobic digesters after the decant phase.

Solids Handling

The solids handling system consists of two aerobic digesters and a belt-filter press (BFP) for digested sludge dewatering (Ashbrook Klampress KP05 Skid, Model MPS#40685). Polymer is mixed with the digested sludge prior to the BFP. According to Alfa Laval Inc., the existing BFP has a 1-meter wide belt and 75-gpm sludge processing capacity when the sludge has a 25,000-MG total suspended solids (TSS)/L concentration. The solids handling system was designed to process 1,670 lbs TSS/day. The aerobic digesters have a total 200,000-gallon volume, provide for a 10-day hydraulic residence time (HRT), and are aerated by positive displacement blowers and coarse-bubble diffusers. The dewatered solids are placed in a dumpster, are collected, and then transported to a landfill. Filtrate from the BFP is pumped to the headworks for further treatment.

Disinfection

SBR effluent is pumped to two Chlorine Contact Tanks (CCTs). Each CCT is 16-feet wide, 20-feet long, and 6-feet deep and has a 24-minute HRT at the 1.7-MGD design volumetric flow rate. Liquid sodium hypochlorite (10.5% by weight) is pumped from a double walled tank by two peristaltic pumps (Pulsafeeder Chemtuff). The liquid sodium hypochlorite is injected into the CCTs through a pipe. Disinfected water flows from the CCTs to an effluent pump station.

Effluent Discharge

Disinfected water is discharged through RIBs or a deep-injection well. The RIBs are permitted to receive up to a 0.75-MGD AADF, and the deep-injection well is permitted to receive up to 2.63 MGD. However, the WWTP is currently permitted to discharge an average of 0.75 MGD to the deep-injection well. Disinfected water is seldom discharged through the deep-injection well, but the well is utilized to discharge approximately 250,000 gpd of brine concentrate from the City's WTP.

2.3 EXISTING AND FUTURE WASTEWATER FLOWS AND LOADS

2.3.1 Wastewater Flows and Contaminants Loads

The WWTP was designed to treat wastewater with volumetric flow rates and contaminant concentrations identified in **Table 2-4**.

Table 2-4: Design Raw Wastewater Flows and Loads

Raw Wastewater Parameter	Value	Unit
Average Annual Day Flow	0.75	MGD
Peak Hour Flow	1.85	MGD
$CBOD_5$	320	mg/L
TSS	320	mg/L
Total Kjeldahl Nitrogen (TKN) as N	50	mg/L

Utilizing the information in **Table 2-4**, the design contaminant loading rates in **Table 2-5** were calculated with a 0.75-MGD volumetric flow rate influent to the WWTP.

Table 2-5: Raw Wastewater Annual Average Day Flows and Loads

Wastewater Parameter	Design Loading (lbs/day)
$CBOD_5$	2,000
TSS	2,000
TKN as N	300

DMRs from January of 2021 through December of 2022 were reviewed to develop existing flow and contaminant load characteristics for the City. The City's WWTP operators measured influent volumetric flow rate and pH daily. Eight-hour composite water and solids samples were collected from influent and treated effluent wastewater weekly and tested for carbonaceous biochemical oxygen demand $CBOD_5$ and TSS.

Water treatment gpcd was multiplied by 3,087 citizens to calculate an average water generation to the City's sewered citizens during the period evaluated. The average water treatment that was conveyed to sewered citizens during 2021 and 2022 was 423,900 gpd. **Figure 2-2** shows wastewater and water volumetric flow rates in gallons per day for sewered citizens during 2021 and 2022. This figure also shows that the wastewater volumetric flow rate is equivalent to or exceeds water production during portions of 2021 and 2022. This is due to rainwater inflow and groundwater infiltration to the City's wastewater collection and conveyance system. The City is evaluating ways to reduce inflow and infiltration. An upper threshold of 90% of water treatment becoming wastewater is applied for planning purposes to project future wastewater volumetric flow rates.

$CBOD_5$ and TSS concentrations were utilized to calculate their mass flows (M/T) influent to the WWTP. Influent wastewater samples are collected and analyzed for TSS and $CBOD_5$ four times per month by 8-hour composite samplers. Influent wastewater samples were collected from the flow splitter box that is upstream from the influent screen. The samples were stored in bottles by the WWTP operators using standard FDEP procedures for field sampling, placed on ice, and transported to a certified laboratory. The laboratory analyzed the samples according to National Environmental Laboratory Accreditation Program (NELAP) standards. Test results were reported by the City's WWTP operators in DMRs. The operators use the totalized influent wastewater volumetric flow rate to calculate the $CBOD_5$ and TSS mass flows in pounds per day (lbs/day).

Average daily TSS and $CBOD_5$ loads were averaged for each calendar month during 2021 and 2022. The $CBOD_5$ and TSS mass flows were held constant despite a reduction in wastewater volumetric flow rate from utilizing 90% of water flow to sewered citizens, which increases the $CBOD_5$ and TSS concentrations in wastewater. The future design condition assumes that most of the inflow and infiltration will be eliminated from the collection and conveyance system. Average monthly $CBOD_5$ and TSS mass flows and the monthly average volumetric flow rate, which is 90% of drinking water to sewered citizens, are listed in **Table 2-6**.

Figure 2-2: City Of LaBelle Drinking Water and Wastewater Flow for Sewered Citizens 2021-2022

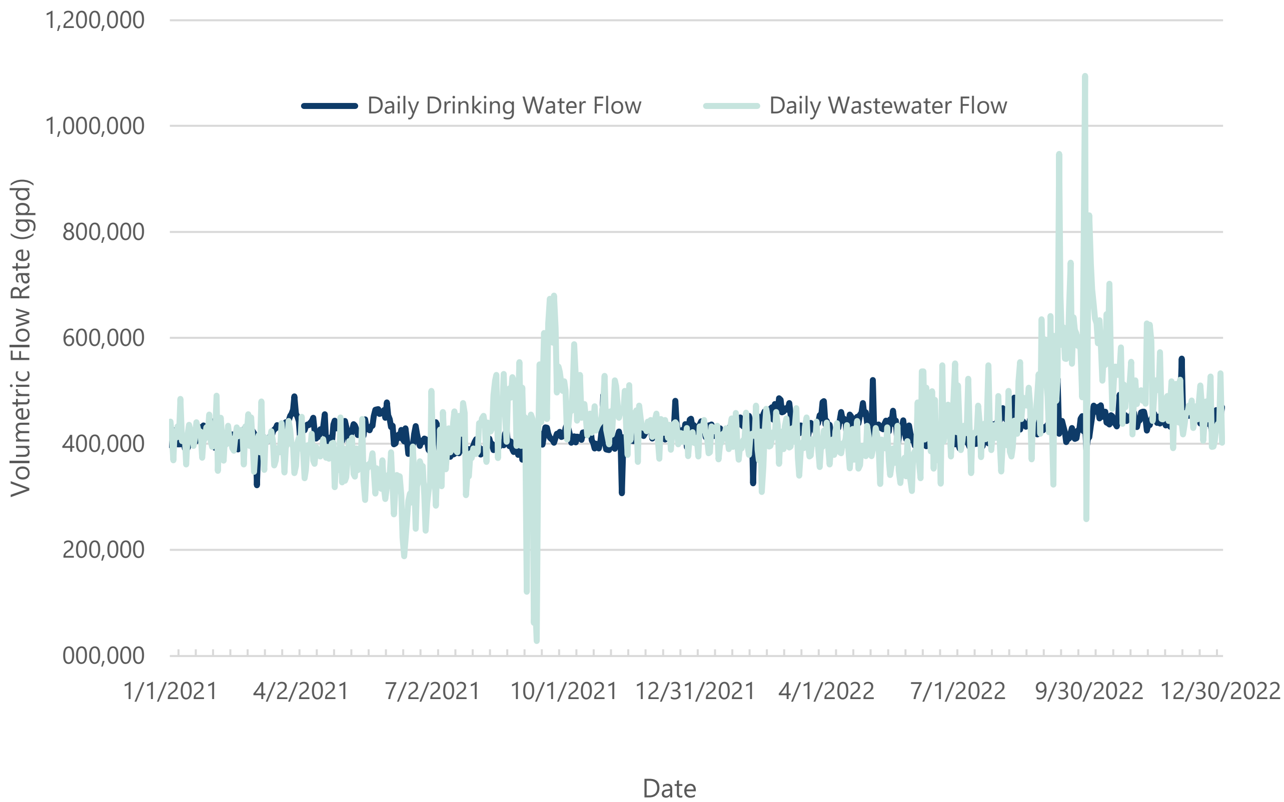


Table 2-6: Average Monthly Flows (WTP Data) and Contaminants Loads (WWTP Data) from January 2021 Through December 2022

Date (month-year)	Average Monthly Water Flow 90% of Water to Sewered Citizens (MGD)	$CBOD_5$ Load (lbs/day)	TSS Load (lbs/day)
Jan-21	0.371	859	1,076
Feb-21	0.371	1,018	852
Mar-21	0.383	818	518
Apr-21	0.382	1,543	454
May-21	0.393	1,071	570
Jun-21	0.369	1,286	813
Jul-21	0.357	2,140	514
Aug-21	0.358	1,930	2,022
Sep-21	0.368	877	623
Oct-21	0.373	1,359	1,240
Nov-21	0.370	1,469	864
Dec-21	0.384	874	2,501
Jan-22	0.384	857	663
Feb-22	0.402	2,170	906
Mar-22	0.398	1,140	755
Apr-22	0.397	972	794
May-22	0.388	1,156	710
Jun-22	0.369	1,225	671
Jul-22	0.371	1,002	788
Aug-22	0.398	1,216	741
Sep-22	0.388	1,488	953
Oct-22	0.407	1,317	625
Nov-22	0.402	1,179	764
Dec-22	0.408	1,219	425

Annual average day, maximum month average day, and maximum daily values are listed in **Table 2-7** and **Table 2-8**.

Table 2-7: Flows and Loads 2021 Calculated Using Treated Water Flow to Sewered Citizens

Parameter	Average Flow 90% of WTP Water to Sewered Citizens (MGD)	Average Influent $CBOD_5$ (mg/L)	$CBOD_5$ Load (lbs/day)	Average Influent TSS (mg/l)	TSS Load (lbs/day)
Annual Average	0.373	410	1,270	323	1,004
Maximum Month Average Day	0.393	718	2,140	782	2,501
Maximum Day	0.443	N/A	3,867	N/A	6,128
Date of Maximum Daily	10/28/21	N/A	7/2/21	N/A	8/16/21

*N/A Values cannot be calculated using the DMR data.

Table 2-8: Flows and Loads 2022 Calculated Using Treated Water Flow to Sewered Citizens

Parameter	Average Flow 90% of WTP Water to Sewered Citizens (MGD)	Average Influent $CBOD_5$ (mg/L)	$CBOD_5$ Load (lbs/day)	Average Influent TSS (mg/l)	TSS Load (lbs/day)
Annual Average	0.393	379	1,245	224	733
Maximum Month Average Day	0.408	648	2,170	294	953
Maximum Daily	0.505	N/A	4,939	N/A	1,682
Date of Maximum Daily	12/31/22	N/A	2/14/22	N/A	11/14/22

*N/A Values cannot be calculated using the DMR data.

2.3.2 Predicted Future Flows and Loads

Peaking factors were developed for wastewater volumetric flow rates and $CBOD_5$ and TSS mass flows. The peaking factors are shown in **Table 2-9** and **Table 2-10**.

Table 2-9: Wastewater Flow Peaking Factors

Peaking Factor	2021	2022
Max Month Average Day/Annual Average Day	1.1	1.0
Max Day/Annual Average Day	1.2	1.3

Table 2-10: Carbonaceous Biochemical Oxygen Demand (CBOD5) Peaking Factors

Peaking Factor	2021	2022
Max Month Average Day/Annual Average Day	1.7	1.7
Max Day/Annual Average Day	3.0	4.0

Wastewater contaminant mass flows were extrapolated from values published in *Wastewater Engineering Treatment and Resource Recovery Fifth Edition* by Metcalf and Eddy. An average 380 milligrams per liter (mg/L) $CBOD_5$ concentration was calculated utilizing the 2022 annual average day volumetric flow rate and annual average day $CBOD_5$ loading. Average influent concentrations of contaminants to the City's WWTP and typical municipal wastewater contaminants concentrations published in Metcalf and Eddy are listed in **Table 2-11**.

Table 2-11: Estimated Future Wastewater Concentrations

Constitute	Unit	Medium Strength Wastewater*	High Strength Wastewater*	LaBelle Fl Wastewater Concentrations
$CBOD_5$	mg/L	200	400	380**
Total Nitrogen	mg/L	35	69	66
Ammonia Nitrogen (as N)	mg/L	20	41	39
Total Phosphorus	mg/L	5.6	11	10.5
TSS	mg/L	195	389	370

Notes: *Medium and high strength wastewater values from Metcalf and Eddy Table 3-18.

**$CBOD_5$ value established using 90% of 2022 WTP data for sewered citizens and 2022 average $CBOD_5$ loading.

Utilizing extrapolated wastewater contaminant concentrations from **Table 2-11**, a peaking factor of 1.7 (as shown in **Table 2-10**), the 2022 average annual drinking water flow, an existing sewered population of 3,087, a future population of 6,094 and a development population of 503 people, contaminants mass flows for the City's future population was calculated. Projected contaminants mass flows are listed in **Table 2-12**.

Table 2-12: Projected Future Wastewater Loading

Constitute	Average Annual Daily Loading (lbs/day)	Per Capita Loading (lbs/day/capita)	Projected Average Annual Daily Loading (lbs/day)	Projected Maximum Monthly Average Day Loading (lbs/day)
$CBOD_5$	1,245	0.40	2,661	4,482
Total Nitrogen	215	0.07	459	774
Ammonia Nitrogen (as N)	127	0.04	272	459
Total Phosphorus	34.3	0.01	73	123
TSS	1,211	0.392	2,588	4,360

The City's residents utilized an average of 137-gpcd of potable water during 2021 and 2022. Ninety percent (90%) of the average water usage is 124-gpcd which is the predicted amount of wastewater generated per citizen in LaBelle. By the end of the planning period 6,597 people are projected to utilize the sewer system (the City's projected population in 2046). A peaking factor of 1.1 was utilized to calculate the maximum month average daily flow and a peaking factor of 1.3 was utilized to calculate the maximum daily flow. A 3.0 peak hour flow peaking factor was assumed. The calculated wastewater flows for the WWTP by the end of the planning period are shown in **Table 2-12**.

Table 2-13: Projected Volumetric Flow Rates Influent to the WWTP in 2046

Flow Parameter	Total Flow (MGD)
Annual Average Daily Flow	0.82
Maximum Monthly Average Daily Flow	0.86
Maximum Daily Flow	1.05
Peak Hour Flow	2.46

This project is required due to the Consent Order Number 22-2259 with an effective date of January 18, 2023, issued by the FDEP which says, "Respondent shall construct a wastewater treatment facility with adequate disposal capacity…". The existing unit processes at the WWTP are also currently undersized to meet the requirements of the City for the 20-year planning period.

3. NEED FOR PROJECT (LIFT STATIONS)

The existing LaBelle Florida sewage collection system consists of 24 lift stations[1], approximately 21 miles of gravity sewer main and approximately 11 miles of force main. The City owned lift stations (22 in total) were previously evaluated by Four Waters Engineering as part of the City's 2022 Sewer Master Plan and those prior evaluations were used to prepare project information for the lift stations. **Figure 2-1** attached to this report shows the location of the lift stations, force mains, existing WWTP, and the RIB.

Under the City's direction LS-3, LS-4, and the WWTPs raw sewage pumping station, referred to in this report as the Master Lift Station, are being evaluated for upgrade in this facility plan. Lift Station 3 (LS-3) is being evaluated due to being a major lift station, its current poor condition, and its key function in pumping sewage from other lift stations. Lift Station 4 (LS-4) is being evaluated due to the station being a major station, its current poor condition, and its proximity to the proposed WWTP. The Master Lift Station is being evaluated for the possibility of repurposing the lift station to convey wastewater in a southerly direction to the proposed WWTP. The locations of three lift stations to be evaluated can be seen in **Figure 3-1**.

Four Waters alongside Charles Cobb, a professional electrical engineer with Chatham Engineering, Inc., performed field inspections of the 22 City owned lift stations. According to an email received by Four Waters Engineering, the inspections of these lift stations took place in 2022. Charles Cobb has performed electrical engineering services for the City in the past and is familiar with the City's standards and requirements.

3.1 HEALTH, SANITATION, AND SECURITY

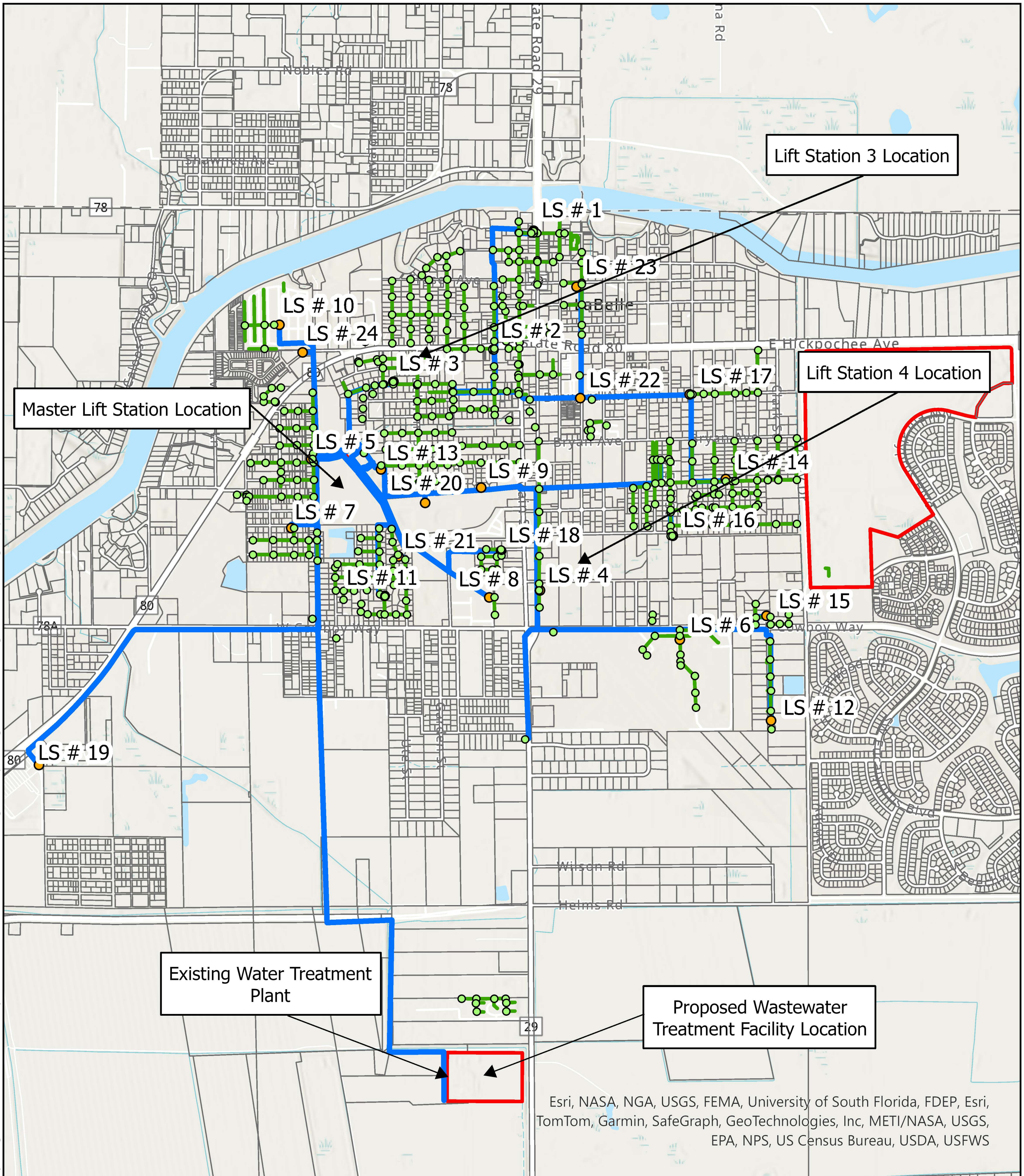
3.1.1 Lift Station 3 (LS-3)

The City of LaBelle Lift Station operators have not reported health or sanitarian violations at LS-3. Lift Station 3 is currently surrounded by a chain link fence topped with barbed wire for security purposes. There is a pad locked chain link swing gate which allows access for personnel and equipment.

3.1.2 Lift Station 4 (LS-4)

The City of LaBelle Lift Station operators have not reported health or sanitarian violations at LS-4. Lift Station 4 is currently surrounded by a chain link fence for security purposes. There is a pad locked chain link swing gate which allows access for personnel and equipment.

[1] Two (2) lift stations are privately owned. Twenty-two (22) of the list stations are owned and maintained by the City.



Lift Station Alternatives Map

LaBelle, Florida

Figure 3-1

Legend

- Existing Lift Station
- Existing Force Main
- Ex. Gravity Sewer
- Ex. Manhole

0 0.1 0.2 0.4 Miles

N

Woodard & Curran

Project #: 0234532.01

Map Created: February 2023

3.1.3 Master Lift Station

The City of LaBelle Lift Station operators have not reported health or sanitarian violations at LS-4. The master lift station is located on the same site as the existing WWTP. The existing WWTP is surrounded by a 6-foot chain link fence with barbed wire. There is a rolling gate at the entrance to the WWTP to allow personnel and vehicles access to the WWTP. The WWTP has lighting.

3.2 EXISTING INFRASTRUCTURE

3.2.1 Lift Station 3 (LS-3)

Lift Station No. 3 is located at 500 2nd Avenue (behind City Hall) on the northern side of the City. A photo of LS-3 can be seen in **Figure 3-2**. The City's geographic information system (GIS) data indicates that the pump station was constructed in 2005. No other record drawings for this lift station are available. According to the 2023 Wastewater Engineering Report, LS-3 collects flow from 81 existing single-family homes, several commercial/industrial properties and from Lift Station Nos. 1, 2, 14, 16, 17, 22, and 23. Lift Station No. 3 is considered a major station in the 2023 Engineering Report by Four Waters. The lift station is comprised of a concrete wet well, concrete valve vault and control panel. There is a six-foot chain-link fence with barbed wire surrounding the lift station. Additional information regarding the lift station's characteristics can be seen in **Tables 3-1 and 3-2** below.

Figure 3-2: Lift Station 3

Lift Station 3 pump run times were provided by the Woodard & Curran Operations and Maintenance team which oversees the pump station. These pump times were analyzed for one year (February 2022 until February 2023). The pump run times were then converted into total gallons pumped using the pumping rates which were established by Four Waters Engineering and published in the LaBelle 2023 Wastewater Engineering Report. According to Four Waters Engineering LS-3 has two pumps; pump 1 has a pumping rate of 793 gpm and pump 2 has a pumping rate of 304 gpm. Using both pumps run times and pumping rates LS-3 pumped an average of 110,663 gpd and had a maximum daily pumped volume of 161,319 gpd during this one-year period.

Currently, the City is in the process of connecting homes utilizing septic systems to the sewer system. New sewer basins to be connected to the sewer system can be seen in **Figure 3-3** attached to this report. Sewer basins A, B, and C will be connected by gravity to LS-17 which pumps directly to LS-3. Woodard & Curran requested information from Four Waters Engineering on the number and location (sewer basin) or residents to be converted from septic to sewer. According to information received from Four Waters Engineering septic to sewer basins A, B, and C will add approximately 1,656 customers to the sewer system. Using the flow estimate of 124 gpdc, established in the Wastewater Treatment Plant Section 2.3 of this report, these three new sewer basins would add approximately 205,344 gpd to LS-3.

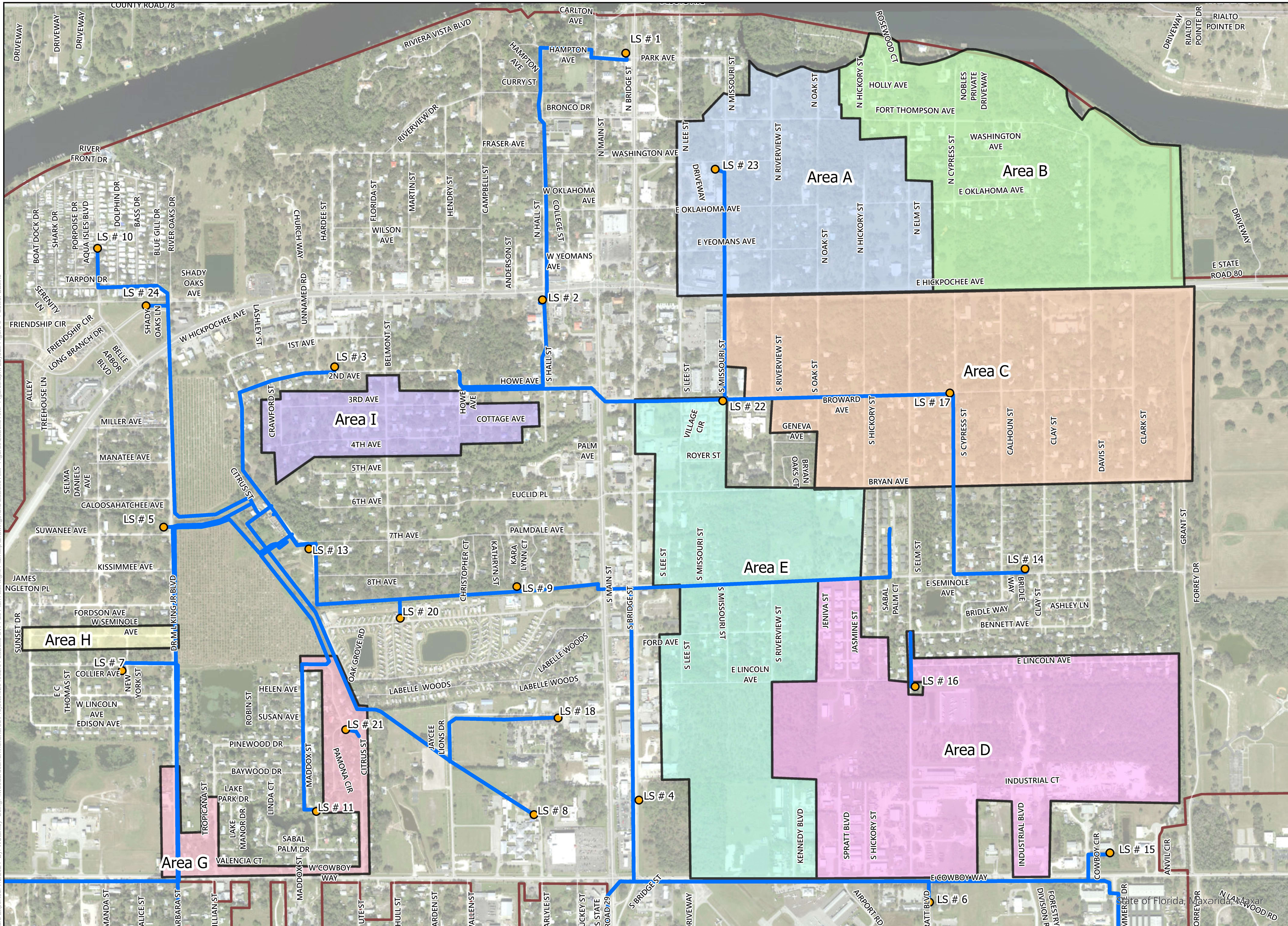


Figure 3-3: Septic to Sewer Basins

City of LaBelle, Florida

N

Legend

- Existing Force Main
- Existing Lift Station
- City Limits

Sewer Basins

- Area A
- Area B
- Area C
- Area D
- Area E
- Area G
- Area H
- Area I

0 300 600 1,200 Feet

Woodard & Curran

Project #: 0234532.01
Map Created: June 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:** City of LaBelle

According to the 2023 Wastewater Engineering Report by Four Waters the following civil/mechanical items require repair/replacement:

- Pumps are over 15 years old and will need replacement within five years.
- Wet well lacks liner (exposed concrete).
- Ductile Iron piping and fittings within wet well are in poor condition due to corrosion.
- No water service for cleaning at the lift station.
- No safety grating over wet well.

According to Four Waters electrical items require repair/replacement:

- Float and pump cables come through the same junction box.
- Grounding was not installed per National Electric Code (NEC.)
- Generator conductors are not connected to emergency circuit breaker.
- Circuit breaker is in panel with slide block.
- All power distribution equipment is in the control panel.
- APT (Advanced Protection Technologies) surge protection unit has failed.
- No site lighting.

In addition, there is no fixed emergency power backup currently installed at LS-3. The lack of emergency power could lead to sewer backups and overflows if the station loses power during high flow events or for extended periods of time.

Table 3-1: Lift Station 3 Characteristics

Number of Pumps Installed (Duty/Total)	1/2
Pump 1 Capacity (gpm)	793
Pump 2 Capacity (gpm)	304
Wet Well Diameter (ft)	10
Wet Well Depth (ft)	20
Level Control	Floats
Pipe Material Within Wet Well	Ductile Iron
Approx. Force Main Length (ft)	2,100
Force Main Diameter (in)	10
Force Main Material	PVC
Force Main Pressure (psi)	N/A
Backup Generator Present (yes/no)	No

Table 3-2: Lift Station 3 Pump Characteristics

Pump Manufacture	Flygt
Pump Model	CP3201
Pump Style	Submersible
Rated Pump Capacity	1,000 gpm at 98 ft of head
Motor Size	30 Hp

Additionally, LS-3 has a chain link fence surrounding it for security purposes.

3.2.2 Lift Station 4 (LS-4)

Lift Station 4 is located across the street from 851 Bridge Street on the northeast side of the City. A photo of LS-4 can be seen in **Figure 3-4**. According to the City's GIS data, the lift station was constructed in 1987. No other record drawings are available. According to the 2023 Wastewater Engineering Report by Four Waters Engineering Lift Station No. 4 collects wastewater from three single family homes and an unknown number of commercial/industrial properties. Lift Station 4 is considered a major station in the 2023 Engineering Report by Four Waters Engineering. This lift station consists of a concrete wet well, concrete valve vault, and a control panel. There is a 4-foot chain link fence surrounding the pump station. Additional Information regarding the lift stations' characteristics can be seen in **Tables 3-3 and 3-4** below.

Figure 3-4: Lift Station 4

Table 3-3: Lift Station 4 Characteristics

Number of Pumps Installed (Duty/Total)	2/1
Pump 1 Capacity (gpm)	331
Pump 2 Capacity (gpm)	282
Wet Well Diameter (ft)	6
Wet Well Depth (ft)	18
Level Control	Floats
Pipe Material Within Wet Well	Ductile Iron
Approx. Force Main Length	N/A
Force Main Diameter (inch)	6
Force Main Material	PVC
Discharge Pressure (psi)	15
Backup Generator Present (yes/no)	No

Table 3-4: Lift Station 4 Pump Characteristics

Pump Manufacture	Flygt / Unknown
Pump Model	N/A
Pump Style	Duplex Submersible
Rated Pump Capacity	N/A
Motor Size	N/A

As mentioned above, LS-4 has a four-foot chain link fence surrounding the lift station.

Lift Station 4 pump run times were provided by the Woodard & Curran Operations and Maintenance team which oversees the pump station. These pump times were analyzed for one year (February 2022 until February 2023). The pump run times were then converted into total gallons pumped using the pumping rates which were established by Four Waters Engineering and published in the LaBelle 2023 Wastewater Engineering Report. According to Four Waters Engineering LS-4 has two pumps: Pump 1 has a flowrate of 321 gpm and pump 2 has a flowrate of 282 gpm. Using both pumps run times and pumping rates LS-4 pumped an average of 53,603 gpd and had a maximum pumped volume of 92,343 gpd during this one-year period.

According to the 2023 Wastewater Engineering Report by Four Waters Engineering LS-4 receives wastewater flow from three single family homes and some commercial/industrial properties. Lift Station 4 does not receive any wastewater flow from other lift stations within the City. New sewer basins to be connected to the sewer system can be seen in **Figure 3-3**. Sewer basins D, E, G, H, and I will be connected by gravity to LS-4. According to information received from Four Waters Engineering septic to sewer basins D, E, G, H and I will add approximately 298 customers to the sewer system. Using the flow estimate of 124 gpdc, established in the Wastewater Treatment Plant Section 2.3 of this report, these five new sewer basins would add approximately 36,952 gpd to LS-4.

According to Four Waters the following civil/mechanical items require repair/replacement:

- Pumps are over 15 years old; need to plan for replacement in the next five years.

- Wet well lacks liner – exposed concrete.
- Ductile iron pipe and ductile iron 90° bends in wet well – Poor/Catastrophic condition – extremely corroded.
- Ductile Iron piping, fittings, and valves in valve vault in poor/catastrophic condition, paint wearing off, completely under water and signs of corrosion.
- No water service.
- No generator.
- No safety grating on wet well.

According to Four Waters electrical items require repair/replacement:

- Panel is obstructed by fence.
- Disconnect switch (3R) is obstructed by fence and rusty.
- Grounding is in the meter and reached the end of useful life.
- No overcurrent protection.
- No surge protection.
- No site lighting.

The lack of emergency power could lead to sewer backups and overflows if the station loses power during high flow events or for extended periods of time.

3.2.3 Master Lift Station

The Master Lift Station is located at 370 Citrus Street, near the center of LaBelle, at the existing WWTP. The Raw Sewage Pump Station is protected within the WWTP grounds, surrounded by a six-foot chain link fence topped with barbwire. The master lift station was constructed at the same time as the WWTP (1999). Currently, the Raw Sewage Pump Station receives incoming wastewater from the pretreatment system, permitted for an AADF of 0.75 MGD. Additional information regarding the Raw Sewage Station characteristics can be found in **Tables 3-5 and 3-6** below.

Table 3-5: Raw Sewage Pump Station Characteristics

Number of Pumps Installed (Duty/Total)	3
Pump 1 Capacity (gpm)	442
Pump 2 Capacity (gpm)	604
Pump 3 Capacity (gpm)	604
Wet Well Diameter (ft)	12
Wet Well Depth (ft)	18
Level Control	Floats
Pipe Material Within Wet Well	N/A
Approx. Force Main Length	N/A
Force Main Diameter	6"
Force Main Material	PVC
Discharge Pressure (psi)	15
Backup Generator Present (yes/no)	Yes

Table 3-6: Raw Sewage Pump Station Characteristics

Pump Manufacture	Flygt
Pump 1 Model	CP3127
Pump 2 & 3 Model	CP3171
Pump 1 Flow (gpm)	442
Pump 2 &3 Flow (gpm)	604
Pump Style	Duplex Submersible
Rated Pump Capacity	N/A
Motor Size	25 HP/10HP

The Master Lift Station currently has sufficient pump capacity to handle the existing flows. This lift station is designed for an AADF of 0.75 MGD, where the current AADF is 0.45 MGD. All corrective actions required by Consent Order No. 22-2259 for the Master Lift Station have been addressed. A regular equipment maintenance program in accordance with individual manufacturer's recommendations would reduce the risk of diminished reliability and service interruptions.

During the years of 2021 and 2022 the Master Lift Station had an AADF of 0.41 MGD. Once the septic to sewer modifications is complete the master lift station is projected to have an AADF of 0.68 MGD. This projection is according to the flows and loads analysis in Section 2 of this report. The master lift station is part of the headworks for the existing WWTP. According to Section 2 of this report the projected maximum daily flow for the future WWTP is 0.88 MGD. However, the influent flow pump station for a WWTP should be sized for the peak hour flow. The data analyzed for this report does not have hourly flow data for the existing WWTP. Due to this lack of data a standard peaking factor of 1.5 was utilized to determine the peak hour flow rate. According to *Wastewater Engineering Treatment and Resource Recovery* by Metcalf and Eddy, Table 3-12 gives a range of geometric standard deviations for influent wastewater flow rates of 1.4-2.0. This peaking factor puts the peak hour flow for the master lift station at 1.0 MGD. This flow rate is greater than the current design capacity for the master lift station meaning the existing lift station must be upgraded.

3.3 WASTEWATER COLLECTION SYSTEM GROWTH

Currently, about 61% of the City's residents are connected to the sewage collection system. The City is located in the Caloosahatchee River Basin and is actively pursuing septic to sewer opportunities to reduce nutrient loading on the local environment. This will mean that additional sewer collection infrastructure will need to be installed to collect and transport the sewage to the WWTP.

4. NEED FOR PROJECT (SEWER COLLECTION)

4.1 HEALTH, SANITATION, AND SECURITY

The City's wastewater collection system operators have not reported health or sanitation violations. The existing sewer collection system is subject to high infiltration and inflow rates due to infrastructure age, condition and proximity to FEMA flood hazard zones. High amounts of infiltration and inflow can lead to sanitary sewer overflows (SSOs) caused by capacity limitations. Most components of the sewer collection system are underground where the likelihood of security concerns is minimal.

4.2 EXISTING INFRASTRUCTURE

The City's wastewater collection system consists of approximately 109,600 linear feet of gravity sewer pipes, 60,500 linear feet of sewer force main pipes, and approximately 400 sewer manholes. Portions of the wastewater collection system are subject to high infiltration and inflow due to infrastructure age, condition, and proximity to the flood hazard zone.

4.3 REASONABLE GROWTH

Currently, about 61% of the City's residents are connected to the sewage collection system. However, the City is actively working towards connecting residents utilizing septic systems to the sewer collection system. This will mean that additional sewer collection infrastructure will need to be installed to collect and transport the sewage to the WWTP.

5. ALTERNATIVES CONSIDERED (WASTEWATER TREATMENT PLANT)

5.1 DESCRIPTION

The existing WWTP receives wastewater from approximately 61% (3,087) of the City's residents. DMRs indicate that the WWTP effluent is compliant with its discharge permitted. The WWTP is projected to receive increased volumetric flow rates and contaminants mass flows during a 20-year planning period that ends in 2046, as described in Section 2.

5.2 ALTERNATIVES ANALYSIS

This section describes three alternatives for addressing the projected increases in volumetric flow rates and contaminants mass flows during the 20-year planning period. The alternatives that are evaluated are (1) no WWTP improvements, (2) rehabilitation and expansion of the existing WWTP, and (3) construction of a new WWTP at a different location.

5.2.1 Alternative 1 – No Infrastructure Improvements or Expansion

Section 2.2 describes the City's existing WWTP. This sub-section describes the hydraulic and treatment capacities of existing unit processes. **Figure 5-1** is the City's existing WWTP layout.

Headworks

Municipal wastewater flows into existing headworks that consist of a static screen. According to the 5th Edition of *Wastewater Engineering Treatment and Recovery* by Metcalf and Eddy, static screens can process a hydraulic loading rate that is in the range of 10 to 30 gpm/ft^2. The existing static screen has a 35-ft^2 screen area which equates to a 49-gpm/ft^2 hydraulic loading rate at the projected peak hour flow of 2.46 MGD. Therefore, the existing screen does not provide sufficient hydraulic loading capacity to screen the projected peak hour flow. Consequently, it is not a viable alternative to provide no improvement to or expansion of the existing headworks.

According to FDEP Consent Order Number 22-2259, the City is required to construct new headworks with a 1.0-MGD capacity. A new static screen has been installed and is currently in operation with the current flows.

Screened Wastewater Pump Station

The existing screened wastewater pump station receives screened municipal wastewater and can convey a 0.75-MGD average daily volumetric flow rate to the SBRs according to the "Lift Station Operations & Maintenance Performance Report" prepared by Four Waters Engineering and dated August of 2019. During the 20-year planning period, the City's WWTP is projected to receive a 0.82-MGD average daily volumetric flow rate, 1.05-MGD maximum daily volumetric flow rate, and a 2.46-MGD peak hour volumetric flow rate. The projected volumetric flow rates exceed the capacity of the existing screened wastewater pump station; thus, it is not a viable alternative to provide no improvement to or expansion of this pump station.

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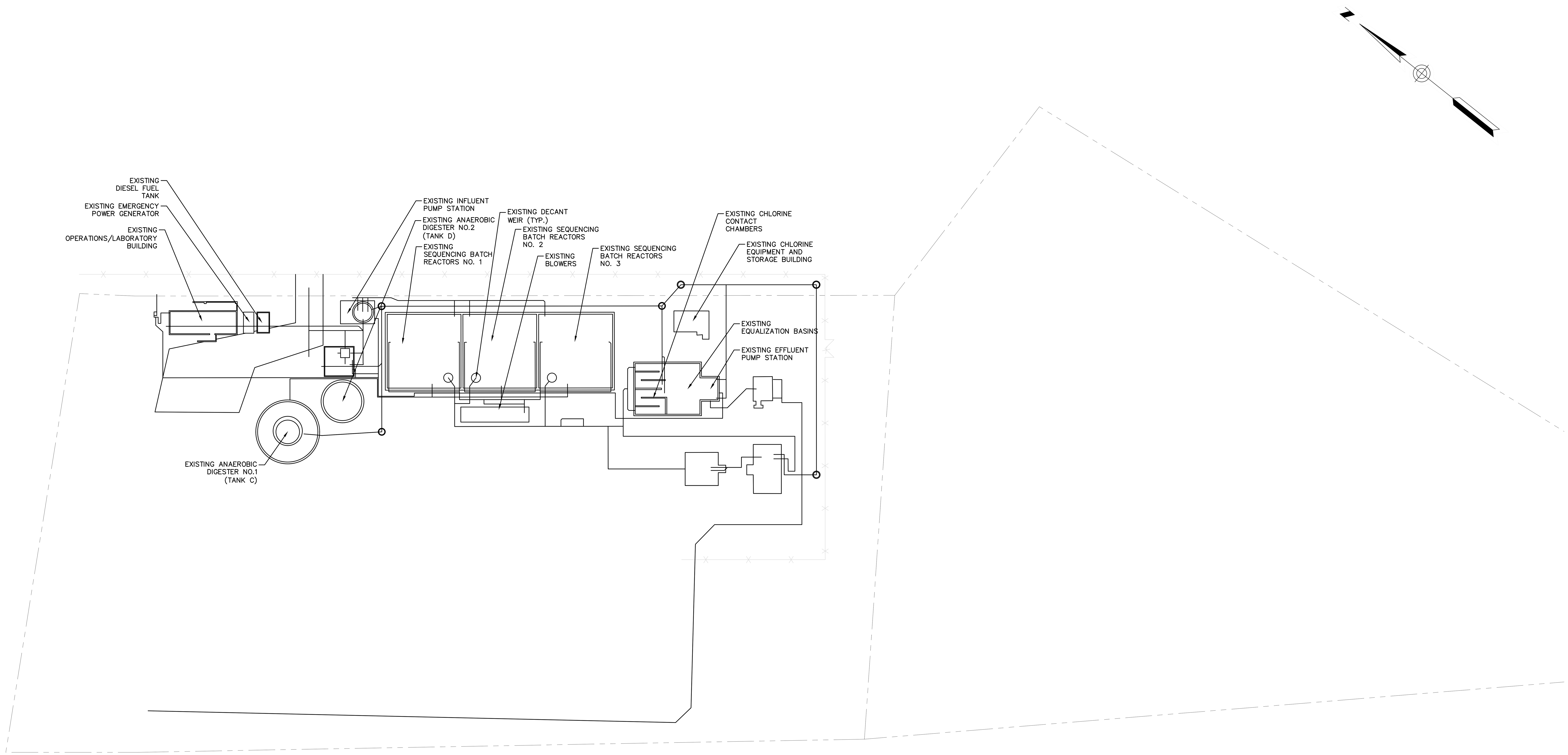
PLOT SCALE: 1:1



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CLIENT INFO:

CITY OF LABELLE FLORIDA

REV	MM/DD/YY	DESCRIPTION
01	6/12/24	FACILITY PLAN

JOB NO:	0234532.01
DATE:	DECEMBER 2023
SCALE:	1" = 50'
DESIGNED BY:	WAS
DRAWN BY:	WAS
CHECKED BY:	JB
FILENAME:	LABELLE EXISTING PLANT.dwg

DRAWING TITLE:

CIVIL
EXISTING WASTEWATER TREATMENT FACILITY

DRAWING NO:

FG 5-1

Secondary Treatment

According to the *Operation and Maintenance Manual* by Applied Technology & Management Inc., dated April 2001 the following is the design basis for the SBRs.

- Cycle duration: 4.8 hours
- Design mixed liquor suspended solids (MLSS) concentration; 4,500 MG TSS/L at minimum water depth
- Hydraulic retention time: 1.0 day at average water depth and average flow.
- Solids residence time (SRT): 12.5 days
- Net sludge yield: 0.84 lbs TSS/lbs $CBOD_5$ transformed
- WAS volumetric flow rate: 96 gpm (20,200 gpd)
- WAS TSS concentration: 10,000 MG TSS/L
- Decant volumetric flow rate: 1.67 MGD
- Oxygen requirements:
  - 1.25 lbs O_2/lbs TKN oxidized
  - Actual oxygen requirement (AOR) of 3,423 lbs/day
  - Air-flow rate per basin 1,609 standard cubic feet per minute (scfm)

The three existing SBRs were designed to treat 2,000 lbs $CBOD_5$/day and do not have the capacity to process the projected 4,482-lbs $CBOD_5$/day maximum monthly average daily mass flow. It is not a viable alternative to provide no improvement to or expansion of the secondary process.

Aerobic Digestion

According to the *Operation and Maintenance Manual* by Applied Technology & Management Inc., dated April 2001, the existing aerobic digester has a 0.203-MG volume and was designed to provide a 10-day SRT when receiving 1,685 lbs TSS/day and a 20,200-gpd WAS volumetric flow rate. The projected maximum monthly average daily $CBOD_5$ load is 4,482 lbs $CBOD_5$/day. The secondary process has a 0.84-lbs TSS/lbs $CBOD_5$ net sludge yield. The projected TSS mass flow in WAS that results from biological transformations ($MF_{TSS,BIO}$) is 3,765 lbs TSS/day when treating the projected maximum monthly average daily $CBOD_5$ mass flow.

The projected maximum monthly average daily TSS load is 4,360 lbs TSS/day, which corresponds to a 498-MG TSS/L concentration in the influent wastewater at the maximum monthly average daily volumetric flow rate. The existing SBRs will contain an estimated 938 MG TSS/L assuming the TSSinfluent wastewater contains 15% inert particles (75 MG TSS/L) at the maximum monthly average daily volumetric flow rate and TSS load when the SRT is 12.5 days. The estimated inert-particle concentration comprises 21% of the 4,500 MG TSS/L concentration in the SBR, therefore, the projected maximum monthly average daily TSS mass flow in WAS is 4,556 lbs TSS/day. Applying a 10,000-MG TSS/L WAS concentration, an estimated 54,596 gpd of WAS will be conveyed from the SBRs to the aerobic digester. This is 2.7-fold of the existing WAS pumping capacity and will reduce the aerobic digester SRT to 3.7 days. No improvements to or expansion of the existing solids handling infrastructure is a viable alternative but will reduce volatile solids destruction in the aerobic digester and require frequent dewatering and sludge hauling.

Disinfection

According to Florida Administrative Codes (F.A.C.s) 62-600 and 62-610, the existing LaBelle WWTP is required to provide high-level disinfection. According to the 5th Edition of *Wastewater Engineering Treatment and Resource Recovery* by Metcalf and Eddy, medium strength wastewater has a fecal coliform count in the order 10^4 to 10^6 No./100 mL. According to the F.A.C.s, a wastewater with this strength is required to have a minimum 25-minute hydraulic retention time (HRT) at the peak hour volumetric flow rate and maintain a minimum chlorine residual of at least 1.0 mg/L. There are two existing chlorine contact tanks (CCTs) at the LaBelle WWTP, each having a 0.014-MG volume. At the end of the 20-year planning period the WWTP is projected to receive a 2.46-MGD peak hourly volumetric flow rate. The existing CCTs will provide a 16-minute HRT at this volumetric flow rate. The increased volumetric flow rate will require additional chemical storage and dosing capabilities to maintain a 1.0-mg/L chlorine residual. Not expanding the existing CCTs is not a viable alternative.

Effluent Discharge

The existing WWTP's treated effluent is re-introduced to the environment through (1) 99 acres of RIBs that can receive up to 0.75 MGD, on an annual average day basis, and (2) a deep-injection well at the existing WTP and is permitted to receive up to 0.75 MGD, on an annual average day basis, of treated effluent from the LaBelle WWTP. The deep-injection well is not used because of its fouling potential. Both of these disposal alternatives are required to discharge the projected peak hourly volumetric flow rate. However, the deep injection well cannot be utilized because the existing WWTP does not have tertiary filtration. In its current configuration, the existing effluent discharged system is inadequate for receiving projected volumetric flow rates, and not improving the WWTP with tertiary filtration and/or expanding the existing RIBs is not a viable alternative.

Dewatering

According to Alfa Laval Inc., the existing belt filter press has a 1-meter-wide belt and can receive digested sludge with approximately 2.5% solids, or a 25,000-MG TSS/L concentration, and can receive a 75-gpm sludge flow when the sludge has a 25,000-MG TSS/L concentration. The belt filter press is no longer operational and a third-party has been retained by the City of LaBelle to dewater digested solids intermittently with a mobile process, which is a viable technical solution but is not considered to be cost effective.

5.2.2 Alternative 2 – Retrofitting and Expansion of the Existing WWTP

Alternative 2 identifies WWTP retrofits and improvements that will enable the LaBelle WWTP to process projected wastewater volumetric flow rates and contaminants loads. All upgrades discussed in this section can be seen in **Figure 5-2**.

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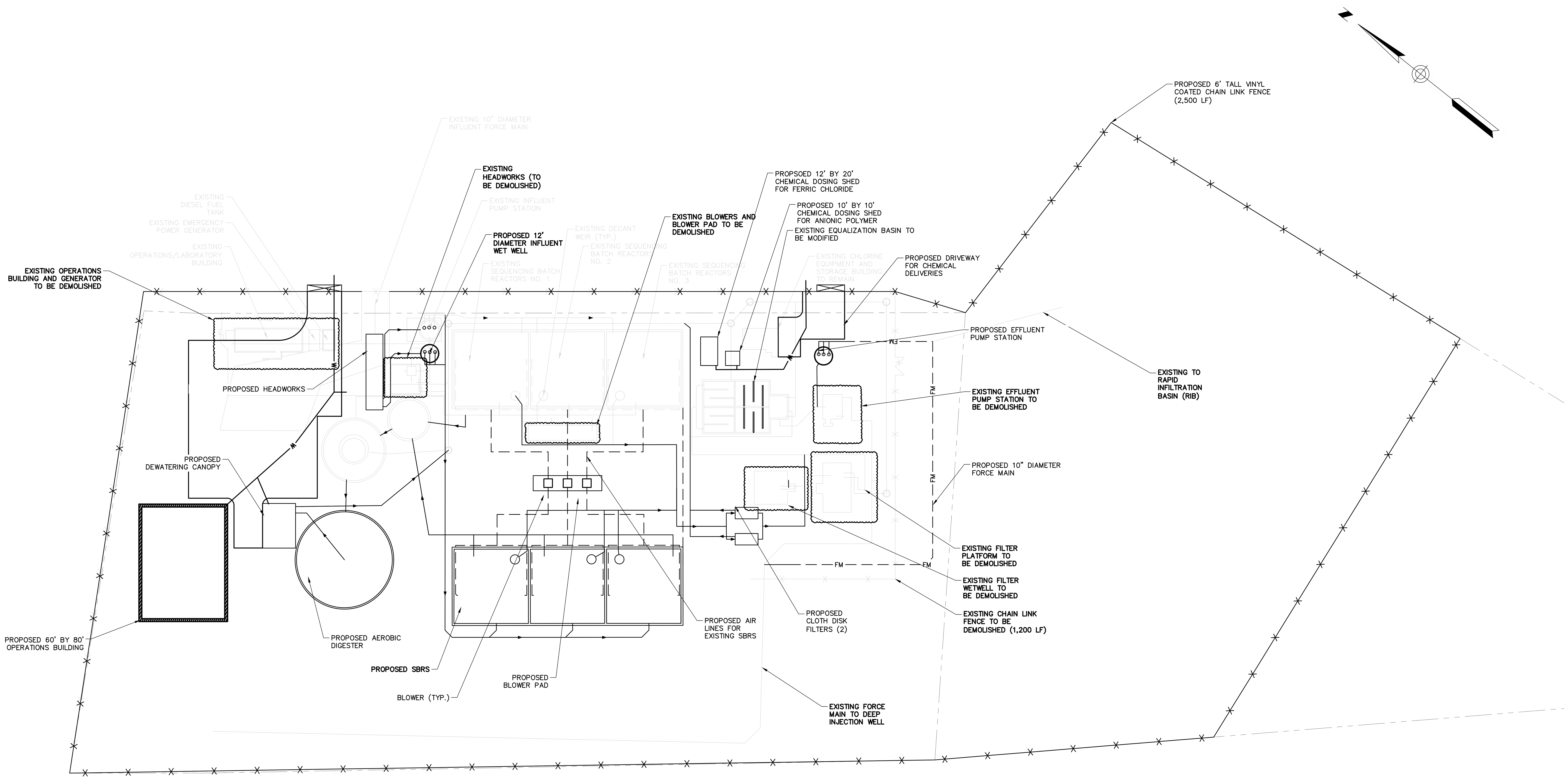
PLOT SCALE: 1:1



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CLIENT INFO:

CITY OF LABELLE FLORIDA

REV	MM/DD/YY	DESCRIPTION
01	06/12/24	FACILITY PLAN

JOB NO:	0234532.01
DATE:	DECEMBER 2023
SCALE:	1" = 50'
DESIGNED BY:	WAS
DRAWN BY:	WAS
CHECKED BY:	JB
FILENAME:	LABELLE EXISTING PLANT *.dwg

DRAWING TITLE:
CIVIL
UPGRADES TO EXISTING WASTEWATER TREATMENT FACILITY

DRAWING NO:
FG 5-2

Headworks

This alternative considers newly constructed headworks with a mechanical screen, bar rack, screenings dewatering and conveyance, grit removal, and grit dewatering and conveyance. The screening and grit-removal systems will process the projected 2.46-MGD peak hourly volumetric flow rate. Municipal and industrial wastewaters will flow to a splitter box through an existing 10-inch diameter force main. This splitter box will direct the wastewater to an in-channel mechanical screen and overflow to a channel with a bar rack. The mechanical screen will be placed in a concrete channel followed by a grit-removal unit. Overflows will discharge to a deep concrete channel with a bar rack. Screenings collected will discharge to a washpress for washing and compacting before discharging into a dumpster. The screened and de-gritted wastewater will flow from the headworks to a raw sewage pump station.

Screened Wastewater Pump Station

The existing screened wastewater pump station was designed to convey a 0.75-MGD average daily volumetric flow rate and a 1.85-MGD peak hourly volumetric flow rate. The projected average daily volumetric flow rate is 0.82 MGD and peak hourly volumetric flow is 2.46 MGD; therefore, the existing pumps require a 32% capacity increase to convey the projected peak hourly volumetric flow rate. The existing raw sewage pump station has two duty pumps that can convey 604 gpm (each) and one back-up pump that can convey 442 gpm.

If the existing screen wastewater pump station cannot accommodate larger pumps to meet the peak flow, an alternative would incorporate a new lift station adjacent to the existing screened wastewater pump station wet well to provide the necessary capacity. The new lift station would include a new valve vault, wet well and pumps, control panel, motor control center (MCC), internal piping, and be tied into the existing plant communications for operation.

Secondary Treatment

This alternative considers the addition of SBRs to treat the projected maximum monthly average daily $CBOD_5$ load of 4,482 lbs $CBOD_5$/day. Each of the three existing SBRs have a 0.251-MG volume at the 14-foot average side-water depth and a 0.198-MG volume at the 11-foot minimum side-water depth, which is the operating period during which WAS is removed from the bioreactors. The mass flow of TSS in WAS while treated in the projected maximum monthly average daily $CBOD_5$ load was calculated as 3,765 lbs TSS/day, or 1,707,766 g TSS/day. The total SBR volume ($V_{SBR,T}$) required to treat for projected maximum monthly average daily $CBOD_5$ load was calculated to be 1.25 MG based on an SRT of 12.5 days and a MLSS concentration of 4,500 g TSS/m^3.

Each of the existing SBRs have a 0.198-MG volume at a minimum 11-foot minimum side-water depth. Three additional SBRs that each have a 0.219-MG volume at a minimum 11-foot side-water depth will provide a total 1.25-MG volume. A WAS pumping requirement of approximately 45,000 gal/day were calculated based on the total reactor volume and assumptions stated above.

The existing WAS pumps are designed to convey 20,200 gpd; therefore, over double the existing WAS pumping capacity is required for the existing and proposed SBRs to process the projected maximum monthly average daily $CBOD_5$ load. New piping, valves, and other infrastructure associated with the proposed WAS pumps will also be required.

The SBRs will also require blowers, air piping and valves, and fine-bubble diffusers. Due to the increase of contaminant loading (from the original design), the existing SBRs will have a greater actual oxygen requirement (AOR) than the existing aerators can provide. Thus, a new, expanded, aeration system is proposed for the WWTP.

Positive displacement blowers will be utilized to meet process oxygen demand imposed by the projected maximum monthly average daily contaminants loads. The newly constructed SBRs will require process piping, mechanical fixtures, and instrumentation and controls required to fill, react, and decant in alternating SBRs.

Aerobic Digestion

The projected maximum monthly average daily TSS mass flow in WAS is 4,556 lbs TSS/day. Applying a 10,000-MG TSS/L WAS concentration, an estimated 54,596 gpd of WAS will be conveyed from the SBRs to aerobic digestion. A total 0.546-MG aerobic digester volume is required to provide a 10-day SRT. Assuming that the existing aerobic digesters can be re-used, a new additional 0.343-MG aerobic digester is required. The new aerobic digester will require process piping, mechanical fixtures, a blower, and coarse-bubble diffusers.

Tertiary Filtration

This alternative includes tertiary solids removal by cloth-disc filtration. The cloth-disc filters can be arranged in parallel to provide duty and standby units. These filters will be sized in accordance with the 5th Edition of *Wastewater Engineering Treatment and Resource Recovery* by Metcalf and Eddy, 2 and 5-gpm/ft^2 average and up to 6-gpm/ft^2 peak hydraulic loading rates.

Per F.A.C. 62-600, this tertiary filtration system requires ferric chloride and anionic polymer addition to coagulate and flocculate particles remaining in the secondary effluent. Both of these chemicals will require storage and dosing equipment. The ferric chloride and anionic polymer storage tanks are sized to provide 21 days of storage based on the annual average daily volumetric flow rate. Assuming that ferric chloride has a 0.18-mg/L density, the required ferric chloride storage-tank volume is approximately 3,500 gallons. Assuming that anionic polymer has a 0.02-mg/L density, the required anionic polymer storage-tank volume is approximately 900 gallons. These chemical-storage tanks will be in a building that is equipped with containment walls, plumbing, heating, ventilating, and air conditioning (HVAC), piping, valves, instrumentation, controls, and peristaltic pumps.

Disinfection

According to F.A.C. 62-600, high-level disinfection will be required. High-level disinfection consists of CCTs that provide a minimum 25-minute HRT at the projected 2.46-MGD peak hourly volumetric flow rate. This results in a total minimum CCT volume of approximately 43,000 gallons. The retrofit will include converting the existing equalization basins into additional CCT volume to achieve a contact time of 30.5 minutes at peak flow including baffle walls.

A sodium hypochlorite bulk storage tank system will be located adjacent to the existing CCT to provide a 21-day storage period. This disinfection system will require new sodium hypochlorite dosing pumps, controls, piping, and mechanical fixtures. A retrofit of the existing structure is required that includes upgrades to the HVAC system, and electrical system to ensure code compliance. The updated chlorine contact tank is shown in **Figure 5-2**.

Effluent Discharge

The disinfected water will flow to an effluent pump station that will discharge to the RIBs and deep injection well. The effluent pump station is required to discharge the maximum month average daily flow to the discharge locations four times per hour. The proposed effluent pump station consists of a wet well that contains three submersible pumps rated for the peak flow capacity. This pump station will require controls, piping, and mechanical fixtures.

Dewatering

The projected maximum monthly average daily TSS mass flow to the aerobic digesters is 4,556 lbs TSS/day, which consists of 3,765 lbs TSS/day as biomass and 791 lbs TSS/day of inert particles. Assuming 30% destruction of biomass during the 10-day SRT provided by the existing and proposed aerobic digesters, 3,427 lbs TSS/day will flow from the aerobic digesters to the new belt filter press. A sludge with 25,000 MG TSS/L will result in a 16,450-gpd volumetric flow rate of sludge to the dewatering equipment. The dewatering equipment would need to run for approximately five hours per workday, assuming a total of five working days per week and a volumetric flow rate of 16,450 gpd.

The dewatering equipment will require a canopy, dewatered solids conveyance, piping, polymer storage and dosing, and mechanical fixtures. The specific dewatering equipment will be selected during design based on sludge characteristics, piloting and desired operations.

Additional Site Upgrades

The site will also require additional upgrades for access, safety, and resiliency. The site will require a new driveway, electronic access gates, chain link fence, and a new laboratory and operations building. For the purposes of this report, it is assumed that the WWTP will require electrical upgrades. The site will likely require a new electrical service, diesel generator, MCC, and a supervisory control and data acquisition (SCADA) system.

The existing WWTP is located within a 100-year flood plain. To utilize funding from the Supplemental Funding for Hurricane Fiona and Ian (SAHFI) which has been incorporated into the Clean Water State Revolving Fund (CWSRF), proposed infrastructure must be located above the 500-year flood plain. The flood plain (FEMA Firmette) is shown in **Figure 5-3**. The FEMA Firmette figure does not include an established 500-year flood elevation. For the purposes of this report, it has been assumed that the 500-year flood elevation is located 2-feet above the 100-year flood plain which is elevation 14 in the area of the exiting WWTP. The cost analysis for this alternative includes provisions to raise Citrus Street from Route 80 to the existing WWTP as well as raising all critical infrastructure on the WWTP site. It should be noted that raising the road from Route 80 to the existing WWTP may not be possible without major land takings as there would be significant disruptions to private property to properly raise the road out of the 500-year flood plain. The monetary analysis of land takings was not analyzed as part of this report due to the complexity of land taking requirements. Flood resilience planning and design would need to be incorporated as part of the design phase for this alternative.

National Flood Hazard Layer FIRMette

FEMA

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/1/2024 at 1:20 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

5.2.3 Alternative 3 – Construction of a New WWTP

A third alternative for the City is to design and construct a new WWTP that includes a new influent raw sewage pump station, headworks with screening and grit removal, secondary process, tertiary filtration, disinfection, effluent discharge, aerobic digestion, sludge dewatering, and demolition of the existing WWTP. The secondary process can consist of an oxidation ditch or packaged system, secondary clarifiers, and return activated sludge (RAS) and WAS pump station. The final stage can consist of chlorine or ultraviolet (UV) disinfection and a final effluent pump station. This WWTP can be constructed on a City owned parcel that is adjacent to the existing WTP and is located on the southern side of the City on Route 29. The location of the new WWTP can be seen in **Figure 5-4 and Figure 5-5**.

New Master Lift Pump Station

The Master Lift Station located at the existing WWTP utilizes triplex submersible pumps. According to the City of LaBelle Lift Station Operation and Maintenance Performance Report by Four Waters Engineering dated January 6, 2020, Pump #1 is capable of 442 gpm, and Pumps #2 and #3 are both capable of 604 gpm.

The existing master lift station has a wet well diameter of 12-feet and a depth of 18-feet. However, according to the record drawings the lift station has a wet well depth of 5-feet (4,230 gallons) due to the location of the influent pipe entering the station. If the WWTP experiences a power loss, a 250 Kilowatt (KW) emergency standby generator powers the Master Lift Station and several other items at the WWTP.

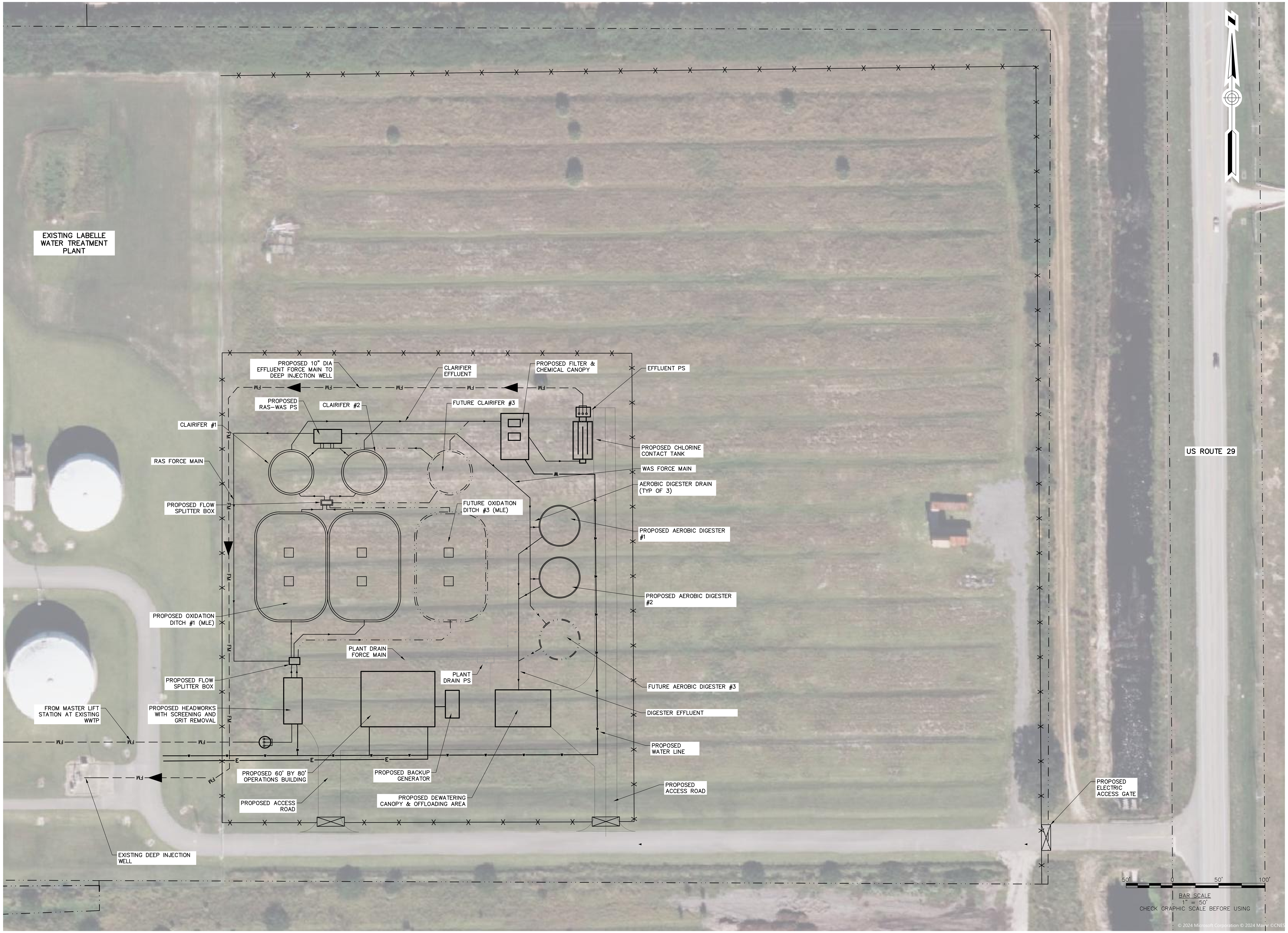
The average daily and peak flow for the proposed WWTP is 0.82 MGD and 2.46 MGD. The current master lift station does not have sufficient pump or wet well capacity to handle the projected peak flow. A new master lift pump station would be designed to transport raw wastewater from the existing WWTP site to the new WWTP located at the southern end of the City. The station would include submersible pumps ultimately capable of pumping a peak flow of 2.46 MGD. The new master lift pump station will include a new control panel, MCC, valve vault, internal piping, water connection, fencing, lighting, and radio communications. The top of the tank would extend to surface grade at a minimum of 1-foot above the 100-year flood. This lift station configuration would also include the installation of a new generator contained within a weatherproof, sound attenuated within a fenced area.

Currently there is existing 16,400 foot 8-inch polyvinyl chloride (PVC) reuse force main from the existing WWTP effluent to the injection well located adjacent to the proposed WWTP. It is proposed to convert this 8-inch PVC reuse line into pumping raw wastewater from the new master lift station to the new WWTP as shown in **Figure 5-4 and Figure 5-5**. An 8-inch PVC line has a hydraulic capacity of roughly 1200 GPM at 8 ft/s, leaving a remaining 450 GPM to reach a projected peak flow of 1700 GPM (2.46 MGD). The additional capacity will be handled in a future project by either providing a redundant larger force main and/or through equalization storage. This will be evaluated and confirmed during detailed design.

Headworks

This alternative considers newly constructed headworks with a mechanical screen, bar rack, screenings dewatering and conveyance, optional grit removal, and grit dewatering and conveyance. The screening and grit-removal systems will process the projected 2.46-MGD peak hourly volumetric flow rate. Municipal and industrial wastewater will flow from the raw sewage pump station to this headworks. The headworks will include an in-channel mechanical screen and overflow to a channel with a bar rack. Screened wastewater will potentially flow to a grit-removal unit if deemed necessary and or desirable. Screenings collected will discharge to a washpress for washing and compacting before discharging into a dumpster. Screenings and dewatered grit would be discharged into a dumpster and disposed offsite. The screened and de-gritted wastewater will flow from the headworks to a splitter box that will distribute flow to secondary treatment.

22x34
PLOT SCALE: 1:1



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REV	MM/DD/YY	DESCRIPTION
01	11/4/24	FACILITY PLAN

JOB NO:	0234532.01
DATE:	NOVEMBER 2024
SCALE:	1" = 50'
DESIGNED BY:	WAS
DRAWN BY:	WAS
CHECKED BY:	JB
FILENAME:	LABELLE PROPOSED PLANT *.dwg

DRAWING TITLE:

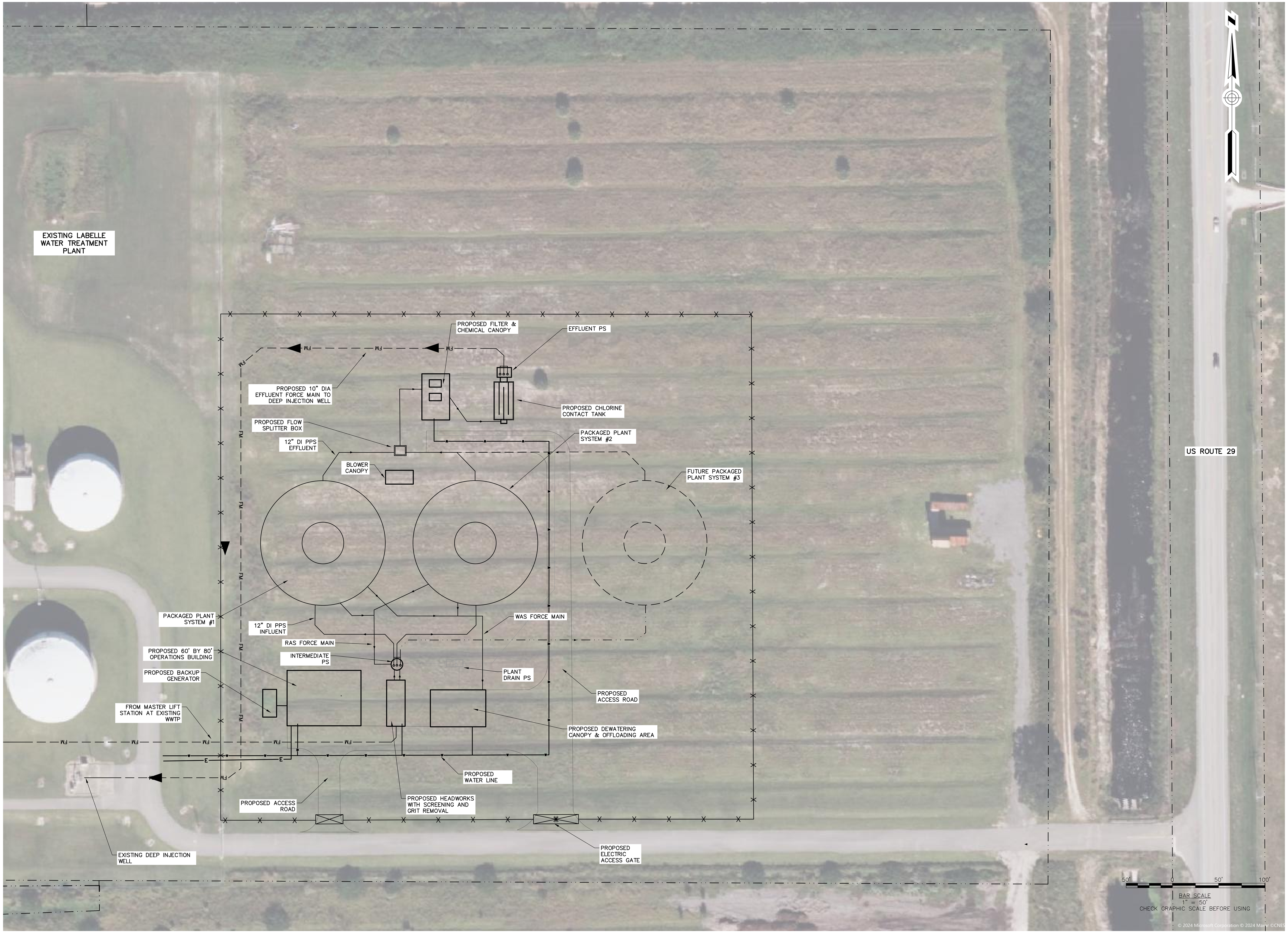
CIVIL
PROPOSED WASTEWATER TREATMENT FACILITY

DRAWING NO:

PR-02

03 03

22x34
PLOT SCALE: 1:1



\\woodardcurran.net\shared\Projects\0234532.01 LaBelle CW Fac Plan Asst Mgmt Plan\wip\Drawings\Civil\LABELLE PROPOSED PLANT ALT B_11-04-2024.dwg, Dec 02, 2024 - 10:19am ANDREW.CREW

Woodard & Curran
41 Hutchins Drive
Portland, Maine 04102
800.426.4262 | www.woodardcurran.com

PE SEAL:

NOT FOR CONSTRUCTION

CLIENT INFO:

CITY OF LABELLE FLORIDA

REV	MM/DD/YY	DESCRIPTION
01	11/4/24	FACILITY PLAN

JOB NO:	0234532.01
DATE:	NOVEMBER 2024
SCALE:	1" = 50'
DESIGNED BY:	WAS
DRAWN BY:	WAS
CHECKED BY:	JB
FILENAME:	LABELLE PROPOSED PLANT *.dwg

DRAWING TITLE:

CIVIL
PROPOSED WASTEWATER TREATMENT FACILITY

DRAWING NO:

PR-03

03 03

Secondary Treatment Alt. A – Bioreactor (Oxidation Ditch)

The oxidation ditch will be configured as a Modified Ludzack Ettinger (MLE) process with a 15-day SRT. Assumptions and calculations pertaining to secondary process design follow as shown in Table 5-1.

Table 5-1: Oxidation Ditch Design Characteristics

Design Criteria	Units	
Solids Retention Time (SRT)	days	20
Anoxic Zone Volume	%	30
Internal Mixed Liquor Recirculation Design Volumetric Flow Rate	% of MMADF	300
WAS Volumetric Flow Rate	% of MMADF	2.5
Reactor MLSS	mg/L	3,000
RAS Volumetric Flow Rate	% of MMADF	100
WAS Concentration	MG TSS/L	25 HP/10HP
Bioreactor Biomass	lbs TSS	35,180
Total Air Demand	lbs O_2/day	7,714

The total bioreactor volume (V_R) is the quotient of M_R divided by X_{WAS} and is 1.40 MG, which will consist of two 0.70-MG bioreactors. The bioreactors need to also incorporate a 30% increase in volume for the anoxic zones. This 30% increase leads to the design of two bioreactors each having a capacity of 0.91 MG or a total volume of 1.82 MG. The air demand will be provided by low-speed mechanical surface aerators or equivalent technology.

Secondary Treatment Alt. B – Packaged Treatment System

A field erected packaged treatment system is designed by the manufacturer to meet the effluent requirements in a cost-effective manner by having multiple treatments condensed to a singular structure as depicted in Figure 5-5. Preliminary design is based on two Evoqua 5-stage BNR DAVCO packaged plant systems providing full redundancy based on the projected future loadings and flows. Each packaged system includes a center clarifier, an anaerobic zone, a pre-anoxic zone, an aeration zone, a post-anoxic zone, a re-aeration zone, an equalization basin, and a digester zone. The packaged system includes ancillary equipment including blowers, mixers, pumps, etc. to provide a fully functioning system.

Secondary Process – Clarifier

Water and solids will flow from the oxidation ditches to a hydraulic control structure that includes two weirs, which will be utilized to direct flow to secondary clarifiers. The secondary clarifiers will be sized for a 1,000-gpd/ft^2 hydraulic loading rate at the peak hourly volumetric flow rate and 35-lbs TSS/day ft^2 solids loading rate at the peak solids loading rate, according to the 2014 Edition of *Recommended Standards for Wastewater Facilities* (i.e., 10 States Standards). The RAS pumps will have the capacity to convey 100% of the maximum monthly average daily volumetric flow rate. The peak volumetric flow rate of 3.51 MGD is the controlling design criterion for the secondary clarifiers. This flow rate will require a total secondary clarifier area of approximately 3,500-ft^2. The clarifiers will have energy dissipating inlets, sludge-scraping mechanisms, scum scrapers and pump.

Clarification is built into the packaged plant system and will feed sludge by gravity to the RAS/WAS pump station. The RAS pumps will return sludge to the intermediate pump station to the secondary treatment while the WAS pumps will pump sludge for dewatering.

Tertiary Filtering

This alternative includes tertiary solids removal by cloth-disc filtration. Approximately two cloth-disc filters can be arranged in parallel to provide duty and standby units. These filters will be sized according to the 5th Edition of *Wastewater Engineering Treatment and Resource Recovery* by Metcalf and Eddy, 2 and 5-gpm/ft^2 average and up to 6-gpm/ft^2 peak hydraulic loading rates.

Per F.A.C. 62-600, this tertiary filtration system requires ferric chloride and anionic polymer addition to coagulate and flocculate particles remaining in the secondary effluent. Both of these chemicals will require storage and dosing equipment. The ferric chloride and anionic polymer storage tanks will be sized to provide 21 days of storage based on the annual average daily volumetric flow rate. These chemical-storage tanks will be placed in a canopy structure that is equipped with containment walls, plumbing, HVAC, piping, valves, instrumentation, controls, and peristaltic pumps.

Disinfection

According to F.A.C. 62-600, high-level disinfection will be required. High-level disinfection consists of CCTs that provide a minimum 25-minute HRT with fecal coliforms less than 1,000 at the projected 2.46-MGD peak hourly volumetric flow rate. This results in a total minimum CCT volume of approximately 43,000 gallons. The new plant will incorporate two chlorine contact chambers with concrete baffles to meet the minimum contact time with full redundancy. A sodium hypochlorite bulk storage tank system will be designed to feed into the CCTs and provide a minimum 21-day storage period. This disinfection system will require new sodium hypochlorite dosing pumps, controls, piping, and mechanical fixtures.

Ultraviolet disinfection may be considered for disinfection purposes in lieu of chlorine disinfection. The UV system will be designed in accordance to F.A.C. 62-600 and shall have emergency power capabilities from the back-up generator to ensure continuous operation.

Effluent Discharge

The disinfected water will flow to an effluent pump station that includes a wet well with submersible pumps that will include the necessary controls, piping, and mechanical fixtures. The effluent pump station will discharge to an existing deep injection well located on the site adjacent to the newly constructed WWTP.

The maximum permitted volumetric flowrate to the deep injection well is currently 1625 GPM (2.34 MGD) which includes flow from reverse osmosis concentration from the City of Labelle Water Treatment Plant (WTP) and wastewater from the City of Labelle Wastewater Treatment Plant. The projected maximum reverse osmosis concentrate flow from the City of Labelle WTP is 200 GPM, which leaves a remaining 1,425 GPM (2.08 MGD) of capacity for the new WWTP discharge.

The deep injection well does have capacity to solely handle the future average daily flow of 0.82 MGD and the existing peak hourly flow of 1.85 MGD. However, additional discharge capacity will be required in the future to achieve the projected peak daily flow of 2.46 MGD. Further evaluation and investigation is required to determine the best and most affordable option for the City. One possible option may include expanding the effluent pump station to allow discharge to the existing RIBs. A conceptual cost estimate to route a new force main from the effluent pump station to the existing RIBs is included in **Table 5-2** below. This option requires effluent to be pumped approximately 3.5 miles to the location of the existing RIBs. Identifying a new discharge source closer to the proposed WWTP may be worth considering. While the City has sufficient capacity to discharge effluent wastewater to the existing deep injection well over the next 5-10 years (depending on growth rate), a facilities plan amendment is recommended in the future to evaluate alternatives for future disposal. This evaluation will need to include hydrogeological evaluation and capacity testing of the existing disposal options (existing RIBs and deep injection well).

Table 5-2: Alternative Discharge to Existing RIBs Cost Analysis

Item	Cost
Construction Base Cost (2024)	$10,110,000
Construction Contingency (10%)	$1,011,000
Engineering, Permitting and Design (10%)	$1,011,000
Engineering Service During Construction (8%)	$808,800
Fiscal, Legal and administrative (3%)	$303,300
Land Acquisition	$0
Construction Escalation to Mid-Point of Construction (end of 2030 20%)	$2,022,000
Construction Contingency (10%)	$1,011,000
Total Opinion of Capital Costs	**$16,277,100**

Aerobic Digestion

The projected maximum monthly average daily TSS mass flow in WAS is 4,556 lbs TSS/day. Applying a 10,000-MG TSS/L WAS concentration, an estimated 54,596 gpd of WAS will be conveyed from the secondary treatment to aerobic digestion via the WAS pump station. A total 0.546-MG aerobic digester volume is required to provide a 10-day SRT and will consist of two aerobic digesters. The new aerobic digesters will require process piping, mechanical fixtures, blowers, and coarse-bubble diffusers.

The packaged treatment system will have a zone for aerobic digestion that will ultimately pump WAS to the dewatering canopy as shown in **Figure 5-5**.

Dewatering

This alternative includes new dewatering equipment to further dry solids. The concept is based on a belt filter press with an approximate 150-gpm sludge dewatering capacity. The final dewatering technology and capacity will be finalized during design. The projected maximum monthly average daily TSS mass flow to the aerobic digesters is 4,556 lbs TSS/day, which consists of 3,765 lbs TSS/day as biomass and 791 lbs TSS/day of inert particles. Assuming 30% destruction of biomass during the 10-day SRT provided by the existing and proposed aerobic digesters, 3,427 lbs TSS/day will flow from the aerobic digesters to the new belt filter press. A sludge with 25,000 MG TSS/L will result in a 16,450-gpd volumetric flow rate of sludge to the dewatering equipment. The dewatering equipment will be designed to run for approximately five hours per work day assuming five working days per week.

This dewatering equipment will require a canopy, dewatered solids conveyance, polymer storage and dosing, piping, and mechanical fixtures.

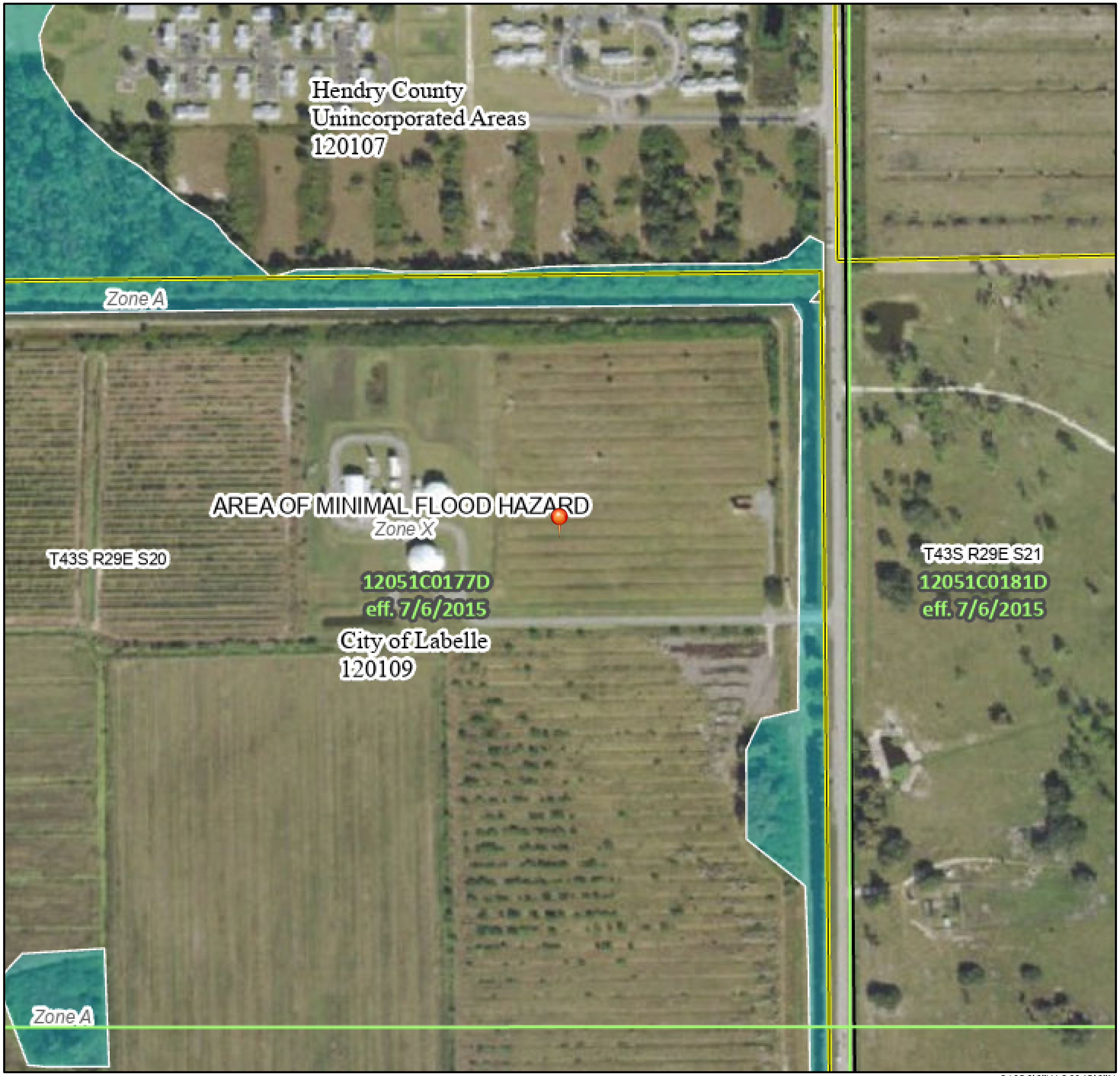
Additional Site Features

The site will require access, safety, and resiliency features that include a driveway, electronic access gates, chain link fence, a new laboratory and operations building, transformer, diesel generator, motor control center, lighting protection and a SCADA system.

National Flood Hazard Layer FIRMette

FEMA

81°26'43"W 26°43'38"N



81°26'6"W 26°43'6"N

Feet
0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Effective LOMRs
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
	8 Coastal Transect
	513 Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/7/2024 at 4:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

5.3 LAND REQUIREMENTS (SITES AND EASEMENTS)

5.3.1 Alternative 1 – No Infrastructure Improvements

This alternative does not require additional land requirements.

5.3.2 Alternative 2 – Retrofitting and Expansion of the Existing WWTP

This alternative will slightly increase the footprint of the existing WWTP, however, existing information received from the City and preliminary planning it seems as though the existing site has adequate capacity to accommodate a rehabilitated and expanded WWTP.

5.3.3 Alternative 3 – Construction of a New WWTP

Alternative 3 would require the City to build the new WWTP on a City owned parcel located on the southern side of the City. The City owns a parcel of land where the WTP is located. The City would have to prove ownership prior to beginning design. A new pump station would need to be constructed at the existing WWTP to pump influent to the new WWTP. This plan includes reutilizing the existing reuse force main to pump raw influent to the new WWTP.

5.4 POTENTIAL CONSTRUCTION REQUIREMENTS

5.4.1 Alternative 1 – No Infrastructure Improvements

Since there is no construction for this alternative there are no potential construction requirements.

5.4.2 Alternative 2 – Retrofitting and Expansion of the Existing WWTP

The existing WWTP would have to remain online to both treat and dispose of effluent during construction. Construction activities will be staged to minimize impacts to the treatment process and maintain effluent requirements.

5.4.3 Alternative 3 – Construction of a New WWTP

The existing WWTP would have to remain online to both treat and dispose of effluent during construction. There should be no significant disruptions to the treatment process and the new WWTP would be built on a vacant site on the southern end of the City.

5.5 SUSTAINABILITY CONSIDERATIONS

All alternatives will incorporate sustainability considerations to give the City the most cost effective and robust infrastructure.

5.6 CAPITAL COST ESTIMATES

This section describes the associated costs for the three WWTP alternatives for addressing the projected increases in volumetric flow rates and contaminant loads during the 20-year planning period.

5.6.1 Alternative 1 – No Infrastructure Improvements

Alternative 1 proposes to make no infrastructure improvements which would cost $0. However, this alternative is not feasible due to the current Florida Administrative Consent Order. According to the Consent Order a daily fine of $15,000 would be incurred if the respondent does not complete the construction of an upgraded WWTP by December 15, 2026. The fines would be incurred during the planning period by the City from December 15, 2026 until December 31 2046 (7,321 days) for a total amount of $109,815,000. There could also be other fines due to environmental and health impacts. This alternative is not viable.

5.6.2 Alternative 2 – Retrofitting and Expansion of the Existing WWTP

Alternative 2 proposes to retrofit the existing WWTP which would cost a total of $42,195,000. See **Table 5-3** below for a detailed cost estimate.

Table 5-3: Alternative 2 Retrofit and Expansion of the Existing WWTP Capital Cost Analysis

Item	Cost
Construction Base Cost (2024)	$28,510,000
Construction Contingency (10%)	$2,851,000
Engineering, Permitting and Design (10%)	$2,851,000
Engineering Service During Construction (8%)	$2,280,800
Fiscal, Legal and administrative (3%)	$855,300
Land Acquisition	$0
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$1,995,700
Construction Contingency (10%)	$2,851,000
Total Opinion of Capital Costs	**$42,195,000**

5.6.3 Alternative 3 – Construction of a New WWTP

Alternative 3 is based on a new WWTP Alternative A as shown in **Figure 5-4** at a parcel located on the southern side of the City which would cost a total of $56,200,000. See **Table 5-4** below for a detailed cost estimate.

Table 5-4: Construction of a New WWTP Alternative A Capital Cost Analysis

Item	Cost
Construction Base Cost (2024)	$44,530,000
Construction Contingency (10%)	$4,453,000
Engineering, Permitting and Design (10%)	$4,453,000
Engineering Service During Construction (8%)	$3,562,400
Fiscal, Legal and administrative (3%)	$1,335,900
Land Acquisition	$0
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$3,117,100
Construction Contingency (10%)	$4,453,000
Total Opinion of Capital Costs	**$65,904,000**

Alternative 4 is based on a new WWTP Alternative B as shown in **Figure 5-5** at a parcel located on the southern side of the City which would cost a total of $57,809,000. See **Table 5-5** below for a detailed cost estimate.

Table 5-5: Construction of a New WWTP Alternative B Capital Cost Analysis

Item	Cost
Construction Base Cost (2024)	$39,060,000
Construction Contingency (10%)	$3,906,000
Engineering, Permitting and Design (10%)	$3,906,000
Engineering Service During Construction (8%)	$3,124,800
Fiscal, Legal and administrative (3%)	$1,171,800
Land Acquisition	$0
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$2,734,200
Construction Contingency (10%)	$3,906,000
Total Opinion of Capital Costs	**$57,809,000**

5.7 O&M ESTIMATES

Analyzing the life-cycle costs of each alternative provides a more in-depth comparison of costs that may be associated with each alternative. The life-cycle cost analysis (LCCA) considers capital cost and operational costs over the design life for each alternative. In addition, the salvage value of the remaining assets at the end of the project's 20-year period were subtracted from the initial investment and replacement cost. The net present value (NPV) of operational and maintenance costs were then added to the capital investment to arrive at a total "life-cycle cost". The table below provides a summary of the common factors used for evaluation of all the alternatives considered.

Table 5-6: Common Life Cycle Cost Analysis Criteria

Common Life Cycle Cost Criteria	Value
Electricity Cost ($/Kwh)	$0.12
Real Federal Discount Rate (i)	5.5%
Planning Period in Years (n)	20

The construction, non-construction, operation and maintenance, and short lived (reserve) asset costs for each alternative are presented in the following tables. All costs have been converted to present day dollars.

5.7.1 Alternative 1 – No Infrastructure Improvements

No life cycle cost analysis was conducted for this alternative.

5.7.2 Alternative 2 – Retrofitting and Expansion of the Existing WWTP

The table below provides life-cycle cost comparisons for the WWTP Alternative 2.

Table 5-7: Alternative 2 LCCA

Item	Cost
Initial Capital Cost (Construction)	$42,195,000
Annual Future Replacement Cost	$16,600
Annual O&M costs[1]	$214,900
Present Value of O&M Costs	$4,630,000
Salvage Value	$752,600
Present Value of Salvage Value	$8,994,000
Total Net Present Value	**$37,850,000**

Notes: [1]O&M costs include energy costs for equipment as part of this upgrade as well as annual equipment repairs.

5.7.3 Alternative 3 – Construction of a New WWTP

The table below provides life-cycle cost comparisons for the WWTP Alternative 3.

Table 5-8: Alternative 3 LCCA

Item	Cost
Initial Capital Cost (Construction)	$65,904,000
Annual Future Replacement Cost	$18,400
Annual O&M costs[1]	$363,100
Present Value of O&M Costs	$7,630,000
Salvage Value	$760,000
Present Value of Salvage Value	$9,083,000
Total Net Present Value	**$64,470,000**

Notes: [1]O&M costs include energy costs for equipment as part of this upgrade as well as annual equipment repairs.

Table 5-9: Alternative 4 LCCA

Item	Cost
Initial Capital Cost (Construction)	$57,809,000
Annual Future Replacement Cost	$18,400
Annual O&M costs[1]	$363,100
Present Value of O&M Costs	$7,630,000
Salvage Value	$760,000
Present Value of Salvage Value	$9,083,000
Total Net Present Value	**$56,380,000**

Notes: [1]O&M costs include energy costs for equipment as part of this upgrade as well as annual equipment repairs.

5.8 RECOMMENDED ALTERNATIVE

It is recommended to proceed with Alternative 4 in order to construct the new WWTP out of the 500-year flood plain and to have their major water infrastructure (Water Treatment Plant & Wastewater Treatment Plant) concentrated on the southern side of the City. The proposed location of the WWTP also has greater room for future expansion than the existing WWTP site.

6. ALTERNATIVES CONSIDERED (LIFT STATION 3)

6.1 EXISTING CONDITIONS

As outlined in Section 3 above, LS-3 currently utilizes duplex submersible pumps and has a 10-foot diameter wet well with a 20-foot depth. Additional information regarding the existing conditions of LS-3 can be found in Section 3.

The City has purchased a dedicated 100-kw generator for LS-3 which is currently in storage. The addition of emergency power to this lift station would help protect the City from potential wastewater backups and overflows. Also, according to the *Recommended Standards for Wastewater Facilities* written by The Board of State and Provincial Public Health and Environmental Managers (i.e., Ten State Standards) adequate emergency storage must be provided if no emergency pumping is provided. LS-3 will incorporate a backup generator so additional emergency storage will not be required.

6.2 DESIGN CRITERIA

As described in Section 3.2.1 the average daily flow for LS-3 was 110,663 gpd and the addition of septic to sewer will add approximately 205,334 gpd. Additionally, the City is expected to grow at 0.87% per year during the 24-year planning period. The future flow projection for LS-3 is estimated to be 381,997 gpd.

It is assumed that the gravity sewer entering the lift station enters the station approximately 8-feet below the existing grade and 1-foot is required at the bottom of the wet well to keep the pumps submerged, which equates to the lift station having an existing 10-foot diameter wet well volume of 6,462 gallons. This assumption must be made as there are no record plans of the existing lift station. The updated lift station will be designed to provide a maximum of four pump starts per hour for a maximum run time of 15 minutes per hour, while incorporating adequately sized pumps for the estimated total dynamic head. The existing force main is 2,100-feet and is made of 10-inch diameter PVC pipe. It is assumed that minor losses (bends) comprise of 10% of the major losses in the pipe. According to the 10 State Standards and General Engineering Practices pressure within the force main should be below 100 pounds per square inch (psi) and velocity within the force main should be between 2 and 8-feet per second.

The updated lift station would incorporate the 100kw generator that the City has already purchased and slated for installation at the LS-3 site. The generator is to provide redundancy in the power supply to the pump station. The generator also allows for the wet well to be smaller due to the reduction in emergency storage.

6.2.1 Alternative 1 – Do Nothing

Alternative No. 1 would lead to sewer overflows and fines which are not acceptable. Therefore, this option was not fully evaluated.

6.2.2 Alternative 2 – Retrofitted Lift Station

Alternative No. 2 would incorporate the design and construction of a retrofitted LS-3. Currently the lift station has a wet well volume of 6,462 gallons meaning an additional 9,498 gallons of storage would be required. To meet this requirement a new 10,000-gallon concrete tank would be installed next to the existing 10-foot diameter wet well. The bottom of the proposed tank would then be connected via a sewer pipe to the existing wet well. Two risers would extend from the top of the new wet well to the existing surface grade. Both the new wet well and the existing wet well would be set 1-foot above existing grade to ensure they are 1-foot above the 100-year flood elevation.

The new lift station would utilize two submersible pumps each with a pumping capacity of approximately 1,100 gpm. The new lift station would also include a new valve vault, control panel, MCC, internal piping, water connection, fencing, lighting, and radio communications. This lift station configuration would install the previously bought generator in a weatherproof, sound attenuated within the fenced area of the pump station.

6.2.3 Alternative 3 – Construction of a New Lift Station

Alternative No. 3 is the replacement of LS-3 with a new pump station utilizing submersible pumps. The station would incorporate duplex submersible pumps capable of 1,100 gpm. This lift station would be designed to have a wet well capacity of 15,960 gallons. To meet this capacity two new 12-foot diameter wet wells would be installed to a depth of 20 feet. The two wet wells would be connected via a sewer pipe.

The new lift station would also include a new control panel, MCC, valve vault, internal piping, water connection, fencing, lighting, and radio communications. This lift station configuration would place the previously bought generator in a weatherproof, sound attenuated, enclosure outside of the pump station.

6.3 LAND REQUIREMENTS (SITES AND EASEMENTS)

6.3.1 Alternative 1 – Do Nothing

No additional land requirements or easements would be required for this alternative.

6.3.2 Alternative 2 – Retrofitted Lift Station

Temporary construction easements and possibly permanent easements would be likely for the construction of a retrofitted LS-3. The land area required for this pump station would be slightly larger than the land area currently required for LS-3 due to the addition of an additional wet well, valve vault, generator and additional appurtenances. Detailed land requirements would be calculated during the preliminary design phase and are not incorporated as part of this Facilities Plan.

6.3.3 Alternative 3 – Construction of a New Lift Station

Additional land would likely be required for the construction of a new LS-3. The land area required for this pump station would be larger than the land area currently required for LS-3 due to the addition of the new wet well(s), valve vault, generator and appurtenances. New land would likely be required as it would be more economical to leave the existing station online during the construction of the new lift station. This would reduce construction costs as bypass pumping would not be required. Detailed land requirements would be calculated during the preliminary design phase and are not incorporated as part of this Facilities Plan.

6.4 POTENTIAL CONSTRUCTION REQUIREMENTS

6.4.1 Alternative 1 – Do Nothing

Since there is no construction for this alternative there are no potential construction requirements.

6.4.2 Alternative 2 – Retrofitted Lift Station

Alternative 2 would likely require some degree of bypass pumping to keep sewage flowing from LS-3 to the WWTP. A detailed analysis of all bypass pumping and construction requirements would be required during the design phase.

6.4.3 Alternative 3 – Construction of a New Lift Station

Alternative 3 would most likely keep the existing LS-3 online during the construction phase. This would allow for the new station to be built without a disruption of sewage flow. A detailed analysis of all construction phasing and requirements would be required during the design phase.

6.5 SUSTAINABILITY CONSIDERATIONS

All alternatives will incorporate sustainability considerations to give the City the most cost effective and robust infrastructure.

6.6 CAPITAL COST ESTIMATES

6.6.1 Alternative 1 – Do Nothing

Alternative 1 proposes to do no infrastructure improvements to LS-3 which would cost $0. However, this alternative is not feasible as the existing lift station would fail and could possibly result in pollution and fines.

6.6.2 Alternative 2 – Retrofitted Lift Station

Alternative 2 proposed to retrofit the existing LS-3 which would cost $888,400. See **Table 6-1** below for a cost estimate.

Table 6-1: Alternative 2 Retrofit of Lift Station 3 Capital Cost Analysis

Item	Cost
Construction Base Cost (2024)	$580,000
Construction Contingency (10%)	$58,000
Engineering, Permitting and Design (10%)	$58,000
Engineering Service During Construction (8%)	$46,400
Fiscal, Legal and administrative (3%)	$17,400
Land Acquisition	$30,000
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$40,600
Construction Contingency (10%)	$58,000
Total Opinion of Capital Costs	**$888,400**

6.6.3 Alternative 3 – Construction of a New Lift Station

Alternative 3 includes construction of a new lift station proposed which would cost $844,000. See **Table 6-2** below for a cost estimate.

Table 6-2: Alternative 3 Construction of a New Lift Station 3 Capital Cost Analysis

Item	Cost
Construction Base Cost (2024)	$550,000
Construction Contingency (10%)	$55,000
Engineering, Permitting and Design (10%)	$55,000
Engineering Service During Construction (8%)	$44,000
Fiscal, Legal and administrative (3%)	$16,500
Land Acquisition	$30,000
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$38,500
Construction Contingency (10%)	$55,000
Total Opinion of Capital Costs	**$844,000**

6.7 O&M ESTIMATES

Analyzing the life-cycle costs of each alternative provides a more in-depth comparison of costs that may be associated with each alternative. The LCCA considers capital cost and operational costs over the design life for each alternative. In addition, the salvage value of the remaining assets at the end of the project's 20-year period were subtracted from the initial investment and replacement cost. The NPV of operational and maintenance costs were then added to the capital investment to arrive at a total "life-cycle cost". The table below provides a summary of the common factors used for evaluation of all the alternatives considered.

Table 6-3: Common Life Cycle Cost Analysis Criteria

Common Life Cycle Cost Criteria	Value
Electricity Cost ($/kWh)	$0.12
Real Federal Discount Rate (i)	5.5%
Planning Period in Years (n)	20

The construction, non-construction, operation and maintenance, and short lived (reserve) asset costs for each alternative are presented in the following tables. All costs have been converted to present day dollars.

6.7.1 Alternative 1 – Do Nothing

No life cycle cost analysis was conducted for this alternative.

6.7.2 Alternative 2 – Retrofitted Lift Station 3

The table below provides life-cycle cost comparisons for the LS-3 Alternative 2.

Table 6-4: Alternative 2 Retrofit of Lift Station LCCA

Item	Cost
Initial Capital Cost (Construction)	$888,400
Annual Future Replacement Cost	$5,100
Annual O&M costs[1]	$22,500
Present Value of O&M Costs	$552,000
Salvage Value	$3,500
Present Value of Salvage Value	$42,000
Total Net Present Value	**$1,410,000**

Notes: [1]O&M costs include energy costs for pumping equipment and annual wet well cleaning.

6.7.3 Alternative 3 – Construction of a New Lift Station

The table below provides life-cycle cost comparisons for the LS-3 Alternative 3.

Table 6-5: Alternative 3 Construction of New Lift Station 3 LCCA

Item	Cost
Initial Capital Cost (Construction)	$844,000
Annual Future Replacement Cost	$5,100
Annual O&M costs[1]	$22,500
Present Value of O&M Costs	$552,000
Salvage Value	$4,200
Present Value of Salvage Value	$51,000
Total Net Present Value	**$1,360,000**

Notes: [1]O&M costs include energy costs for pumping equipment and annual wet well cleaning.

6.8 RECOMMENDED ALTERNATIVE

Alternative 3 – Construction of a new LS-3 is the recommended alternative. Alternative 3 is the most cost-effective option that provides reliability and resilience for the sewer shed serviced by LS-3. Utilizing the existing infrastructure at the LS-3 site costs more than building a whole new LS-3, therefore Alternative 3 is recommended.

7. ALTERNATIVES CONSIDERED (LIFT STATION 4)

7.1 EXISTING CONDITIONS

Currently LS-4 utilizes duplex submersible pumps. LS-4 has a wet well diameter of 6-feet and a depth of 18-feet from existing grade. Additional information regarding the existing conditions of LS-4 can be found in Section 3. Currently LS-4 does not have a dedicated emergency generator. The addition of emergency power to this lift station would help protect the City from potential wastewater backups and overflows.

7.2 DESIGN CRITERIA

As outlined in Section 3 LS-4 currently utilizes duplex submersible pumps and has a 6-foot diameter wet well with an 18-foot depth. As described in Section 3.2.2, the average daily flow for LS-4 is 53,603 gpd and the addition of septic to sewer will add approximately 36,952 gpd. Additionally, the City is expected to grow at a rate of 0.87% per year.

It is assumed that the gravity sewer entering the pump station enters the station 8-feet below surface grade and 1-foot is required at the bottom to keep the pump submerged which equated to the lift station having a wet well volume of 1,904 gallons. This assumption must be made because there are no record plans of the existing pump station. The updated lift station will be designed to provide a maximum of four pump starts per hour and for a maximum run time of 15 minutes per hour while incorporating adequately sized pumps for the estimated total dynamic head. The existing 6-inch force main has sufficient capacity to handle the projected flow while maintaining 10 state standards and general engineering practices of pressure below 100 psi and velocity between 2 and 8 feet per second.

7.2.1 Alternative 1 – Do Nothing

Under the expected future flows the existing list station could become overwhelmed causing sewer overflows and fines which are not acceptable. Therefore, this option was not fully evaluated.

7.2.2 Alternative 2 – Retrofit of Existing Lift Station

Alternative No. 2 would incorporate the design and construction of a retrofitted LS-4. Currently the lift station has a wet well volume of 1,904 gallons meaning an additional 6,076 gallons of storage would be required. To meet this requirement, a new 12-foot diameter concrete wet well would be installed next to the existing 6-foot diameter wet well. The bottom of the proposed tank would then be connected via a 12-inch diameter sewer pipe to the existing wet well. The top of the tank would extend to surface grade.

The new lift station would utilize two submersible pumps each with a pumping capacity of approximately 550 gpm. The new lift station would also include a new valve vault, control panel, MCC, internal piping, water connection, fencing, lighting, and radio communications. This lift station configuration would also include the installation of a new generator contained within a weatherproof, sound attenuated within the fenced area of the pump station.

7.2.3 Alternative 3 – Construction of a New Lift Station

Alternative No. 3 is the replacement of LS-4 with a new pump station utilizing submersible pumps. The station would incorporate duplex submersible pumps with a working wet well volume of approximately 2,000 gallons. Sizing of pump and wet well to be confirmed during design.

The new lift station would also include a new control panel, MCC, valve vault, internal piping, water connection, fencing, lighting, and radio communications. This lift station configuration would also include the installation of a new generator contained within a weatherproof, sound attenuated within the fenced area of the pump station.

7.3 LAND REQUIREMENTS (SITES AND EASEMENTS)

7.3.1 Alternative 1 – Do Nothing

No additional land requirements or easements would be required for this alternative.

7.3.2 Alternative 2 – Retrofit of Existing Lift Station

Temporary construction easements and possible permanent easements would be likely for the construction of the lift station outlined in Alternative No. 2 for LS-4. The land area required for this pump station would be slightly larger than the land area currently required for LS-4 due to the addition of the generator and slightly larger wet well. Detailed land requirements would be calculated during the preliminary design phase and are not incorporated as part of this Facilities Plan.

7.3.3 Alternative 3 – Construction of a New Lift Station

Temporary construction and easements and possible permanent easements would be likely for the construction of the lift station outlined in Alternative No. 3 for LS-4. The land area required for this pump station would be larger than the land currently required for LS-4 due to the wet well volume increase. It would also be more economical for the existing lift station to remain online during the construction of the new lift station. This would mean building the new lift station on land next to the lift station which is likely not City property.

7.4 POTENTIAL CONSTRUCTION REQUIREMENTS

7.4.1 Alternative 1 – Do Nothing

Since there is no construction for this alternative there are no potential construction requirements.

7.4.2 Alternative 2 – Retrofit of Existing Lift Station

Alternative 2 would likely require some degree of bypass pumping to keep sewage flowing from LS-4 to the WWTP. A detailed analysis of all bypass pumping and construction requirements would be required during the design phase.

7.4.3 Alternative 3 – Construction of a New Lift Station

Alternative 3 would most likely keep the existing LS-4 online during the construction phase. This would allow for the new station to be built without a disruption of sewage flow. A detailed analysis of construction phasing and requirements would be required during the design phase.

7.5 SUSTAINABILITY CONSIDERATIONS

All alternatives will incorporate sustainability considerations to give the City the most cost effective and robust infrastructure.

7.6 CAPITAL COST ESTIMATES

7.6.1 Alternative 1 – Do Nothing

Alternative 1 proposes to make no infrastructure improvements to LS-4, which would cost $0. However, this alternative is not feasible as the existing lift station could fail and could result in pollution and fines.

7.6.2 Alternative 2 – Retrofit of Existing Lift Station

Alternative 2 proposed to retrofit the existing LS-4. See **Table 7-1** below for a detailed cost estimate.

Table 7-1: Alternative 2 Retrofit of Lift Station 4

Item	Cost
Construction Base Cost (2024)	$790,000
Construction Contingency (10%)	$79,000
Engineering, Permitting and Design (10%)	$79,000
Engineering Service During Construction (8%)	$63,200
Fiscal, Legal and administrative (3%)	$23,700
Land Acquisition	
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$55,300
Construction Contingency (10%)	$79,000
Total Opinion of Capital Costs	**$1,169,200**

7.6.3 Alternative 3 – Construction of a New Lift Station

Alternative 3 proposed to build a new LS-4. See **Table 7-2** below for a detailed cost estimate.

Table 7-2: Alternative 3 Construction of a New Lift Station 4

Item	Cost
Construction Base Cost (2024)	$560,000
Construction Contingency (10%)	$56,000
Engineering, Permitting and Design (10%)	$56,000
Engineering Service During Construction (8%)	$44,800
Fiscal, Legal and administrative (3%)	$16,800
Land Acquisition	
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$39,200
Construction Contingency (10%)	$56,000
Total Opinion of Capital Costs	**$828,800**

7.7 O&M ESTIMATES

Analyzing the life-cycle costs of each alternative provides a more in-depth comparison of costs that may be associated with each alternative. The LCCA considers capital cost and operational costs over the design life for each alternative. In addition, the salvage value of the remaining assets at the end of the project's 20-year period were subtracted from the initial investment and replacement cost. The NPV of operational and maintenance costs were then added to the capital investment to arrive at a total "life-cycle cost". The table below provides a summary of the common factors used for evaluation of all the alternatives considered.

Table 7-3: Common Life Cycle Cost Analysis Criteria

Common Life Cycle Cost Criteria	Value
Electricity Cost ($/kWh)	$0.12
Real Federal Discount Rate (i)	5.5%
Planning Period in Years (n)	20

The construction, non-construction, operation and maintenance, and short lived (reserve) asset costs for each alternative are presented in the following tables. All costs have been converted to present day dollars.

7.7.1 Alternative 1 – Do Nothing

No life cycle cost analysis was conducted for this alternative.

7.7.2 Alternative 2 – Retrofit of Existing Lift Station

The table below provides life-cycle cost comparisons for the LS-4 Alternative 2.

Table 7-4: Alternative 2 Retrofit Lift Station 4 LCCA

Item	Cost
Initial Capital Cost (Construction)	$1,169,200
Annual Future Replacement Cost	$4,900
Annual O&M costs[1]	$9,400
Present Value of O&M Costs	$286,000
Salvage Value	$3,500
Present Value of Salvage Value	$42,000
Total Net Present Value	**$1,420,000**

Notes: [1]O&M costs include energy costs for pumping equipment and annual wet well cleaning.

7.7.3 Alternative 3 – Construction of a New Lift Station

The table below provides life-cycle cost comparisons for the LS-4 Alternative 3.

Table 7-5: Alternative 3 Construction of New Lift Station 4 LCCA

Item	Cost
Initial Capital Cost (Construction)	$828,800
Annual Future Replacement Cost	$4,600
Annual O&M costs[1]	$9,400
Present Value of O&M Costs	$280,000
Salvage Value	$3,500
Present Value of Salvage Value	$42,000
Total Net Present Value	**$1,080,000**

Notes: [1]O&M costs include energy costs for pumping equipment and annual wet well cleaning.

7.8 RECOMMENDED ALTERNATIVE

Alternative 3 – Construction of a New Lift Station 4 is the recommended alternative. Alternative 3 is the most cost-effective option that provides reliability and resilience for the sewer shed serviced by LS-4. Utilizing the existing infrastructure at the LS-4 site costs more than building a new LS-4 and thus Alternative 3 is recommended.

8. ALTERNATIVES CONSIDERED (SEWER COLLECTION SYSTEM)

8.1 EXISTING CONDITIONS

The City of LaBelle has a collection system that consists of approximately 109,600 linear feet of gravity sewer, 60,500 linear feet of sewer force main, and approximately 400 sewer manholes. Portions of the sewer collection system are subject to high infiltration and inflow due to infrastructure age, condition, and proximity to the flood hazard zone. Removing infiltration and inflow from the sewer can increase hydraulic capacity, reduce operations and maintenance costs, and reduce the likelihood of SSOs caused by capacity limitations.

The City received a Consent Order (22-2259) from the FDEP in January 2023 which required the City to conduct a SSES to identify infrastructure beyond design life and defects within the collection system that are contributing to substantial infiltration and inflow and operational issues. Woodard & Curran conducted SSES including smoke testing, closed-circuit television (CCTV) inspections, and manhole inspections throughout the City's collection system and summarized the findings and recommendations in the SSES Report dated March 2024.

8.2 DESIGN CRITERIA

The primary objective of the collection system portion of this project is to reduce a significant portion of the City's inflow and infiltration so that SSO volumes decrease with the ultimate goal of eliminating SSOs in the future. Approaches for infiltration and inflow reduction include rehabilitating and/or replacing aging infrastructure that is allowing stormwater and groundwater to unnecessarily enter the City's wastewater collection system.

The previously completed SSES program identified that 67% of sewer pipes inspected and 94% of manholes inspected had defects warranting rehabilitation to help prevent hydraulic failures, reduce infiltration and inflow into the sewer system, and/or improve operation and maintenance. The SSES Report recommended a combination of trenchless rehabilitation and open cut replacement of sewer infrastructure.

The alternatives evaluated for planning include 1) do nothing, 2) sewer infrastructure rehabilitation and replacement which follows the recommendations of the SSES Report, and 3) sewer infrastructure complete replacement, which includes replacement of all infrastructure that was observed as having defects during the SSES program.

8.2.1 Alternative 1 – Do Nothing

This alternative would result in the City making no capital improvements or rehabilitation efforts to its sewer collection system. The City would continue to operate and maintain the collection system in its current condition, making emergency repairs as needed. This alternative has the lowest capital cost, requiring $0 in capital expenditures; however, the condition of the collection system and severity of infiltration and inflow will continue to worsen and result in excessively high operation and maintenance costs, unexpected capital costs, and ongoing environmental and safety concerns. For these reasons, Alternative 1 is not a viable alternative for the City.

8.2.2 Alternative 2 – Sewer Infrastructure Rehabilitation & Replacement

Alternative 2 would consist of a combination of sewer rehabilitation work and replacement work as recommended in the March 2024 SSES Report. As shown in **Table 8-1** below, 64% of the total 67% of sewer pipes identified with defects are eligible for repairs in lieu of complete replacement because the defects are small enough to be repaired with cost effective trenchless technology repair methods. Similarly, 90% of the total 94% of manholes identified with defects could be repaired with rehabilitation methods in lieu of complete replacement. Considering a combination of rehabilitation and replacement would result in capital cost savings. Because some infrastructure is in a condition where rehabilitation methods could significantly prolong its useful life, rehabilitation is a great consideration over complete replacement.

Table 8-1 summarizes the rehabilitation recommendations for the inspected pipe segments. Rehabilitation methods include cured-in-place lining, heavy cleaning, and CCTV. Complete replacement of sewer segments that are in too poor a condition to be restored are included in the last row.

Table 8-1: Sewer Piping with Defects

Recommended Rehabilitation	Pipe Length (LF)	% of Inspected Pipes
Cured-in-Place Pipe (CIPP) Lining	14,880	49%
Heavy Clean & CCTV	3,365	11%
CCTV	1,255	4%
Open Cut Replacement	930	3%

Additionally, manholes could also be rehabilitated using several methods depending on the extent of their defects. **Table 8-2** summarizes the rehabilitation recommendations for the inspected manhole structures including structural modifications, raising or replacement of frames and covers, heavy cleaning, etc. Complete replacement of manholes that are in too poor condition to be restored are included in the last row.

Table 8-2: Sewer Manholes with Defects

Recommended Rehabilitation	Quantity of Manholes	% of Inspected Manholes[1]
Structural Modification	1	<1%
Raise Frame & Cover to Grade	33	18%
New Frame & Cover	62	52%
Rebuild Bench & Invert	8	8%
Cementitious Restoration	17	14%
Heavy Clean	43	38%
New Watertight Frame & Cover	26	22%
Replace Manhole Structure	7	6%

Notes: [1]Manholes can receive multiple types of rehabilitation, so the percentages are not equal to the 94% noted above.

8.2.3 Alternative 3 – Sewer Infrastructure Complete Replacement

Alternative 3 consists of complete replacement of all sewer pipe and manhole infrastructure that was identified as having defects as part of the SSES program, without the option of rehabilitation. Although trenchless repairs are more cost effective when looking at capital cost, installation of new infrastructure typically lasts longer than rehabilitation methods and may reduce operation and maintenance costs in the future.

The sewer pipe replacement total quantity and manhole structure replacement total quantity for this alternative is summarized below:

- Sewer pipe replacement: 20,430 linear feet
- Sewer manhole replacement: 120 structures

8.3 ENVIRONMENTAL IMPACTS

Extraneous flow from infiltration and inflow sources results in unnecessary collection, transmission, and treatment of storm water and groundwater that enters the sewer system. The inundation of clean water takes away from the available capacity within the collection system and at the WWTP. When the sewer facilities exceed capacity, environmental risks and safety concerns such as SSOs are introduced. Additionally, the limited capacity of sewer facilities during wet weather events impacts future growth within the City. Without removing infiltration and inflow from the collection system, larger sewer pipes would be needed to accommodate expansion within the City.

8.4 LAND REQUIREMENTS (SITE AND EASEMENTS)

8.4.1 Alternative 1 – Do Nothing

No additional land requirements or easements would be required for this alternative.

8.4.2 Alternative 2 – Sewer Infrastructure Rehabilitation & Replacement

No additional land acquisition would be needed for this alternative. Temporary construction easements would likely be necessary for the portion of work that includes open cut replacement of infrastructure that is not within the public right-of-way. For the portion of rehabilitation work where ground disturbance is not required, temporary construction easements may only be needed in areas where construction equipment or activities cannot be maintained within the right-of-way.

8.4.3 Alternative 3 – Sewer Infrastructure Complete Replacement

No additional land acquisition is envisioned for this alternative. Temporary construction easements would likely be needed where sewer pipe and manhole replacement work occur on private property. An option to reduce bypass pumping costs would be to install new sewer pipe and manholes adjacent to existing infrastructure so existing infrastructure can convey sewer flows during construction; however, this requires additional land and may only be feasible in public roads where the space is not already occupied by existing utilities.

8.5 POTENTIAL CONSTRUCTION REQUIREMENTS

Both Alternatives 2 and 3 will require bypass pumping for rehabilitation and replacement work. Sewer flows will need to be rerouted around pipe segments and manholes that require replacement or rehabilitation so that homeowners can continue utilizing their sewer services. For certain manholes, rehabilitation may be able to be conducted while sewer flows are passing through the structure, depending on the location of the repair and the repair method. Bypass pumping should be conducted during dry weather to reduce the size of pumps needed and reduce the overall bypass pumping cost.

In some cases, new sewer pipe and manholes may be installed adjacent to existing so that the existing infrastructure can be used to convey flows during construction. In these instances, bypass pumping could be reduced.

8.6 SUSTAINABILITY CONSIDERATIONS

All alternatives will incorporate sustainability considerations to give the City the most cost effective and robust infrastructure.

8.7 CAPITAL COST ESTIMATES

8.7.1 Alternative 1 – Do Nothing

Alternative 1 proposes to make no infrastructure improvements to the sewer collection system, which would cost $0. However, this alternative is not feasible as the City is experiencing SSOs due to the aging condition of the collection system.

8.7.2 Alternative 2 – Sewer Infrastructure Rehabilitation & Replacement

Alternative 2 is proposed to rehabilitate and replace certain portions of the sewer collection system that are beyond their useful life which would cost $5,908,000. See **Table 8-3** below for a cost estimate.

Table 8-3: Alternative 2 Sewer Infrastructure Rehabilitation & Replacement

Item	Cost
Construction Base Cost (2024)	$3,992,000
Construction Contingency (10%)	$399,200
Engineering, Permitting and Design (10%)	$399,200
Engineering Service During Construction (8%)	$319,360
Fiscal, Legal and administrative (3%)	$119,760
Land Acquisition	
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$279,440
Construction Contingency (10%)	$399,200
Total Opinion of Capital Costs	**$5,908,000**

8.7.3 Alternative 3 – Sewer Infrastructure Complete Replacement

Alternative 3 is proposed to replace all sewer infrastructure identified to have defects which would cost $29,422,000. See **Table 8-4** below for a cost estimate.

Table 8-4: Alternative 3 Sewer Infrastructure Complete Replacement

Item	Cost
Construction Base Cost (2024)	$19,879,719
Construction Contingency (10%)	$1,987,972
Engineering, Permitting and Design (10%)	$1,987,972
Engineering Service During Construction (8%)	$1,590,378
Fiscal, Legal and administrative (3%)	$596,392
Land Acquisition	
Construction Escalation to Mid-Point of Construction (end of 2026 7%)	$1,391,580
Construction Contingency (10%)	$1,987,972
Total Opinion of Capital Costs	**$29,422,000**

8.8 OPERATION & MAINTENANCE ESTIMATES

Analyzing the life-cycle costs of each alternative provides a more in-depth comparison of costs that may be associated with each alternative. The LCCA considers capital cost and operational costs over the design life for each alternative. In addition, the salvage value of the remaining assets at the end of the project's 20-year period were subtracted from the initial investment and replacement cost. The NPV of operational and maintenance costs were then added to the capital investment to arrive at a total "life-cycle cost". **Table 8-5** below provides a summary of the common factors used for evaluation of all the alternatives considered.

Table 8-5: Common Life Cycle Cost Analysis Criteria

Common Life Cycle Cost Criteria	Value
Electricity Cost ($/kWh)	$0.12
Real Federal Discount Rate (i)	5.5%
Planning Period in Years (n)	20

The construction, non-construction, operation and maintenance, and short lived (reserve) asset costs for each alternative are presented in the following tables. All costs have been converted to present day dollars.

8.8.1 Alternative 1 – Do Nothing

No life cycle cost analysis was conducted for this alternative.

8.8.2 Alternative 2 – Sewer Infrastructure Rehabilitation & Replacement

Table 8-6 below provides life-cycle cost comparisons for the sewer collection system Alternative 2.

Table 8-6: Alternative 2 Sewer Infrastructure Rehab & Replacement LCCA

Item	Cost
Initial Capital Cost (Construction)	$5,908,000
Annual Future Replacement Cost[1]	--
Annual O&M costs[2]	$19,600
Present Value of O&M Costs	$392,000
Salvage Value[3]	--
Present Value of Salvage Value	--
Total Net Present Value	**$6,319,600**

Notes: [1]Replacement costs are zero for this alternative because all infrastructure has a design life of greater than 20-years.
[2]O&M costs include cleaning and CCTV of sewer (10% of piping annually), and emergency spot repairs.
[3]Salvage value is zero for this alternative because buried structures and piping are not intended to be reused if they are removed from service.

8.8.3 Alternative 3 – Sewer Infrastructure Complete Replacement

The table below provides life-cycle cost comparisons for the sewer collection system Alternative 3.

Table 8-7: Alternative 3 Sewer Infrastructure Complete Replacement LCCA

Item	Cost
Initial Capital Cost (Construction)	$27,610,000
Annual Future Replacement Cost[1]	--
Annual O&M costs[2]	$7,400
Present Value of O&M Costs	$148,000
Salvage Value[3]	--
Present Value of Salvage Value	--
Total Net Present Value	**$29,577,400**

Notes: [1]Replacement costs are zero for this alternative because all infrastructure has a design life of greater than 20-years.
[2]O&M costs include cleaning and CCTV of sewer (10% of piping annually), and emergency spot repairs.
[3]Salvage value is zero for this alternative because buried structures and piping are not intended to be reused if they are removed from service.

8.9 RECOMMENDED ALTERNATIVE

Alternative 2 – Sewer Infrastructure Replacement and Repair is the recommended alternative. This alternative is the most cost-effective option that will reduce SSOs, prolong sewer infrastructure life, and provide reliability throughout the collection system. For these reasons, Alternative 2 is recommended.

9. IMPLEMENTATION AND COMPLIANCE

9.1 PUBLIC MEETING

A public meeting was held August 8, 2024, after advertising in the Okeechobee Newspaper. Resolution 2024-15 to approve this Clean Water Facilities Plan and submit to the FDEP passed at the meeting. A copy of Resolution 2024-15, the legal advertisement affidavit, and certified meeting minutes are provided in **Appendix F**.

9.2 REGULATORY AGENCY REVIEW

To qualify for a subsidized loan from the SRF, various government agencies must be satisfied with the way that the City of LaBelle is proposing to address their wastewater system challenges. Copies of the Facilities Plan adopted by the City of LaBelle are being sent to the FDEP-SRF for review and comments. The FDEP-SRF staff will distribute this Facilities Plan to Local, State and Federal Agencies via the "State Clearing House Process" for their review and comment.

9.3 FINANCIAL PLANNING

The FDEP-SRF program is expected to be the financing source for the project. A capital financing plan (CFP) is included with this Facilities Plan, which provides the financial impact on the users of the system. The CFP is shown in **Appendix G** and demonstrates that water and sewer operating expenses; existing debt service obligations; and proposed project debt service associated with the selected plan. The CFP also evaluates the current utility rates, existing approved annual increases, and water and sewer impact fees. The CFP is based on the current utility rates and the rate ordinance that the City adopted with a consumer price index (CPI) increase annually, as well as water and sewer impact fees. Copies of the current water and sewer rate documents are provided in **Appendix H** that support the CFP.

9.4 SAHFI COMPLIANCE

The City of LaBelle, FL is slated to receive Supplemental Appropriation for Hurricane's Fiona and Ian (SAHFI Funding). The project elements outlined herein have been determined to be eligible by SRF staff as they satisfy goals described within Hurricane Ian Special Appropriation Florida Requirements guidance. Specific project elements that meet the CWSRF program and SAHFI supplemental planning requirements are listed below (in blue):

1. **Projects that prevent interruption of collection system operation in the event of a flood or natural disaster, including but not limited to:**
   a. Installation of back-up generators (including portable generators) or alternative energy sources (e.g., solar panels, wind turbines, batteries, switch boxes) that service pump stations or other distribution system facilities.

      All projects will include installation of new emergency power generators, portable generator connections, and/or backup diesel pumps for the lift stations.

   b. Replacement of damaged equipment with more energy-efficient equipment.

      All projects will include installation of premium efficiency motors, including variable frequency drives (VFDs) for pumps.

c. Physical "hardening" or waterproofing of pumps and electrical equipment at pump stations and other components of collection systems (including storage facilities and associated equipment) through upgrade or replacement, including:

- Installation of submersible pumps
- Waterproofing electrical components (e.g., pump motors)
- Waterproofing circuitry
- Dry floodproofing/sealing of structure to prevent floodwater penetration
- Installation/construction of wind resistant features (e.g., wind resistant roofing materials, wind-damage resistant windows, storm shutters)

Projects will include relocation and replacement of all control panels with 316 SS, NEMA 4X control panels for continuous all-weather operation. Projects will also install electrical equipment above the 100-year flood elevation and or floodproof the structure.

d. Relocation of pump stations or other collection system facilities to less flood prone areas.

Project will include elevating the treatment and or collection as required to better protect them from storm damage and improve accessibility.

e. Installation of physical barriers around pump stations or other collection system facilities (e.g., levees or dykes).

N/A

f. Correction of significant infiltration and inflow problems that increase the likelihood of sewer backups or flooding of treatment works.

The City recently completed a sanitary sewer evaluation project and identified several pipes and lift station wet wells with structural defects that facilitate inflow and infiltration. This project will rehabilitate or replace select pipes and wet wells in order to eliminate the inflow and infiltration source.

g. Separation of combined sewers that will result in a reduced risk of flooding of the collections system and/or treatment works.

N/A

h. Installation/construction of redundant collection system components and equipment.

Collection system will be provided with redundant components.

i. Regionalization project that enables diversion of wastewater flows to an alternate system for emergency wastewater collection and treatment services.

N/A

j. SCADA system projects to allow remote or multiple system operation locations. Construction or installation of flood attenuation, diversion, and retention infrastructure within or beyond the boundaries of a treatment works that protects the collection system.

Projects will include upgrading the lift stations with a new SCADA system with updated technology and more supervision and control installed in 316 SS NEMA 4X panels and moved to safe locations. SCADA Control will enhance operations for uninterrupted water supply during a natural disaster.

k. Green infrastructure that reduces flood risk by reducing stormwater runoff, including permeable pavement, green roofs and walls, bioretention infrastructure (e.g., constructed wetlands, detention basins, riparian buffers, or stormwater tree trenches/pits/boxes), stream daylighting, and downspout disconnection.

N/A

l. Natural systems, and features thereof, capable of mitigating a storm surge, such as barrier beach and dune systems, tidal wetlands, living shorelines, and natural berms/levees.

- Floodwater pumping systems
- Flood water channels/culverts, physical barriers, and retention infrastructure

N/A

2. Projects that prevent floodwaters from entering a treatment works, including but not limited to:

a. Installation of physical barriers around a facility (e.g., levees or dykes around the facility to prevent flooding).

N/A

b. Relocation of facilities to less flood prone areas.

This project will relocate the existing WWTP from a dirt road at elevation 12 feet to a State four-lane road at elevation 33 feet to better protect it from storm events and improve access during emergencies.

c. Construction or installation of flood attenuation, diversion, and retention infrastructure within or beyond the boundaries of a treatment works that protects the treatment works.

N/A

d. Green infrastructure that reduces the risk of flooding by reducing stormwater runoff, including permeable pavement, green roofs and walls, bioretention infrastructure (e.g., constructed wetlands, detention basins, riparian buffers, or stormwater tree trenches/pits/boxes), stream daylighting, and downspout disconnection.

N/A

e. Natural systems, and features thereof, capable of mitigating a storm surge, such as barrier beach and dune systems, tidal wetlands, living shorelines, and natural berms/levees.

- Floodwater pumping systems
- Flood water channels/culverts, physical barriers, and retention infrastructure

N/A

3. Projects that maintain the operation of a treatment works and the integrity of the treatment train in the event of a flood or natural disaster, including but not limited to:

a. Installation of back-up generators (including portable generators) or alternative energy sources (e.g., solar panels, wind turbines, batteries, switch boxes) that service pump stations or other distribution system facilities.

Project will include new emergency power generator and/or backup diesel pumps, at the WWTP.

b. Replacement of damaged equipment with more energy-efficient equipment.

Project includes new VFDs and other more efficient equipment with premium efficient motors that will be integrated into the design of the WWTP.

c. Physical "hardening" or waterproofing of pumps and electrical equipment at treatment works through upgrade or replacement, including:

- Installation of submersible pumps
- Waterproofing electrical components (e.g., pump motors)
- Waterproofing circuitry
- Dry floodproofing/sealing of structure to prevent floodwater penetration
- Installation/construction of wind resistant features (e.g., wind resistant roofing materials, wind-damage resistant windows, storm shutters)

Project includes installation of 316 SS, NEMA 4Xf control panels for continuous all-weather operation.

d. Relocation of critical equipment to less flood prone areas of a facility and/or elevation of critical structures.

e. Installation of physical barriers around individual treatment processes.

- Flood walls around treatment tanks
- Elevated walls or capping of treatment tanks

f. Installation of larger capacity storage tanks.

- Installation of larger capacity chemical storage tanks for continued treatment in absence of delivery service
- Installation of larger capacity fuel storage tanks for back-up generators
- Construction of storage tanks at treatment works to store overflows for future treatment

Project will include increasing the size of tanks, treatment capacity, reject tanks, chemical storage and generators to handle wet weather flows and storm events.

g. Installation/construction of redundant components and equipment.

System will be provided with redundant components and recommended spare parts.

h. SCADA system projects to allow remote or multiple system operation locations.

Project will include new SCADA system with updated technology and more supervision and control installed in 316 SS, NEMA 4X panels and moved to safe locations.

4. **Projects that preserve and protect treatment works equipment in the event of a flood or natural disaster, including but not limited to:**

N/A

5. **Planning projects that assess a treatment works' vulnerability to flood damage or that analyze the best approach to integrate system and community sustainability/resiliency**

priorities in the face of a variety of uncertain futures including natural disasters and more frequent and intense extreme weather events, provided the planning work is reasonably expected to result in a capital project, including but not limited to:

N/A

9.4.1 Previous Impacts from Hurricane Ian

The City identified a series of vulnerabilities to their wastewater collection system following Hurricane Ian. During the storm, the City experienced widespread power outages due to tree damage and roadway flooding preventing access to many remote lift stations (See Chapter 3 for summary of lift station issues). The City is under FDEP Consent Order 22-2259 to make upgrades to the sewer collection system to mitigate multiple occurrences of SSO's into the Caloosahatchee River. The Consent Order dictates the City must perform the sewer upgrades that will include lift station rehabilitation/replacement, generators, supply towable emergency pumps, installation of submersible pumps, floodproofing of component structures and waterproofing of electrical equipment and circuitry, SCADA system improvements for remote monitoring and control, identification and removal of inflow and infiltration sources and critical pipe repairs. Many of the existing lift stations are located in roads that flooded during Hurricane Ian with access hatches at ground level making overflows easy and emergency response difficult to perform. The City plans to expedite design and construction to complete the critical WWTP and lift station repairs and upgrade projects.

9.4.2 500-Year Floodplain

The proposed project sites are located outside the 500-year floodplain, providing enhanced redundancy and resiliency of the system during major flood events and natural disasters. **Figure 1-2** shows the existing and the proposed project site locations with relation to the 0.2% Annual Chance Flood Hazard (500-Year Floodplain). The existing facility is currently within the 500-year floodplain and the proposed new facility is outside the 500-year floodplain.

9.5 PROJECT IMPLEMENTATION

The City of LaBelle has the sole responsibility and authority to implement the recommended facilities.

9.6 IMPLEMENTATION SCHEDULE

The implementation schedule is estimated to follow the timeline below:

Wastewater Treatment Plant (WWTP)

- Planning Approval March 30, 2025
- Design Begins March 31, 2025
- Design Documents Due to FDEP September 30, 2025
- Design Approval December 10, 2025
- Construction Begins December 2025
- Construction Ends December 2027

Lift Station 3, Lift Station 4, Master Lift Station, Sewer Collection

- Planning Approval February 1, 2025
- Design Approval June 1, 2025
- Bidding June 1, 2026
- Construction Begins September 2026
- Construction Ends September 2027

9.7 COMPLIANCE

1. Wastewater treatment and disposal will be the full responsibility of LaBelle.
2. Selected alternatives will meet the reliability requirements as per chapter 62-600, F.A.C.
3. Residual disposal will meet the requirements of Chapter 62-701, F.A.C. and 40 CFR Part 503.
4. Effluent disposal will meet the requirements of Chapter 62-600.540 underground injection.
5. Effluent disposal will meet the requirements of Chapter 62-610.
6. The environmental aspects of the proposed facilities are satisfactory.
7. All projects identified herein comply with the goals described within Hurricane Ian Special Appropriation Florida Requirements guidance. Specific elements of the projects meet program goals within Attachment 2 of the Memorandum dated September 7, 2023, *Award and Implementation of the 2023 State Revolving Fund Supplement Appropriation for Hurricanes Fiona and Ian (SAHFI)* from the United States Environmental Protection Agency (EPA).

10. REFERENCES

Applied Technology & Management, Inc., "City of LaBelle, Florida Wastewater Treatment Facility Draft Operation and Maintenance Manual." Draft, April 2001.

"Ten State Standards", 2014 Edition, Health Research, Inc., Health Education Services Division, 2014, Albany, N.Y.

Bryan B. Angela, "LaBelle 2023 Wastewater Engineering Report", March 10, 2023.

"Sewer System Evaluation Survey (SSES) Report – City of LaBelle FL", Woodard & Curran, March 2024, Tampa FL.

APPENDIX A: CUSTOM SOIL RESOURCE REPORT

United States Department of Agriculture

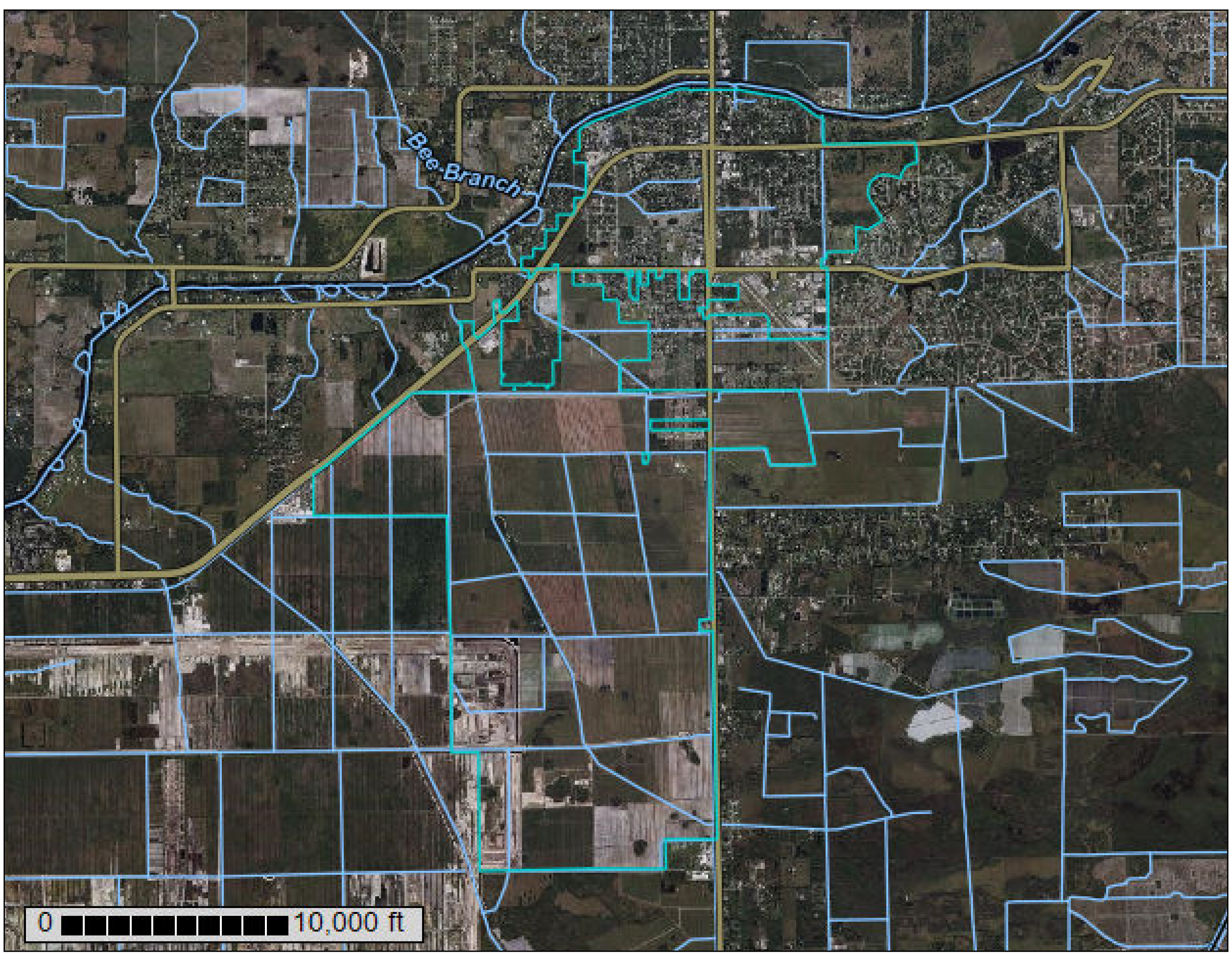
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Glades County, Florida, and Hendry County, Florida

LaBelle Advanced Wastewater Treatment Plant



July 20, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

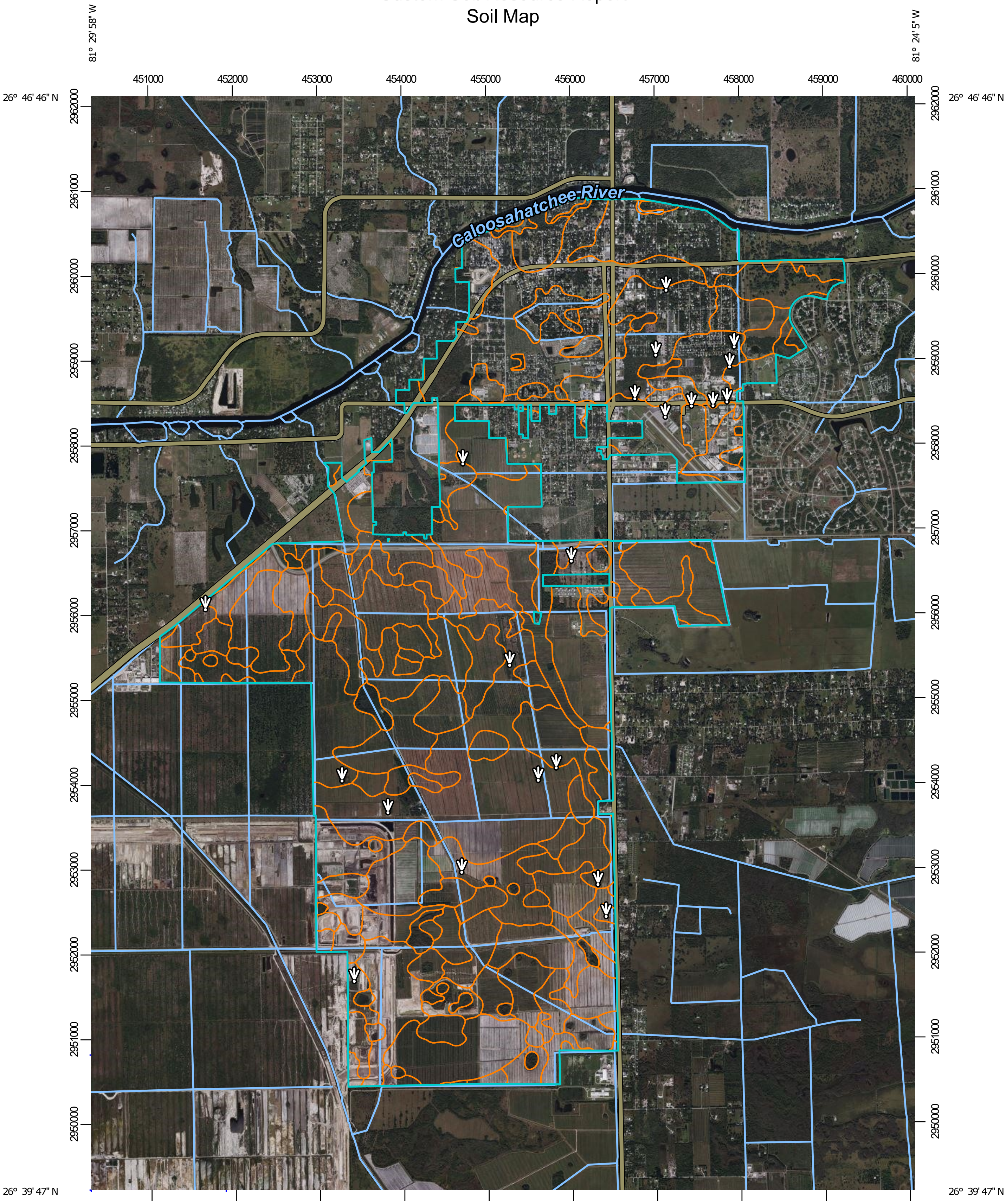
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map



Map Scale: 1:63,000 if printed on A portrait (8.5" x 11") sheet.

0 500 1000 2000 3000 Meters

0 3000 6000 12000 18000 Feet

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Glades County, Florida
Survey Area Data: Version 22, Sep 6, 2023

Soil Survey Area: Hendry County, Florida
Survey Area Data: Version 23, Aug 28, 2023

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 14, 2021—Nov 23, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
35	Arents, very steep	0.1	0.0%
99	Water	0.2	0.0%
Subtotals for Soil Survey Area		**0.3**	**0.0%**
Totals for Area of Interest		**9,237.3**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Cypress Lake sand, 0 to 2 percent slopes	949.6	10.3%
2	Pineda sand, limestone substratum	501.3	5.4%
4	Oldsmar sand, 0 to 2 percent slopes	552.4	6.0%
6	Wabasso sand, 0 to 2 percent slopes	777.8	8.4%
7	Immokalee sand, 0 to 2 percent slopes	1,724.9	18.7%
8	Malabar sand, 0 to 2 percent slopes	355.8	3.9%
9	Riviera fine sand, 0 to 2 percent slopes	179.9	1.9%
10	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	1.9	0.0%
14	Wabasso sand, limestone substratum, 0 to 2 percent slopes	673.0	7.3%
15	Myakka sand, 0 to 2 percent slopes	39.9	0.4%
17	Basinger sand, 0 to 2 percent slopes	350.5	3.8%
18	Pompano sand, 0 to 2 percent slopes	298.8	3.2%
19	Gator muck, frequently ponded, 0 to 1 percent slopes	70.3	0.8%
20	Okeelanta muck	9.7	0.1%
21	Holopaw sand, 0 to 2 percent slopes	670.3	7.3%
22	Valkaria sand	97.0	1.0%
27	Riviera sand, limestone substratum	581.5	6.3%
28	Cypress Lake sand, frequently ponded, 0 to 1 percent slopes	79.9	0.9%
29	Oldsmar sand, limestone substratum	352.4	3.8%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
32	Riviera sand, frequently ponded, 0 to 1 percent slopes	68.7	0.7%
34	Chobee fine sandy loam, limestone substratum, depressional	46.8	0.5%
37	Tuscawilla fine sand, 0 to 2 percent slopes	44.2	0.5%
39	Udifluvents	10.4	0.1%
45	Pahokee muck, drained, 0 to 1 percent slopes	10.1	0.1%
47	Udorthents	115.1	1.2%
49	Aquents, organic substratum	16.8	0.2%
53	Adamsville fine sand, 0 to 2 percent slopes	150.2	1.6%
57	Chobee fine sandy loam, frequently ponded, 0 to 1 percent slopes	484.1	5.2%
62	Pineda sand, depressional	12.6	0.1%
99	Water	11.2	0.1%
Subtotals for Soil Survey Area		**9,237.0**	**100.0%**
Totals for Area of Interest		**9,237.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Glades County, Florida

35—Arents, very steep

Map Unit Setting

National map unit symbol: 1ksky
Elevation: 0 to 50 feet
Mean annual precipitation: 42 to 50 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Arents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Typical profile

A - 0 to 2 inches: fine sand
C - 2 to 80 inches: variable

Properties and qualities

Slope: 45 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

99—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Forage suitability group: Forage suitability group not assigned (G155XB999FL)

Other vegetative classification: Forage suitability group not assigned (G155XB999FL)

Hydric soil rating: Unranked

Hendry County, Florida

1—Cypress Lake sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2zlf0
Elevation: 0 to 100 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Cypress lake and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cypress Lake

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

Ap - 0 to 7 inches: sand
E - 7 to 28 inches: sand
Btg - 28 to 33 inches: fine sandy loam
2R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 13 to 58 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 6.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)

Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: No

Minor Components

Pineda

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL), Slough (R156BY011FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

2—Pineda sand, limestone substratum

Map Unit Setting

National map unit symbol: 17n44
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pineda, limestone substratum, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda, Limestone Substratum

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 10 inches: sand
E/Bw - 10 to 32 inches: sand
Btg - 32 to 50 inches: sandy clay loam
2R - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks

Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Boca

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY010FL - Subtropical Pine Flatwoods and Palmetto Prairie of Big Cypress
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pineda

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

4—Oldsmar sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sm4p
Elevation: 0 to 80 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Oldsmar and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oldsmar

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 38 inches: sand
Bh - 38 to 50 inches: sand
Btg - 50 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Minor Components

Immokalee

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Holopaw

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Cypress lake

Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave

Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

6—Wabasso sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2svyr
Elevation: 0 to 70 feet
Mean annual precipitation: 46 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Wabasso and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 30 inches: sand
Btg - 30 to 58 inches: sandy clay loam
Cg - 58 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 9 to 50 inches to strongly contrasting textural stratification
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Brynwood

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Cypress lake

Percent of map unit: 5 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Pineda

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

7—Immokalee sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2s3ll
Elevation: 0 to 150 feet
Mean annual precipitation: 42 to 57 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Immokalee and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Immokalee

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 9 inches: sand
E - 9 to 36 inches: sand
Bh - 36 to 55 inches: sand
C - 55 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Valkaria

Percent of map unit: 5 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pomello

Percent of map unit: 3 percent
Landform: Ridges on marine terraces, knolls on marine terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve, side slope, riser
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Satellite

Percent of map unit: 2 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Other vegetative classification: Sand Pine Scrub (R155XY001FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Felda

Percent of map unit: 1 percent

Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

8—Malabar sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sm5k
Elevation: 0 to 40 feet
Mean annual precipitation: 46 to 57 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Malabar and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Malabar

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 15 inches: sand
Bw - 15 to 35 inches: sand
E' - 35 to 45 inches: sand
Btg - 45 to 65 inches: sandy loam
Cg - 65 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Cypress lake

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip

Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

9—Riviera fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw2
Elevation: 0 to 80 feet
Mean annual precipitation: 44 to 59 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Riviera and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera

Setting

Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 28 inches: fine sand
Bt/E - 28 to 32 inches: fine sandy loam
Btg - 32 to 42 inches: sandy clay loam
C - 42 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Wabasso

Percent of map unit: 8 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pinellas

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Cabbage Palm Flatwoods (R155XY005FL)
Hydric soil rating: No

Brynwood

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Floridana

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps

Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

10—Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2svyp
Elevation: 0 to 100 feet
Mean annual precipitation: 42 to 63 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pineda and similar soils: 45 percent
Pineda, wet, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda

Setting

Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 1 inches: fine sand
E - 1 to 5 inches: fine sand
Bw - 5 to 36 inches: fine sand
Btg/E - 36 to 54 inches: fine sandy loam
Cg - 54 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: No

Description of Pineda, Wet

Setting

Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 1 inches: fine sand
E - 1 to 5 inches: fine sand
Bw - 5 to 36 inches: fine sand
Btg/E - 36 to 54 inches: fine sandy loam
Cg - 54 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Minor Components

Felda

Percent of map unit: 6 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Valkaria

Percent of map unit: 2 percent
Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Cypress lake

Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

14—Wabasso sand, limestone substratum, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzws
Elevation: 0 to 50 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Wabasso, limestone substratum, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wabasso, Limestone Substratum

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 35 inches: sand
Btg - 35 to 45 inches: sandy clay loam
2R - 45 to 55 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 13 to 54 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Cypress lake

Percent of map unit: 6 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Gentry

Percent of map unit: 3 percent
Landform: Depressions on marine terraces

Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

15—Myakka sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2twt9
Elevation: 10 to 130 feet
Mean annual precipitation: 43 to 62 inches
Mean annual air temperature: 64 to 77 degrees F
Frost-free period: 280 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Myakka and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 20 inches: sand
Bh - 20 to 36 inches: sand
C - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, convex
Across-slope shape: Concave, linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Valkaria

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

17—Basinger sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2vbpc
Elevation: 0 to 50 feet
Mean annual precipitation: 42 to 62 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Basinger and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basinger

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
E - 6 to 25 inches: sand
Bh - 25 to 50 inches: sand
C - 50 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Minor Components

Holopaw

Percent of map unit: 6 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Pompano

Percent of map unit: 3 percent
Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Anclote

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

18—Pompano sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tzw4
Elevation: 0 to 40 feet
Mean annual precipitation: 44 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pompano and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pompano

Setting

Landform: Drainageways on flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
C - 6 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)

Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Myakka

Percent of map unit: 8 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Brynwood

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Holopaw

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Convex, concave, linear
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Samsula

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

19—Gator muck, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzwz
Elevation: 0 to 100 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Gator and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gator

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy and loamy marine deposits

Typical profile

Oa - 0 to 18 inches: muck
Cg1 - 18 to 36 inches: sandy clay loam
Cg2 - 36 to 55 inches: fine sandy loam
Cg3 - 55 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 13.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Terra ceia

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave, linear
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Chobee

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Felda

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)

Hydric soil rating: Yes

Pompano

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

20—Okeelanta muck

Map Unit Setting

National map unit symbol: 17n4l
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Okeelanta, undrained, and similar soils: 50 percent
Okeelanta, drained, and similar soils: 37 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Okeelanta, Undrained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa - 0 to 48 inches: muck
C - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None

Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 20.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Description of Okeelanta, Drained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oa - 0 to 48 inches: muck
C - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 20.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Delray

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Pahokee, drained

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Terra ceia

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Holopaw, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Winder, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

21—Holopaw sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9g9
Elevation: 0 to 190 feet
Mean annual precipitation: 46 to 57 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Holopaw and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holopaw

Setting

Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
Eg - 5 to 48 inches: sand
Btg - 48 to 65 inches: sandy clay loam
BCkg - 65 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 3 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Other vegetative classification: Slough (R155XY011FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Minor Components

Basinger

Percent of map unit: 6 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G156BC241FL), Slough (R156BY011FL)
Hydric soil rating: Yes

Oldsmar

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Cypress lake

Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Gentry

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

22—Valkaria sand

Map Unit Setting

National map unit symbol: 17n4n
Elevation: 10 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Valkaria and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valkaria

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 10 inches: sand
E - 10 to 15 inches: sand
Bw - 15 to 45 inches: sand
C - 45 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 10 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Pompano
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Pineda
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar
Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Myakka
Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Basinger

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

27—Riviera sand, limestone substratum

Map Unit Setting

National map unit symbol: 17n4s
Elevation: 0 to 60 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Riviera, limestone substratum, and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera, Limestone Substratum

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 35 inches: sand
Btg - 35 to 50 inches: sandy loam
2R - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 50 to 80 inches to lithic bedrock

Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Minor Components

Boca

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F156AY010FL - Subtropical Pine Flatwoods and Palmetto Prairie of Big Cypress
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Gentry

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Pineda, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Winder

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Ecological site: F155XY140FL - Loamy and Clayey Hardwood Hammocks
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Holopaw, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Wabasso, limestone substratum

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

28—Cypress Lake sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2zlf1
Elevation: 0 to 280 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 55 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Cypress lake and similar soils: 77 percent
Minor components: 23 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cypress Lake

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Sandy and loamy marine deposits over limestone

Typical profile

Ap - 0 to 7 inches: sand
E - 7 to 28 inches: sand
Btg - 28 to 33 inches: fine sandy loam
2R - 33 to 43 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 13 to 58 inches to lithic bedrock
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D

Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Minor Components

Pineda

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Holopaw

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

Basinger

Percent of map unit: 3 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, concave
Across-slope shape: Linear, concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Okeelanta

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces, flatwoods on drainageways
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

Riviera

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

29—Oldsmar sand, limestone substratum

Map Unit Setting

National map unit symbol: 17n4v
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Oldsmar, limetone substratum, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oldsmar, Limetone Substratum

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 37 inches: sand
Bh - 37 to 63 inches: sand
Btg - 63 to 73 inches: sandy clay loam
2R - 73 to 77 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 60 to 73 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks

Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Minor Components

Hallandale

Percent of map unit: 3 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F156AY030FL - Subtropical Moist Hammocks of Big Cypress
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Pineda, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Malabar

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Holopaw, limestone substratum

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear

Across-slope shape: Concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Riviera, limestone substratum
Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

32—Riviera sand, frequently ponded, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2tzwm
Elevation: 0 to 70 feet
Mean annual precipitation: 46 to 58 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Riviera and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riviera

Setting
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile
A - 0 to 0 inches: sand
E - 0 to 22 inches: sand
Btg/E - 22 to 31 inches: sandy loam
Btg1 - 31 to 42 inches: sandy loam
Btg2 - 42 to 80 inches: sandy clay loam

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 4 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Chobee

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Malabar

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear

Across-slope shape: Concave, linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Brynwood

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

34—Chobee fine sandy loam, limestone substratum, depressional

Map Unit Setting

National map unit symbol: 17n4y
Elevation: 0 to 80 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Chobee, depressional, limestone subst., and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chobee, Depressional, Limestone Subst.

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy alluvium

Typical profile

A - 0 to 15 inches: fine sandy loam
Btg - 15 to 50 inches: sandy clay loam
2R - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 79 inches to lithic bedrock
Drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Forage suitability group: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Jupiter

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Cabbage Palm Flatwoods (R155XY005FL)
Hydric soil rating: Yes

Gentry

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave

Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Winder, depressional

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear, concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Dania

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Organic soils in depressions and on flood plains (G155XB645FL)
Hydric soil rating: Yes

37—Tuscawilla fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 30dg1
Elevation: 20 to 110 feet
Mean annual precipitation: 46 to 61 inches
Mean annual air temperature: 66 to 77 degrees F
Frost-free period: 335 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Tuscawilla and similar soils: 84 percent
Minor components: 16 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tuscawilla

Setting

Landform: Rises on flats on marine terraces

Landform position (three-dimensional): Tread, talf, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile
A - 0 to 3 inches: fine sand
Eg - 3 to 10 inches: fine sand
Btg - 10 to 13 inches: fine sandy loam
Btkg - 13 to 40 inches: fine sandy loam
Ckg - 40 to 68 inches: fine sand
2Ckg - 68 to 80 inches: fine sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F155XY140FL - Loamy and Clayey Hardwood Hammocks
Forage suitability group: Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL)
Other vegetative classification: Wetland Hardwood Hammock (R155XY012FL), Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL)
Hydric soil rating: Yes

Minor Components

Wabasso
Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: No

Chobee, flooded
Percent of map unit: 4 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear

Across-slope shape: Linear
Ecological site: R155XY050FL - Loamy and Clayey Freshwater Floodplain Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G156BC345FL)
Hydric soil rating: Yes

Tequesta

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Cypress lake

Percent of map unit: 2 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Hydric soil rating: Yes

Jupiter

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Cabbage Palm Flatwoods (R155XY005FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

39—Udifluvents

Map Unit Setting

National map unit symbol: 17n50
Elevation: 0 to 30 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Udifluvents and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents

Setting

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Runoff class: Negligible
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Minor Components

Riviera

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Immokalee

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

45—Pahokee muck, drained, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2rfsb
Elevation: 0 to 60 feet
Mean annual precipitation: 42 to 55 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pahokee, drained, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pahokee, Drained

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over limestone

Typical profile

Oa - 0 to 40 inches: muck
2R - 40 to 50 inches: bedrock

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 36 to 51 inches to lithic bedrock
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 16.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Forage suitability group: Organic soils in depressions and on flood plains (G155XB645FL)

Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Cypress lake

Percent of map unit: 6 percent
Landform: Flats on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Convex, linear
Across-slope shape: Linear, concave
Ecological site: F155XY130FL - Sandy over Loamy Flatwoods and Hammocks
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: Yes

Dania, drained

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156AY010FL)
Hydric soil rating: Yes

Lauderhill, drained

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL)
Hydric soil rating: Yes

47—Udorthents

Map Unit Setting

National map unit symbol: 17n54
Elevation: 0 to 20 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Altered marine deposits

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Minor Components

Aquents

Percent of map unit: 10 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

49—Aquents, organic substratum

Map Unit Setting

National map unit symbol: 17n55
Elevation: 0 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Aquents and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aquents

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits over organic material over sandy marine deposits

Typical profile

A - 0 to 8 inches: fine sand
E - 8 to 35 inches: loamy sand
Oa - 35 to 42 inches: muck
C - 42 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: No

Minor Components

Basinger

Percent of map unit: 2 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Winder

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G155XB341FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Pompano

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Chobee, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Okeelanta, drained

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Riviera, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave

Across-slope shape: Concave
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

53—Adamsville fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x9c0
Elevation: 0 to 130 feet
Mean annual precipitation: 42 to 57 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 345 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Adamsville and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adamsville

Setting

Landform: Rises on marine terraces, knolls on marine terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 7 inches: fine sand
C - 7 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: A
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Other vegetative classification: Upland Hardwood Hammock (R155XY008FL), Sandy soils on rises and knolls of mesic uplands (G155XB131FL)
Hydric soil rating: No

Minor Components

Zolfo

Percent of map unit: 4 percent
Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F155XY150FL - Sandy Upland Mesic Flatwoods and Hammocks on Rises and Knolls
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G155XB131FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Tavares

Percent of map unit: 4 percent
Landform: Knolls on marine terraces, flats on marine terraces, ridges on marine terraces, hills on marine terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, side slope, tread, rise
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Ecological site: R155XY180FL - Sandy Scrub on Rises, Ridges, and Knolls of Mesic Uplands
Other vegetative classification: Longleaf Pine-Turkey Oak Hills (R155XY002FL), Sand Pine Scrub (R155XY001FL), Sandy soils on rises, knolls, and ridges of mesic uplands (G155XB121FL)
Hydric soil rating: No

Myakka

Percent of map unit: 3 percent
Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Ecological site: F155XY120FL - Sandy Flatwoods and Hammocks
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Pompano

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear, concave

Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Slough (R155XY011FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Hydric soil rating: Yes

57—Chobee fine sandy loam, frequently ponded, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2tzvw
Elevation: 10 to 70 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Chobee and similar soils: 88 percent
Minor components: 12 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chobee

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy marine deposits

Typical profile

A - 0 to 9 inches: fine sandy loam
Btg1 - 9 to 13 inches: fine sandy loam
Btg2 - 13 to 68 inches: sandy clay loam
Cg - 68 to 80 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 14 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Forage suitability group: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Hydric soil rating: Yes

Minor Components

Tequesta

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G156AC645FL), Freshwater Marshes and Ponds (R156BY010FL)
Hydric soil rating: Yes

Winder

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL)
Hydric soil rating: Yes

Placid

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, drainageways on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Gator

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

62—Pineda sand, depressional

Map Unit Setting

National map unit symbol: 17n5h
Elevation: 10 to 80 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pineda, depressional, and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pineda, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 5 inches: sand
E/Bw - 5 to 24 inches: sand
Btg - 24 to 42 inches: sandy loam
Cg - 42 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps
Forage suitability group: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Minor Components

Gator

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Chobee, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY090FL - Loamy and Clayey Freshwater Isolated Marshes and Swamps
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G155XB345FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Holopaw, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Malabar, depressional

Percent of map unit: 2 percent

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Boca, depressional

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F156AY050FL - Subtropical Freshwater Cypress Swamps of Big Cypress
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Valkaria

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R155XY070FL - Sandy Freshwater Isolated Marshes and Swamps
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL), Slough (R155XY011FL)
Hydric soil rating: Yes

Okeelanta, drained

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY100FL - Organic Freshwater Isolated Marshes and Swamps
Other vegetative classification: Organic soils in depressions and on flood plains (G155XB645FL), Freshwater Marshes and Ponds (R155XY010FL)
Hydric soil rating: Yes

Riviera, depressional

Percent of map unit: 1 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R155XY080FL - Sandy over Loamy Freshwater Isolated Marshes and Swamps

Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL), Sandy over loamy soils on stream terraces, flood plains, or in depressions (G155XB245FL)
Hydric soil rating: Yes

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G155XB999FL)
Other vegetative classification: Forage suitability group not assigned (G155XB999FL)
Hydric soil rating: Unranked

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United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX B: SOURCE WATER PROTECTION REPORT

SWAPP Quick Links

- Home (/swapp/)
- Search By County (https://prodapps.dep.state.fl.us/swapp/Welcome/links/search_county_v)
- Search by PWS Name or Number (https://prodapps.dep.state.fl.us/swapp/Welcome/links/search_pws_v)
- How to Help? (https://prodapps.dep.state.fl.us/swapp/Welcome/links/help_v)

Definitions

- Aquifers (https://prodapps.dep.state.fl.us/swapp/Welcome/links/aquifers_v)
- Public Water Systems (https://prodapps.dep.state.fl.us/swapp/Welcome/links/public_water_systems_v)
- Assessment (https://prodapps.dep.state.fl.us/swapp/Welcome/links/assessment_v)
- Potential Contaminants (https://prodapps.dep.state.fl.us/swapp/Welcome/links/potential_contaminants_v)
- Susceptibility (https://prodapps.dep.state.fl.us/swapp/Welcome/links/susceptibility_v)
- Prevention (https://prodapps.dep.state.fl.us/swapp/Welcome/links/prevention_v)

Contact Us

- Email (mailto:Marian.Fugitt@floridadep.gov?subject=SWAPP Question)
- Mailing Address (https://prodapps.dep.state.fl.us/swapp/Welcome/links/contact_v)

EPA Source Water Protection Website

(https://www.epa.gov/sourcewaterprotection)

Source Water Assessment & Protection Program

Results For: 2023

LABELLE, CITY OF
2500 SR-29 S
LABELLE, FL 33935

Public Water System ID: 5260050
County Name: HENDRY
DEP Regulatory Office: DEP South District
2295 Victoria Ave, Suite 364
Fort Myers, FL 33901
239-344-5600
Public Water System Type: COMMUNITY
Public Water System Source: GROUND, PURCHASED
Primary Use: MUNICIPAL/CITY
Population Served: 5950
Size of Assessment Area:

GROUND: For this community system, a 5-year ground water travel time around each well was used to define the assessment area. The 5-year ground water travel time is defined by the area from which water will drain to a well pumping at the average daily permitted rate for a five year period of time.

Number of Wells: 2

Well ID	Owner ID	FLUWID	Status	Well Depth (ft)	Aquifer
63003	UFA - 2	AAO4474 (//floridadep.gov/water/source-drinking-water/content/florida-unique-well-identification-program)	ACTIVE	697	Floridan Aquifer
63004	UFA 3	AAO4473 (//floridadep.gov/water/source-drinking-water/content/florida-unique-well-identification-program)	ACTIVE	632	Floridan Aquifer

This system purchases water only during emergencies from:

PORT LABELLE (/swapp/Welcome/detailsByPwsNumber/5260226)

Results:

GROUND WATER:

Number of Unique Potential Contaminant Sources: 2*

*Note: This number represents the total of **unique** potential contaminant sources at this system which commonly is a subset of all of the records (rows) shown in the table below. When these unique potential contaminant sources affect more than one well at this system, they will appear more than once in the following table. Map Direct is a visual tool that can be accessed at Map Direct: Source Water Assessment and Protection (SWAPP) Map (state.fl.us) (https://ca.dep.state.fl.us/mapdirect/?webmap=3733594f71034be2a1b3a84e1e17a221) for more details.

Facility Type	Facility Class	Status	Name	Affected Well	Susceptibility Score	Concern Level
PETROLEUM STORAGE TANK (/swapp/Welcome/links/potential_contaminants_v)	LOCAL GOVERNMENT	OPEN	LA BELLE CITY WELL #2	63003	2.77 (/swapp/Welcome/links/susceptibility_v)	LOW (/swapp/Welcome/links/susceptibility_v)
PETROLEUM STORAGE TANK (/swapp/Welcome/links/potential_contaminants_v)	LOCAL GOVERNMENT	OPEN	LA BELLE CITY WELL#3	63003	2.77 (/swapp/Welcome/links/susceptibility_v)	LOW (/swapp/Welcome/links/susceptibility_v)
PETROLEUM STORAGE TANK (/swapp/Welcome/links/potential_contaminants_v)	LOCAL GOVERNMENT	OPEN	LA BELLE CITY WELL #2	63004	2.77 (/swapp/Welcome/links/susceptibility_v)	LOW (/swapp/Welcome/links/susceptibility_v)

APPENDIX C: UNITED STATES FISH AND WILDLIFE CLEARANCE LETTER & OFFICIAL SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
Phone: (352) 448-9151 Fax: (772) 562-4288
Email Address: fw4flesregs@fws.gov
https://www.fws.gov/office/florida-ecological-services

In Reply Refer To: 07/22/2024 23:11:59 UTC
Project Code: 2024-0119853
Project Name: City of LaBelle Advanced Wastewater Treatment Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. **Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project.** Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Marine Mammals
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

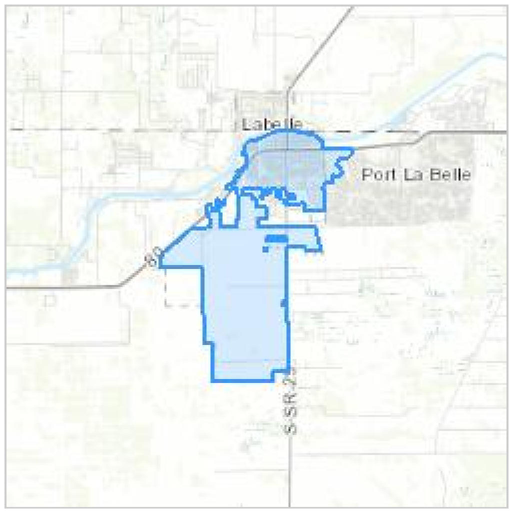
This species list is provided by:

Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
(352) 448-9151

PROJECT SUMMARY

Project Code: 2024-0119853
Project Name: City of LaBelle Advanced Wastewater Treatment Project
Project Type: Wastewater Facility - New Construction
Project Description: Construction of a new Advanced Wastewater Treatment Plant, lift station upgrades, forcemain upgrades, and sewer system rehabilitation.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@26.71992735,-81.46458275048573,14z



Counties: Hendry County, Florida

ENDANGERED SPECIES ACT SPECIES

There is a total of 12 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Florida Bonneted Bat *Eumops floridanus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8630	Endangered
Florida Panther *Puma (=Felis) concolor coryi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1763 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z73M3FMV7BGVTAYMWGU7FKNQVQ/documents/generated/7123.pdf	Endangered
Puma (=mountain Lion) *Puma (=Felis) concolor (all subsp. except coryi)* Population: FL No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6049	Similarity of Appearance (Threatened)
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered
West Indian Manatee *Trichechus manatus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. ***This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.*** Species profile: https://ecos.fws.gov/ecp/species/4469 General project design guidelines: https://ipac.ecosphere.fws.gov/project/Z73M3FMV7BGVTAYMWGU7FKNQVQ/documents/generated/7281.pdf	Threatened

BIRDS

NAME	STATUS
Crested Caracara (audubon""s) [fl Dps] *Caracara plancus audubonii* Population: FL DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8250	Threatened
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Everglade Snail Kite *Rostrhamus sociabilis plumbeus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7713	Endangered
Florida Scrub-jay *Aphelocoma coerulescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6174	Threatened

REPTILES

NAME	STATUS
American Alligator *Alligator mississippiensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/776	Similarity of Appearance (Threatened)
Eastern Indigo Snake *Drymarchon couperi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/646	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.

3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

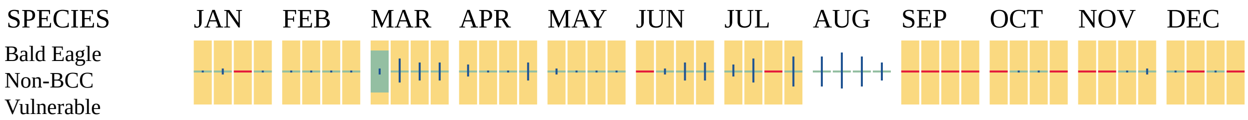
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31

NAME	BREEDING SEASON
Bachman's Sparrow *Peucaea aestivalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6177	Breeds May 1 to Sep 30
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Great Blue Heron *Ardea herodias occidentalis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/10590	Breeds Jan 1 to Dec 31
Painted Bunting *Passerina ciris* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9511	Breeds Apr 25 to Aug 15
Prairie Warbler *Setophaga discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Swallow-tailed Kite *Elanoides forficatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

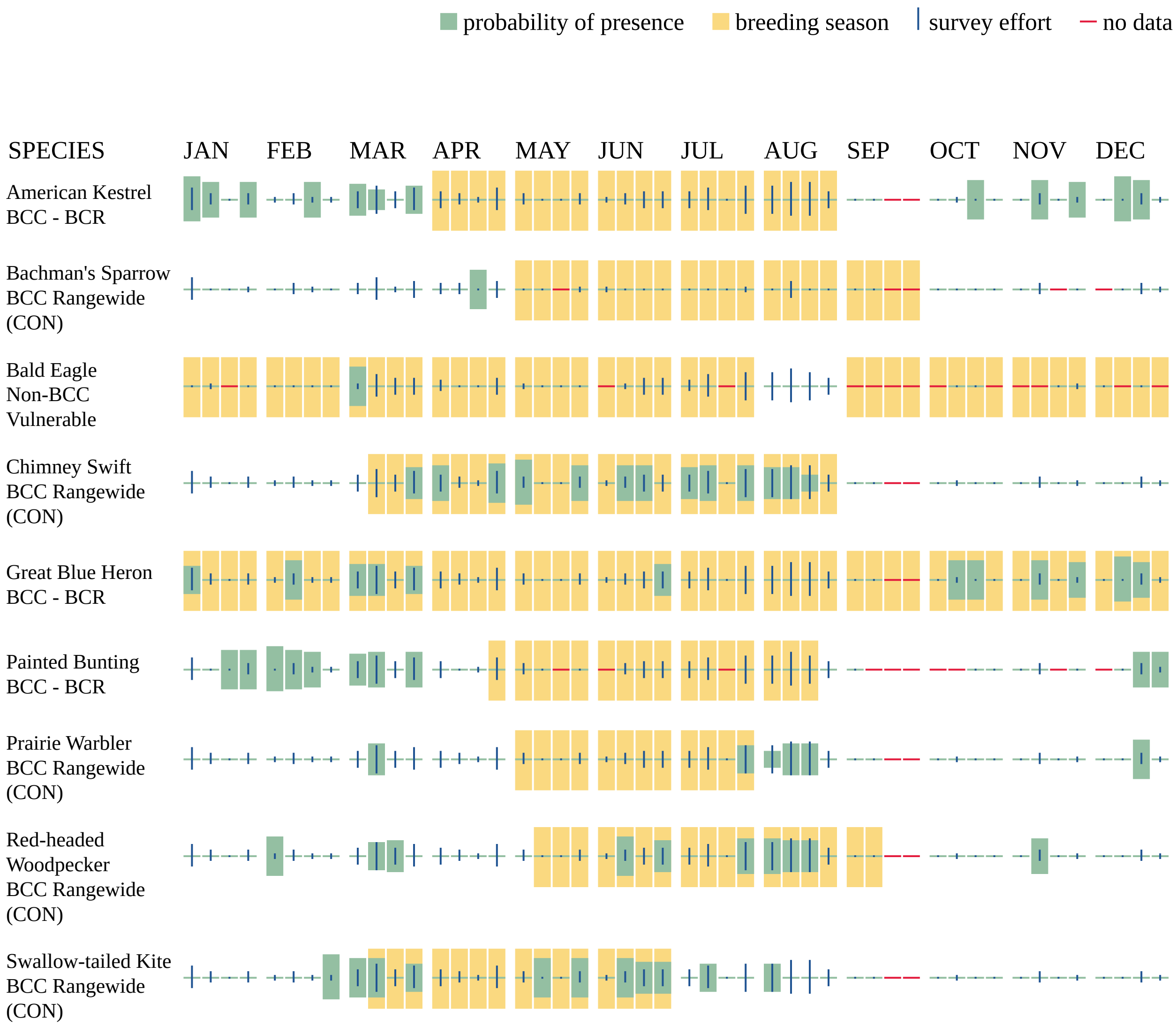
Probability of Presence ( )

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season ( )
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MARINE MAMMALS

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

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1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NAME

West Indian Manatee *Trichechus manatus*
Species profile: https://ecos.fws.gov/ecp/species/4469

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1Cx
- PEM1Fx
- PEM1Cd
- PEM1Ax

RIVERINE

- R5UBH
- R2UBH
- R2ABHx
- R4SBC
- R2UBHx
- R5UBFx

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1Cd
- PFO2Ad
- PFO2Fd
- PFO1/3Cd
- PSS1/3Cd
- PFO2Cd
- PFO1Fd
- PFO4Cd
- PSS1Fx
- PFO2/1Fd

FRESHWATER POND

- PAB4Fx
- PAB4Fd
- PUBHx

- PAB4Hx
- PUBKx

IPAC USER CONTACT INFORMATION

Agency: LaBelle city
Name: Morgan French
Address: 1496 Highway 90
City: Chipley
State: FL
Zip: 32428
Email mfrench@woodardcurran.com
Phone: 8507033000

You have indicated that your project falls under or receives funding through the following special project authorities:

- BIPARTISAN INFRASTRUCTURE LAW (BIL) (OTHER)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office
777 37th St
Suite D-101
Vero Beach, FL 32960-3559
Phone: (352) 448-9151 Fax: (772) 562-4288
Email Address: fw4flesregs@fws.gov
https://www.fws.gov/office/florida-ecological-services

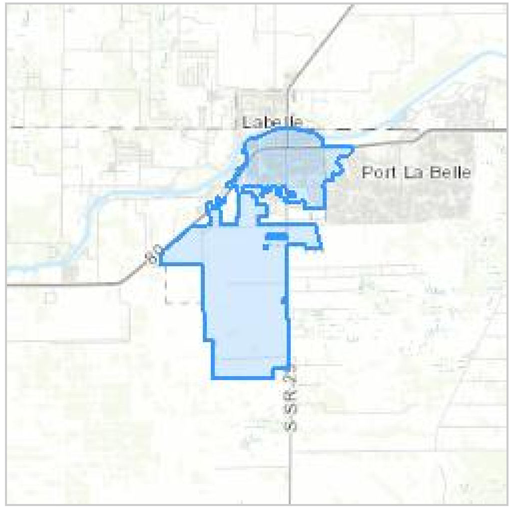
In Reply Refer To: 07/22/2024 23:15:19 UTC
Project code: 2024-0119853
Project Name: City of LaBelle Advanced Wastewater Treatment Project
Please provide this document to the Federal agency or their designee with your loan/grant application.

Subject: Consistency letter for the project named 'City of LaBelle Advanced Wastewater Treatment Project' for specified threatened and endangered species that may occur in your proposed project location, pursuant to the IPaC determination key titled 'Clearance to Proceed with Federally-Insured Loan and Grant Project Requests'.

To whom it may concern:

On July 22, 2024, Morgan French used the IPaC determination key 'Clearance to Proceed with Federally-Insured Loan and Grant Project Requests'; dated May 07, 2024, in the U.S. Fish and Wildlife Service's online IPaC tool to evaluate potential impacts to listed species from a project named 'City of LaBelle Advanced Wastewater Treatment Project' in Hendry County, Florida (shown below):

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@26.71992735,-81.46458275048573,14z



The following description was provided for the project 'City of LaBelle Advanced Wastewater Treatment Project':

> Construction of a new Advanced Wastewater Treatment Plant, lift station upgrades, forcemain upgrades, and sewer system rehabilitation.

Based on your answers provided, the proposed project is unlikely to have any detrimental effects to federally-listed species or critical habitat. Therefore, per this guidance, Morgan French has determined that City of LaBelle Advanced Wastewater Treatment Project will have No Effect on the species listed below.

This letter serves as documentation of your consideration of endangered species, bald eagles, and migratory birds. No further coordination with the Service is necessary.

Please be advised that, if later modifications are made to the project that do not meet the criteria described above, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

BIRDS

- Crested Caracara (audubon""s) [fl Dps] *Caracara plancus audubonii* Threatened
- Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* Threatened
- Everglade Snail Kite *Rostrhamus sociabilis plumbeus* Endangered
- Florida Scrub-jay *Aphelocoma coerulescens* Threatened

INSECTS

- Monarch Butterfly *Danaus plexippus* Candidate

MAMMALS

- Florida Bonneted Bat *Eumops floridanus* Endangered
- Florida Panther *Puma (=Felis) concolor coryi* Endangered
- Puma (=mountain Lion) *Puma (=Felis) concolor (all subsp. except coryi)* Similarity of Appearance (Threatened)

- Tricolored Bat *Perimyotis subflavus* Proposed Endangered
- West Indian Manatee *Trichechus manatus* Threatened

REPTILES

- American Alligator *Alligator mississippiensis* Similarity of Appearance (Threatened)
- Eastern Indigo Snake *Drymarchon couperi* Threatened

ADDITIONAL CONSIDERATIONS FOR NON-FEDERALLY LISTED SPECIES

- **Bald Eagle Nest Issues.** If any of the above-referenced activities (rehabilitation, demolition, or rebuilding) are proposed to occur **within 660 feet** of an active or alternate bald eagle (*Haliaeetus leucocephalus*) nest during the nesting season (October 1 through May 15), we recommend the applicant or their designated agent coordinate with the agency responsible for managing wildlife in their state. For additional information, please visit the Service's regional web page: https://www.fws.gov/service/3-200-71-eagle-take-associated-not-purpose-activity-incidental-take.
- **Migratory Bird Issues.** If any native birds are using the structures for nesting then actions should be taken so as not to disturb the adults, nests, eggs, or chicks as this could lead to a potential violation of the Migratory Bird Treaty Act. If nests are present or any birds are using the structures regularly for roosting purposes, we recommend the applicant or their designated agent coordinate with the appropriate Service's Field Office and visit the Service's Migratory Bird Program website at https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds for recommendations on how impacts can be avoided and minimized.

Morgan French answered the determination key questions for this project as follows:

1. Does the project intersect Monroe County, FL?

   Automatically answered

   No

2. Is the project exclusively a Federal loan transfer, where the original lending or mortgage institutions for existing project are no longer holding the loan and the property is being transferred via a federally-backed loan?

   Yes, this is ***exclusively*** *a Federal loan transfer, as described above.*

Attachments:

- Project questionnaire
- Determination key description: Clearance to Proceed with Federally-Insured Loan and Grant Project Requests
- U.S. Fish & Wildlife Service contact list

PROJECT INFORMATIONAL QUESTIONNAIRE

As part of completing the determination key, Morgan French provided the following information about their project:

1. How many square feet of facilities will be affected by this project?

   402363720

2. Are there bald eagles within 660 feet of the site, or migratory birds or bats using structures on the site?

   None of the above

3. Which Federal Agency is the lead agency providing the funding?

   U.S. Environmental Protection Agency (EPA)

4. Which types of activities you will be conducting:

   Infrastructure
   Utilities

5. Which types of structures this funding will address:

   Wastewater treatment facility

DETERMINATION KEY DESCRIPTION: CLEARANCE TO PROCEED WITH FEDERALLY-INSURED LOAN AND GRANT PROJECT REQUESTS

This key was last updated in IPaC on May 07, 2024. Keys are subject to periodic revision.

This determination key is for all Federally-insured loans, loan transfers, or grant requests for projects that may be completed without requiring additional clearing of undisturbed habitat beyond the original footprint of the existing project. For the purposes of this key, Federal loan transfers are those transfers where the original lending or mortgage institutions for existing projects are no longer holding the loans and the properties are being transferred via federally backed loans. Projects may include demolition, rehabilitation, renovations, and/or rebuilding of existing structures (*e.g.*, commercial buildings, multi-family housing, single-family housing), and various utilities projects such as water and wastewater treatment facilities, sewer or power line repair, etc.

The U.S. Fish and Wildlife Service is the lead Federal agency charged with the protection and conservation of Federal Trust Resources, such as threatened and endangered species and migratory birds, in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 et seq.), the Bald and Golden Eagle Protection Act, (16 U.S.C. 668-668d) (Eagle Act), and the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 701 et seq.).

Recently, many Federal agencies have activated programs that have resulted in an increased consumer demand to initiate projects through federally-backed loans and grants, all of which require those same Federal agencies to comply with Section 7 of the Act. Consequently, we have experienced an increase in the number of requests for review of these government-backed loan and grant projects. These include, but are not limited to:

1. U.S. Department of Housing and Urban Development's (HUD) Neighborhood Stabilization and Community Development Block Grant programs;

2. U.S. Department of Energy's (DOE) Energy Efficiency and Renewable Energy program;

3. U.S. Department of Agriculture's (USDA) Housing Assistance and Rural Development Loan and Grant Assistance programs;

4. U.S. Federal Aviation Administration (FAA) regulatory airport and runway modifications;

5. U.S. Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance program; and

6. U.S. Environmental Protection Agency's (EPA) Clean Water State Revolving Fund.

In order to fulfill the Act's statutory obligations in a timely and consistent manner, and to assist Federal agencies, State and local governments, and consultants in addressing Section 7 and National Environmental Policy Act (NEPA) environmental impact review requirements, we provide the following guidance and clearance relative to the criteria stated below for Federally-insured loan and grant project requests.

This guidance is based on the signed letters:
U.S. Fish and Wildlife Service Clearance to Proceed with Federally-Insured Loan and Grant Project Requests in Florida.
U.S. Fish and Wildlife Service Clearance to Proceed with Federally-Insured Loan and Grant Project Requests in Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

IPAC USER CONTACT INFORMATION

Agency: LaBelle city
Name: Morgan French
Address: 1496 Highway 90
City: Chipley
State: FL
Zip: 32428
Email mfrench@woodardcurran.com
Phone: 8507033000

You have indicated that your project falls under or receives funding through the following special project authorities:

- BIPARTISAN INFRASTRUCTURE LAW (BIL) (OTHER)

APPENDIX D: OLD FLORIDA RV EXECUTED AGREEMENT

**CITY OF LABELLE, FLORIDA / HENDRY COUNTY/
SWJR LAND DEVELOPMENT, LLC
WATER AND WASTEWATER SYSTEM
DEVELOPER'S AGREEMENT**

[Old Florida RV Resort]

THIS AGREEMENT made and entered into this 14th day of April, 2022, by and between SWJR LAND DEVELOPMENT, LLC, a Florida limited liability company, hereinafter referred to as "Developer", the City of LaBelle, Florida, an incorporated municipality located within the State of Florida, hereinafter referred to as the "City", and Hendry County, a political subdivision of the State of Florida, hereinafter referred to as "Hendry County" or "County" (collectively, the Developer, City, and County shall be referred to as the "Parties").

RECITALS

a. Developer owns real property in Hendry County, Florida south of State Road 80 and east of the Lee County line, more particularly described and depicted in **Exhibit A,** which is attached hereto and made a part hereof (the "Property").

b. Developer desires and intends to develop the Property pursuant to approvals from Hendry County, Florida, for a recreational vehicle park, with customary amenities and accessory uses including commercial uses (the "Project") as are permitted by Hendry County Ordinance No. 2021-22 adopted on October 26, 2021 ("Development Order").

c. City potable water service is not currently available to the Property.

d. City sewer service is not currently available at the Property.

e. The Property is outside of the municipal boundaries of the City of LaBelle, but the Property can be served by the City of LaBelle for utilities.

f. Developer intends to construct all internal potable water and sewer improvements on the Property to serve the Project, which work will be performed at Developer's cost.

g. Developer also desires and intends to construct force main extensions along with the necessary pumps, valves, meters, and other appurtenant facilities needed to provide potable water transmission and sewage collection for the Project, as more specifically described in plans by prepared by JR Evans Engineering project #0061601-02 dated January 10, 2022 ("Engineering Plans"), which shall be constructed in or adjacent to the right of way of State Road 80, West Cowboy Way, and Dr. Martin Luther King Blvd., as the route is depicted on the graphic attached as **Exhibit B,** which is attached hereto and made a part hereof.

h. In addition to the potable water and sewage collection infrastructure the Developer will install those fire hydrants required to serve the Project and along the extension route (at

1,000 feet spacing) and will also construct an on-site lift station on the Property (the work contemplated by Paragraph g., above, and this Paragraph h. are collectively referred to as the "Force Main Extensions"). Aside from the lift station, all other water and sewer facilities installed on the Property and lying on the Developer's side of the proposed master meter shall be not included as Force Main Extensions as defined in this Agreement.

i. The Force Main Extensions are intended to be available to service the Property and the City and County have requested that these facilities be upsized to provide available capacity to serve other properties within the area depicted in **Exhibit C,** which is attached hereto and made a part hereof.

j. Developer intends and desires to be responsible for the design, permitting, and construction of the Force Main Extensions and to provide easements, and all appurtenances within the route identified in **Exhibit B.** The design, permitting, and construction of the Force Main Extensions will be performed at Developer's initial cost, but the Upsize Cost, as defined herein, shall be reimbursed to the Developer by the City and the County.

k. City will cooperate with and aid Developer with permitting for the Force Main Extensions as an applicant in any potable water or sewage extension permit from the Florida Department of Environmental Protection.

l. The City desires and intends to accept the Force Main Extensions for ownership and operation upon completion and upon the standard turnover of the Force Main Extensions to City.

m. The Parties acknowledge and agree that the Upsize Cost will be reimbursed to the Developer in the manner more specifically set forth in Section 5 of this Agreement through: (a) granting to the Developer Credits, as defined herein, for the Project, (b) a County Reimbursement, as defined herein, from the County to the Developer, and (c) payment by the City to the Developer of Futures, as defined herein.

n. The Parties agree that Developer will receive reimbursement for the Upsize Cost of the Force Main Extensions from the City and County when due pursuant to Section 5 below and upon completion of construction, certification by Developer's civil engineer, and turnover of the Force Main Extensions to the City, and approval for the Force Main Extensions to be put into service by the applicable regulatory authorities. The Upsize Cost, agreed credits and cash payments set forth in Section 5 are based on the estimated costs of construction set forth in **Exhibit D**, which is attached hereto and made a part hereof, and which the Parties all approve.

o. The Parties acknowledge the Force Main Extension will deliver potable water and wastewater flow via connections to the City's planned Helms Rd twelve (12) inch water main and to the master pump station located at the City's wastewater treatment plant for sewer, as indicated in the Engineering Plans.

p. Developer desires to convey title of the Force Main Extensions to City on the terms and conditions outlined herein.

q. City desires to acquire the Force Main Extensions from Developer upon their completion, and to operate the Force Main Extensions as part of a City-owned system, providing central utility services to the Property and to other properties.

ACCORDINGLY, for and in consideration of the Recitals, the mutual undertakings and agreements herein contained and assumed, and other good and valuable consideration the receipt and sufficiency of which are acknowledged by the parties, the Developer, the City and the County hereby covenant and agree as follows:

Section 1. RECITALS. The above Recitals are true and correct and form a material part of this Agreement.

Section 2. PROVISION OF SERVICE; RESERVATION OF CAPACITY. Upon completion of the Force Main Extensions in accordance with the approved Engineering Plans by the Developer, and approval and acceptance of the completed Force Main Extensions by the City, the City will provide water and wastewater service to the Property and the Developer's Project in accordance with the standard practices of the Utility and City Ordinances. The City agrees to reserve and set aside for the benefit of the Property, sufficient capacity to serve 271 ERUs at the City's wastewater treatment plant and potable water plant for water/sewer service to the Property. Notwithstanding the reservation, City is not obligated to provide water or wastewater capacity in excess of the amounts estimated to be supplied in this Agreement. All calculations provided for in this Agreement are based on representations and calculations made by the Developer with respect to anticipated Project needs and usage. To the extent the Project's usage exceeds its capacity reservation of 62,339 gallons per day, additional impact fees may become due as provided in Section 5.d.

Section 3. CONVEYANCE OF THE FORCE MAIN EXTENSIONS.

a. During the construction of the Force Main Extensions by Developer (with an estimated start time of June of 2022), the City shall have the right to inspect such installation to determine compliance with plans and specifications, adequacy of the quality of the installation, and further, shall be entitled to require standard tests for pressure, infiltration/vacuum, line and grade, and all other normal engineering tests required by specifications and good engineering practices. Developer shall correct any deficiencies found by City with regard to design or construction. Complete as-built plans shall be submitted to the City upon completion of construction. The estimated completion time of the work contemplated hereby is February 2023, which is not guaranteed and is subject to equitable extension due to delays not within the reasonable control of Developer; provided, however, that if the Force Main Extensions are not approved to be put into service by the applicable regulatory authorities by December 31, 2023, then the City and/or County may terminate this

Agreement upon providing 60 days' written notice to the Developer. Upon termination the Parties will not have any further obligations under this Agreement.

b. Upon completion of the Force Main Extensions and approval and acceptance by City, Developer shall convey the Force Main Extensions to City free of any liens or other encumbrances by means of conveyance documents in a form agreeable to the City.

c. Upon Developer complying with the documentation for turnover and conveyance in the above paragraph, City shall accept and take possession of the Force Main Extensions "AS-IS" and without warranty from the Developer (whether express or implied) except as expressly stated in Section 3.d., below, and will thereafter operate, maintain, and repair the Force Main Extensions and do all other things necessary for the public convenience and as may be required by law to use and operate the Force Main Extensions as part of its utility system.

d. All installations by Developer or its contractor(s) and subcontractor(s) shall be warranted for at least one year from the date of certificate of acceptance by the City, with financial assurances acceptable to the City in the form of a bond or other assurance backing the warranty.

e. All utility facilities shall be covered by fee title or perpetual, exclusive easements if not located within platted or dedicated rights-of-way, and the Developer shall convey either a fee simple interest or a sufficient exclusive and perpetual easement interest to the City. Mortgagee(s), if any, holding prior liens on such properties shall be required to subordinate their position and join in the grant or dedication of the easements or rights-of-way.

Section 4. **OWNERSHIP OF THE FORCE MAIN EXTENSIONS.** Developer agrees with the City that all components of the Force Main Extensions conveyed to the City for use in connection with providing potable water and wastewater services to the Property and other properties along the depicted route, shall at all times remain in the complete and exclusive ownership and control of the City.

Section 5. **REIMBURSEMENT BY CITY AND COUNTY TO DEVELOPER FOR UPSIZE COST OF THE FORCE MAIN EXTENSIONS.** In consideration of this Agreement and the rights conveyed hereunder, City agrees and obligates itself to accept the Force Main Extensions from Developer, and City and County agree to reimburse Developer a total amount not-to-exceed $5,557,256.00 for the costs associated with upsizing the Force Main Extensions ("Upsize Cost"), as more specifically set forth in **Exhibit D**, as follows:

a. **Credits.** City shall credit Developer for a portion of the Upsize Cost incurred by Developer by issuing a $2,010,765.80 credit against future water and sewer impact fees, as currently set forth in City Resolution Nos. 2019-22 and 2020-59 for the Project, which amounts would otherwise be payable by Developer to the City for the Project ("Credits"). It is agreed that in exchange for Developer accepting such Credit, the Project (and all improvements that may be developed thereon in accordance with the Development Order) will be exempt from the payment of any and all water and sewer impact fees that would otherwise be payable at such time as facilities within the Property are constructed and/or connected to municipal water and sewer up to a maximum of 271 Equivalent Residential Units ("ERUs" where one ERU is equal to 230 Gallons Per Day) or 62,330 gallons per day combined water and wastewater but excluding any monthly rate or usage charges and any miscellaneous meter or connection charges at time of connection. The amount of the Credits is fixed and not subject to change, regardless of the actual costs incurred by Developer in constructing the Force Main Extensions. For purposes hereof, the Credits shall be deemed paid by the City to the Developer at such time as the Developer actually applies the Credit towards what would otherwise be a cash payment due to the City by Developer.

b. **County Reimbursement.** In addition to the Credits provided by the City, Hendry County agrees to make a cash payment to Developer in the total amount of $400,000 (the "County Reimbursement"). The amount of the County Reimbursement is fixed and not subject to change, regardless of the actual costs incurred by Developer in constructing the Force Main Extensions. The County Reimbursement shall be paid to Developer within thirty (30) days of the date the Developer and/or the City notify the County that the Force Main Extensions have been completed and approved to be put into service by the applicable regulatory authorities.

c. **Futures.** In addition to the Credits and County Reimbursement, the City agrees to pay to Developer any portion of any water or sewer impact fees attributable to transmission or collection from any party that connects to the Force Main Extensions or reserves capacity for future connection to the Force Main Extensions (such portions hereinafter "Futures") until such time as the $3,146,490.20balance of the Upsize Cost has been paid in full to Developer. Futures payments received by the City before the Force Main Extensions have been completed and approved to be put into service by the applicable regulatory authorities shall be made to the Developer within thirty (30) days of date the Force Main Extensions are put into service. Futures payments received by the City after the Force Main Extensions have been completed and put into service by the applicable regulatory authorities shall be made to Developer within thirty (30) days of receipt by the City. No Futures payments shall be due for any connections that are not required to pay connection fees due to exemption by law or court order. The City and the County will adopt applicable ordinances and enforce mandatory water and sewer connections for "New Development" (as defined in **Exhibit E**) that occurs after the Force Main Extensions are operational, requiring such new development within the area set forth in **Exhibit C** with "Available" service from the Force Main Extensions to connect to the City utility system. For purposes of requiring connection to water and sewer service, new development will be deemed to have service "Available" to it from the Force Main Extensions if the requirements in Exhibit E are met. Notwithstanding the forgoing, the City and County may by interlocal agreement also provide for an expanded service area and definition of "Available" for eligible connections reimbursement.

d. In consideration of the City's reliance upon the Developer's estimated usage, Developer specifically agrees that at any time prior to the complete repayment of Developer's outstanding costs pursuant to Section 5.c. the City shall have the right to request additional impact fees or reduce outstanding Futures, or combination thereof, to the extent the total Project water and wastewater utilization exceeds Developer's reservation capacity threshold as provided in Section 2. The amount of any such adjustment will be based on the applicable portions of the then current impact fee schedule not attributable to transmission or collection lines averaged over any consecutive three (3) month period in which the Project's actual usage exceeded the volumetric limits set forth herein.

Section 6. APPLICATION OF RULES, REGULATIONS AND RATES. Notwithstanding any provisions in this Agreement, the City may establish, revise, modify and enforce rules, regulations and monthly rates covering the provision of wastewater service and water service to the Property. Such rules, regulations and rates are subject to the approval of the City of LaBelle, Florida. Such rules and regulations shall at all times be reasonable and subject to regulations as may be provided by law or under contract. Service rates charged to Developer or customers located upon the Property shall be identical to rates charged for the same classification of service. All rules, regulations and rates in effect, or placed into effect in accordance with the preceding, shall be binding upon Developer, upon any other entity holding by, through or under Developer, and upon any customer of utility services provided to the Property and to other properties along the depicted route by the City.

Section 7. PERMISSION TO CONNECT REQUIRED. Developer, or any owner of any parcel of the Property, or any occupant of any residences or buildings located thereon, shall not have the right to and shall not connect any customer installation to the water and wastewater facilities of the City until approval of such connection has been granted by the City. The City will not unreasonably withhold its permission for the connection by Developer of the Project to the City's system.

Section 8. BINDING AGREEMENT: ASSIGNMENTS BY DEVELOPER. This Agreement shall be binding upon and shall inure to the benefit of Developer, the City, the County, and their respective assigns and successors by merger, consolidation or conveyance. This Agreement shall not be sold, conveyed, assigned or otherwise disposed of by Developer without the written consent of the City and County first having been obtained. The City and County agree not to unreasonably withhold, condition nor delay such consent.

Section 9. NOTICES. Until further written notice by either party to the other, all notices provided for herein shall be in writing and transmitted by hand delivery, by mail, or electronic mail to:

Developer: SWJR Land Development, LLC
430 Bayfront Place
Naples, FL 34102
Attention: Jon Rubinton
jon@lotusnaples.com

City: City of LaBelle
City Hall, 481 West Hickpochee Avenue
LaBelle, FL 33935
Attention: Superintendent of Public Works
ghull@citylabelle.com

County: Hendry County
640 S. Main Street
LaBelle, FL 33975
Attention: County Administrator
jdavis@hendryfla.net

Section 10. SURVIVAL OF COVENANTS. The rights, privileges, obligations and covenants of the Parties shall survive the completion of the work of Developer with respect to completing the Force Main Extensions, until the Developer has received reimbursement in full for the Upsize Cost.

Section 11. ENTIRE AGREEMENT; AMENDMENTS; APPLICABLE LAW. This Agreement supersedes all previous agreements or representations, either verbal or written, heretofore in effect between the Parties, made with respect to the matters herein contained, and when duly executed, constitutes the agreement between the Parties. The language of this Agreement has been agreed to by all parties to express their mutual intent and no rules of strict construction shall be applied against any party hereto. No additions, alterations or variations of the terms of this Agreement shall be valid, nor can provisions of the Agreement be waived by any party, unless such additions, alterations, variations or waivers are expressed in writing and duly signed by all parties. This Agreement shall be governed by the laws of the State of Florida, as well as all applicable local ordinances of the City and the County and it shall be and become effective immediately upon execution by all parties hereto. Venue for any action relating to this Agreement shall be in Hendry County, Florida.

Section 12. DISCLAIMERS: LIMITATIONS ON LIABILITY.

a. STATUS. THE PARTIES DEEM EACH OTHER TO BE INDEPENDENT CONTRACTORS, AND NOT AGENTS OF THE OTHER. NO PARTY TO THIS AGREEMENT SHALL HAVE ANY RESPONSIBILITY WHATSOEVER WITH RESPECT TO SERVICES PROVIDED OR CONTRACTUAL OBLIGATIONS ASSUMED BY ANOTHER PARTY TO THIRD PARTIES.

b. INDEMNITY. THE DEVELOPER SHALL INDEMNIFY THE CITY AND THE COUNTY AND, THEIR RESPECTIVE COMMISSIONERS, AGENTS, AND EMPLOYEES, FROM AND AGAINST ANY AND ALL CLAIMS, LIABILITY, DEMANDS, DAMAGES, EXPENSES, FEES, FINES, PENALTIES, SUITS, PROCEEDINGS, ACTIONS AND FEES, INCLUDING ATTORNEYS' FEES, FOR INJURY (INCLUDING DEATH) TO PERSONS OR DAMAGE TO PROPERTY OR PROPERTY RIGHTS THAT MAY ARISE FROM OR BE RELATED TO ACTS, ERRORS, OR OMISSIONS OF THE DEVELOPER, ITS AGENTS,

EMPLOYEES, SERVANTS, LICENSEES, INVITEES, OR CONTRACTORS OR BY ANY PERSON UNDER THE CONTROL OR DIRECTION OF THE DEVELOPER, OR BY THE DEVELOPER'S USE OF THE CITY'S SYSTEM, AND THE DEVELOPER SHALL INDEMNIFY THE CITY AND COUNTY AS AFORESAID FROM ALL LIABILITY, CLAIMS AND ALL OTHER ITEMS ABOVE MENTIONED, ARISING OR GROWING OUT OF OR CONNECTED WITH ANY DEFAULT, BREACH, VIOLATION OR NONPERFORMANCE BY THE DEVELOPER OF ANY COVENANT, CONDITION, AGREEMENT OR PROVISION CONTAINED IN THIS AGREEMENT CONCERNING ALL OR ANY PART OF THE CITY'S SYSTEM.

c. FORCE MAJEURE. NO PARTY SHALL BE LIABLE OR RESPONSIBLE TO ANOTHER BY REASON OF THE FAILURE OR INABILITY TO TAKE ANY ACTION REQUIRED OR TO COMPLY WITH THE REQUIREMENTS IMPOSED HEREBY (OR ANY INJURY TO THE PARTY OR BY THOSE CLAIMING BY OR THROUGH A PARTY WHICH FAILURE, INABILITY OR INJURY IS CAUSED DIRECTLY OR INDIRECTLY BY FORCE MAJEURE AS HEREINAFTER SET FORTH). THE TERM "FORCE MAJEURE" AS EMPLOYED HEREIN SHALL MEAN ACTS OF GOD, STRIKES, LOCK-OUTS, OR OTHER INDUSTRIAL DISTURBANCE; ACTS OF PUBLIC ENEMIES, WAR, BLOCKADES, RIOTS, ACTS OF ARMED FORCES, MILITIA, OR PUBLIC AUTHORITY; EPIDEMICS, BREAKDOWN OF OR DAMAGE TO MACHINERY, PUMPS OR PIPE LINES; LANDSLIDES, EARTHQUAKES, FIRES, STORMS, FLOODS, OR WASHOUTS; ARRESTS, TITLE DISPUTES, OR OTHER LITIGATION; GOVERNMENTAL RESTRAINTS OF ANY NATURE WHETHER FEDERAL, STATE, COUNTY, MUNICIPAL OR OTHERWISE, CIVIL OR MILITARY, CIVIL DISTURBANCES; EXPLOSIONS, FAILURE OR INABILITY TO OBTAIN NECESSARY MATERIALS, SUPPLIES, LABOR OR PERMITS OR GOVERNMENTAL APPROVALS WHETHER RESULTING FROM OR PURSUANT TO EXISTING OR FUTURE RULES, REGULATIONS, ORDERS, LAWS OR PROCLAMATIONS WHETHER FEDERAL, STATE, COUNTY, MUNICIPAL OR OTHERWISE, CIVIL OR MILITARY; OR BY ANY OTHER CAUSES, WHETHER OR NOT OF THE SAME KIND AS ENUMERATED HEREIN, NOT WITHIN THE SOLE CONTROL OF THE PARTY AND WHICH BY EXERCISE OF DUE DILIGENCE THE PARTY IS UNABLE TO OVERCOME.

d. DISCLAIMER OF THIRD-PARTY BENEFICIARIES. THIS AGREEMENT IS SOLELY FOR THE BENEFIT OF AND SHALL BE BINDING UPON THE FORMAL PARTIES HERETO AND THEIR RESPECTIVE AUTHORIZED SUCCESSORS AND ASSIGNS, AND NO RIGHT OR CAUSE OF ACTION SHALL ACCRUE UPON OR BY REASON HEREOF, TO OR FOR THE BENEFIT OF ANY THIRD PARTY NOT A PARTY TO THIS AGREEMENT OR AN AUTHORIZED SUCCESSOR OR ASSIGNEE THEREOF.

e. DISCLAIMER OF SECURITY. NOTWITHSTANDING ANY OTHER PROVISION OF THIS AGREEMENT, THE DEVELOPER EXPRESSLY ACKNOWLEDGES (1) THAT IT HAS NO PLEDGE OF OR LIEN UPON ANY REAL PROPERTY (INCLUDING, SPECIFICALLY, THE CITY'S SYSTEM), ANY PERSONAL PROPERTY, OR ANY EXISTING OR FUTURE REVENUE SOURCE OF THE COUNTY OR CITY (INCLUDING, SPECIFICALLY, ANY REVENUE OR RATES, FEES, OR CHARGES COLLECTED BY

THE CITY UNDER THIS AGREEMENT); AND (2) THAT ITS RIGHTS TO ANY PAYMENTS OR CREDITS UNDER THIS AGREEMENT ARE SUBORDINATE TO THE RIGHTS OF ALL HOLDERS OF ANY STOCKS, BONDS, OR NOTES OF THE COUNTY AND CITY, WHETHER CURRENTLY OUTSTANDING OR HEREINAFTER ISSUED.

Section 13. ESTOPPEL. Upon the request of Developer (which may be made in conjunction with sale or transferring all or any portion of the Property and/or in conjunction with placing financing on the Property), the City will promptly provide an estoppel letter confirm in writing to Developer (and/or Developer's successor in title and/or their respective lenders) that this Agreement is in full force and effect and any other statements reasonably requested by the Developer.

Section 14. SEVERABILITY. If any part of this Agreement is found invalid or unenforceable by any court, such invalidity or unenforceability shall not affect the other parts of this Agreement if the rights and obligations of the parties contained therein are not materially prejudiced, and if the intentions of the parties can continue to be effected. To that end, this Agreement is declared severable.

Section 15. AUTHORITY TO EXECUTE AGREEMENT. The signature by any person to this Agreement shall be deemed a personal warranty by that person that he has the full power and authority to bind any governmental entity, corporation, partnership, or any other business entity for which he purports to act hereunder.

Section 16. CAPACITY. The execution of this Agreement does not itself constitute a specific reservation of capacity by Developer, and the City does not hereby guarantee that capacity will be available for Developer's Project until the completion and turnover of the Force Main Extensions at which time the identified capacity for the Developer's Project will be available.

LIST OF EXHIBITS:
Exhibit A – Legal Description of Developer's Property
Exhibit B – Force Main Extension Route
Exhibit C – Service Area
Exhibit D – Force Main Extensions Cost Estimate
Exhibit E – "Availability" Requirements for Connection of New Development to Water and Sewer Service

IN WITNESS WHEREOF, the Developer, the County, and the City have executed or have caused this Agreement to be duly executed in several counterparts, each of which counterpart shall be considered an original executed copy of this Agreement.

[SIGNATURE PAGES FOLLOW]

CITY OF LABELLE

Julie C Wilkins

Julie Wilkins, Mayor

ATTEST

Jessi Zubaty

Jessi Zubaty, Deputy City Clerk

APPROVED AS TO FORM:

Derek Rooney, City Attorney

HENDRY COUNTY

By: Emma J. Byrd

Emma J. Byrd, Chair,
County Commission

ATTEST:

Kimberley Barrineau

Kimberley Barrineau, County Clerk

SWJR Land Development, LLC

By: ______________________________

Name: Jon Robinson

Title: Manager

STATE OF Florida
COUNTY OF Collier

The foregoing instrument was acknowledged before me by means of ☑ physical presence or ☐ online notarization, this 4 day of May, 2022 by Jon Robinson, as a duly authorized representative of SWJR Land Development, LLC, who is ☑ personally known to me or ☐ who has produced ______________________ as identification and who did/did not take an oath.

Elisabeth Paulhus

Notary Public, State of Florida

My Commission Expires: 10.13.2023

ELISABETH PAULHUS
Notary Public-State of Florida
Commission # GG 345313
My Commission Expires
October 13, 2023

Exhibit A
Legal Description of Developer's Property

PARCEL I

A PARCEL OF LAND LYING AND BEING IN THE SOUTHWEST ONE-QUARTER (S.W. 1/4) OF SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, AND THE NORTHWEST ONE-QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 43 SOUTH, RANGE 28 EAST, ALL LYING AND BEING IN HENDRY COUNTY, FLORIDA, SAID LANDS BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST (N.W.) CORNER OF SAID SECTION 31, SAID POINT ALSO BEING THE SOUTHWEST (S.W.) CORNER OF SAID SECTION 30. THENCE RUN NORTH 89 DEGREES 35' 08" EAST ALONG THE NORTH LINE OF THE N.W. 1/4 OF SAID SECTION 31, 1317.91 FEET TO THE N.W. CORNER OF THE N.E. 1/4 OF SAID N.W. 1/4 AND THE POINT OF BEGINNING OF THE LANDS HEREIN DESCRIBED; THENCE RUN SOUTH 00 DEGREES 00' 05" WEST, ALONG THE WEST LINE OF SAID N.E. 1/4, OF THE N.W. 1/4, 1135.02 FEET TO THE NORTH LINE OF THE CARLOS WATERWAY AS DESCRIBED IN OFFICIAL RECORDS BOOK (O.R.B.) 575, PAGE 1695 OF THE PUBLIC RECORDS OF HENDRY COUNTY, FLORIDA; THENCE RUN SOUTH 89 DEGREES 40' 19" EAST, ALONG SAID NORTH LINE, 1319.29 FEET TO THE EAST LINE OF SAID N.E. 1/4 OF THE N.W. 1/4; THENCE RUN NORTH 00 DEGREES 06' 10" WEST, ALONG SAID EAST LINE, 1133.05 FEET TO THE N.E. CORNER OF SAID N.W. 1/4, SAID POINT ALSO BEING THE S.E. CORNER OF THE S.W. 1/4 OF SAID SECTION 30 THENCE RUN NORTH (N 00 DEGREES 00' 00" E), ALONG THE EAST LINE OF SAID S.W. 1/4, 1319.81 FEET TO THE N.E. CORNER OF THE S.E. 1/4 OF SAID S.W. 1/4; THENCE RUN NORTH 89 DEGREES 29' 36" WEST, ALONG THE NORTH LINE OF SAID S.E. 1/4 OF THE S.W. 1/4, 616.12 FEET; THENCE RUN NORTH (N 00 DEGREES 00' 00" E), PARALLEL TO THE EAST LINE OF SAID S.W. 1/4, 1268.50 FEET TO THE SOUTH RIGHT OF WAY LINE OF STATE ROAD 80; THENCE RUN SOUTH 89 DEGREES 25' 16" WEST, ALONG SAID SOUTH RIGHT OF WAY LINE, 706.77 FEET TO AN INTERSECTION WITH THE WEST LINE OF THE N.E. 1/4 OF SAID S.W. 1/4; THENCE SOUTH 00 DEGREES 07' 29" EAST, ALONG SAID WEST LINE, 2577.09 FEET TO THE S.W. CORNER OF SAID S.E. 1/4 OF THE S.W. 1/4, SAID POINT ALSO BEING THE N.W. CORNER OF THE N.E. 1/4 OF THE N.W. 1/4 OF SAID SECTION 31 AND THE POINT OF BEGINNING.

TOGETHER WITH AN IRRIGATION PUMP EASEMENT AS DESCRIBED IN O.R. BOOK 489, PAGE 396, PUBLIC RECORDS OF HENDRY COUNTY, FLORIDA.

LESS AND EXCEPT THE FOLLOWING:

PARCEL 1:

A PARCEL OF LAND LOCATED IN THE SOUTHWEST 1/4 OF SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA; THENCE RUN NORTH 89 DEGREES 52' 11" WEST ALONG THE SOUTH LINE OF THE SOUTHEAST 1/4 OF SAID SECTION 30, FOR A DISTANCE OF 2636.53 FEET TO THE SOUTH 1/4 CORNER OF SAID SECTION 30, THE SAME BEING A POINT ON THE EAST RIGHT-OF-WAY LINE OF A 50 FOOT WIDE ROAD RIGHT-OF-WAY EASEMENT, AS RECORDED IN OFFICIAL RECORDS BOOK 489 AT PAGE 391 OF THE PUBLIC RECORDS OF HENDRY COUNTY, FLORIDA; THENCE RUN NORTH 00 DEGREES 20' 46" WEST ALONG SAID RIGHT-OF-WAY LINE FOR A DISTANCE OF 1,019.53 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUE NORTH 00 20' 46" WEST ALONG SAID RIGHT-OF-WAY LINE FOR A DISTANCE OF 300.01 FEET; THENCE RUN NORTH 89 DEGREES 50' 33" WEST FOR A DISTANCE OF 616.12 FEET; THENCE RUN SOUTH 00 DEGREES 20' 46" EAST FOR A DISTANCE OF 300.01 FEET; THENCE RUN SOUTH 89 DEGREES 50' 33" EAST FOR A DISTANCE OF 616.12 FEET TO THE POINT OF BEGINNING.

PARCEL 2:

A 20.00 FOOT STRIP OF LAND LOCATED IN THE SOUTHWEST 1/4 OF SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA; THENCE RUN NORTH 89 DEGREES 52' 11" WEST ALONG THE SOUTH LINE OF THE SOUTHEAST 1/4 OF SAID SECTION 30, FOR A DISTANCE OF 2636.53 FEET TO THE SOUTH 1/4 CORNER OF SAID SECTION 30, THE SAME BEING A POINT ON THE EAST RIGHT-OF-WAY LINE OF A 50 FOOT WIDE ROAD RIGHT-OF-WAY EASEMENT, AS RECORDED IN OFFICIAL RECORDS BOOK 489 AT PAGE 391 OF THE PUBLIC RECORD OF HENDRY COUNTY, FLORIDA; THENCE RUN NORTH 00 DEGREES 20' 46" WEST ALONG SAID RIGHT-OF-WAY LINE FOR A DISTANCE OF 1,019.53 FEET; THENCE RUN NORTH 89 DEGREES 50' 33" WEST FOR A DISTANCE OF 616.12 FEET TO THE POINT OF BEGINNING OF THE 20.00 FOOT WIDE STRIP OF LAND HEREIN DESCRIBED; THENCE CONTINUE NORTH 89 DEGREES 50' 33" WEST FOR A DISTANCE OF 20.00 FEET; THENCE RUN NORTH 00 DEGREES 20' 46" WEST FOR A DISTANCE OF 1567.90 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF STATE ROAD 80, AS RECORDED IN OFFICIAL RECORDS BOOK 537 AT PAGE 856 AND IN OFFICIAL RECORDS BOOK 537 AT PAGE 859 OF THE PUBLIC RECORDS OF HENDRY COUNTY FLORIDA; THENCE RUN NORTH 89 DEGREES 03' 52" EAST ALONG SAID SOUTH RIGHT-OF-WAY LINE FOR A DISTANCE OF 20.00 FEET; THENCE RUN SOUTH 00 DEGREES 20' 46" EAST FOR A DISTANCE OF 1568.28 FEET TO THE POINT OF BEGINNING.

PARCEL II

A PARCEL OF LAND IN SECTIONS 30 AND 31, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

GOVERNMENT LOT 5 AND THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4 LESS THAT PART LYING WITHIN THE RIGHT-OF-WAY FOR STATE ROAD 80 ALL BEING IN SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA. - AND-THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 31, TOWNSHIP 43 SOUTH, RANGE 28 EAST. LESS THE SOUTH 25 FEET OF THE EAST 120 FEET THEREOF. AND- INCLUDING A STRIP OF LAND DESCRIBED AS THE WEST 1200 FEET OF THE NORTH 30 FEET OF THE SOUTHWEST 1/4 OF THE NORTHWEST 1/4 OF SECTION 31, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA.

LESS AND EXCEPT THEREFROM THAT PORTION AS DESCRIBED IN THAT CERTAIN ORDER OF TAKING FOR STATE ROAD 80 RECORDED IN OFFICIAL RECORDS BOOK 537, PAGE 856, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCE AT THE SOUTHWEST CORNER OF SAID SECTION 30, TOWNSHIP 43 SOUTH, RANGE 28 EAST, HENDRY COUNTY, FLORIDA, THENCE NORTH 01 DEGREES 02' 02" WEST ALONG THE WESTERN LINE OF SAID SECTION 30, A DISTANCE OF 2597.24 FEET TO THE SOUTHERLY EXISTING RIGHT-OF-WAY LINE OF STATE ROAD 80 (PER 0701-PROJECT 805) FOR A POINT OF BEGINNING; THENCE NORTH 89 DEGREES 47' 22" EAST ALONG SAID SOUTHERLY EXISTING RIGHT-OF-LINE A DISTANCE OF 1322.97 FEET; THENCE SOUTH 00 DEGREES 55' 25" EAST, A DISTANCE OF 16.82 FEET; THENCE SOUTH 88 DEGREES 36' 43" WEST, A DISTANCE OF 1322.85 FEET; THENCE NORTH 01 DEGREES 02' 02" WEST, A DISTANCE OF 44.01 FEET TO THE POINT OF BEGINNING.

ALSO LESS AND EXCEPT THEREFROM THAT PORTION AS DESCRIBED IN THAT CERTAIN AGREED ORDER OF TAKING IN FAVOR OF THE EAST COUNTY WATER CONTROL DISTRICT, A DRAINAGE DISTRICT AND A PUBLIC CORPORATION RECORDED NOVEMBER 2, 1998 IN OFFICIAL RECORDS BOOK 575, PAGE 1692 OF THE PUBLIC RECORDS OF HENDRY COUNTY, FLORIDA; BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST 400.00 FEET AND THE SOUTH 214.97 FEET OF THOSE LANDS DESCRIBED AS PARCEL D IN OFFICIAL RECORD BOOK 508, PAGE 408, LYING IN SECTIONS 30 AND 31, TOWNSHIP 43 SOUTH, RANGE 28 EAST, OF THE PUBLIC RECORDS OF HENDRY COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGIN AT THE SOUTHEAST CORNER OF SAID LANDS DESCRIBED IN OFFICIAL RECORD BOOK 508, PAGE 408; THENCE RUN SOUTH, 89 DEGREES 34' 13" WEST A DISTANCE OF 539.24 FEET THENCE CONTINUE SOUTH 89 DEGREES 34' 13" WEST, A

DISTANCE OF 659.98 FEET; THENCE NUN NORTH 00 DEGREES 41' 48" WEST A DISTANCE OF 1351 97 FEET; THENCE RUN NORTH 01 DEGREES 00' 04" WEST, A DISTANCE OF 1323.57 FEET; THENCE CONTINUE NORTH 01 DEGREES 01' 04" WEST, A DISTANCE OF 1229.56 FEET; THENCE RUN NORTH 88 DEGREES 36' 43" EAST A DISTANCE OF 400.01 FEET; THENCE RUN SOUTH 01 DEGREES 01' 04" EAST, A DISTANCE OF 2556.83 FEET; THENCE RUN SOUTH 00 DEGREES 41' 48" EAST, A DISTANCE OF 1139.998 FEET; THENCE RUN NORTH 89 DEGREES 34' 13" EAST A DISTANCE OF 798.99 FEET; THENCE RUN SOUTH 00 DEGREES 45' 31" EAST, A DISTANCE OF 160.00 FEET; THENCE CONTINUE SOUTH 00 DEGREES 45' 31" EAST A DISTANCE OF 54.97 FEET TO THE POINT OF BEGINNING.

ALSO LESS AND EXCEPT THEREFROM THE SOUTH 160.00 FEET OF THOSE LANDS DESCRIBED AS PARCEL E IN OFFICIAL RECORD BOOK 508, PAGE 411, PUBLIC RECORDS OF HENDRY COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGIN AT THE SOUTHEAST CORNER OF SAID LANDS DESCRIBED IN OFFICIAL RECORD BOOK 508, PAGE 411; THENCE RUN SOUTH 89 DEGREES 33' 27" WEST, A DISTANCE OF 250.01 FEET; THENCE CONTINUE SOUTH 89 DEGREES 33' 27" WEST, A DISTANCE OF 1189.24 FEET; THENCE RUN NORTH 00 DEGREES 45' 31" WEST A DISTANCE OF 160.00 FEET; THENCE RUN NORTH 89 DEGREES 33' 27" EAST, A DISTANCE OF 1439.10 FEET; THENCE RUN SOUTH 00 DEGREES 48' 43" EAST, A DISTANCE OF 160.00 FEET TO THE POINT OF BEGINNING.

Exhibit B
Force Main Extension Route

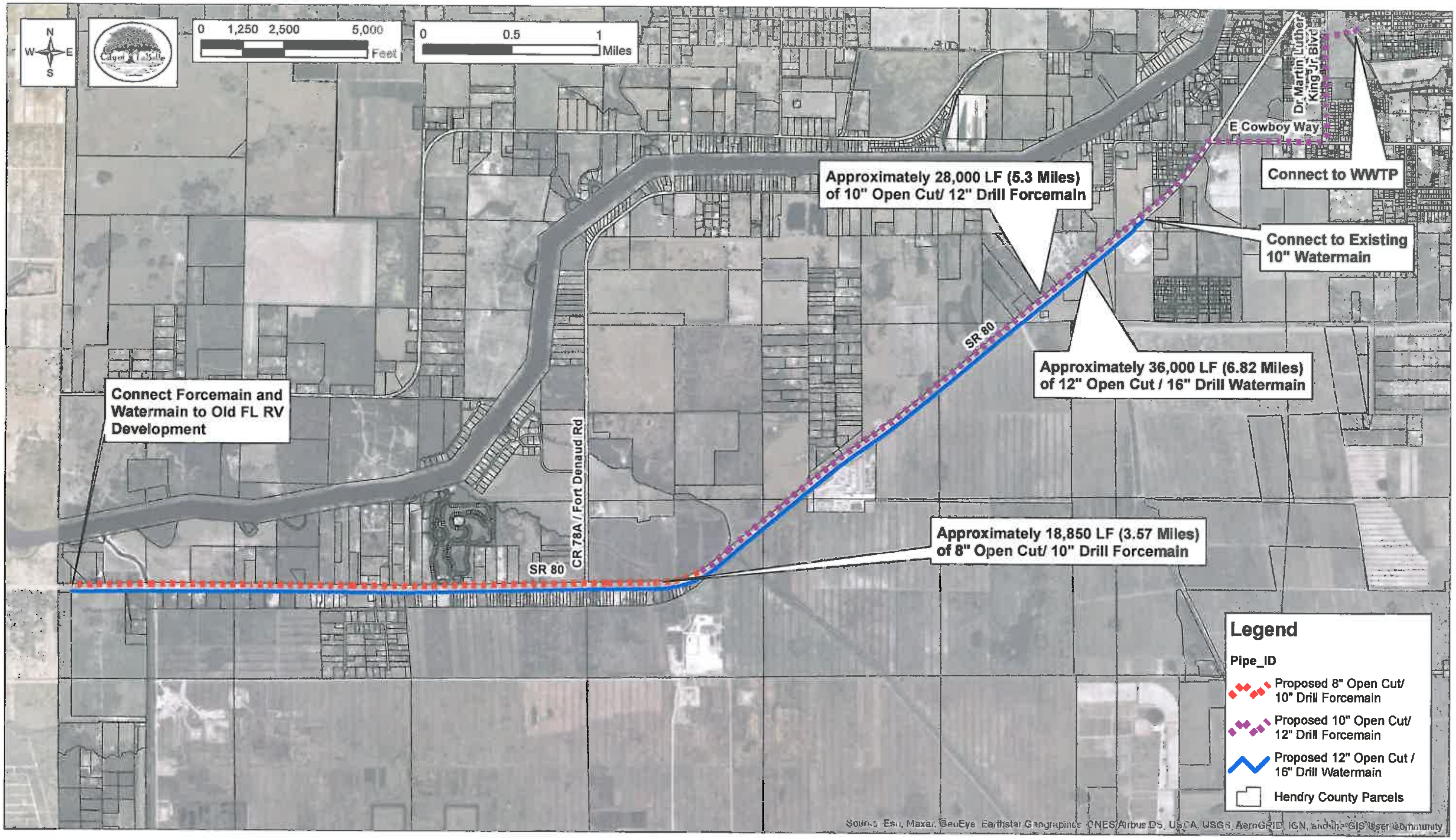


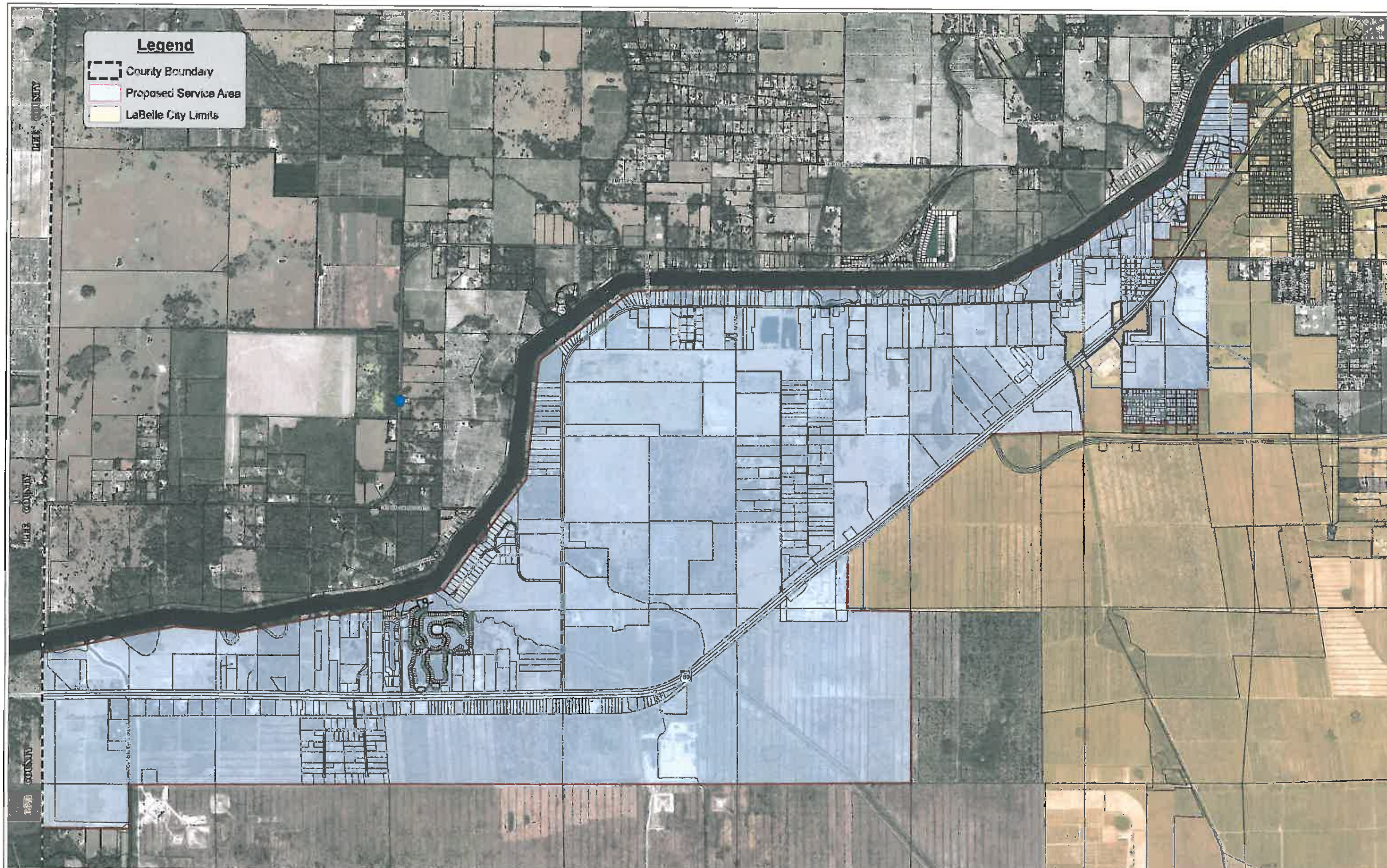
Exhibit B
Forcemain and Watermain Extensions
City of LaBelle - Hendry County SR 80

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design

FOUR WATERS ENGINEERING

Revision Date: 3/9/2022 P:\20-1003_20-1004 LaBelle Area A and J Sewer\16.0 GIS\Map Document\AreaA_Population

Exhibit C
Service Area



W SR 80 Proposed Service Bndy PDF	THIS MAP HAS BEEN COMPILED FROM THE MOST AUTHENTIC INFORMATION AVAILABLE AND THE HENDRY COUNTY GIS DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR ERRORS OR OMISSIONS CONTAINED HEREON	HENDRY COUNTY GIS DEPARTMENT STEVEN L. McCORMICK, COORDINATOR	Proposed Service Area For West State Road 80	March 21, 2022

Exhibit D
Force Main Extensions Cost Estimate

Water and Sewer Reimbursement Costs

Water		
12" Water Main	$	6,285,680.00
10" Water Main	$	(4,760,074.00)
Upsizing Cost Reimbursement	**$**	**1,525,606.00**
Wastewater		
8" and 10" Force Main	$	5,814,650.00
Package Plant	$	(1,783,000.00)
Cost Reimbursement	**$**	**4,031,650.00**
Total Water and Wastewater Costs for Reimbursement	**$**	**5,557,256.00**
Less: City Connection Fees	$	(2,010,765.80)
Reimbursement To Developer	**$**	**3,546,490.20**
Water		
ERU's		271
Cost Reimbursement	$	1,525,606.00
Waived Connection Fees (271*4222.80)	$	(1,144,378.80)
Amount Remaining	**$**	**381,227.20**
Wastewater		
ERU's		271
Cost Reimbursement	$	4,031,650.00
Waived Connection Fees (271*3197)	$	(866,387.00)
County ARPA $	$	(400,000.00)
Amount Remaining	**$**	**2,765,263.00**
Total Remaining To Reimburse Developer	**$**	**3,146,490.20**

Exhibit E
"Availability" Requirements for Connection of New Development to Water and Sewer Service

A. Consistent with Section 5.c. of this Agreement, mandatory connection to water and sewer service shall only be required for new development that occurs subsequent to the date on which the Force Main Extensions become operational.

B. Availability of Potable Water Service. *Available* for purposes of potable water service means that a potable water system owned and operated by the City, County, or another governmental entity is capable of being connected with the plumbing of an establishment, residential subdivision, or commercial subdivision, is not under a moratorium, and has adequate permitted capacity to supply potable water to the establishment, residential subdivision, or commercial subdivision, and:

1. For an establishment which has an estimated potable water demand of 350 gallons per day or less, a potable water line exists in a public easement or right-of-way that abuts the property line of the establishment.

2. For an establishment with an estimated potable water demand exceeding 350 gallons per day, a potable water line exists in a public easement or right-of-way that abuts the property of the establishment or is within 50 feet of the property line of the establishment as accessed via existing rights-of-way or easements.

3. For proposed residential subdivisions, for proposed commercial subdivisions, and for areas zoned or used for an industrial or manufacturing purpose or its equivalent, a potable water line exists within one-fourth mile of the development as measured and accessed via existing easements or rights-of-way.

C. Availability of Sewer Service. *Available* for purposes of sewer service means that a sewer system owned and operated by the City, County, or another governmental entity is capable of being connected with the plumbing of an establishment, residential subdivision, or commercial subdivision, is not under a moratorium, and has adequate permitted capacity to supply wastewater service to the establishment, residential subdivision, or commercial subdivision, and:

1. For an establishment which has an estimated sewage flow of 1,000 gallons per day or less, a gravity sewer line to maintain gravity flow from the property's drain to the sewer line, or a low pressure or vacuum sewage collection line in those areas approved for low pressure or vacuum sewage collection, exists in a public easement or right-of-way that abuts the property line of the establishment.

2. For an establishment with an estimated an estimated sewage flow exceeding 1,000 gallons per day, a sewer line, force main, or lift station exists in a public easement or right-of-way that abuts the property of the establishment or is within 50 feet of the property line of the establishment as accessed via existing rights-of-way or easements.

3. For proposed residential subdivisions, for proposed commercial subdivisions, and for areas zoned or used for an industrial or manufacturing purpose or its equivalent, a sewerage system exists within one-fourth mile of the development as measured and accessed via existing easements or rights-of-way.

D. As used in this Exhibit E, the following terms have the following meanings:

City – The City of Labelle.

County – Hendry County.

Establishment – Any building containing or that is proposed to contain a commercial, industrial, or multi-family residential use.

New Development – Any establishment, residential subdivision, or commercial subdivision for which construction is commenced subsequent to the Force Main Extensions being operational.

Subdivision - The division of land into four (4) or more lots, parcels, tracts, blocks, or sites.

APPENDIX E: LABELLE 2023 WASTEWATER ENGINEERING REPORT (FOUR WATERS)

City of LaBelle

LaBelle 2023 Wastewater Engineering Report

Prepared for City of LaBelle
Public Works Department

ANGELA B. BRYAN
LICENSE
No. 56730
STATE OF FLORIDA
PROFESSIONAL ENGINEER

3-10-23

FOUR WATERS ENGINEERING

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

To adhere to the Florida Department of Environmental Protection (FDEP) Consent Order OGC Case No. 22-2259 item 5A, the City of LaBelle Public Works Department (City) has set forth to conduct an engineering review of their wastewater infrastructure issues and develop an Engineering Report to identify a plan to remediate any found issues. This report will specify milestones for completion in addition to recommended actions.

The City has set a goal to provide wastewater treatment and collection that meets the health and safety needs of the community. To this end, the City commissioned Four Waters Engineering, Inc. (4Waters) to assist with the engineering review of their wastewater infrastructure issues and preparation of this Engineering Report to resolve the found issues.

The general scope of this task involved a thorough analysis of the City's treatment, wastewater pumping and collection systems and as part of the Engineering Report, 4Waters completed the following tasks:

- Assessment of wastewater lift stations and the City wastewater treatment plant (WWTP)
- Population projections and associated wastewater generation rates
- Compilation of rehabilitation capital improvement plans (CIPs)

The resulting Engineering Report provides a concise guide for the City to meet the needs of the Consent Order and for planning wastewater system improvements with a focus on feasible solutions to wastewater problems which balance the desired level of service to be provided with environmental, funding, and regulatory constraints.

1.2 SERVICE AREA AND TOPOGRAPHY

The City of LaBelle is located on the northern boarder of Hendry County, approximately 32 miles east of Fort Myers (the closest metropolitan area and located in Lee County), 50 miles east of the Gulf of Mexico and approximately 92 miles west of Palm Beach (Palm Beach County). LaBelle is bounded by Glades County to the north, Palm Beach Count to the east, Collier County to the south and Lee County to the west and encompasses approximately 12 square miles. It is the site of the county seat of Hendry County and the only urban area of any size in western Hendry County and southern Glades County. As such, LaBelle provides the commercial base for an area that reaches beyond the corporate limits of the City into surrounding Hendry and Glades Counties.

Two major state roads, State Road (SR) 80 and State Road 29, bisect the City. SR 80 (Hickpochee Avenue) connects the east and west sides of Southern Florida (Fort Myers to West Palm Beach) while SR 29 connects travelers north and south from SR 27 to Everglades City. Figure 1.1 provides a map of the City of LaBelle with the Wastewater Engineering Report evaluation area delineated.

According to the United States Geological Survey (USGS), the topographical elevations of the evaluation area range from a high of approximately 30 feet to a low of 5 feet, North American Datum of 1983 (NAD83). The higher areas are typically found in the middle of the City with the topography of the area gently sloping downward from the high areas towards the Caloosahatchee River. Figure 1.2 depicts the topography of the area.

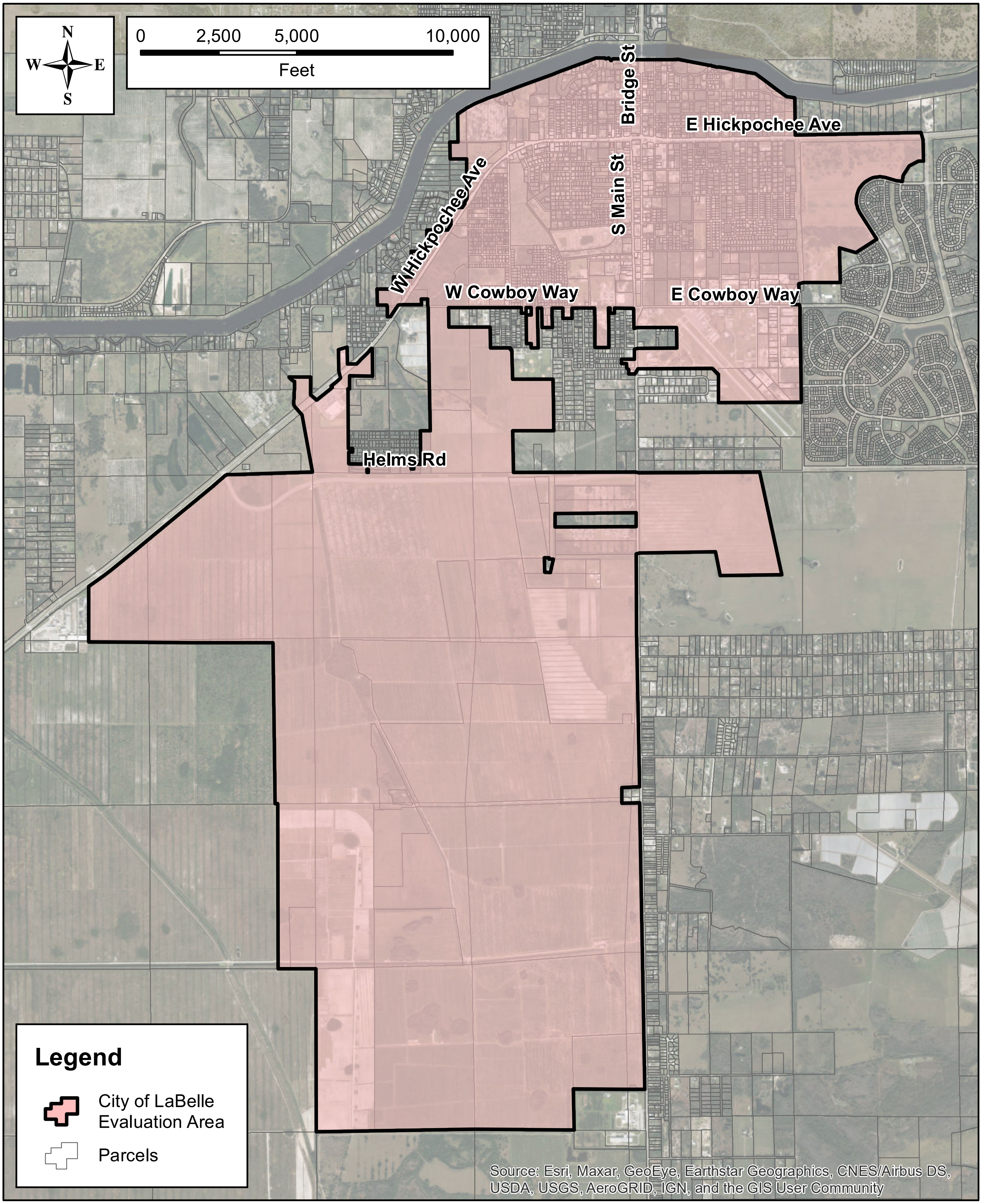


Figure 1.1: Wastewater Evaluation Area

LaBelle, FL

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

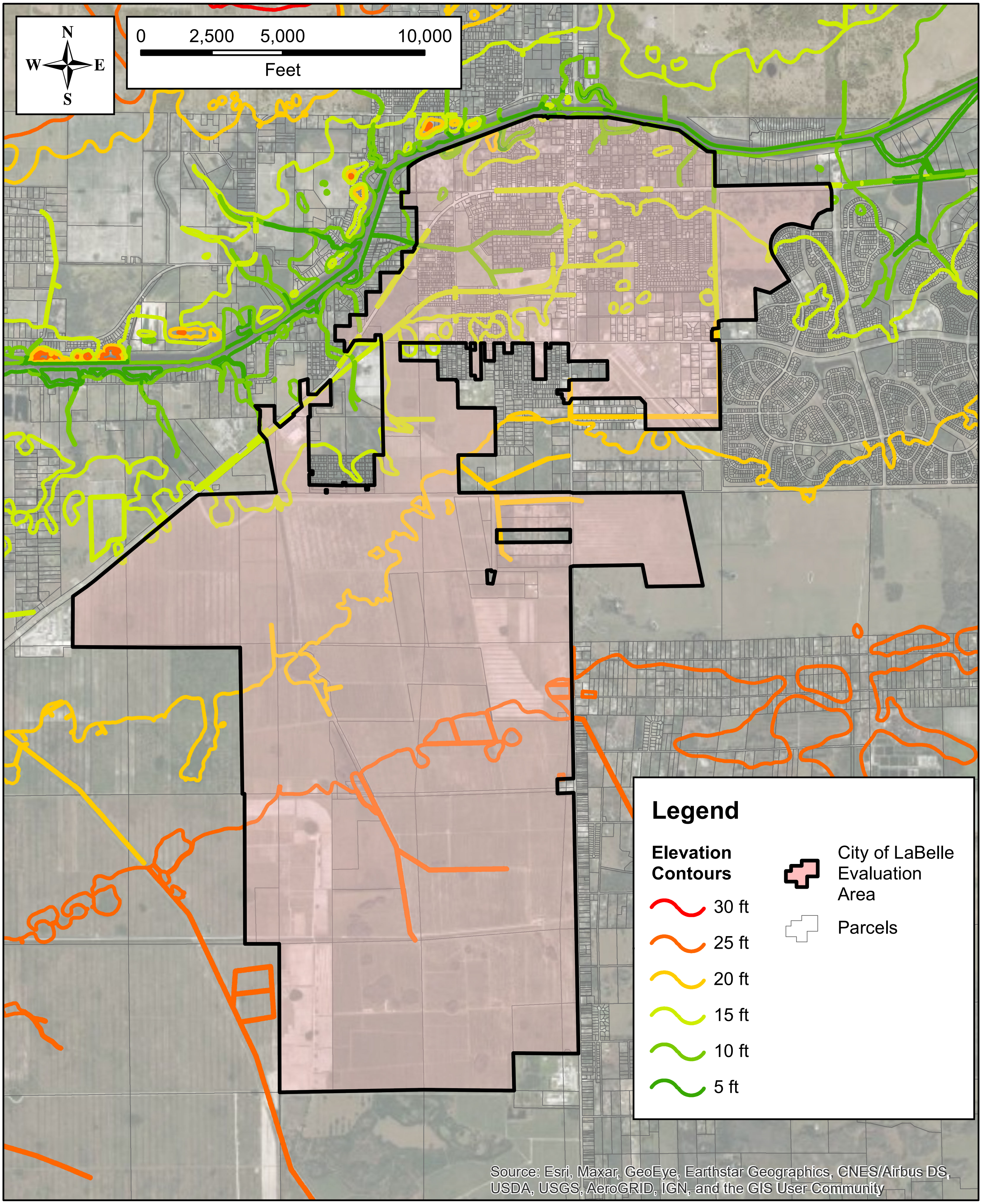


Figure 1.2: Topographical Contours

LaBelle, FL

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

Revision Date: 9/6/2022 Path: P:\22-1012 LaBelle Sewer Master Plan\16.0 GIS\Map Document\Report Figure Maps\Figure 1.2 - Topographical Contours Ver2.mxd

1.3 ZONING AND LAND USE CHARACTERISTICS

The land uses throughout the City area include Commercial, Residential/Planned Residential, Industrial, Downtown District, Mixed Use, Public and South LaBelle Village. The City is predominantly a residential community although it has a large percentage of commercial and industrial properties in addition to a sizeable, annexed area of the City known as the South LaBelle Community. While the City is an economic hub and thoroughfare for millions of boxes of citrus, residential housing still accounts as the dominant land use type.

In 2002, LaBelle annexed approximately 5,982 acres into the City, through four separate annexations. The most significant annexed area is known as South LaBelle Community, which is proposed as a mixed-use community approved for 15,840 residential units, 1 million square feet of commercial development and over 300,000 square feet of industrial land uses.

Based on the City of Labelle's Land Development Code, the City has been divided up into a series of zoning districts to ensure the permitted and conditional use of development is compatible with surrounding land uses, served by adequate public facilities and to take into consideration natural and costal resources. The following zoning classifications are represented within the City:

- Agriculture (AG)
- Business (B-1 Professional, B-2 General and B-3 Heavy)
- Industrial (I-1A Light and I-2 Heavy)
- Mobile Home Park (MHP)
- Public (PS)
- Planned unit development zoning district (PUD)
- Residential, single family medium density, low density, family estates, duplex and duplex manufactured home (R-1, R1-A, R-1AA, R-2 and R-2T)
- Residential, multiple (R-3)
- Residential Neighborhood Urban (RNU)

Each zoning district has its own set criteria and established permitted uses and densities which shape the way wastewater flows are generated. Figure 1.3 depicts the zoning districts of the City.

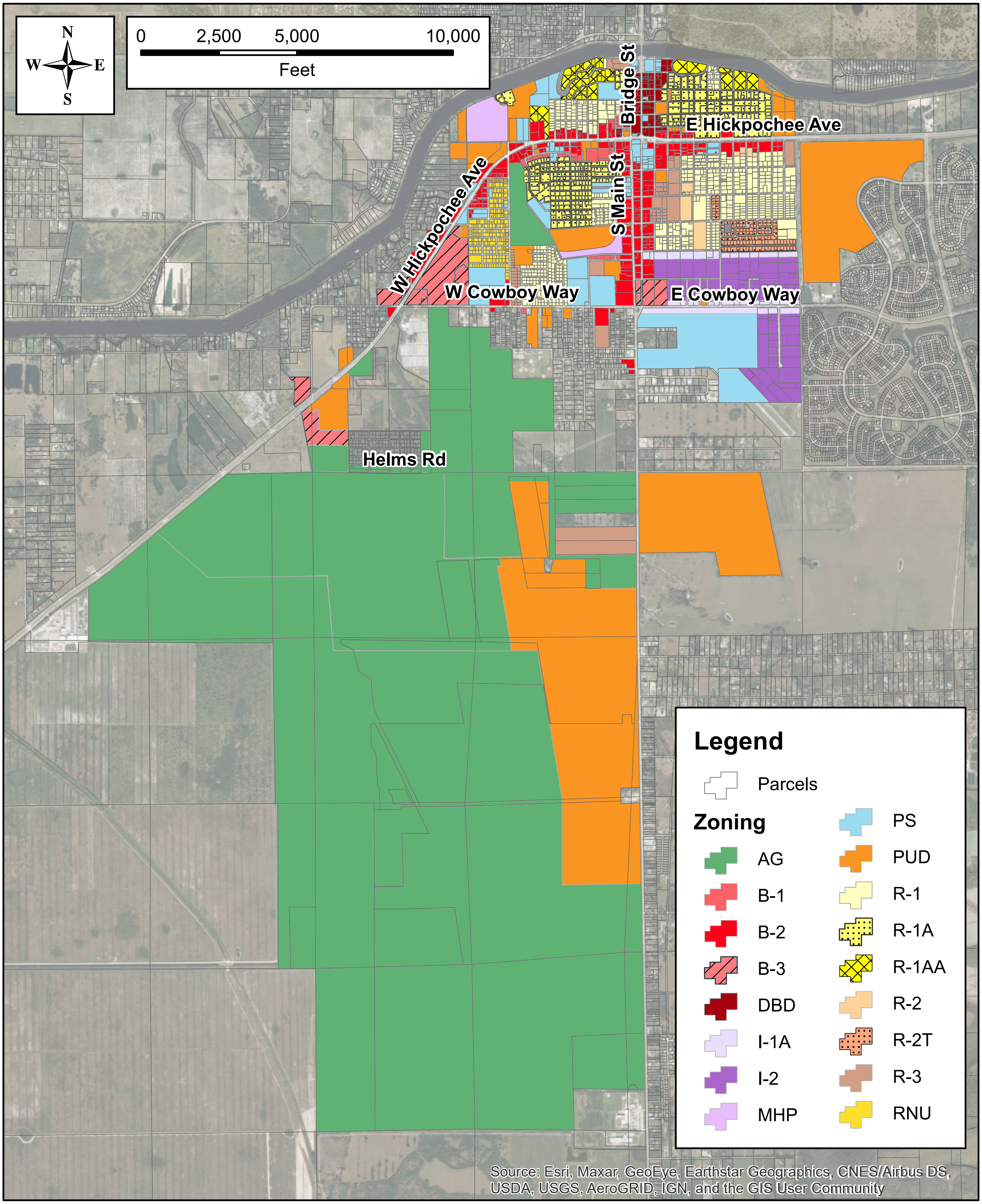


Figure 1.3: Zoning

LaBelle, FL

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

Revision Date: 9/1/2022 Path: P:\22-1012 LaBelle Sewer Master Plan\16.0 GIS\Map Document\Report Figure Maps\Figure 1.3 - ZoningV3.mxd

1.4 EXISTING WASTEWATER SYSTEM SERVICE AREA

For the purposes of the Engineering Report the wastewater system service area represents the entire City limits, with a central wastewater treatment plant (WWTP), gravity collection mains, manholes, lift stations (6 of which are considered major) and their respective force mains. As cataloged from historical City information, Table 1.1 provides an overview of the wastewater system service components and Figure 1.4 depicts the physical extents of the wastewater system service area which is divided into corresponding lift station basins or area served by a particular lift station and the gravity mains flowing to it. A few of the lift stations pump directly to the gravity sewer system or other lift stations for repumping, however numerous lift stations are manifolded and utilize a common forcemain system.

Table 1.1 Wastewater System Component Overview

Wastewater Treatment Plant	Lift Stations*	Manholes	Forcemain Length (Miles)	Forcemain Size Range (Inch)	Gravity Main Length (Miles)	Gravity Main Size Range (Inch)
1	24	391	11	2 to 12	21	4 to 15

**Two lift stations are privately maintained (Aqua Isles and Oak Grove)*

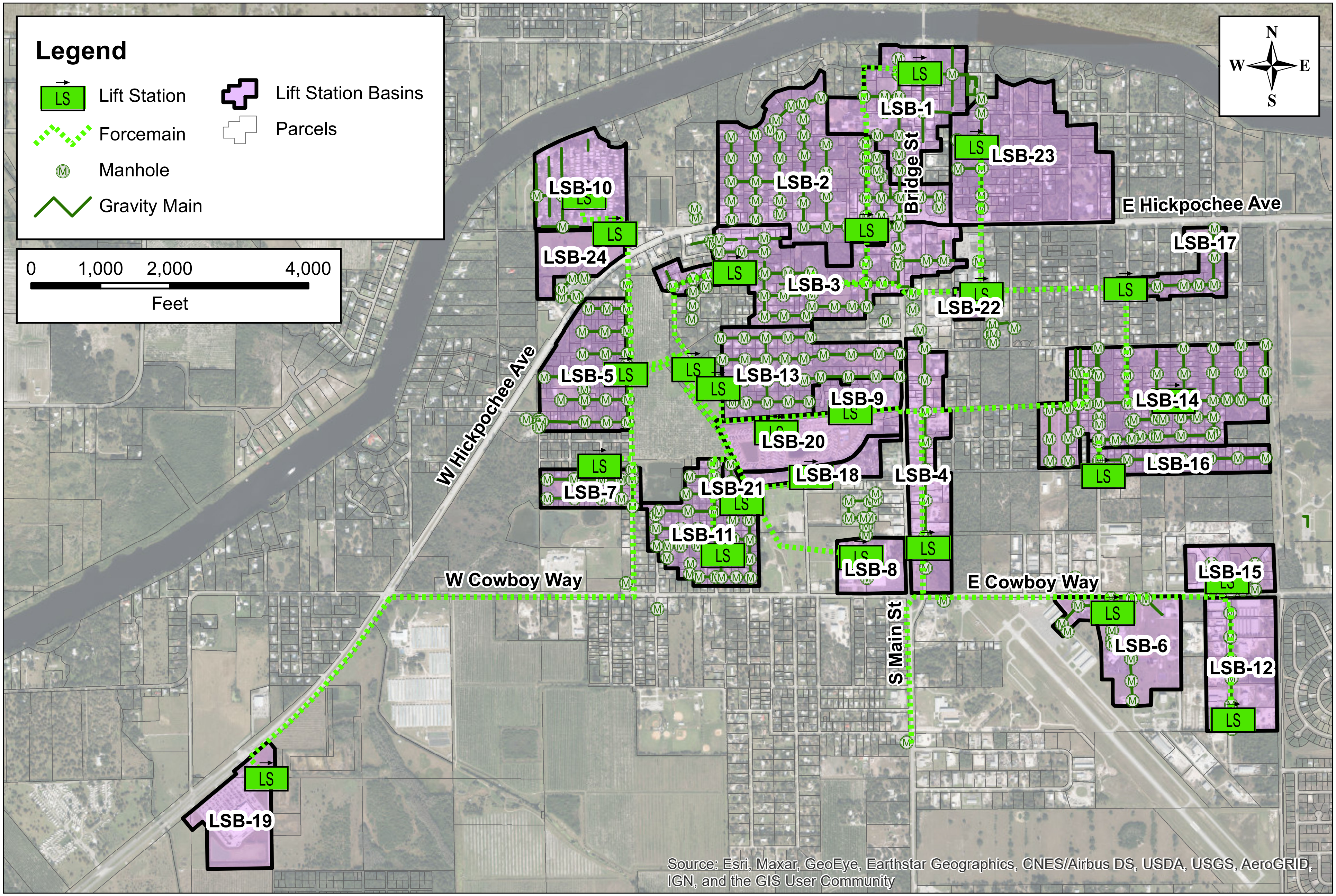


Figure 1.4: Lift Station Basins
Sewer System Service Area

LaBelle, FL

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

Revision Date: 9/1/2022 Path: P:\22-1012 LaBelle Sewer Master Plan\16.0 GIS\Map Document\Report Figure Maps\Figure 1.4 - Lift Station BasinsV2.mxd

2.0 – EXISTING CONDITIONS

2.1 WASTEWATER SYSTEM COMPONENTS

2.1.1 WASTEWATER TREATMENT PLANT

The City owns and operates the LaBelle Wastewater Treatment Plant (WWTP), which is located at 370 Citrus Street. The WWTP began processing wastewater under its current system in 1999 with modifications in 2001. The WWTP receives domestic wastewater from the local community. This wastewater is treated within permitted water quality standards and the effluent is disposed of with a rapid infiltration basin (RIB) land application system. The WWTP operates under the Florida Department of Environmental Protection (FDEP) Permit Number FLA014283 (issued June 2019). The effluent flow from the WWTP has a permitted capacity of 0.75 million gallons per day (MGD) Annual Average Daily Flow (AADF). The facility generally consists of the following:

- Pretreatment
  - Overflow Box
  - Static Fine Screen
  - Grit Removal
- Influent and Headworks
  - A master pump station consisting of three submersible pumps
- Sequential Batch Reactor (SBR) System
  - Three SBR basins (Single sludge, activated sludge process)
  - Five blowers
  - Waste sludge pump
- Disinfection
  - One chlorine contact chamber
  - Sodium Hypochlorite feed
- Solids Handling
  - Two aerobic digestors with forced air from the blowers through a diffuser system
  - Belt filter press and conveyor system
  - Disposal at local Landfill
- Disposal
  - Effluent transfer pump station to RIB system
  - Public access reuse system (not utilized)
    - Two vertical turbine pumps
    - Discharge to the deep injection well at the reverse osmosis treatment plant (ROWTP)

The WWTP discharges its effluent through two outfalls: a RIB land application discharge and deep injection well at the ROWTP. Table 2.1 provides information on the permit parameters.

LaBelle WWTP

Table 2.1 Sewer System Permit – WWTP

Sewer System	FDEP Permit No.	Discharge Method	Effective Date	Expiration Date	Permit Parameters	Average Parameter Limits
City of LaBelle WWTP	FLA014283	1. Land Application (99-acre off-site rapid rate land application sytem)	11/3/2019	11/2/2024	Flow	0.75 MGD (Annual)
					BOD_5	30 mg/L (Max Monthly)
					TSS	30 mg/L (Max Monthly)
					pH	6.0 - 8.5
		2. Discharge to the deep injection well at the reverse osmosis treatment plant (ROWTP)			Fecal Coliform	200/100 mL (Max Monthly)
					Chlorine	0.5 mg/L (Min)
					Nitrogen	12 mg/L (Min)

2.1.2 FORCEMAIN AND LIFT STATION SYSTEMS

Forcemains

The City wastewater system includes 60,150 LF of forcemain which varies in size from 4- to 12-inch piping, with an 8-inch forcemain discharging from the WWTP to the RIB system. LS 16 and LS 21 are the only two of the 24 lift station that discharge to a manhole, all other 22 lift stations are manifold.

The forcemains are constructed of polyvinyl chloride (PVC), cast iron and ductile iron, however, the exact length of each material is unknown.

Lift Stations

As noted in Section 1.4, there are 24 lift stations in the City's wastewater system, however only 22 were evaluated as part of this study, as the other two were determined to be privately owned. Table 2.2 below provides a general overview of each lift station, then the subsequent sections provide a more specific table and site picture with information on the lift stations including location, station type, wet well size and depth, piping material, pump information and discharge location. Each lift station table includes information representing the original design rating (if known) and the results of field conducted draw down testing.

Additionally, Figure 2.1 is provided below to show an overall flow schematic of the City's collection and pumping system that details the lift station routes to the WWTP.

Table 2.2 – Lift Station Summary

Lift Station Number	Location	Pump Type	Pump Discharge Size (In)	Pump Manufacturer	Motor HP	No. Pumps	Model
LS-1	6 Park Ave.	Submersible	4"/6"	Flygt	10	2	CP3127
LS-2	141 W. Hickpochee Ave.	Submersible	6"	Flygt	10	2	CP3127
LS-3	500 2nd Ave.	Submersible	10"	Flygt	30	2	CP3201
LS-4	Bridge St. (Ford)	Submersible	4"/6"	Flygt	10	2	**
LS-5	MLK / Suwanee St.	Submersible	4"	Flygt	4.7	2	CP3127
LS-6	Pratt Blvd.	Submersible	4"	Aurora	15	2	S4HRC
LS-7	Collier Ave. / New York St.	Submersible	4"	Flygt	4.0	2	CP3102
LS-8	LaBelle Elementary	Submersible	3"	**	5	2	**
LS-9	Kathryn St.	Submersible	4"	**	15	2	**
LS-10*	Aqua Isles	Submersible	**	**	**	2	**
LS-11	Maddox St.	Submersible	4"	Flygt	15	2	CP3140
LS-12	Commerce Dr.	Submersible	6"	Flygt	23	2	CP3152
LS-13	Citrus St. Next to WWTP	Submersible	6"/4"	Flygt	7.5	2	CP3127
LS-14	Seminole Ave.	Submersible	6"/4"	Flygt	30	2	CP3170
LS-15	11 Hopson Road	Submersible	4"	Flygt	23	2	Unknown
LS-16	Elm St.	Submersible	4"	Flygt	3	2	CP3085
LS-17	Cypress / Broward	Submersible	6"	Flygt	20	2	CP3152
LS-18	Jacee Lyons Dr.	Submersible	4"	Flygt	3	2	CP3085
LS-19	Wal-Mart	Submersible	4"	Flygt	6.5	2	NP3102
LS-20*	Oak Grove	Submersible	**	**	**	2	**
LS-21	Citrus St.	Submersible	2"	Keen	2	2	KG2
LS-22	City Village	Submersible	4"/6"	Sulzer	3.75	2	XDP100C-CB1
LS-23	Washington / Missouri	Submersible	4"	Sulzer	12.1	2	XDP100E CB1
LS-24	Bell Arbor	Submersible	6"	Sulzer	16.8	2	XFP 81 E VX

**Private*
***Unknown*

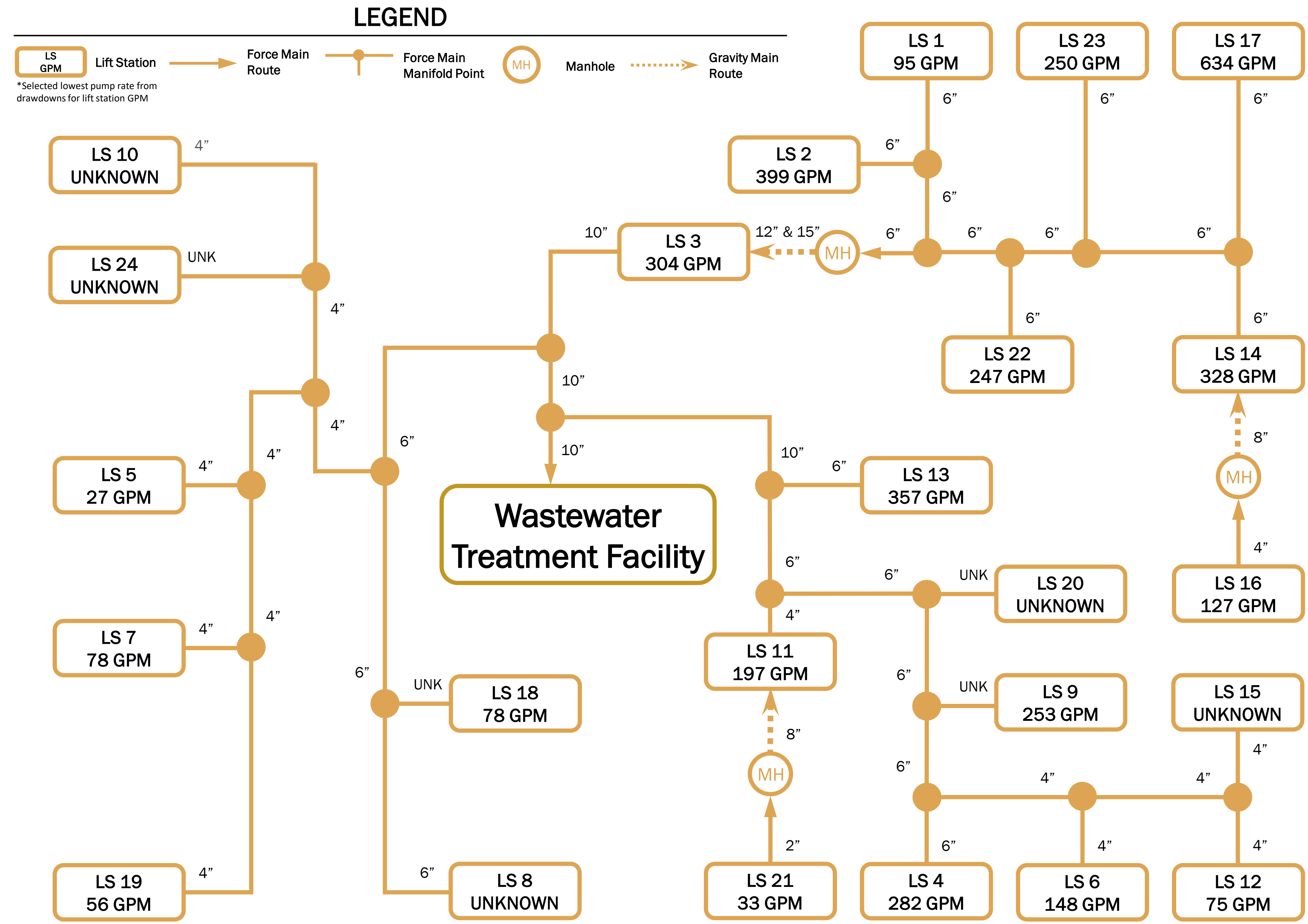


Figure 2.1: Wastewater Collection System Schematic

City of LaBelle, Florida

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Lift Station No. 1

LS-1					
Location:	Bridge Street (Foot of Bridge) – 6 Park Ave.	Type:	Duplex Submersible		
Wet Well		**Pump**		**Discharge**	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-/6-inch
Depth:	14-feet	Draw Down Rating:	P1 113 gpm / P2 95 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar	Discharge Pressure:	40 psi	Location:	MH 42 at the Corner of 2nd Avenue and Howe Avenue
Generator	No	Manufacturer / Model:	Flygt / CP3127		
		Horsepower:	10 Hp		

Lift Station No. 2

LS-2					
Location:	80/Hall Street – 141 W. Hickpochee Ave.	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	6-inch
Depth:	18-feet	Draw Down Rating:	P1 399 gpm / P2 488 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete/Coal Tar Epoxy	Discharge Pressure:	3 psi	Location:	MH 42 at the Corner of 2nd Avenue and Howe Avenue
Generator	No	Manufacturer / Model:	Flygt / CP3127		
		Horsepower:	10 Hp		

Lift Station No. 3

LS-3					
Location:	2^{nd} Ave (Behind City Hall) – 500 2^{nd} Ave.	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	10-feet	Design Rating:	Not Available	Piping Size:	10-inch
Depth:	20-feet	Draw Down Rating:	P1 793 gpm / P2 304 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	Not Available	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Flygt / CP3201		
		Horsepower:	30 Hp		

Lift Station No. 4

LS-4					
Location:	Bridge St. (Ford) – 901 S Bridge St		Type:	Duplex Submersible	
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-/6-inch
Depth:	18-feet	Draw Down Rating:	P1 331 gpm / P2 282 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	15 psi	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Flygt / Unknown		
		Horsepower:	10 Hp		

Lift Station No. 5

<table>
<tr><th colspan="6">LS-5</th></tr>
<tr><td>Location:</td><td colspan="3">MLK/Suwanee St</td><td>Type:</td><td>Duplex Submersible</td></tr>
<tr><th colspan="2">Wet Well</th><th colspan="2">Pump</th><th colspan="2">Discharge</th></tr>
<tr><td>Size:</td><td>6-feet</td><td>Design Rating:</td><td>Not Available</td><td>Piping Size:</td><td>4-inch</td></tr>
<tr><td>Depth:</td><td>16-feet</td><td>Draw Down Rating:</td><td>P1 331 gpm /
P2 282 gpm</td><td>Piping Material:</td><td>Ductile Iron</td></tr>
<tr><td>Material/ Coating:</td><td>Concrete /
Coal Tar Epoxy</td><td>Discharge Pressure:</td><td>Not Available</td><td rowspan="3">Location:</td><td rowspan="3">WWTP Headworks</td></tr>
<tr><td rowspan="2">Generator</td><td rowspan="2">No</td><td>Manufacturer / Model:</td><td>Flygt / CP3127</td></tr>
<tr><td>Horsepower:</td><td>4.7 Hp</td></tr>
</table>

Lift Station No. 6

LS-6					
Location:	Pratt Blvd		Type:	Duplex Submersible	
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-inch
Depth:	16-feet	Draw Down Rating:	P1 148 gpm / P2 148 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / None	Discharge Pressure:	Not Available	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Aurora / S4HRC		
		Horsepower:	15 Hp		

Lift Station No. 7

LS-7					
Location:	Collier Ave / New York St.	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-inch
Depth:	17-feet	Draw Down Rating:	P1 148 gpm / P2 148 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Brick/ Concrete / Coal Tar Epoxy	Discharge Pressure:	Not Available	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Flygt / CP3102		
		Horsepower:	4 Hp		

Lift Station No. 8

LS-8					
Location:	LaBelle Elementary		Type:	Duplex Submersible	
Wet Well		Pump		Discharge	
Size:	5-feet	Design Rating:	Not Available	Piping Size:	3-inch
Depth:	8-feet	Draw Down Rating:	Could not complete	Piping Material:	PVC
Material/ Coating:	Concrete / None	Discharge Pressure:	Not Available	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Unknown		
		Horsepower:	5 Hp		

Lift Station No. 9

<table>
<tr><th colspan="8">LS-9</th></tr>
<tr><td>Location:</td><td colspan="3">Kathryn St.</td><td>Type:</td><td colspan="3">Duplex Submersible</td></tr>
<tr><th colspan="2">Wet Well</th><th></th><th colspan="2">Pump</th><th></th><th colspan="2">Discharge</th></tr>
<tr><td>Size:</td><td>6-feet</td><td></td><td>Design Rating:</td><td>Not Available</td><td></td><td>Piping Size:</td><td>4-inch</td></tr>
<tr><td>Depth:</td><td>13-feet</td><td></td><td>Draw Down Rating:</td><td>P1 253 gpm / P2 587 gpm</td><td></td><td>Piping Material:</td><td>Ductile Iron</td></tr>
<tr><td>Material/ Coating:</td><td>Concrete / Coal Tar Epoxy</td><td></td><td>Discharge Pressure:</td><td>Not Available</td><td></td><td rowspan="3">Location:</td><td rowspan="3">WWTP Headworks</td></tr>
<tr><td rowspan="2">Generator</td><td rowspan="2">No</td><td></td><td>Manufacturer / Model:</td><td>Unknown</td><td></td></tr>
<tr><td></td><td>Horsepower:</td><td>Hp</td><td></td></tr>
</table>

Lift Station No. 10

LS-10					
Location:	Aqua Isles – 900 Aqua Isles Blvd	Type:	-		
Wet Well		Pump		Discharge	
Size:	-	Design Rating:	-	Piping Size:	-
Depth:	-	Draw Down Rating:	-	Piping Material:	-
Material/ Coating:	-	Discharge Pressure:	-	Location:	-
Generator	-	Manufacturer / Model:	-		
		Horsepower:	-		

This lift station was not evaluated as a part of the study.

Lift Station No. 11

LS-11					
Location:	Maddox St. – 901 Maddox St.		Type:	Duplex Submersible	
Wet Well		**Pump**		**Discharge**	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-inch
Depth:	18.5-feet	Draw Down Rating:	P1 197 gpm / P2 197 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	Not Available	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Flygt / CP3140		
		Horsepower:	15 Hp		

Lift Station No. 12

LS-12			
Location:	Commerce Dr. – 1225 Commerce Dr.	Type:	Duplex Submersible

Wet Well	
Size:	8-feet
Depth:	16-feet
Material/ Coating:	Concrete / Coal Tar Epoxy
Generator	No

Pump	
Design Rating:	Not Available
Draw Down Rating:	P1 138 gpm / P2 75 gpm
Discharge Pressure:	35 psi
Manufacturer / Model:	Flygt / CP3152
Horsepower:	23 Hp

Discharge	
Piping Size:	6-inch
Piping Material:	Ductile Iron
Location:	WWTP Headworks

Lift Station No. 13

LS-13					
Location:	Citrus St. Next to WWTP – 370 Citrus St.		Type:	Duplex Submersible	
Wet Well		Pump		Discharge	
Size:	8-feet	Design Rating:	Not Available	Piping Size:	4-/6-inch
Depth:	19-feet	Draw Down Rating:	P1 357 gpm / P2 357 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	5 psi	Location:	WWTP Headworks
Generator	Powered by WWTP	Manufacturer / Model:	Flygt / CP3127		
		Horsepower:	7.5 Hp		

Lift Station No. 14

LS-14					
Location:	Seminole Ave. – 751 E. Seminole Ave.	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-/6-inch
Depth:	18-feet	Draw Down Rating:	P1 328 gpm / P2 434 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	35 psi	Location:	MH 42 at the Corner of 2nd Avenue and Howe Avenue
Generator	No	Manufacturer / Model:	Flygt / CP3170		
		Horsepower:	30 Hp		

Lift Station No. 15

LS-15					
Location:	Cowboy Cr. – 961 Cowboy Cr. (Lisa St. John)	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	7-foot	Design Rating:	Not Available	Piping Size:	4-inch
Depth:	18.5-feet	Draw Down Rating:	P1 0 gpm / P2 48 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epxoy	Discharge Pressure:	60 psi	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Flygt / Unknown		
		Horsepower:	23 Hp		

Lift Station No. 16

LS-16					
Location:	Elm St. - 691 Elm St.	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	5-feet	Design Rating:	Not Available	Piping Size:	4-inch
Depth:	21-feet	Draw Down Rating:	P1 127 gpm / P2 152 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	2 psi	Location:	MH 42 at the Corner of 2nd Avenue and Howe Avenue
Generator	No	Manufacturer / Model:	Flygt / CP3085		
		Horsepower:	3 Hp		

Lift Station No. 17

<table>
<tr><th colspan="8">LS-17</th></tr>
<tr><td>Location:</td><td colspan="3">Cypress/Broward – 591 Broward Ave.</td><td>Type:</td><td colspan="3">Duplex Submersible</td></tr>
<tr><th colspan="2">Wet Well</th><th colspan="2">Pump</th><th colspan="2">Discharge</th></tr>
<tr><td>Size:</td><td>8-feet</td><td>Design Rating:</td><td>Not Available</td><td>Piping Size:</td><td>6-inch</td></tr>
<tr><td>Depth:</td><td>19-feet</td><td>Draw Down Rating:</td><td>P1 29 gpm /
P2 20 gpm</td><td>Piping Material:</td><td>Ductile Iron</td></tr>
<tr><td>Material/ Coating:</td><td>Concrete /
Coal Tar Epoxy</td><td>Discharge Pressure:</td><td>Not Available</td><td rowspan="3">Location:</td><td rowspan="3">MH 42 at the Corner of 2nd Avenue and Howe Avenue</td></tr>
<tr><td rowspan="2">Generator</td><td rowspan="2">No</td><td>Manufacturer / Model:</td><td>Flygt /
CP3152</td></tr>
<tr><td>Horsepower:</td><td>20 Hp</td></tr>
</table>

Lift Station No. 18

LS-18							
Location:	Jacee Lyons Dr. – 115 Jacee Lynos Dr.	Type:	Duplex Submersible				
Wet Well		Pump		Discharge			
Size:	6-foot	Design Rating:	Not Available	Piping Size:	4-inch		
Depth:	13.5	Draw Down Rating:	P1 78 gpm / P2 78 gpm	Piping Material:	PVC / Ductile Iron		
Material/ Coating:	Concrete / None	Discharge Pressure:	Not Available	Location:	WWTP Headworks		
Generator	No	Manufacturer / Model:	Flygt/ CP3085				
		Horsepower:	3 Hp				

Lift Station No. 19

LS-19					
Location:	Wal – Mart 1951 W. Hickpochee Ave.	Type:	Duplex Submersible		
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	Not Available	Piping Size:	4-inch
Depth:	18’	Draw Down Rating:	P1 56 gpm / P2 127 gpm	Piping Material:	Ductile Iron
Material/ Coating:	Concrete / None	Discharge Pressure:	30 psi	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Flygt / NP3102		
		Horsepower:	6.5 Hp		

Lift Station No. 20

LS-20								
Location:	Oak Grove – 520 S. Main				Type:	-		
Wet Well			Pump			Discharge		
Size:	-		Design Rating:	-		Piping Size:	-	
Depth:	-		Draw Down Rating:	-		Piping Material:	-	
Material / Coating:	-		Discharge Pressure:	-		Location:	-	
Generator	-		Manufacturer / Model:	-				
			Horsepower:	-				

This lift station was not evaluated as a part of the study.

Lift Station No. 21

LS-21			
Location:	Citrus St.	Type:	Duplex Submersible

Wet Well	
Size:	4-feet
Depth:	11-feet
Material/ Coating:	Fiberglass / None
Generator	No

Pump	
Design Rating:	20 gpm @ 8' TDH
Draw Down Rating:	P1 96 gpm / P2 33 gpm
Discharge Pressure:	11 psi
Manufacturer / Model:	Keen / KG2
Horsepower:	2 Hp

Discharge	
Piping Size:	2-inch
Piping Material:	PVC
Location:	MH 305 at the Corner of Citrus Street and Pamona Avenue

Lift Station No. 22

LS-22					
Location:	City Village		Type:	Duplex Submersible	
Wet Well		Pump		Discharge	
Size:	6-feet	Design Rating:	112 gpm @ 15' TDH	Piping Size:	4-/6-inch
Depth:	12-feet	Draw Down Rating:	P1 282 gpm / P2 247 gpm	Piping Material:	HDPE
Material/ Coating:	Concrete / None	Discharge Pressure:	1 psi	Location:	MH 42 at the Corner of 2nd Avenue and Howe Avenue
Generator	No	Manufacturer / Model:	Sulzer / XDP100C-CB1		
		Horsepower:	3.75 Hp		

Lift Station No. 23

<table>
<tr><th colspan="6">LS-23</th></tr>
<tr><td>Location:</td><td colspan="3">Washington / Missouri</td><td>Type:</td><td>Duplex Submersible</td></tr>
<tr><th colspan="2">Wet Well</th><th colspan="2">Pump</th><th colspan="2">Discharge</th></tr>
<tr><td>Size:</td><td>6-feet</td><td>Design Rating:</td><td>130 gpm @ 65’ TDH</td><td>Piping Size:</td><td>4-inch</td></tr>
<tr><td>Depth:</td><td>26-feet</td><td>Draw Down Rating:</td><td>P1 462 gpm / P2 250 gpm</td><td>Piping Material:</td><td>HDPE</td></tr>
<tr><td>Material/ Coating:</td><td>Concrete / IET Polymorphic Resin</td><td>Discharge Pressure:</td><td>15 psi</td><td rowspan="3">Location:</td><td rowspan="3">MH 42 at the Corner of 2nd Avenue and Howe Avenue</td></tr>
<tr><td rowspan="2">Generator</td><td rowspan="2">Yes</td><td>Manufacturer / Model:</td><td>Sulzer / XFP 100E-CB1</td></tr>
<tr><td>Horsepower:</td><td>12.1 Hp</td></tr>
</table>

Lift Station No. 24

LS-24					
Location:	Bell Arbor		Type:	Duplex Submersible	
Wet Well		Pump		Discharge	
Size:	8	Design Rating:	135 gpm @ 90' TDH	Piping Size:	6-inch
Depth:	23	Draw Down Rating:	Could not complete	Piping Material:	HPDE
Material / Coating:	Concrete / Coal Tar Epoxy	Discharge Pressure:	23 psi	Location:	WWTP Headworks
Generator	No	Manufacturer / Model:	Sulzer / XFP 81 E VX		
		Horsepower:	16.8 Hp		

2.1.3 GRAVITY SEWER SYSTEMS

The City pumping and collection system, as noted in Section 1.4, utilizes approximately 11 miles of forcemain and has been designed with routes of gravity sewer mains that total over 21 miles in length with approximately 391 manholes.

The gravity sewer mains range in size from 4- to 15-inch. The gravity sewer mains are constructed of PVC, clay, cast iron and ductile iron, however, the exact length of each material is unknown.

The manholes in the system are constructed of precast concrete or in older sewer basins of the system some of the manholes may be brick.

2.2 POPULATION AND WASTEWATER GENERATION RATES

2.2.1 BASE POPULATION FOR WASTEWATER SYSTEM

Development of a base or existing population is critical to this Engineering Report, as it is used for the determination of a per capita wastewater demand and any required future growth projections, which will ultimately assist with understanding of the required pumping capacity of a lift station. As previously mentioned, a lift station basin represents the extents of an area served by a specific lift station and the corresponding gravity mains flowing to it. 4Waters examined existing historical data and available GIS data including wastewater lift station basins, parcels, zoning/land use type, aerial imagery and water meter locations to determine an overall number of house holds within a specified lift station basin. Table 2.4 below shows a breakdown of the number of house holds and population (single family or multifamily) for each basin and if the lift station basin received wastewater flows from a commercial or institutional type contributor.

Table 2.4: Households and Population (Single/Multi Family) and Commercial per Basin

Lift Station Number	Single Family (# of House Holds)	Single Family Population (People)*	Multi Family (# of House Holds)	Multi Family Population (People)**	Commercial / Institutional / Industrial Component
LS-1	0	0	0	0	Yes
LS-2	93	252	0	0	Yes
LS-3	81	220	0	0	Yes
LS-4	3	8	0	0	Yes
LS-5	42	114	0	0	No
LS-6	0	0	0	0	Yes
LS-7	40	108	0	0	No
LS-8	0	0	0	0	Yes
LS-9	21	57	2	4	Yes
LS-10	0	0	175	349	No
LS-11	128	347	0	0	No
LS-12	0	0	0	0	Yes
LS-13	70	190	0	0	Yes
LS-14	179	485	21	42	No
LS-15	0	0	0	0	Yes
LS-16	43	117	0	0	No
LS-17	20	54	0	0	Yes
LS-18	96	260	0	0	Yes
LS-19	0	0	0	0	Yes
LS-20	0	0	183	366	Yes
LS-21	9	24	0	0	No
LS-22	15	41	0	0	No
LS-23	0	0	25	50	Yes
LS-24	0	0	0	0	Yes
Total	840	2,276	406	811	-
Total People	3,087				-

**Utilizes 2.71 people per single family house hold as indicated in the 2019 Comprehensive Plan*

***Utilizes 2.0 people per multi family house hold based on research provided by the US Census*

2.3.3 WASTEWATER GENERATION RATES

The first step in this analysis is to develop an understanding of the historic wastewater generation rates, and specifically the domestic sewer generation rates. The monthly Average Daily Flow (ADF) was calculated by averaging the total monthly sewer generation flow for the City and dividing by the number of days in each month.

The distinction and determination of significant or large industrial, institutional and commercial uses was made for the City system so that when the system per capita rate was calculated it would more accurately represent the flow associated with each permanent resident and the corresponding commercial and institutional wastewater generation rates typical of neighborhood support facilities and the character of the areas. Therefore, when the per capita rate was used in conjunction with any required projected population growth, the projected wastewater generation rates reflect only the commercial and institutional flows associated with residential developments.

The domestic flow for the City was derived by removing large commercial, institutional and industrial flows from the totalized flows measured at the WWTP. The monthly ADF sewer generation rates for the various sources discharging to the City WWTP for 12 month period from Jan 2022 to Dec 2022 are presented in Table 2.5.

Table 2.5: WWTP Wastewater Generation Rates

Date	WWTP Monthly ADF (MGD)
Jan-22	0.41
Feb-22	0.41
Mar-22	0.41
Apr-22	0.40
May-22	0.38
Jun-22	0.44
Jul-22	0.43
Aug-22	0.47
Sep-22	0.60
Oct-22	0.56
Nov-22	0.50
Dec-22	0.45

Numbers based on Influent DMR Records

2.3.4 WASTEWATER PER CAPITA GENERATION RATE

Development of a per capita value is critical to this Engineering Report, as it is used for the determination of the projected future wastewater generation rates for any added developments to the existing list station basins. A per capita wastewater generation rate used for flow projection determination should not be overly influenced by I&I as newly constructed sewer systems should not be susceptible to significant amounts of I&I, therefore, it is desirable to use sewer generation data from a predominantly dry period which still incorporates some background I&I. Rainfall data from NOAA rain gauges was used to determine these dry periods. The per capita wastewater generation rate for the City was calculated by dividing the adjusted domestic monthly ADF during dry periods, by the base sewer population as described in Section 2.2.1. The sewer generation per capita rate for the City is provided in Table 2.6.

Table 2.6: Wastewater Generation Per Capita Rates

Per Capita Rate (gpc/d)
140

The 140 gallons per capita per day (gpcd) is in line with the adopted level of service in the City's 2019 Comprehensive Plan.

3.0 – CURRENT STATE ASSESSMENT

One of the primary tasks of the Engineering Report is the general evaluation of the existing lift stations within the wastewater transmission system. These evaluations included field inspections and staff interviews to understand completed CIP projects and system improvements in addition to any concerns or needs. A summary of the field evaluations and status of the facilities is detailed in Sections 3.1 and 3.2.

Charles Cobb with Chatham Engineering, Inc., a professional electrical engineer, accompanied 4Waters staff on the field inspections and provided the electrical and controls system assessments. Charles Cobb regularly provides electrical engineering design and evaluation services and is familiar with City's standards, staff and facilities.

3.1 WASTEWATER SYSTEM COMPONENTS

The following sections summarize the assessments of the physical condition and capacity of the existing lift stations evaluated in this study. A general physical condition assessment of the WWTP was additionally completed and capacity and treatment levels were examined.

Recommendations for rehabilitation capital improvements encompassing the major lift stations and WWTP are provided in Section 4.0 Recommended Actions – Implementation Plan.

3.1.1 WASTEWATER TREATMENT PLANT – PROCESS ASSESEMENT

The City's existing WWTP is a 0.75 MGD Aqua-Aerobic System, Inc. sequencing batch reactor (SBR) facility which discharges to a rapid infiltration basin (RIB) system. Currently, the WWTP provides basic screening prior to the SBRs and chlorination of the effluent prior to pumping to the RIBs. The WWTP has a disc filter to assist with meeting restricted access reuse, however it is non-operational. Additional there is an 8-inch forcemain that can discharge effluent to the deep injection well at the existing reverse osmosis water treatment plant (ROWTP).

Residuals are put through the belt filter press and hauled to a landfill. Based on discharge monitoring reports for a recent 24-month period the facility appears to consistently meet all permit requirements, with the exception of Total Suspended Solid (TSS) for November 2021, March 2022, April 2022, June 2022 and July 2022. This was due mostly in part to one of the SBR basins being down, which has now been repaired and is back in service. There were also a few months with Fecal exceedances. 3.1 provides a summary of treatment levels for May 2019 through April 2022 for the WWTP in comparison to the permitted levels.

Table 3.1 WWTP Treatment Levels

Date (MO-YR)	Max Monthly Average Effluent BOD (mg/L)	Max Monthly Average Effluent TSS (mg/L)	Max Monthly Fecal Coliform Geometric Mean (200 Mo Geomn)	Average Effluent pH (Min/Max)	Nitrogen, Nitrate, Total Monthly Average (mg/L)
Jan-21	5.00	20.00	0.50	6.0/7.7	0.56
Feb-21	8.00	16.40	0.50	6.2/7.15	0.40
Mar-21	6.00	15.70	4.10	6.5/7.2	0.20
Apr-21	4.00	16.70	6.80	6.5/7.9	0.10
May-21	7.00	17.20	200.00	6.5/7.4	0.05
Jun-21	5.00	22.00	6.00	6.5/7.48	0.02
Jul-21	3.00	19.50	**400.00**	6.7/7.6	0.06
Aug-21	4.00	16.70	28.00	6.5/7.9	0.02
Sep-21	4.00	19.60	75.21	7.27/7.47	0.01
Oct-21	6.00	14.00	100.00	7.2/7.6	0.47
Nov-21	9.00	**32.70**	**400.00**	7.3/7.79	0.42
Dec-21	6.00	24.80	31.90	7.1/7.6	0.11
Jan-22	9.00	27.50	1.19	7.3/7.6	0.60
Feb-22	5.00	25.00	0.50	6.9/7.5	0.33
Mar-22	8.00	**32.70**	**400.00**	6.9/7.4	0.53
Apr-22	7.00	**38.10**	7.80	7.0/7.3	0.91
May-22	6.00	24.88	79.00	7.0/7.5	0.94
Jun-22	4.80	**41.30**	1.00	6.9/7.3	0.39
Jul-22	2.00	**31.30**	1.41	6.8/7.3	0.40
Aug-22	4.80	18.70	1.15	6.9/7.4	1.78
Sep-22	5.30	8.70	1.41	6.9/7.5	1.04
Oct-22	2.50	14.00	2.66	7.1/7.4	0.82
Nov-22	2.80	7.90	8.08	7.1/7.3	0.94
Dec-22	3.60	11.40	21.67	6.9/7.1	1.17
Permit Limits	30.00	30.00	200	6.0 - 8.5	12.0

3.1.2 WASTEWATER TREATMENT PLANT – AVAILABLE CAPACITY

Table 3.2 provides an analysis of the historic metered effluent flows through the City's WWTP over the 24-month period from Jan 2021 through Dec 2022. The analysis includes an evaluation of the monthly average daily flow (ADF), which have set permit limits for the facility.

Table 3.2 WWTP *Historic and Permitted Monthly ADF Comparison*

Date (MO-YR)	Monthly ADF (MGD)
Jan-21	0.345
Feb-21	0.336
Mar-21	0.398
Apr-21	0.360
May-21	0.351
Jun-21	0.308
Jul-21	0.380
Aug-21	0.456
Sep-21	0.412
Oct-21	0.369
Nov-21	0.444
Dec-21	0.419
Jan-22	0.413
Feb-22	0.413
Mar-22	0.406
Apr-22	0.398
May-22	0.376
Jun-22	0.436
Jul-22	0.429
Aug-22	0.467
Sep-22	0.603
Oct-22	0.562
Nov-22	0.501
Dec-22	0.454
Average (MGD)	**0.418**
Maximum (MGD)	**0.603**
Permit Limits (MGD)	0.750

Based on the historic monthly average daily flows over the noted 24-month period, the WWTP is currently operating at 56% of permitted capacity. The WWTP has sufficient capacity available for the current customer base population and has not had any permitted exceedances during the evaluation period. The facility has enough treatment capacity available with the existing infrastructure to provide service for the existing sewer users.

3.1.3 WASTEWATER TREATMENT PLANT – PHYSICAL ASSESSMENT

WWTP
Civil/Mechanical • Headworks requires new static screen. • Equalization Tank is required to manage variations in flow and pollutant loading. New transfer pumps are needed to pump from head works to the new Equalization Tank. • Master Lift Station requires improvements including pumps, controls and electrical equipment.

3.1.4 PUMPING AND FORCEMAIN SYSTEMS

4Waters with City staff conducted field inspections of 22 sewer lift station facilities in July 2022. The assessments evaluated the pumps, piping, controls, electrical systems, instrumentation, wet well and other structures at the lift station sites. A summary of the noted deficiencies is provided below for each individual lift station. As noted in Section 2.1.2, two lift stations were not included in the evaluation effort, because they are privately owned.

Overall the lift station facilities which were visited were generally secure, pumps and equipment were operational, and the sites were neat and clear. It appears that good housekeeping measures are maintained along with important routine maintenance efforts such as regular removal of grease from wet wells.

LS-1
Civil/Mechanical • Pumps are over 15 years old. • Wet well lacks liner – exposed concrete. • Ductile iron piping and fittings in valve vault in good condition. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Water service lacks back flow preventor. • Site lacks generator. • No safety grating on wet well. Electrical • H2S in panel. • Bonding in meter and back plate. • Grounding unknown. • Neutral to insulated neutral BUS. • Surge protection appears to have failed. • No site lighting.

LS-2
Civil/Mechanical
• Pumps are over 15 years old.
• Wet well lacks liner – exposed concrete.
• Ductile iron piping and fittings in valve vault in good condition.
• Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded.
• No water service.
• Site lacks generator.
• No permanent safety grating on wet well.
Electrical
• Grounding wrong and not per NEC,
• No external disconnect switch.
• Equipment rack is leaning and not anchored properly.
• No bonding after meter.
• Surge protection has failed.
• No site lighting.

LS-3 * Major Station
Civil/Mechanical
• Pumps are over 15 years old; need to plan for replacement in next 5 years.
• Wet well lacks liner – exposed concrete.
• Ductile iron piping and fittings in valve vault in good condition.
• Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded.
• No water service.
• Site lacks generator.
• No safety grating on wet well.
Electrical
• Float and pump cables come through same junction box.
• Grounding is not per NEC and poor with single ground rod at the meter with acorn nut.
• Bonding in meter w/ equipment-grounding conductor extended to panel.
• Generator conductors not connected to the emergency circuit breaker.
• Circuit breaker is in panel with slide block.
• All power distribution equipment is in control panel.
• APT surge protection unit has failed.
• No site lighting.

LS-4 * Major Station
Civil/Mechanical • Pumps are over 15 years old; need to plan for replacement in next 5 years. • Wet well lacks liner – exposed concrete. • Ductile iron pipe and ductile iron 90° bends in wet well – Poor/Catastrophic Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Poor/Catastrophic Condition - paint wearing off, completely underwater and signs of corrosion. • No water service. • Site lacks generator. • No safety grating on wet well. Electrical • Panel is obstructed by fence. • Disconnect switch (3R) is obstructed by fence and rusty. • Grounding is in meter and reached the end of useful life. • No overcurrent protection. • No surge protection. • No site lighting.

LS-5 * Major Station
Civil/Mechanical • Pumps are over 30 years old; need to plan for replacement in next 5 years. • Wet well lacks liner – exposed concrete. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Fair Condition - paint wearing off and signs of corrosion. • Concrete foundation is undermined. • No water service. • Site lacks generator. • No safety grating on wet well. Electrical • Panel power distribution in fair condition. • No surge protection. • No bonding. • General neutral has failed. • No site lighting.

LS-6
Civil/Mechanical • Pumps are over 30 years old. • Wet well lacks liner – exposed concrete and brick. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Fair Condition - paint wearing off and signs of corrosion. • No water service. • Site lacks generator. • No safety grating on wet well. Electrical • Panel needs to be replaced. • No grounding. • Uncertain power distribution. • No surge protection. • No site lighting.

LS-7
Civil/Mechanical • Pumps are over 25 years old. • Wet well lacks liner – exposed concrete and brick. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Poor Condition – extremely corroded and due to limited space maintenance is an issue. • Water service lacks back flow preventor. • Site lacks generator. • No safety grating on wet well. Electrical • Neutral bonded in meter. • Neutral and ground (electrical ground terminal) terminated to insulated neutral bus in panel. • Control panel has large hole in bottom. • Panel mounted close to ground. • Pump cables pulled directly into panel • No junction box. • Power distribution all within panel. • No surge protection. • No site lighting.

LS-8
Civil/Mechanical • Pump(s) is/are over 25 years old. • Wet well lacks liner – exposed concrete and brick. • PVC pipe and PVC 90° bends in wet well - Fair Condition. • PVC, fittings and valves in valve vault in Fair Condition. • No water service. • Site lacks generator. • No safety grating on wet well. Electrical • Continual low voltage trip failures. The pumps are rated for 230V utilization power but school pad mounted transformer is 208Y/120V 3-phase 4-wire system, which are not compatible. • Bad grounding. • No surge protection. • No junction box. • No site lighting.

LS-9 * Major Station
Civil/Mechanical • Pumps are over 15 years old; need to plan for replacement in next 5 years. • Wet well lacks liner – exposed concrete. • Ductile iron pipe and ductile iron 90° bends in wet well – Poor/Catastrophic Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Poor/Catastrophic Condition - paint wearing off, completely underwater and signs of corrosion. • Water service lacks back flow preventor. • Site lacks generator. • No safety grating on wet well. Electrical • Service pole, meter, disconnect switch and electrical box are all outside of the fence. • Disconnect switch (3R). • H2S infiltration and corrosion in. • Neutral BUS in Panel – Ground possible terminated to BUS. No ground lug on back plate. • Surge protection is old lightning arrestor. • No site lighting.

LS-10
LS-10 was not evaluated as part of this study

LS-11 * Major Station
Civil/Mechanical • Pumps are over 15 years old; need to plan for replacement in next 5 years. • Wet well lacks liner – exposed concrete. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Fair Condition - paint wearing off and signs of corrosion. • Site lacks generator. • No safety grating on wet well. Electrical • Neutral bonded in meter. • Neutral and ground attached to back plate in disconnect switch. • Neutral terminated to insulated neutral in panel. • Ground to back plate. • No surge protection. • No site lighting.

LS-12
Civil/Mechanical • Pumps are over 15 years old. • Wet well lacks liner – exposed concrete. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Fair Condition - paint wearing off and signs of corrosion. • Water service lacks back flow preventor. • Site lacks generator. • No safety grating on wet well. Electrical • Junction box not sealed from control panel. • H2S corrosion in control panel and on disconnect switch. • Service equipment is bad. • Grounding incorrect. • No surge protection. • Panel is old and in poor condition. • No site lighting.

LS-13
Civil/Mechanical
• Pumps are over 15 years old.
• Wet well lacks liner – exposed concrete.
• Ductile iron piping and fittings in valve vault in fair condition.
• Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded.
• Water service lacks back flow preventor.
• Site lacks generator.
• No permanent safety grating on wet well.
Electrical
• Float and pump cables come through same junction box.
• No equipment-grounding conductor run with feeder from treatment plant, only neutral.
• Neutral bonded in panel.
• Extensive H_2S corrosion in panel.
• No grounding rod.
• All power distribution equipment is in control panel.
• APT surge protection unit has failed.
• No site lighting.

LS-14 * Major Station
Civil/Mechanical
• Pumps are over 15 years old; need to plan for replacement in next 5 years.
• Wet well lacks liner – exposed concrete.
• Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded.
• Ductile iron piping, fittings and valves in valve vault in Fair Condition - paint wearing off and signs of corrosion.
• No water service.
• Site lacks generator.
• No safety grating on wet well.
Electrical
• No surge protection.
• No bonding.
• No site lighting.

LS-15
Civil/Mechanical • Pumps are over 15 years old. • Wet well lacks liner – exposed concrete. • Ductile iron piping and fittings in valve vault in fair condition. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • No water service. • Site lacks generator. • No permanent safety grating on wet well. Electrical • No overcurrent protection in disconnect switch. • No surge protection. • Service grounding bad. • No site lighting.

LS-16
Civil/Mechanical • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping, fittings and valves in valve vault in Fair Condition - paint wearing off and signs of corrosion. • Wet well lacks liner – exposed concrete. • Site lacks bypass. • Site lacks generator. • No safety grating on wet well. Electrical • Wrong grounding. • Surge protection has failed. • No site lighting.

LS-17
Civil/Mechanical • Pumps are over 15 years old. • Wet well lacks liner – exposed concrete. • Ductile iron piping and fittings in valve vault in fair condition. • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • No water service. • Site lacks generator. • No permanent safety grating on wet well. Electrical • Bonding incorrect in panel. • Grounding incorrect. • Surge protection has failed. • No site lighting.

LS-18
Civil/Mechanical • Pumps continual need to be de-ragged and are undersized for estimated capacity required. • Wet well lacks liner – exposed concrete. • Ductile iron piping and fittings in valve vault in poor condition and extremely corroded. • PVC pipe and PVC 90° bends in wet well are in good condition. • Water service lacks back flow preventor. • Site lacks generator. • No permanent safety grating on wet well. Electrical • Ground from disconnect switch neutral. • Bonded in panel. • No ground rod from insulated neutral. • No surge protection. • No site lighting.

LS-19
Civil/Mechanical • Ductile iron pipe and ductile iron 90° bends in wet well - Poor Condition - extremely corroded. • Ductile iron piping and fittings in valve vault in good condition. • Wet well lacks liner – exposed concrete. • Site lacks generator. • No safety grating on wet well. Electrical • Service is grounded in the meter. • Neutral bonded in panel but no ground rod connection. • Service disconnect switch does not have overcurrent protection or bonding. • Surge protection had failed. • No site lighting.

LS-20
LS-20 was not evaluated as part of this study.

LS-21
Civil/Mechanical • PVC pipe in Good condition. • PVC piping and ductile iron valves in valve vault in Good condition. • Wet well is fiberglass and does not require liner. • No safety grating on wet well. Electrical • Grounding/Bonding in meter. • Neutral to insulated neutral BUS. • Ground to back plate and not per NEC. • No site lighting.

LS-22
Civil/Mechanical • HDPE pipe in Good condition. • HDPE piping and ductile iron valves in valve vault in Good condition. • Wet well lacks sufficient liner. • Site lacks generator. • Site lacks security fence. • Site lacks water service. • No safety grating on wet well. Electrical • Grounding bad. • Disconnect switch (3R). • No site lighting.

LS-23
Civil/Mechanical • HDPE pipe in Good condition. • HDPE piping and ductile iron valves in valve vault in Good condition. • No safety grating on wet well. Electrical • Acorn nuts on ground rods. • No site lighting.

LS-24
Civil/Mechanical • HDPE pipe in Good condition. • HDPE piping and ductile iron valves in valve vault in Good condition. • Wet well lacks sufficient liner. • Site lacks generator. • No safety grating on wet well. Electrical • Bad grounding. • PVC between meter and disconnect switch. • No equipment grounding conductor from meter. • No ground rod from disconnect switch. • No overcurrent protection. • Surge protection of poor quality. • No site lighting.

3.2 OVERALL ELECTRICAL ASSESSMENTS

Charles Cobb with Chatham Engineering, a professional electrical engineer, accompanied 4Waters staff on the field inspections and provided the electrical and controls system assessments. The electrical deficiencies noted at the various lift stations have been listed in the sections above. Important electrical design standards that were reviewed are described below.

As defined by the National Fire Protection Association (NFPA) a Classified Area is a space where a flammable gas, flammable liquid-produced vapor, combustible liquid produced vapors, combustible dusts, or combustible fibers could be present, and the likelihood that a flammable or combustible concentration or quantity is present. NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, indicates that the envelope within 18 inches above the wet well top slab, and within 3 ft of the outside edge of the hatch, is designated as a Division 2 Classified Location. The classified area also extends for a 5 foot radius from the end of the wet well vent. Lift station electrical equipment is not permitted within the classified area.

The Florida Department of Environmental Protection (FDEP) Notification/Application for Construction a Domestic Wastewater Collection/Transmission System requires the electrical equipment to be protected by National Electrical Code (NEC) approved conduit sealing fittings to prevent the atmosphere or the wet well from gaining access to the electrical equipment. The FDEP permit application also requires wet well electrical equipment including the pump motors, float switches, and level sensor, to be disconnected and removed without disturbing the conduit sealing fittings. To meet these requirements the City standard lift station design uses explosion protected wet well terminal boxes between the wet well and the pump control panel, with cable seals on the wet well conduits, and explosion proof conduit sealing fittings on the control panel conduits.

The City standard lift station control panel is equipped with a dead front inner door to allow the operator to have access to the pump controller and circuit breaker operating handles without being exposed to live electrical parts. The standard lift station electrical service surge protection equipment has status indication lights that are only operational when the equipment is energized. This equipment also needs to be installed so that the status indication lights are visible from outside the dead front inner door, or through a view window.

4.0 – RECOMMENDED ACTIONS – IMPLEMENTATION PLAN

The culmination of the Engineering Report is to provide a plan of implementation for the identified deficiencies and the proposed recommendations listed throughout the report. This section will address the rehabilitation needs of the priority system projects to maintain and/or provide a desirable level of service for the current customer population (person) and anticipated milestones for completion. Additional CIP projects are continually being monitored and evaluated.

6.1 REHABILITATION CAPITAL IMPROVEMENT PLAN

The Wastewater Rehabilitation Capital Improvement Plan (CIP) presented in the following section incorporates priority deficiencies for the Cities major lift station and WWTP as noted from the field assessments. The purpose of the Implementation Plan is to address deficiencies in the systems which need to be handled in the near-term future to provide an acceptable level of service to the existing customer base population (person).

6.1.2 WASTEWATER SYSTEM REHABILITATION CIP – ORDER OF MAGNITUDE COST

The following section provides the recommended priority project rehabilitation improvements necessary to provide an acceptable level of service and reliability within the City system with milestones for completion. The estimated Order of Magnitude Costs are provided with the rehabilitation items prioritized.

Table 6.1 Wastewater Rehabilitation CIP (Near Term)

Facility	Recommended Improvements (Near Term) Description	Order of Magnitude Costs	Anticpated Funding Source
WWTP	**Civil/Mechanical** Headworks upgrades, New Influnet Equlization Tank, New Transfer Pumps and Master Lift Station Improvements **Electrical** Electrical and control replacement.	$ 3,700,000	FDEP Funded
LS-3	**Civil/Mechanical** Replace pumps and rails due to age, Replace 10" piping and plug/check valves in valve vault and install above grade, Install wet well liner, Install new water service, Install safety grating, **Electrical** Entire electrical system capital replacement. Poor condition and significant safety hazards.	$ 622,000	Potential FDEP Funding with Septic to Sewer Project and or Facility Plan
LS-9	**Civil/Mechanical** Replace pumps and rails due to age, Replace 4" piping and plug/check valves in valve vault and install above grade, Install wet well liner, Install new water service, Install safety grating, **Electrical** Entire electrical system capital replacement. Poor condition and significant safety hazards.	$ 433,000	Pending
LS-11	**Civil/Mechanical** Replace pumps and rails due to age, Replace 4" piping and plug/check valves in valve vault and install above grade, Install wet well liner, Install safety grating, **Electrical** Entire electrical system capital replacement. Poor condition and significant safety hazards.	$ 434,000	Potential FDEP Funding with Septic to Sewer Project and or Facility Plan

Table 6.1 Wastewater Rehabilitation CIP (Near Term) Cont.

Facility	Recommended Improvements (Near Term) Description	Order of Magnitude Costs	Anticipated Funding Source
LS-14	**Civil/Mechanical** Replace pumps and rails due to age, Replace 6" piping and plug/check valves in valve vault and install above grade, Install wet well liner, Install new water service, Install safety grating, **Electrical** Entire electrical system capital replacement. Poor condition and significant safety hazards.	$ 545,000	Potential FDEP Funding with Septic to Sewer Project and or Facility Plan
LS-4	**Civil/Mechanical** Replace pumps and rails due to age, Replace 4" piping and plug/check valves in valve vault and install above grade, Install wet well liner, Install new water service, Install safety grating, **Electrical** Entire electrical system capital replacement. Poor condition and significant safety hazards.	$ 395,000	Potential FDEP Funding with Septic to Sewer Project and or Facility Plan
LS-5	**Civil/Mechanical** Replace pumps and rails due to age, Replace 4" piping and plug/check valves in valve vault and install above grade, Install wet well liner, Install new water service, Install safety grating, **Electrical** Entire electrical system capital replacement. Poor condition and significant safety hazards.	$ 332,000	Potential FDEP Funding with Septic to Sewer Project and or Facility Plan

APPENDIX F: COMMUNITY ENGAGEMENT

INDEPENDENT NEWSMEDIA INC. USA

Lake Okeechobee News
313 NW 4th Avenue
Okeechobee, FL 34972
863-763-3134

STATE OF FLORIDA
COUNTY OF HENDRY

Before the undersigned authority personally appeared **Katrina Elsken Muros**, who on oath says that she is **Editor in Chief** of the **Lake Okeechobee News**, a weekly newspaper published in **Hendry County, Florida;** that the attached copy of advertisement, being a **Public Notice** matter of

Public Notice

in the **20th Judicial District of the Circuit Court of Hendry County, Florida,** was published in said newspaper in the issues of

07/24/24
(Print Dates)

or by publication on the newspaper's website, if authorized, on

07/24 thru 08/06/2024
(Website Dates)

Affiant further says that the newspaper complies with all legal requirements for publication in Chapter 50, Florida Statutes.

NOTICE OF PUBLIC MEETING
City of LaBelle, FL

Notice is hereby given, the LaBelle City Commission will hold a Public Meeting located at City Hall in the Commission Chambers at 481 W. Hickpoochee Ave., LaBelle, FL 33935 on Thursday, August 8, 2024, at 5:30 P.M. for the purpose of considering the approval of the City of LaBelle clean water improvements facility planning documents. This meeting will include a discussion of the proposed clean water improvements. The meeting is intended to afford the opportunity to individuals to be heard on the economic and social effects of the location, design, and environmental impact of the proposed clean water improvements.

A portion of the funding for this project is anticipated to come from the State Revolving Fund (SRF) loan program. Financial impacts on utility users will be presented at the hearing. Reports, documents, and data relevant to the discussion, "Clean Water Facility Plan", are available for public review at LaBelle City Hall. These reports present infrastructure needs, alternative analyses, and cost comparisons over a 20-year planning period to support the development of clean water improvements and the City's goals. These documents were prepared to meet the planning requirements for the FDEP Clean Water State Revolving Fund programs for the purpose of obtaining funding for new facilities in the City of LaBelle. Other business which may properly come before the Commission will also be addressed. All interested persons are invited to attend this meeting.

SPECIAL REQUIREMENTS: If you require special aid or services as addressed in the American Disabilities Act, please contact the City Clerk's Office at (863) 675-2872, no less than five (5) days prior to the above stated meeting date.

City of LaBelle, Florida

Julie C. Wilkins, Mayor
3145 LON/Hendry 07/24/2024

Katrina Elsken Muros

Sworn to and subscribed before me by means of
☐ Physical Presence ☒ Online Notarization
physical presence or online notarization, this
24th day of July, 2024.

JANET SUE MADRAY
MY COMMISSION # HH 129146
EXPIRES: May 12, 2025
Bonded Thru Notary Public Underwriters

(Signature of Notary Public)
STAMP OF NOTARY PUBLIC

APPENDIX G: CAPITAL FINANCE PLAN

CAPITAL FINANCING PLAN

City of LaBelle
(Project Sponsor)
Julie Wilkins, Mayor
(Authorized Representative and Title)
LaBelle, Florida 33935
(City, State, and Zip Code)

Julie Wilkins, Mayor, (863) 675-2872
(Capital Financing Plan Contact, Title and Telephone Number)

481 West Hickpochee Avenue
(Mailing Address)

LaBelle, FL 33935
(City, State, and Zip Code)

The Department needs to know about the financial capabilities of potential State Revolving Fund (SRF) loan applicants. Therefore, a financial capability demonstration (and certification) is required well before the evaluation of the actual loan application.

The sources of revenues being dedicated to repayment of the SRF loan are water and sewer rate revenues

(Note: Projects pledging utility operating revenues should attach a copy of the existing/proposed rate ordinance)

Estimate of Proposed SRF Loan Debt Service

Capital Cost*	**$93,353,000 / 63,529,682**
Loan Service Fee (2% of capital cost)	**$1,270,594**
Subtotal	**$64,800,276**
Capitalized Interest**	**$434,162**
Total Cost to be Amortized	**$65,234,438**
Interest Rate***	**0.67%**
Annual Debt Service	**$3,496,035**
Annual Debt Service Including Coverage Factor****	

* Capital Cost = Allowance + Construction Cost (including a 10% contingency) + Technical Services after Bid Opening.
** Estimated Capitalized Interest = Subtotal times Interest Rate times construction time in years divided by two.
***20 GO Bond Rate times Affordability Index divided by 200.
**** Coverage Factor is generally 15%. However, it may be higher if other than utility operating revenues are pledged.

SCHEDULE OF PRIOR AND PARITY LIENS

List annual debt service beginning two years before the anticipated loan agreement date and continuing at least fifteen fiscal years. Use additional pages as necessary.

IDENTIFY EACH OBLIGATION

#1 Water & Sewer Revenue Bond Series 2013 **Coverage % 15** **Insured (Yes/No) Yes**	**#2W&S revenue Bond Series 2002** **Coverage % 15** **Insured (Yes/No) Yes**	**#3W&S revenue Bond Series 2005** **Coverage % 15** **Insured (Yes/No) Yes**
#4 SRF Note **Coverage % 15** **Insured (Yes/No) Yes**	**#5 DW SRF - LS260370** **Coverage % 15** **Insured (Yes/No) Yes**	**#6** **Coverage %** **Insured (Yes/No)**

Fiscal Year	Annual Debt Service (Principal + Interest)						Total Non-SRF Debt Service w/coverage	Total SRF Debt Service w/coverage
	#1	**#2**	**#3**	**#4**	**#5**	**#6**		
2022	**$564,085**	**$139,696**	**$64,226**	**$16,544**			**$768,007**	**$16,544**
2023	**$563,568**	**$139,696**	**$64,226**	**$16,544**			**$767,489**	**$16,544**
2024	**$563,885**	**$139,696**	**$64,226**	**$16,544**			**$767,807**	**$16,544**
2025	**$563,010**	**$139,696**	**$64,226**	**$16,544**			**$766,932**	**$16,544**
2026	**$563,970**	**$139,696**	**$64,226**	**$16,544**			**$767,892**	**$16,544**
2027	**$563,710**	**$139,696**	**$64,226**	**$16,544**			**$767,632**	**$16,544**
2028	**$564,258**	**$139,696**	**$64,226**	**$16,544**	**$217,770**		**$768,179**	**$234,314**
2029	**$563,585**	**$139,696**	**$64,226**	**$16,544**			**$767,507**	**$16,544**
2030	**$562,720**	**$139,696**	**$64,226**	**$8,272**			**$766,642**	**$8,272**
2031	**$563,663**	**$139,696**	**$64,226**				**$767,584**	**0**
2032	**$563,358**	**$139,696**	**$64,226**				**$767,279**	**0**
2033	**$562,833**	**$139,696**	**$64,226**				**$766,754**	**0**
2034	**$564,088**	**$139,696**	**$64,226**				**$768,009**	**0**
2035	**$563,068**	**$139,696**	**$64,226**				**$766,989**	**0**
2036	**$563,828**	**$139,696**	**$64,226**				**$767,749**	**0**
2037	**$563,313**	**$139,696**	**$64,226**				**$767,234**	**0**
2038	**$563,550**	**$139,696**	**$64,226**				**$767,472**	**0**
2039	**$564,513**	**$139,696**	**$64,226**				**$768,434**	**0**
2040	**$564,173**	**$139,696**	**$64,226**				**$768,094**	**0**
								0

SCHEDULE OF ACTUAL REVENUES AND DEBT COVERAGE
FOR PLEDGED REVENUE

(Provide information for the two fiscal years preceding the anticipated date of the SRF loan agreement)

		FY2023	FY2024
(a)	Operating Revenues (Identify)		
	Water sales/fees	$2,056,000	$2,442,430
	Sewer Sales/fees	$1,115,000	$1,115,000
(b)	Interest Income	$4,250	$4,250
(c)	Other Incomes or Revenues (Identify)		
	Miscellaneous Revenue	$100,000	$50,000
	Capital Outlay	$800,000	$800,000
(d)	Total Revenues	**$4,075,250**	**$4,618,780**
(e)	Operating Expenses (excluding interest on debt, depreciation, and other non-cash items)	$2,852,038	$3,844,063
(f)	**Net Revenues (f = d – e)**	**$1,223,216**	**$774,717**
(g)	Debt Service (including coverage) Excluding SRF Loans	$$767,489	$767,807
(h)	Debt Service (including coverage) for Outstanding SRF Loans	$16,544	$16,544
(i)	**Net Revenues After Debt Service (i = f – g – h)**	**$439,183**	**($9,316)**

Source: Annual Reports, budget files
Notes:

SCHEDULE OF PROJECTED REVENUES AND DEBT COVERAGE
FOR PLEDGED REVENUE
(Begin with the fiscal year preceding first anticipated semiannual loan payment)

		FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
(a)	Operating Revenues (Identify)					
	Water sales/fees	$3,297,011	$4,121,263	$5,151,579	$6,181,895	$6,181,895
	Sewer sales/fees	$1,505,250	$1,881,563	$2,351,953	$2,822,344	$2,822,344
(b)	Interest Income	$4,250	$4,250	$4,250	$4,250	$4,250
(c)	Other Incomes or Revenues (Identify)					
(d)	Total Revenues	**$4,806,511**	**$6,007,076**	**$7,507,782**	**$8,633,312**	**$9,064,765**
(e)	Operating Expenses[1]	$3,959,385	$4,078,166	$4,200,511	$4,326,527	$4,456,323
(f)	**Net Revenues (f = d - e)**	**$847,128**	**$2,409,135**	**$3,907,553**	**$5,807,491**	**$6,184,184**
(g)	Existing Debt Service on Non-SRF Projects (including coverage)	$766,932	$767,892	$767,632	$768,179	$767,507
(h)	Existing SRF Loan Debt Service (including coverage)	$16,544	$16,544	$16,544	$234,314	$16,544
(i)	**Total Existing Debt Service (i = g + h)**	**$783,476**	**$784,436**	**$784,176**	**$1,002,493**	**$784,051**
(j)	Projected Debt Service on Non-SRF Future Projects (including coverage)	0	0	0	0	0
(k)	Projected SRF Loan Debt Service (including coverage)	0	$3,496,035	$3,496,035	$3,496,035	$3,496,035
(l)	**Total Debt Service (Existing and Projected) (l = i + j + k)**	**$783,476**	**$4,280,470**	**$4,280,210**	**$4,498,528**	**$4,280,085**
(m)	**Net Revenues After Debt Service (m = f – l)**	**$63,650**	**(2,351,561)**	**(972,940)**	**$183,434**	**$272,081**

Source: CAFR, FY2023-24 Budget, Projected rates

Notes: (i.e. rate increases, explanations, etc.)
1. For existing and proposed facilities, excluding interest on debt, depreciation, and other non-cash items.
SAHFI Grant Secured $19,823,318: + L0060 = $6,000,000 + QG004 = $4,000,000 to total grant secured to date $29,823,000. SRF eligible for +$13,918,682 low interest loan at August 2024 hearing.

Net amount requested, after duducting grants is $63,529,682.

To cover loan costs, projections include 35% rate increases in FY25, 25% rate increases in FY26 & FY27, 20% rate increase in FY28.

CERTIFICATION

I, ____ , certify that I have reviewed the information
Chief Financial Officer (please print)

included in the preceding capital financing plan worksheets, and to the best of my knowledge, this

information accurately reflects the financial capability of _______________________________________
Project Sponsor

I further certify that __________________________________ has the financial capability to ensure
Project Sponsor

adequate construction, operation, and maintenance of the system, including this SRF project.

____________________________________ ____________________________________
Signature Date

Woodard & Curran

APPENDIX H: CURRENT WASTEWATER AND SEWER RATES

Chapter 18 - UTILITIES

> *Footnotes:*
>
> *--- (**1**) ---*
>
> ***Cross reference—*** *Administration, Ch. 2; buildings and building regulations, Ch. 5; fire prevention, Ch. 6; flood damage prevention, Ch. 7; garbage and refuse, Ch. 8; the charges for garbage collection shall be included on the bills for other utility services, § 8-38; housing, Ch. 9; junked, wrecked, abandoned property, Ch. 10; abandoned wells left uncovered prohibited, § 12-9; public improvements, Ch. 13; streets, sidewalks and other public places, Ch. 14; permit required for installation of underground utilities, § 14-23; construction standards for driveways, § 14-56; subdivisions, Ch. 15; taxation, Ch. 16; public service tax levies on utilities, § 16-11 et seq.; zoning, Ch. 19.*

ARTICLE I. - IN GENERAL

Secs. 18-1—18-15. - Reserved.

ARTICLE II. - SEWERS

DIVISION 1. - GENERALLY

Sec. 18-16. - Sewerage system declared utility.

The present sanitary sewer system in existence in the city, together with any and all extensions thereof, replacements thereto, and treatment plant, pumps and all other equipment, is hereby declared to be a public utility for the use and benefit of the city in the maintenance of public health and general sanitary conditions throughout the city.

(Code 1967, § 18-1)

Sec. 18-17. - Connections with sewer required.

The owner of each lot or parcel of land within the city, upon which lot or parcel of land, any building, or mobile home used as a dwelling, is now situated or shall hereafter be situated, for either residential, commercial or industrial use shall connect or cause such building(s) or mobile home(s) to be connected with public sewer facilities of the municipal sewer system of the city and use such facilities within two (2) months following notification to do so by the clerk of the city. All such connections shall be made in accordance with rules and regulations which shall be adopted from time to time by the city commission. No connections or connections shall be required where said sewer system or line is more than two hundred (200) feet from such lot or parcel of land.

(Code 1967, § 18-2; Ord. No. 2003-24, § i, 9-11-03)

Sec. 18-18. - Exceptions to connection.

This article shall not be construed to require or entitle any person to cross the private property of another to make any such sewer connection.

(Code 1967, § 18-3; Ord. No. 2003-24, § i, 9-11-03)

Sec. 18-19. - Connections may be made by city.

If any such owner of any lot or parcel of land within the city shall fail and refuse to connect with and use the facilities of the sewer system of the city after notification by the city clerk as provided herein, then the city shall be authorized to make such connection entering on or upon any such lot or parcel of land for the purpose of making such connection. The city shall thereupon be entitled to recover the costs of making such connection together with reasonable penalties and interest and attorney's fees, by suit in any court of competent jurisdiction. In addition to and as an alternative means of collecting such costs of making such connections, the city shall have a lien on such lot or parcel of land for such costs, which lien shall be of equal dignity with a lien of state and county and municipal taxes. Such lien may be foreclosed by the city in the manner provided by the Laws of Florida for the foreclosure of mortgages upon real estate liens.

(Code 1967, § 18-4)

Sec. 18-20. - Subdivision.

The developer of a new or existing subdivision shall be required to install sewer mains in streets or easements in the subdivision at his own expense according to plans and specifications to be approved by the city commission. The city may install the trunk line to the boundary of the subdivision but the location will be determined by the city. When subdivision mains will not feed into the city trunk by gravity, the developer will be required to install a lift station at his own expense in accordance with plans and specifications to be approved by the city commission.

(Code 1967, § 18-5)

Sec. 18-21. - Unlawful connection.

No person shall be allowed to connect into any sewer line owned by the City of LaBelle without the written consent of the city, and then the connection with such line shall be made only under the direction and supervision of the city. Any person or persons, who shall make any connection without such consent of the city shall be subject to the penalties herein after provided.

(Code 1967, § 18-6; Ord. No. 2003-24, § i, 9-11-03)

Sec. 18-22. - Unlawful construction.

No person or group of persons shall build, remodel or cause to be built or remodeled any structure used for human habitation or occupancy within the city which is within two hundred (200) feet of a public sanitary sewer line unless it is provided with water-carried sewerage facilities.

(Code 1967, § 18-7)

Sec. 18-23. - Connecting old plumbing.

Whenever it is desirable to connect old plumbing with the city sewer main, the owner or plumber contemplating doing such work shall notify the city plumbing inspector who will inspect said old plumbing and notify the owner or plumber what alterations will be necessary to place said old plumbing in an acceptable condition for such connection. Any owner or plumber who shall make any connection without the approval of the plumbing inspector shall, upon conviction, be subject to the penalties hereinafter provided.

(Code 1967, § 18-8)

Sec. 18-24. - Sanitary requirements.

Every residence and building in which human beings reside, are employed or congregate, shall be required to have a sanitary method of disposing of human excrement, namely either a sanitary water closet that is connected with the city sewer, or an approved type of septic tank. A septic tank will be used only if the property is more than two hundred (200) feet from the sewer line.

(Code 1967, § 18-9)

Sec. 18-25. - Disposal requirements.

It shall be unlawful for any person, persons, firm or corporation owning or leasing any premises in the City to permit disposal of any human excrement on any property, owned, leased or rented by any such person, firm or corporation or the agent of any such persons, firm or corporation, except in a sanitary water closet where sewage lines are available as defined above.

(Code 1967, § 18-13; Ord. No. 2003-24, § i, 9-11-03)

Sec. 18-26. - Septic tank.

No septic tank other than those approved by the appropriate health authority shall be constructed within the corporate limits of LaBelle, Florida. No septic tank shall be constructed within two hundred (200) feet of a sewer line.

(Code 1967, § 18-14)

Sec. 18-27. - Maintenance of plumbing system.

The owner of the property shall be responsible for maintaining and keeping clean the sewer pipes leading and connecting from the plumbing system to the sewer main.

(Code 1967, § 18-15)

Sec. 18-28. - Failure to maintain plumbing system.

Failure to keep the sewer pipe, i.e., the pipe leading from the plumbing system to the sewer main, clean and maintained in a proper manner will give the city the right to cut off the water connection, which shall not be reconnected until the sewer pipe is cleaned and maintained properly. In those instances where the owner has his own private water supply, the city shall have the right to cut off such water supply to the plumbing system, and the owner shall have no right to reconnect his own private water supply until the sewer pipe leading from the plumbing system to the sewer main has been maintained and cleaned and in proper condition. Any violation of this provision by reconnecting his private water supply or the connection from the city's water line, until such sewer pipes are cleaned and maintained, shall be considered a violation of this chapter.

(Code 1967, § 18-18)

Sec. 18-29. - Grease traps.

(a) *Purpose.* The purpose of this section is to establish uniform requirements for generators discharging wastewater containing fats, oil and grease into The City of LaBelle Utilities astewater collection system and to enable the city to comply with all the most up-to-date and applicable federal and state laws, including those which apply to sanitary sewer overflows.

(1) It is the intent of these City of LaBelle FOG Ordinance to provide the specifications for grease trap location, design, installation, construction, operation, inspection and maintenance (standards) so as to ensure compliance with the FOG Ordinance. It should be noted that failure to comply with these standards shall be considered a violation of the applicable sections of the existing city ordinance and subject to applicable penalties as allowed by law and/or denial or discontinuance of wastewater service.

(2)

Wastewater discharges containing high concentrations of oil and grease from food service facilities are a cause of blockages and overflows in the city's wastewater collection system. Overflows of wastewater into the stormwater collection system and natural bodies of water could be greatly reduced by controlling the discharge of oil and grease into the wastewater collection system.

(b) *Scope.* The territorial scope of this section includes all areas of The City of LaBelle in which the wastewater collection system is owned and maintained by city utilities. The FOG Ordinance will amend City of LaBelle Municipal Code chapter 18—Utilities, article II—Sewers. division 1—Generally, only.

(c) *Definitions.* In construing the provisions of this chapter, where the context will permit and no definition is provided herein, the definitions provided in F.S. ch. 403, as may be amended from time to time, and in rules and regulations promulgated thereunder, as may be amended from time to time, shall apply. The following words and phrases when used in this chapter shall have the meanings ascribed to them in this section:

Analytical laboratory shall mean a laboratory that complies with F.A.C. 64E-1, for the examination of environmental samples by the State of Florida Department of Health, Bureau of Public Health Laboratories for the water quality parameters and analytical methods included in this article rdinance.

Captured material shall mean any FOG, or organic matter captured and retained in the grease handling facilities.

Control authority shall mean The City of LaBelle Utilities superintendent or its designee.

Environmental Protection Agency (EPA) shall mean the United States Environmental Protection Agency of the United States, its administrator, or other duly authorized representative of said agency.

Fats, oils and grease or *FOG* shall mean any substance such as vegetable or animal product used in, or a byproduct of, the cooking, food preparation, or cleaning process, that can cause or lead to corrosion, blockages, reduced flow, or interference with the sanitary sewer system when discharged alone or combined with other materials or waste.

Floatable grease shall mean FOG in a physical state such that it will separate, by gravity, from wastewater by treatment in an approved pretreatment device.

FOG capacity limit shall mean the combined FOG and solids depth equal to twenty-five percent (25%) of the design hydraulic depth in any location of a grease handling facility, or seventy-five percent (75%) of the rated FOG and solids capacity established by third party certification.

Food service establishment shall mean any facility engaged in preparing and/or packaging food or beverages for sale or consumption, on or off site, with the exception of private residences. Food service establishments shall include, but are not limited to restaurants, cafeterias, hospitals, schools, bars, food courts, food manufacturers, food packagers, grocery stores, convenience stores, bakeries, cafeterias, correctional facilities, hotels, nursing homes, churches, and schools and any other facility that, in the city's opinion, would require a grease handling facility installation by virtue of its operation. Such definition normally includes any establishment required to have a State of Florida food service license.

Garbage grinder shall mean a device that shreds or grinds up solid or semisolid waste materials into smaller particles for discharge into the wastewater collection system.

Generator shall mean any nonresidential facility, including, but not limited to food service establishments or such other nonresidential facilities that can introduce FOG into building sanitary drains, building sewers, onsite sewage treatment and disposal systems, or non-utility or utility sanitary sewer systems. A FOG generator also includes those nonresidential facilities that produce yellow grease.

Grab sample shall mean a sample that is taken from a grease handling facility or wastewater discharge on a one-time basis with no regard to the volume of flow in the discharge.

Gray water shall mean all of the liquid contained in a grease interceptor that lies below the floating grease layer and above the food solids layer.

Grease shall mean a material either liquid or solid, composed primarily of fat, oil and grease from animal or vegetable sources. The terms "fats, oils and grease" (FOG) and "oil and grease" shall be included within this definition.

Grease handling facilities shall mean the physical structures, piping and equipment used to collect and separate FOG. Grease handling refers to the entire grease trap, grease interceptor and/or alternative grease removal devices or technology system used by a generator.

Grease interceptor shall mean a device whose rated flow exceeds 50 gpm, which has a minimum storage capacity of 750 gallons or more, and is located underground and outside a generator establishment. This device is designed to collect, contain and remove food wastes and grease from the waste stream while allowing the balance of the liquid waste to discharge to the wastewater collection system by gravity. The construction and location criteria for grease interceptors shall be in accordance with the Florida Building Code.

Grease trap shall mean a device, whose rated flow is less than 50 gpm, located inside a generator and designed to collect, contain and remove food wastes and grease from the waste stream while allowing the balance of the liquid waste to discharge to the wastewater collection system by gravity. The construction and location criteria for grease traps shall be in accordance with the Florida Building Code.

Notice of violation (NOV) shall mean a written notice informing an owner that a violation of this article has occurred.

Notify shall mean contact by telephone, in person, electronic mail or via certified United States Mail, return receipt requested.

Owner shall mean the legal owner(s) of the structure in which the FOG generator is located and/or the operator(s).

Premises shall mean a parcel of real estate or portion thereof including any improvements thereon which is determined by the control authority to be a single user for the purposes of receiving, using and paying for sewer services.

Pretreatment review committee shall mean a panel made up of the following individuals whose main function is to review user appeals relating to grease issues, chief building inspector or designee, utilities superintendent or designee, and the pretreatment coordinator or designee.

Wastewater treatment facility (WWTF) shall mean a treatment works, also referred to as a wastewater treatment plant (WWTP) or publicly owned treatment works (POTW). which is owned by the city. Any devices and systems used to pump, store, treat, recycle and reclaim municipal sewage or industrial wastes of a liquid nature. WWTF shall include piping and city owned and maintained lift stations and pump stations that convey wastewater to the WWTF. Any sewers that convey waste waters to the WWTF from persons outside the city who are users of the WWTF by contract or agreement with the city.

Replacement costs shall mean expenditures for obtaining and installing equipment, accessories or appurtenances necessary to retain design capacity and performance of the WWTF throughout the jurisdiction of the city.

Sanitary sewer overflow shall mean releases of untreated sewage into the environment.

Utilities superintendent shall mean the person designated by the city to oversee and administer the activities of the utilities division, supervise the operation of the WWTF, maintain records of such operation, prepare operating budgets and make recommendations to the City of LaBelle's City Commissioners concerning activities within his responsibility and authority.

Wastewater shall mean the liquid and water containing industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, institutions and any other source, whether treated or untreated which is contributed to or permitted to enter the WWTF.

(d) *General.* Liquid wastes, mostly from food service establishments, containing FOG can become significant problem for wastewater collection and treatment systems if they are disposed directly in the sanitary sewer collection system. Once in the sanitary sewer collection system. FOGs coat and accumulate in pipes and on equipment causing backups and overflows. As a result, the City of LaBelle is requiring generators to restrict the disposal or discharge of any FOG into any city sanitary sewer system, onsite sewage treatment and disposal system, non-utility or utility sanitary sewer system in quantities which hinder the operation of any onsite sewage treatment and disposal system, sewage collection, transmission or treatment system, exceeds the standards in this article, or causes a sanitary sewer overflow, sanitary sewer nuisance or partial blockage of the city sanitary sewer system due to FOG discharge.

(e) *Existing facilities.* For the purposes of sizing and installation of grease interceptors, all existing generators within the city prior to the effective date of this article shall be permitted to operate and maintain existing grease handling facilities provided same are in efficient operating condition. Upon the effective date of this article, the city will require an existing generator to install, operate and maintain a new grease handling facilities which comply with the requirements of this article or to modify or repair any noncompliant existing plumbing or grease handling facilities within ninety (90) days of written notification by the city when any one or more of the following conditions exist:

1. The generator is found to be contributing FOG in quantities sufficient to cause sanitary sewer line blockages, sanitary sewer overflows, or necessitate increased maintenance on the wastewater collection system; and/or
2. The generator is found to be contributing FOG in quantities exceeding the limits listed in this section; and/ r,
3. The generator has an undersized, irreparable or defective grease handling facilities; and/or,
4. The generator has a garbage grinder; and/or.
5. Remodeling of the food service establishment preparation or kitchen waste plumbing system is performed which requires a plumbing or building permit to be issued; and/or.
6. The existing generator is sold or undergoes a change of ownership.

(f) *Food service establishments requirements.* All food service establishments (generators) are required to have a grease handling facilities as per the requirements of the Florida Building Code as may be amended from time to time. A grease handling facility inspection fee of two dollars and zero cents ($2.00) per interceptor/trap or alternative grease handling facility, per month is hereby imposed and may be amended from time to time through a rate resolution approved by the City of LaBelle Board of Commissioners pursuant to this article. Such fee shall be paid through the City of LaBelle Utilities monthly service bill by all food service establishments required to install and maintain grease handling facilities pursuant to state regulations.

(g) *Plumbing connections.* Grease handling facilities shall be located in the food service establishment's lateral sewer line between all fixtures, which may introduce FOG into the sanitary sewer system and the connection to the city's wastewater collection system. Such fixtures shall include but not be limited to, sinks, dishwashers, automatic hood wash units, floor drains in food preparation and storage areas, and any other fixture which is determined to be a potential FOG source. Garbage grinders installed within food service establishments shall be plumbed through the grease handling facilities and a solids interceptor shall separate the discharge before connecting to the grease handling facilities. Solids interceptors and grease handling facilities shall be sized and rated for the discharge of the garbage grinder. Wastewater from sanitary facilities and other similar fixtures shall not be introduced into the grease handling facilities under any circumstances.

(h) *Minimum standards.* The controlling authority shall approve the installation of a grease trap instead of a grease interceptor at a new food service establishment, as specified in the Florida Building Code. All food service establishments shall comply with the following guidelines:

1. Inspection. Cleaning and maintenance: Each food service establishment shall be solely responsible for the cost of trap installation, inspection. cleaning and maintenance. Cleaning, FOG removal and maintenance must be performed when the total volume of captured grease and solid material displaces more than twenty percent (20%) of the total volume of the unit. Each food service establishment shall determine the frequency at which their grease trap shall be cleaned, but all grease traps shall be opened. inspected, and maintained at a minimum of once per week. Generators shall provide written documentation of the grease trap inspection, maintenance and repairs in accordance with this section.
2. Repairs: The food service establishment shall be responsible for all cost and scheduling of all repairs to its grease trap(s). Repairs required by the control authority shall be completed within thirty (30) consecutive calendar days after the date of written notice of required repairs is received by the generator, unless the city approves in writing of a different schedule.
3. Disposal: Captured materials removed from a grease trap shall be legally disposed of as solid waste.

(i) *Grease interceptors.* Grease interceptors shall be installed at all new food service establishments as specified by the Florida Building Code. All food service establishments shall comply with the following guidelines:

1. Inspection. Pumping, and maintenance: Each food service establishment shall be responsible for the costs of installing, inspecting, pumping. cleaning, and maintaining its grease interceptor(s). Pumping services shall include the initial complete removal of all captured material, including floating materials, wastewater and bottom sludge and solids from the interceptor. Grease interceptor cleaning shall include scraping excessive solids from the walls, floors, baffles and all pipe work. The return of gray water back into the grease interceptor from which the wastes were removed is allowable, provided that FOG and solids are not returned to the interceptor. The grease hauler shall wait at least twenty (20) minutes to allow the Interceptor waste to separate in the truck tank before attempting to reintroduce the gray water to the interceptor. It shall be the responsibility of each food service establishment to inspect its grease interceptor during the pumping procedure to ensure that the interceptor is

properly cleaned out and that all fittings and fixtures inside the interceptor are in working condition and functioning properly. Generators shall provide written documentation of the grease interceptor inspection, maintenance and repairs in accordance with this section.

2. Interceptor pumping frequency: Food service establishment interceptor(s) shall be pumped out when any of the following criteria are reached:
    a. When the floatable grease layer exceeds six inches (6") in depth as measured by an approved dipping method; or,
    b. When the settleable solids layer exceeds eight inches (8") in depth as measured by an approved dipping method; or,
    c. When the total volume of settable solids is more than seventy-five percent (75%) of the total clearance of the outlet pipe located at the bottom of the interceptor; or,
    d. When the total volume of captured grease and solid material displaces more than twenty percent (20%) of the interceptor capacity as calculated using an approved dipping method; or,
    e. When the interceptor is not retaining/capturing oils and greases; or the oil/grease concentration of the water being discharged, as determined through sampling and analysis, exceeds the limits indicated in this section.

(j) *Repairs.* Each food service establishment shall be responsible for the cost and scheduling of all repairs to its grease interceptor(s). Repairs required by the control authority shall be completed within thirty (30) consecutive calendar days after written notice is received by the generator unless the control authority establishes a different compliance date.

(k) *Disposal.* Captured material removed from each grease interceptor shall be disposed of at a facility permitted to receive such wastes. Captured material removed from interceptors shall not be returned to any grease handling facility, private sewer line or to any portion of the city's wastewater collection system.

(l) *Interceptor additives.* Any chemicals, enzymes, emulsifiers. live bacteria or other grease cutters or additives shall be approved by the control authority, prior to their use by the food service establishment or the grease hauler. Safety data sheets and any other applicable information concerning the composition, frequency of use and mode of action of the proposed additive shall be sent to the control authority together with a written statement outlining the proposed use of the additive(s). Based upon the information received and any other information solicited from the potential user or supplier, the control authority shall permit or deny the use of the additive in writing. Permission to use any specific additive may be withdrawn by the control authority at any time.

(m)

Alternative grease removal devices or technology. Alternative devices and technologies such as automatic grease removal systems shall be subject to written approval by the control authority prior to installation. Approval of the device shall be based on demonstrated (proven) removal efficiencies and reliability of operation. The control authority may approve these types of devices depending on manufacturers' specifications on a case-by-case basis. The food service establishment may be required to furnish analytical data demonstrating that grease discharge concentrations to the city wastewater collection system will not exceed the established limitation.

(n) *New facilities.* Upon the effective date of this article, generators which are newly proposed or constructed, or existing facilities which will be expanded or renovated, where such facility did not previously exist, shall be required to install, operate and maintain a grease interceptor or grease trap according to the requirements of the Florida Building Code.

(o) *Grease handling facilities operation and maintenance.* Generators shall perform weekly inspections of their grease handling facilities and shall document the inspection findings. Generator shall generate and retail for at least three (3) years, written documentation of grease handling facilities operations, maintenance and repairs including, but not limited to, date and time, level, date of grease removal, cleanings performed, date of cleanings, date of additive(s) addition, type and quantity of additive(s), and analytical sampling results, and any other applicable grease handling facility information required by the Florida Building Code, Florida Administrative Codes or EPA.

(p) *Limitations and standards.* All of the following rules and regulations are hereby adopted and are incorporated herein by reference hereto as same may updated from time to time.

1. F.A.C. ch. 62-160 - Quality Assurance.
2. F.A.C. ch. 62-761 - Underground Storage Tank Systems.
3. F.A.C. ch. 64E-6 - Standards for Onsite Sewage Treatment and Disposal Systems.

(q) *General pollutant standards and local limits.* It shall be unlawful for any person to throw, drain, run or otherwise discharge into a sanitary sewer, or to cause, permit, allow or suffer, be thrown, run, drained, or otherwise discharged into such sewer any effluent that is in excess of the following local limits:

Parameter	Analytical Method	Limit
Biochemical oxygen demand. 5 day (BOD5)	EPA method 405.1 or SM 5210 B.	145 lbs/day at a concentration not to exceed 200 mg/L, unless allowed by the WWTP

Total suspended solids (TSS)	SM 2540 C.	145 lbs/day at a concentration not to exceed 200 mg/L, unless allowed by the WWTF
Oil and grease	EPA 1664 (Hexane Extractable Materials)	100.0 mg/L
Oil and Grease strictly for facilities classified as FOG Generators	EPA Method 1664 (Hexane Extractable Materials)	150.0 mg/L
Total Recoverable Petroleum Hydrocarbons	EPA Method 1664 (Silica Gel Treated Hexane Extractable Materials)	50.0 mg/L
Ammonia (un-ionized)	EPA 350.1 or SM 4500	100.0 mg/L
Temperature		150°F (See Note 1)
pH	EPA 150.1 or SM 4500 H^+-B	5.5 - 11.5 standard units (SU). (See Note 2)

Notes:

1. Shall not cause the plant influent to exceed 104°F (40°C) nor inhibit WWTF biological activity.

2. Shall not cause damage to or create a hazard to structures, equipment, or WWTF personnel.

(r) *Entry, inspection, and sampling.* All generators shall allow the control authority, bearing proper credentials and identification, access to all parts of the premises during reasonable business hours, for the purpose of inspection, observation, and sampling in accordance with the provisions of this article. Any user refusing the control authority entry to or upon the premises of the user for the purposes of inspection, sampling effluents or performing such other duties as required by this article shall constitute a violation of the terms of this article. The control authority may seek a warrant or use any other legally available procedures to discharge their duties.

1.

The control authority may inspect the facilities of any food service establishment, to ascertain compliance with this article. The city will provide seven (7) days' notice to the generator before this inspection occurs. Grease handling facilities shall be inspected by the generator to ensure compliance with these standards and to determine if proper cleaning and maintenance schedules are being performed and documented in accordance with this article. Generators shall make the written copies of the inspection. operation, maintenance repair and analytical results available to the control authority upon inspection, to demonstrate compliance with this article.

2. The control authority will provide the generator with a written summary of inspection findings including compliance with the article and any deficiencies observed during the inspection to be corrected by the generator. including deficiencies in operation, maintenance repairs and documentation of same. The control authority may collect effluent samples to determine compliance. The control authority shall re-inspect any generator that received a deficiency notice after the original inspection within thirty (30) consecutive calendar days. In the event that the generator has corrected all of the deficiencies and is compliant with the remainder of this article, there shall be no charge for the re-inspection. In the event of continuing generator non-compliance, the city will issue a notice of violation, successive re-inspections will be scheduled and appropriate fees shall be charged to the generator for the first and all successive re-inspections. Such fees may be charged to the appropriate account of the city utilities water and sewer bill for cost recuperation in accordance with this article.

(s) *Monitoring.* Monitoring is defined as the act of sampling, laboratory analysis and analysis results reporting. Generators shall be responsible for monitoring FOG effluent as follows:

1. Perform annual monitoring for the parameters listed in the table in this section. Interval between monitoring events shall be at least two hundred and seventy (270) consecutive calendar days.
2. Monitoring location: Draw a grab samples at the grease handling facilities outlet.
3. Grab sample(s) shall be shipped to an analytical laboratory in accordance with the analytical method requirements. The analytical method requirements may be provided by the analytical laboratory.
4. Analytical laboratory sample(s) shall be analyzed at an analytical laboratory in accordance with the analytical methods listed in this section. If a different analytical method is used, the results shall be deemed invalid and the generator shall be responsible for any charges incurred by the analytical laboratory including the original monitoring and subsequent monitoring events.

(t) *Reporting.* Report the results to the city upon receipt from the analytical laboratory. Retain a written copy from the analytical laboratory of the analytical results for at least three (3) years from date of monitoring.

(u) *Enforcement, citation, injunctive relief, and damage assessments.* Whenever the control authority determines that a grease trap or interceptor is in need of pumping, repairs or other maintenance, or in the event that an additional grease interceptor is required, the control authority shall proceed as prescribed below:

1. The control authority conducting the inspection who determines that a violation exists shall immediately notify the owner that a violation exists and must be addressed promptly. The control authority may issue the generator a notice of violation (NOV) stating the deficiencies and nature of the violation(s).
2. If the generator responds with an acceptable explanation for the violation, and a plan for rectifying the situation, or makes good a deficiency within the prescribed time, enforcement ceases at the discretion of the control authority.

(v) *Civil and injunctive relief.* If a generator continues to violate the provisions set forth in this article, or fails to initiate/complete corrective action in response to a NOV. the control authority may pursue one or more of the following options:

1. Pump the grease interceptor and place the appropriate charge on the facility's monthly the City of LaBelle's Utilities service bill for cost recuperation as provided in this section; and/or,
2. Assess further inspection fees as provided; and/or,
3. Terminate water and sewer service.

(w) *Non-compliance fines.* The control authority shall perform a first re-inspection ten (10) calendar days, after issuance of the NOV. to allow sufficient time for corrective action by the generator to be completed. In the event that the generator is compliant with all of the deficiencies, there shall be no charge for the re-inspection. If all of the deficiencies have not been corrected, a first re-inspection fee of two hundred fifty dollars ($250) shall be charged to the generator. A second re-inspection will be performed after a minimum of ten (10) additional calendar days have passed. In the event that the generator is compliant with all of the deficiencies, there shall be no additional charge for the re-inspection. If all of the deficiencies have still not been corrected, a second reinspection fee of four hundred dollars ($400) shall be charged to the generator. If a third or more re-inspections are required a re-inspection fee of seven hundred fifty dollars ($750) for each successive re-inspection shall be charged to the generator in addition to other enforcement actions if all of the deficiencies have still not been corrected. All fees shall be added to the City of LaBelle's Utilities monthly service bill of the generator.

(x) *Cost recuperation for the city.* The charge for the cost recuperation shall include any and all actual costs incurred by the city to remove the captured material from the generator grease handling facilities and/or city sewer collection system, maintenance directly attributable to the generator's non-compliance with this article and legal disposal of captured material and FOG removed from the city sewer collection system. Costs shall include, but not be limited to: labor, material and equipment rental or use fees, captured material landfill transportation and disposal fees, and administrative fees. The control authority will provide the generator with supporting materials documenting the labor charges and associated fees incurred by the control authority for the above referenced work.

(Ord. No. 2020-08 , § 2, 7-9-20)

Secs. 18-30—18-45. - Reserved.

DIVISION 2. - RATES, CHARGES, BILLING

> *Footnotes:*
> *--- (**2**) ---*
> ***Cross reference—*** *Finance, § 2-56 et seq.*

Sec. 18-46. - Connection and expansion charges.

(a) There shall be charged each applicant for each connection of the city sanitary sewer system fees in the following amounts:

(1) For each residence, apartment or other residential unit, three hundred nineteen dollars and seven cents ($319.07);

(2) For each industrial user, an amount determined by the city commission after a study of the liquid wastes. The city reserves the right to refuse sewer service to industrial users;

(3) For all other users, business, commercial, governmental or otherwise, an amount equal to three hundred nineteen dollars and seven cents (319.07) multiplied by the number of equivalent residential units as determined by the city commission. An equal residential unit is defined as the service requirement ordinarily assigned to single-family residence.

(b) In addition to the above, there shall be charged each applicant expansion fees in the following amounts:

(1) For each residence, apartment or other residential unit, two thousand nine hundred dollars ($2,900.00);

(2) For each industrial user, an amount determined by the city commission after a study of the liquid wastes. The city reserves the right to refuse sewer service to industrial users;

(3) For all other users, business, commercial, governmental or otherwise, an amount equal to two thousand nine hundred dollars ($2,900.00) multiplied by the number of equivalent residential units as determined by the city commission. An equal residential unit is defined as the service requirement ordinarily assigned to single-family residence

(4)

In addition to the fees stated in subsections (a)(1) through (3) and (b)(1), (2), there shall be a charge of three dollars and fifty cents ($3.50) per running foot of sewer service pipe required to extend the sewer line from the exiting sewer to the user's property line.

(Code 1967, § 18-10; Ord. No. 88-3, 10-13-88; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Sec. 18-47. - Rates.

(1) A rate schedule is adopted by the city providing for the following residential user rates. All residential users of the service of the sewer system shall pay a monthly base rate as follows:

WATER MAIN SIZE	MONTHLY FIXED DEMAND CHARGE
⅝"	$20.52
1"	$74.11
1½"	$148.16
2"	$237.07
3"	$454.34
4"	$553.20
6"	$1,481.68

Plus, a monthly commodity charge of two dollars and forty-three cents ($2.43) per one thousand (1,000) gallons of water usage; provided, the monthly minimum for residential customers shall be the proper fixed demand charge, and the monthly maximum for residential customers shall be the proper fixed demand charge plus twenty dollars and fifty-two cents ($20.52) calculated at the rate of the commodity charge times eight thousand (8,000) gallons of water usage. For all other users there shall be no monthly maximum.

(2) A rate schedule is adopted by the city providing for the following commercial rates. All commercial users of services of the sewer system shall pay a monthly base rate as follows:

WATER MAIN SIZE	MONTHLY FIXED DEMAND CHARGE

>⅝ × ¾"	$20.52
1"	$74.11
1½"	$148.16
2"	$237.07
3"	$454.34
4"	$553.20
6"	$1,481.68

Plus, a monthly commodity charge of two dollars and forty-three cents ($2.43) per one thousand (1,000) gallons of water usage; provided, the monthly minimum for commercial customers shall be the proper fixed demand charge, and there shall be no monthly maximum.

(3) The city reserves the right to enter into contract with large users of water and sewer service for the purpose of setting and determining a monthly charge or rate for the use of such services, which monthly rate or charge may be computed upon a different basis than set forth in the paragraph immediately preceding. Such contracts shall be entered into by means of resolution duly adopted by the city commission.

(4) The city may blend rates from Phase I/Wastewater Treatment Plant and Effluent Disposal Site Project together with Phase II/Wastewater Improvement Project, with concurrence from USDA Rural Development, so that the rates set forth may be less than those set forth above.

(5) For all users having their own private water supply, a monthly charge to be fixed by the city commission but in no event less than the proper monthly fixed demand charge.

(6) In the event that sewage, water or other liquid wastes being discharged into the municipal sewer system from any building or premises contain unduly high concentrates of any substances which add to the operating costs of the municipal sewer system, then special rates, rental, or other charges may be established, charged and collected as to such building or premises.

(Code 1967, § 18-11; Ord. No. 87-7, § 1, 7-9-87; Ord. No. 92-1, § 1, 3-12-92; Ord. No. 92-7, § 1, 12-10-92; Ord. No. 96-10, § 1, 9-12-96; Ord. No. 2003-24, § i, 9-11-03; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Sec. 18-48. - Special treatment.

In the event that sewage, water or other liquid wastes being discharged into the municipal sewer system from any building or premises contains unduly high concentrates or any substances which add to the operating costs of the municipal sewer system, then the owner or other interested party may be required to specially treat such sewage, water or other liquid wastes before it is discharged into the municipal system.

(Code 1967, § 18-12)

Sec. 18-49. - Deposits.

(a) Beginning August 14, 1987, all new commercial accounts shall be required to post a security deposit equal to one hundred fifty (150) percent of their monthly service charge.

(b) All commercial accounts having service established prior to August 14, 1987, who have their service discontinued by their request or by their failure to pay sewer, water or garbage fees, penalties, or any applicable Florida State sales tax connected therewith, and who desire to reestablish service after August 14, 1987, shall be deemed to be a new commercial account and for purposes of this section shall be required to post a security deposit as required in section 18-49(a).

(c) Beginning August 14, 1987, all new residential accounts shall be required to post a security deposit of sixty-five dollars ($65.00).

(d) All residential accounts having service established prior to August 14, 1987, who have their service discontinued by their request or for failure to pay sewer fees, penalties, or sales tax connected therewith, and who desire to reestablish their service after August 14, 1987 shall be deemed to be a new residential account for purposes of this section and shall be required to post a security deposit as required in section 18-49(c).

(Code 1967, § 18-16; Ord. No. 87-4, § 3, 10-8-87; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Editor's note— Ord. No. 87-4, § 3, adopted Oct. 8, 1987, amended § 18-49 to read as herein set out. Prior to inclusion of said ordinance, § 18-49 pertained to payment of fees and bills required.

Sec. 18-50. - Collection of sewer fees where owner has private water supply.

Where sewage disposal fees are not paid in accordance with provisions outlined above, in those instances where the owner has his own private water supply, the city shall have the right to cut off such water supply to the plumbing system and the owner shall have no right to reconnect his own private water supply until sewage disposal fees shall have been paid in full. Any reconnecting of the owner's private water supply, until such sewage disposal fees are paid in full, shall be considered a violation of this Ordinance and subject to the penalties hereinafter provided.

(Code 1967, § 18-17; Ord. No. 2003-24, § i, 9-11-03)

Sec. 18-51. - No service free.

No sewage disposal service shall be furnished or rendered free of charge to any person whatsoever, and the city and each and every agency, department or instrumentality which uses either or both such service shall pay therefor at the rates fixed by this article.

(Code 1967, § 18-19)

Sec. 18-52. - Separate connections for each separate unit.

(1) Each residential unit whether it shall occupy one or more lots and whether it shall occupy any lot or parcel jointly with any other residential unit shall be considered a separate unit for the payment of the sewage disposal fees and separate connections and meters will be required for each such units.

(2) The city commission shall have the authority to issue a special exception upon request of an owner for a single master water meter serving several residential or commercial units upon the following criterion:

 (a) All of the residential or commercial units to be serviced by the master meter must be under the same ownership.

 (b) All of the residential or commercial units to be serviced by the master meter must be located upon the same lot or parcel of property.

 (c) The owner shall agree in writing to pay impact fees, meter charges, and monthly fixed demand charges as if each of the residential or commercial units was on a separate meter.

(3) Should any of the conditions stated herein cease to exist, the owner or owners of the properties previously served by a master meter shall be required to obtain individual water meters for each residential or commercial unit.

(Code 1967, § 18-20; Ord. No. 2003-24, § i, 9-11-03)

Sec. 18-53. - Payment of fees and bills required.

(a) Beginning August 14, 1987, all new commercial accounts shall be billed for the sewer fees provided for in section 18-47 in advance at monthly intervals on the first day of each month in the same manner and at the same time as monthly statements are sent by the city to commercial accounts furnished sewer or water service by the city. These statements shall include the addition of any applicable Florida State sales tax required by Florida Statute and shall be payable upon receipt of the bill. The payment of statements for sewer fees and any applicable sales tax shall be collected at the same time as bills for water or garbage service are collected.

(b) All commercial accounts having sewer service established prior to August 14, 1987 who have their service discontinued by their request or for failure to pay sewer, water and garbage fees, penalties or any applicable Florida sales tax and who desire to reestablish service after August 14, 1987 shall be deemed to be new commercial accounts and for the purposes of this section shall be billed for sewer service in advance at monthly intervals as set forth in section 18-49(a).

(c) Reserved.

(d) If any sewer bill shall remain unpaid on the fifteenth day of the month, there shall be in addition to the amount due and unpaid a penalty of ten (10) percent of the amount of the bill.

(e) If any sewer bill shall remain unpaid on the first day of the succeeding month, the sewer shall be subject to discontinuance and shall not be reconnected after discontinuance until all past due sewage disposal fees are fully paid, together with the following charges that may apply:

(1) Twenty dollar ($20.00) reconnect fee. A reconnect fee is the fee charge when the service has been discontinued due to nonpayment.

(2) Ten dollar ($10.00) trip charge. A trip charge is assessed if the city personnel make the trip to discontinue the service due to nonpayment, but do not discontinue service because the customer is in the process of paying the fees or has paid the fees.

(3) Twenty dollar ($20.00) return check fee. A return check fee is charged if the customer's check is returned by their bank marked insufficient funds. The city retains the right at the discretion of the chief billing clerk to require all subsequent payments in cash, money order or cashier's check.

(4) The fee for turning on utilities shall be fifteen dollars ($15.00). The turn-on fee is for new service, not existing service that has been discontinued.

(f) The city commission does hereby find that the furnishing of sewer services together with the method of billing and collecting the same is so closely related to the furnishing of other public services, including utilities such as garbage and water service, and particularly the use of equipment and personnel, that as of further penalty for failure or refusal to pay the sewer fee as herein provided, the same shall be considered as delinquent at the same time as under its present rules and regulations for nonpayment of garbage or water bills are considered delinquent, and in such cases the garbage or water service, as well as the sewer service may be discontinued to the property or premises of the person failing or refusing to pay the sewer fees, penalty, or sales tax, and allowing the same to become delinquent.

(Code 1967, § 18-21; Ord. No. 87-4, § 3, 10-8-87; Ord. No. 2003-24, § i, 9-11-03)

Editor's note— Ord. No. 87-4, § 3, adopted Oct. 8, 1987, amended § 18-53 to read as herein set out. Prior to inclusion of said ordinance, § 18-53 pertained to payment.

Sec. 18-54. - Restrictions on revenue application and expenditure.

All monies previously received or hereafter received from rates and charges levied as set forth in Sections 18-46 through 18-53, inclusive, plus interest, if any, shall be deposited in the Sanitary Sewer Revenue Fund and shall be expended from that fund only for the purpose of making major emergency repairs, extending, replacing, over sizing, or separating, the existing treatment plant or collection and interceptor system and/or constructing new additions to the treatment plant or collection and interceptor system.

(Ord. No. 96-12, § 1, 11-14-96)

Sec. 18-55. - Penalties.

Any person, firm or corporation violating any of the provisions of this ordinance shall, for each such offense, be subject to a fine of not to exceed ninety (90) days, or both such fine and imprisonment in the discretion of the court. Any failure or refusal by an owner to connect to the city sewer system after notification to do so, as herein provided, shall be construed a violation of this ordinance.

(Ord. No. 2003-24, § i, 9-11-03)

DIVISION 3. - INDUSTRIAL WASTE PRE-TREATMENT.

Sec. 18-56. - Title, purpose, and scope.

(a) This division will be known and cited as the City of LaBelle Industrial Pretreatment Program (IPP).

(b) The purpose of the industrial pretreatment program is to prevent the introduction of pollutants into the City of LaBelle sanitary collection system that would: interfere with the operation of the treatment facilities: cause pass-through of pollutants through the city wastewater treatment facility (WWTF) which can prevent the ability to reclaim or reuse wastewater or biosolids: be incompatible with the existing treatment works process: or that can jeopardize the safety and wellbeing of WWTF and collection systems personnel. In addition, the IPP ensures that City of LaBelle Utilities Department adheres to the standards set by State and Federal Environmental Protection Agency (EPA) pretreatment regulations.

(c) The territorial scope of this division includes all areas of the City of LaBelle in which the sanitary sewer collection system is owned and maintained by city utilities.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-57. - Definitions.

In construing the provisions of this chapter, where the context will permit and no definition is provided herein, the definitions provided in F.S. ch. 403, as may be amended from time to time, and in rules and regulations promulgated thereunder, as may be amended from time to time, shall apply. The following words and phrases when used in this chapter shall have the meanings ascribed to them in this section:

Analytical laboratory shall mean a laboratory that complies with Florida Administrative Code 64E-L for the examination of environmental samples by the State of Florida Department of Health (FDH), Bureau of Public Health Laboratories for the water quality parameters and analytical methods included in this division.

Control authority shall mean the City of LaBelle Utilities Superintendent or its designee.

Environmental Protection Agency (EPA) shall mean the United States Federal Government Environmental Protection Agency of the United States, its administrator, or other duh authorized representative of said agency.

Grab sample shall mean a sample that is taken from a wastewater discharge on a one-time basis with no regard to the volume of flow in the discharge.

Industrial user any nonresidential user subject to categorical pretreatment standards under 40 CFR (Code of Federal Regulations), 403.6 and 40 CFR. chapter 1, subchapter N. Any industry which is designated as such by the FDEP on the basis that the industrial user has are reasonable potential for adversely affecting the operation of the collection system or treatment plant or violating any pretreatment requirement.

Notice of violation (NOV) shall mean a written notice informing an owner that a violation of this division has occurred.

Notify shall mean contact by telephone, in person electronic mail or via certified United States Mail, return receipt requested.

Owner shall mean the legal owner(s) of the structure in which the industrial user is located and/or the operator(s).

Premises shall mean a parcel of real estate or portion thereof including any improvements thereon which is determined by the control authority to be a single user for the purposes of receiving, using and paying for sanitary sewer services.

Replacement costs shall mean expenditures for obtaining and installing equipment, accessories or appurtenances necessary to retain design capacity and performance of the WWTF throughout the jurisdiction of the city,

Utilities superintendent shall mean the person designated by the city to oversee and administer the activities of the utilities department, supervise the operation of the WWTF. maintain records of such operation, prepare operating budgets and make recommendations to the City of LaBelle's City Commissioners concerning activities within his responsibility and authority.

Wastewater shall mean the liquid and water containing industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, institutions and any other source, whether treated or untreated which is contributed to or permitted to enter the WWTF.

Wastewater treatment facility (WWTF) shall mean a treatment works, also referred to as a wastewater treatment plant (WWTP) or publicly owned treatment works (POTW), which is owned by the city. Any devices and systems used to pump, store, treat recycle and reclaim municipal sewage or industrial wastes of a liquid nature. WWTF shall include piping and city owned and maintained lift stations and pump stations that convey wastewater to the WWTF. Any sanitary sewers that convey waste waters to the WWTF from persons outside the city who are users of the WWTF by contract or agreement with the city.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-58. - Industrial pretreatment program authority.

(a) Federal regulations were established in June of 1978 and revised in January of 1981, for the responsibility of governmental agencies, industry, and the public to implement national pretreatment standards (NPS) to control the introduction of pollutants into WWTFs. These regulations implemented the requirements of the 1972 Federal Water Pollution Control Act (FWPCA) as amended by the 1977 Clean Water Act and the 1987 Water Quality Act.

(b) *Duties and powers.* The FDEP has been delegated the responsibility for ensuring that public agencies enforce pretreatment standards and regulations. Accordingly, the City of LaBelle Government has adopted this division which: identifies and defines prohibited wastes: requires industries to submit permit applications and obtain discharge permits; requires access to industries for sampling and inspections; requires pretreatment of wastes to meet federal and state discharge limits: and authorizes fines and penalties for noncompliance with discharge limits and other permit conditions, or which may cause the city WWTF to violate its permit limits.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-59. - Limitations and standards.

(a) *General prohibitions.* Rule 62-625.400 of the Florida Administrative Code (F.A.C.) states that an industrial user shall not introduce into a WWTF any pollutant which causes pass through or interference. These general prohibitions and the specific prohibitions, provided below, apply to each industrial user introducing pollutants into a WWTF whether or not the industrial user is subject to other pretreatment standards, or any national. State, or local pretreatment requirements:

(1) Pollutants which create a fire or explosion hazard in the WWTF;

(2)

Pollutants which will cause corrosive structural damage to the WWTF, but in no case discharges with pH lower than five pint zero (5.0), unless the WWTF is specifically designed to accommodate such discharges;

(3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the WWTF resulting in interference;

(4) Any pollutant, including oxy gen demanding pollutants and solids, released in a discharge at a flow rate or pollutant concentration which will cause interference with the WWTF;

(5) Heat in amounts which will inhibit biological activity in the WWTF resulting in interference, but in no case heat in such quantities that result in the discharge from the treatment plant having a temperature that exceeds 40° C (104° F) unless the FDEP, upon request of the control authority, approves alternate temperature limits in accordance with rule 62-302.520, F.A.C.;

(6) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

(7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the WWTF in a quantity that will cause acute worker health and safety problems; or

(8) Any trucked or hauled pollutants, except at discharge points designated by the control authority.

(b) *Local limits.* Each public utility which adopts a pretreatment program in accordance with rule 62-625,500, F.A.C.. shall develop and enforce specific limits.

The control authority (except where the FDEP is acting as the control authority) may develop best management practices (BMPs). Such BMPs shall be considered local limits and pretreatment standards for the city.

It shall be unlawful for any industrial user to throw, drain, run or otherwise discharge into a sanitary sewer, or to cause, permit, allow or suffer, be thrown, run. drained, or otherwise discharged into such sanitary sewer any effluent that is in excess of the following local limits determined from the WWTF influent design conditions and FDEP permit limits listed in Table 1. Industrial users shall perform quarterly monitoring of all effluent lines discharging directly to the city sanitary sewer system utilizing grab sampling.

Table 1. City Industrial User Discharge Limits

Parameter	Compliance Limit	Units
Total Dissolved Solids (TDS)	500	mg/L
Total Suspended Solids (TSS)	320	mg/L

Biochemical Oxygen Demand, five day (BODs)	320	mg/L
Total Kjeldahl Nitrogen (TKN)	50	mg/L
Total Recoverable Cadmium	5	ug/L
Total Recoverable Chromium	100	ug/L
Total Recoverable Lead	15	ug/L

The control authority reserves the right to establish more stringent standards or requirements on discharges to the WWTF consistent with the purpose of this ordinance.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-60. - Permitting process.

(a) Wastewater discharge permits are issued for a specified period of time not to exceed three (3) years. They define discharge prohibitions, limitations. self-monitoring requirements, and the user's legal obligations. Non-compliance with any discharge limits or permit conditions may result in enforcement.

(b) There are two (2) types of numeric discharge limits which may be included in the permit: local limits which are imposed to protect the WWTF: and federal limits that apply to federal categorical industries. The city's current local limits are established in section 18-59. When both local and federal limits apply for a particular pollutant, both limits are enforced by the control authority. Discharge limits can be expressed either as a concentration (C: mg L) or a mass limit (W: lbs/day). Mass limits are calculated by multiplying the concentration times the flow (Q: million gallons per day (mgd)) times a conversion factor of 8.34 (8.34 is a conversion factor with units (1b x L)/(mg x gallon x 10^6) as follows:

W (lbs/day) = Q (mgd) x C (mg/L) x 8.34

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-61. - Permit application.

(a) Industries which conduct operations subject to federal and state regulations and have the potential to impact the city sanitary sewer collection system are required to apply for a permit.

(b)

Permit applications can be obtained at the address below and should be completed and returned within fifteen (15) business days. For help completing the application or to obtain additional program information contact:

City of LaBelle - Public Works Department
481 West Hickpochee Avenue
LaBelle, FL 33935

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-62. - Permit issuance.

(a) The industrial pretreatment program control authority report, together with the completed permit application, forms the basis for assigning a permit type and for establishing permit discharge limits and conditions. Industries are categorized according to the nature of their discharge into one (1) of three (3) defined permit categories:

(1) *TYPE 1.* Any user subject to an categorical standards must obtain a Type I discharge permit.

(2) *TYPE II.* Any user that is not subject to an categorical standards of Type I, but meets one (1) of the following conditions must obtain a Type II discharge permit:

a. An user that discharges an average of twenty-five thousand (25,000) gallons per day GPD or more of process wastewater into the city sewers, stem excluding sanitary noncontact cooling and boiler blowdown waste water.

b. An user that contributes a process waste stream which makes up more than five (5%) percent of the average dry weather hydraulic or organic capacity of any of the city WWTF (100 lbs BODs/d).

c. Is determined by the city to possess a reasonable potential for adversely affecting the WWTF operations or for violating an local, state, or federal pretreatment standard or requirement.

(3) *TYPE III.* An user that maybe subject to categorical standards but does not discharge any regulated wastewater or an user that is not subject to Type I or Type II conditions above but in the best professional judgment of the control authority has a reasonable potential to violate any local state or federal retreatment standards or requirement must obtain a Type III discharge permit.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-63. - Permit revocation.

(a) The control authority may revoke an individual wastewater discharge permit for good cause including but not limited to, the following reasons:

(1) Failure to notify the authority of significant changes to the wastewater prior to the changed discharge;

(2) Failure to provide prior notification to the authority of changed conditions;

(3) Misrepresentation or failure to fully disclose all relevant facts in the permit application;

(4) Falsifying self-monitoring reports and certification statements;

(5) Tampering with monitoring equipment;

(6) Refusing to allow the authority timely access to the facility premises and records;

(7) Failure to meet effluent limits;

(8) Failure to pay fines;

(9) Failure to pay sanitary sewer charges;

(10) Failure to meet compliance schedules;

(11) Failure to complete an industrial waste survey or a permit application;

(12) Failure to provide advance notice of the transfer of business ownership of a permitted facility; or

(13) Violation of any pretreatment standard, requirement, these provisions, or any terms of the wastewater discharge permit.

An individual wastewater discharge permit shall be voidable upon cessation of operations or transfer of business ownership, unless a permit transfer has been approved by the authority. All existing permits issued to a user are void upon the issuance of a new permit to that user. Failure to acquire a permit will result in the non-compliance penalties outlined in section 7-2.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-64. - Inspection.

(a) *Facility inspection.* After the completed permit application is received, the city will schedule a facility inspection which consists of: an interview with industry personnel; a tour of the facility; and a review of written industry records. During the interview, the industry's application, waste generating processes, wastewater composition, and volume of wastewater discharge are reviewed. The facility tour will include an inspection of the entire operation, focusing primarily on operations generating wastewater, pretreatment facilities, and chemical/hazardous waste storage areas. During the tour, city inspectors will identify or confirm for the sampling location(s) that will be used to monitor compliance with the limits of this division. It is the industry's responsibility to provide an accessible and representative sampling location. Following the inspection, industrial pretreatment program control authority will review all records including, but not limited to, hazardous waste manifests, safety data sheets, and pretreatment system operations/maintenance logs, industrial pretreatment performance.

(b) *Monitoring.* The industry user must sample its own discharge and have it analyzed by an analytical laboratory certified by the FDH Environmental Laboratory Certification Program (ELCP). The City of LaBelle Utilities Department may also periodically and independently sample an industry's discharge to determine compliance with this ordinance. City sampling maybe done with or without prior notice to the industry. Samples collected by the city are analyzed by a laboratory certified by the FDH ELCP

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-65. - Enforcement.

(a) *Enforcement response plan.* The control authority conducting the inspection who determines that a violation exists shall immediately notify the owner that a violation exists and must be addressed promptly. The control authority may issue the industrial user a notice of violation (NOV) stating the deficiencies and nature of the violation(s).

If the industrial user responds with an explanation for the violation acceptable to the city, and a plan for rectifying the situation, or corrects a deficiency within the prescribed time, enforcement ceases at the discretion of the control authority. _____

(b) *Non-compliance fines.* Below is the administrative fine structure for noncompliance with the City of LaBelle Pretreatment Regulations:

Nature of Violation	Fine Amount Assessed Per Violation Per Day
Late Submittal of Required Report (< 30 Days Past Due)	$100.00
Discharge Violation	$500.00

Violations Which Place the Industrial User: 66% or more of all discharge measurements in a six-month period exceed the daily maximum limit or the average limit for the same pollutant parameter. 33% or more of all discharge measurements in a six-month period exceed the daily maximum limit or the average limit for the same pollutant parameter. Discharge(s) which cause pass through, or interference at the WWTF or which endanger the health or the WWTF personnel, the general public or the environment. Violation(s) of compliance date milestones. Failure to submit required reports and/or required reports submitted thirty (30) days or more past due date. Failure to accurately report noncompliance. Any other violation(s) which the Control Authority deems detrimental to implementation of the local pretreatment program.	$1,000.00
Falsification of Reports	$2,000.00 plus Termination of Service
Entry Denial and/or Unprecedented Delay of Entry	$2,000.00 plus Termination of Service

Note: Administrative fines are subject to modification at the discretion of the control authority. Administrative fines more than thirty (30) days past due are subjects to an additional penalty of five ($5.00) dollars per day of violation (plus interest); where each day of continued violation is deemed a separate violation.

(Ord. No. 2020-11 , § 2, 9-10-20)

Sec. 18-66. - Cost recuperation for the City of Labelle.

The charge for the cost recuperation shall include an and all replacement costs incurred by the city to remove the captured material from noncompliant industrial users. Costs shall include, but not be limited to: labor material and equipment rental or use fees captured material landfill transportation and disposal fees, and administrative fees. The control authority will provide the industrial user with supporting materials documenting the labor charges and associated fees incurred by the control authority for the above referenced work.

(Ord. No. 2020-11 , § 2, 9-10-20)

ARTICLE III. - WATER

> *Footnotes:*
>
> *--- (**3**) ---*
>
> ***Cross reference—*** *Abandoned wells left uncovered prohibited, § 12-9.*

DIVISION 1. - GENERALLY

Secs. 18-67—18-90. - Reserved.

DIVISION 2. - CONNECTIONS

Sec. 18-91. - Connections with water works system.

Where the same shall be available, the owner of every lot or parcel of land within the city shall connect or cause the plumbing of any building thereon to be connected with the municipal waterworks system of the city and use the facilities of such system. All such connections shall be made in accordance with the rules and regulations which shall be adopted from time to time by the city commission. No person shall occupy a new home or building until city water is furnished to such new house or building when available.

(Code 1967, § 24-11)

Sec. 18-92. - Exceptions to connections.

This article shall not be construed to require or entitle any person to cross the private property of another to make any such water connection.

(Code 1967, § 24-12)

Sec. 18-93. - Unlawful connection.

(a) No person shall be allowed to connect into any water line owned by the city without the written consent of the city, and then the connection with such line shall be made only under the direction and supervision of the city. Any property owner or plumber who shall make any connection without such consent of the city shall, upon conviction, be subject to the penalties provided for herein.

(b) No person shall make, or cause to be made, any physical connection between the water distribution system of the city and that of any other water supply.

(Code 1967, § 24-13)

Sec. 18-94. - Connecting old plumbing.

Whenever it is desirable to connect old plumbing with the city water line, the owner or plumber contemplating doing such work shall notify the city plumbing inspector who will inspect said old plumbing and notify the owner or plumber what alterations will be necessary to place said old plumbing in an acceptable condition for such connection. Any owner or plumber who shall make any connection without the approval of the plumbing inspector shall, upon conviction, be subject to the penalties herein provided.

(Code 1967, § 24-14)

Sec. 18-95. - Maintenance of plumbing system.

The owner of the property shall be responsible for maintaining and keeping clean the water lines leading and connecting from the plumbing system to the city distribution lines.

(Code 1967, § 24-15)

Sec. 18-96. - No service free.

No water service shall be furnished or rendered free of charge to any person, firm or corporation whatsoever, and the city and each and every agency, department or instrumentality which uses either or both such services shall pay therefor at the rates fixed by this chapter.

(Code 1967, § 24-16)

Sec. 18-97. - Separate connections for each separate unit; special exceptions.

(a) Each residential or commercial unit, whether occupying one or more lots or whether it shall occupy any lot or parcel jointly with any other residential or commercial unit shall be considered a separate unit for the payment of water fees, and separate connections and meters will be required for each of such units.

(b) The city commission shall have the authority to issue a special exception upon request of an owner for a single water meter serving several residential or commercial units upon the following criteria:

(1) All of the residential or commercial units to be serviced by the single water meter must be under the same ownership.

(2) All of the residential units to be serviced by the single water meter must be located upon the same lot or parcel of property.

(3) The owner shall agree in writing to pay impact fees, meter charges, and monthly fixed demand charges as if each of the residential units was on a separate meter.

(c) Should any of the conditions cease to exist, the owner or owners of the properties previously served by a single water meter shall be required to obtain individual water meters for each residential unit.

(Code 1967, § 24-17; Ord. No. 91-1, §§ 1, 2, 5-9-91; Ord. No. 96-2, § 1, 1-11-96)

Sec. 18-98. - Private wells for drinking water.

No person shall use a private well for drinking water where new construction has taken place and city water is available.

(Code 1967, § 24-18)

Sec. 18-99. - Connection or tapping fees.

There is hereby established a fee to be charged and paid by each consumer of water furnished by the city who shall connect or tap into the city water system, a tapping or connection fee as follows:

(1) *Inside city limits.*

Meter size	Fee
⅝ or ¾ inch	$723.60
1 inch	$974.88
1½ inch	$1,623.96
2 inch	$1,941.48

4" and larger	To be determined at time of service.

(2) *Outside city limits.*

Meter size	Fee
⅝ or ¾ inch	$770.40
1 inch	$1,038.24
1½ inch	$1,729.44
2 inch	$2,067.84
4" and larger	To be determined at time of service.

In addition to the above, there shall be charged each applicant expansion fees in the following amounts:

(3) For each residence, apartment or other residential unit within the corporate limits of the city, three thousand three hundred twelve dollars ($3,312.00).

(4) For all other users within the corporate limits of the city, business, industrial, commercial, governmental or otherwise, an amount equal to three thousand three hundred twelve dollars ($3,312.00) multiplied by the number of equivalent residential units as determined by the city commission. An equivalent residential unit is defined as the service requirement ordinarily assigned to single-family residence.

(5) For each residence, apartment or other residential unit outside the corporate limits of the city, four thousand one hundred forty dollars ($4,140.00).

(6) For all other users outside the corporate limits of the city, business, industrial, commercial, governmental or otherwise, an amount equal to four thousand one hundred forty dollars ($4,140.00) multiplied by the number of equivalent residential units as determined by the city commission. An equivalent residential unit is defined as the service requirement ordinarily assigned to single-family residence.

(Code 1967, § 24-19; Ord. No. 94-11, § 1, 10-12-94; Ord. No. 2014-04, §§ 1, 2, 4-10-14; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Secs. 18-100—18-114. - Reserved.

DIVISION 3. - RATES AND CHARGES

> *Footnotes:*
> *--- (**4**) ---*
> ***Cross reference—** Finance, § 2-56 et seq.*

Sec. 18-115. - Authority to modify rates and charges.

All rates and charges codified in Chapter 18 "Utilities" of the City Code, including, but not limited to, all rates and charges for water, wastewater and reclaimed water service, may be modified by resolution, properly noticed and adopted by the city commission.

(Ord. No. 2007-01, § 2, 4-12-07)

Sec. 18-116. - Rates.

The following monthly water rates, consisting of a monthly fixed demand charge based on water meter size, plus a monthly commodity charge per one thousand (1,000) gallons of usage shall be charged and paid for water supplied by the city to the users thereof:

(1) *Inside city limits.*

METER SIZE	MONTHLY FIXED DEMAND CHARGE
⅝"	$35.08
1"	$87.71
1½"	$175.39
2"	$280.60
3"	$526.16
4"	$876.90
6"	$1,753.82

Plus, a monthly commodity charge of four dollars and fifty-five ($4.55) per one thousand (1,000) gallons of usage; provided the monthly minimum for residential customers shall be the proper fixed demand charge.

(2) *Outside city limits.*

METER SIZE	MONTHLY FIXED DEMAND CHARGE
⅝"	$43.86
1"	$109.66
1½"	$219.22
2"	$350.76
3"	$657.66
4"	$1,096.13
6"	$2,192.28

Plus, a monthly commodity charge of five dollars and sixty-nine cents ($5.69) per one thousand (1,000) gallons of usage; provided the monthly minimum for residential customers shall be the proper fixed demand charge.

(Code 1967, § 24-20; Ord. No. 87-4, § 4, 10-8-87; Ord. No. 92-1, § 2, 3-12-92; Ord. No. 92-7, § 2, 12-10-92; Ord. No. 2007-01, § 1, 4-12-07; Ord. No. 2014-04, §§ 1, 2, 4-10-14; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Sec. 18-117. - Deposits.

(a) Beginning August 14, 1987, all new commercial accounts shall be required to post a security deposit equal to one hundred fifty (150) percent of their monthly service charge.

(b) All commercial accounts having service established prior to August 14, 1987, who have their service discontinued by their request or by their failure to pay water, sewer or garbage fees, penalties, or any applicable Florida State sales tax connected therewith, and who desire to reestablish service after August 14, 1987, shall be deemed to be a new commercial account and for purposes of this section shall be required to post a security deposit as required in section 18-117(a).

(c) All new residential accounts shall be required to post a security deposit of ninety dollars ($90.00).

(d) All residential accounts having service established prior to August 14, 1987, who have their service discontinued by their request or for failure to pay water fees, penalties, or sales tax connected therewith, and who desire to reestablish their service after August 14, 1987, shall be deemed to be a new residential account for purposes of this section and shall be required to post a security deposit as required in section 18-117(c).

(Code 1967, § 24-21; Ord. No. 85-6, § 1, 6-13-85; Ord. No. 87-4, § 4, 10-8-87; Ord. No. 2014-04, §§ 1, 2, 4-10-14; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Editor's note— Ord. No. 87-4, § 4, adopted Oct. 8, 1987, amended § 18-117 to read as herein set out. Prior to inclusion of said ordinance, § 18-117 pertained to cash deposits; nonowner occupied.

Sec. 18-118. - Billing; nonpayment.

(a) Beginning August 14, 1987, all new commercial accounts shall be billed for the water fees provided for in section 18-116 in advance at monthly intervals on the first day of each month in the same manner and at the same time as monthly statements are sent by the city to commercial accounts furnished sewer or garbage service by the city. These statements shall include the addition of any applicable Florida State sales tax required by Florida Statute and shall be payable upon receipt of the bill. The payment of statements for water fees and any applicable sales tax shall be collected at the same time as bills for sewer or garbage service are collected.

(b) All commercial accounts having water service established prior to August 14, 1987, who have their service discontinued by their request or for failure to pay water fees, penalties or any applicable Florida sales tax and who desire to reestablish service after August 14, 1987, shall be deemed to be new commercial accounts and for the purposes of this section shall be billed for water service in advance at monthly intervals in the same manner and at the same time as monthly statements are sent by the city to new commercial accounts as set forth in section 18-117(a).

(c) The water fees provided for in section 8-37 for services provided to residential accounts shall be billed to the persons liable for the same at monthly intervals on the first day of each month following the use of the system, in the same manner and at the same time as monthly statements are sent by the city to residential accounts furnished sewer or garbage service by the city. The statement shall include the addition of any applicable Florida State sales tax required by Florida Statute and shall be payable upon receipt. The payment of statements for water fees and any applicable Florida State sales tax shall be collected at the same time as bills for sewer or garbage services are collected.

(d) If any water bill shall remain unpaid on the fifteenth day of the month, there shall be in addition to the amount due and unpaid a penalty of ten (10) percent of the amount of the bill.

(Code 1967, § 24-22; Ord. No. 87-4, § 4, 10-8-87)

Editor's note— Ord. No. 87-4, § 4, adopted Oct. 8, 1987, amended § 18-118 to read as herein set out. Prior to inclusion of said ordinance, § 18-118 pertained to payment of fees and bills required.

Sec. 18-119. - Discontinuance of services; reconnecting charges and miscellaneous charges.

(a) If any bill for water shall remain unpaid on the first day of the succeeding month, the water shall be cut off and discontinued to such user, and before supplying of water to such user is resumed, the user shall pay the city, in addition to the amount due and unpaid by such user the appropriate fees or charges as listed in (c).

(b) If the water shall be cut off and disconnected for reasons other that nonpayment of the water bill, there shall be a turn-on fee as listed in (c).

(c) Fees.

Turn on fee for new deposit	$27.00
Normal reconnect fee	$27.00
Disconnect Processing fee	$55.00
Reconnect charge after hours is an additional charge	$13.00
Trip charge	$13.00
[Damaged meter]	Actual cost of meter plus labor
Broken/Damaged lock	$27.00
Returned check	$42.00
Broken/Damaged valve	$69.00

(Code 1967, § 24-23; Ord. No. 2014-04, §§ 1, 2, 4-10-14; Ord. No. 2015-08(Res.), § 1, 5-14-15)

Editor's note— Res. No. 2015-08, § 1, adopted May 14, 2015, amended § 18-119 to read as set out herein. Previously § 18-119 was titled "Discontinuance of services; reconnection charge."

Sec. 18-120. - Penalties.

Any person, firm or corporation violating any of the provisions of this chapter shall, upon conviction thereof, be punished in accordance with section 1-17 of this Code. Any failure or refusal by an owner or lessee to pay the charges or rates hereinabove provided shall be construed to be in violation of this chapter.

(Code 1967, § 24-24)

Sec. 18-121. - Restrictions on revenue application and expenditure.

All monies previously received or hereafter received from rates and charges levied as set forth in sections 18-91 through 18-120, inclusive, plus interest, if any, shall be deposited in the water revenue fund and shall be expended from that fund only for the purpose of making major emergency repairs, extending, replacing, over sizing, or separating, the existing water treatment plant or collection and interceptor system and/or constructing new additions to the water treatment plant or collection and interceptor system.

(Ord. No. 96-13, § 1, 11-14-96)

DIVISION 4. - CROSS CONNECTION CONTROL PROGRAM

Sec. 18-122. - General policy.

(a) *Purpose.*

(1) To protect the public potable water supply of the City of LaBelle from the possibility of contamination of pollution by isolating within the customer's distribution system(s) of the customer's private water system(s) such contaminants or pollutants that could backflow into the public water system; and

(2) To promote the elimination or control of existing cross connections, actual or potential, between the customer's in plant potable water system(s) and nonpotable water systems, plumbing fixtures and industrial piping systems; and

(3) To provide for maintenance of a continuing program of cross connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems all in accordance with Rule 62-555.360, Florida Administrative Code.

(b)

Responsibility. The City of LaBelle Utility Director shall be responsible for implementation and administration of this division which protects the public potable water distribution system from contamination or pollution due to backflow of contaminants or pollutants through water service connections. If, in the judgment of the utility director an approved backflow prevention assembly is required (at the customer's water service connection; or, within the customer's private water system) for the safety of the water system, the utility director or his/her designated agent shall give notice in writing to the customer to install such an approved backflow prevention assembly(ies) at specific location(s). The customer shall immediately install the approved assembly(ies) at his/her own expense; and, failure, refusal, or inability on the part of the customer to install, have tested, and maintain the assembly(ies) shall constitute grounds for discontinuing water service to the premises until the requirements have been satisfactorily met.

(Ord. No. 2006-27, § I(1), 6-8-06)

Sec. 18-123. - Definitions.

[For the purposes of this division, the following words shall be defined as follows:]

Approved. Accepted by the authority responsible as meeting an applicable specification stated or cited in this program or as suitable for the proposed use.

Auxiliary water supply. Any water supply on or available to the premises other than the city's approved public water supply. These auxiliary waters may include water from another purveyor's public potable water supply or any natural source(s), such as a well, spring, river, stream, harbor and so forth; used waters; or industrial fluids. These waters may be contaminated or polluted, or they may be objectionable and constitute an unacceptable water source over which the water department does not have sanitary control.

Backflow. The undesirable reversal of flow in a potable water distribution system as a result of a cross connection.

Backflow preventer. An assembly or means designed to prevent backflow.

(1) *Air gap.* The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water or waste to a tank, plumbing fixture, receptor, or other assembly and the flood level rim of the receptacle. These vertical, physical separations must be at least twice the diameter of the water supply outlet, never less than one (1) inch (25 mm).

(2) *Reduced pressure backflow prevention assembly.* The approved reduced pressure principle backflow prevention assembly consists of two (2) independently acting approved check valves together with a hydraulically operating, mechanically independent pressure differential relief

valve located between the check value and below the first check valve. These units are located between two (2) tightly closing resilient seated shutoff valves as an assembly and equipped with properly located resilient seated test cocks.

(3) *Double check valve assembly.* The approved double check valve assembly consists of two (2) internally loaded check valves, either spring loaded or internally weighted, installed as a unit between two (2) tightly closing resilient seated shutoff valves and fittings with properly located resilient seated test cocks. This assembly shall only be used to protect against a nonhealth hazard (that is, pollutant).

Backpressure. A pressure, higher than the supply pressure, caused by a pump, elevated tank, boiler, or any other means that may cause backflow.

Backsiphonage. Backflow caused by negative or reduced pressure in the supply piping.

City. Any reference to the "city" shall mean the City of LaBelle Water Department or the City of LaBelle City Commission.

Contamination. An impairment of a potable water supply by the introduction or admission of any foreign substance that degrades the quality and creates a health hazard.

Cross connection. A connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that, under any circumstances would allow such substances to enter the potable water system. Other substances may be gases, liquids or solids, such as chemicals, waste products, steam, water from other sources (potable or nonpotable) or any other matter that may change the color or add odor to the water.

Cross connection control by containment. The installation of an approved backflow prevention assembly at the water service connection to any customer's premises, where it is physically and economically unfeasible to find and permanently eliminate or control all actual or potential cross connections within the customer's water system; or it shall mean the installation of an approved backflow prevention assembly on the service line leading to and supplying a portion of a customer's water system where there are actual or potential cross connections that cannot be effectively eliminated or controlled at the cross connection.

Cross connection controlled. A connection between a potable water system and a nonpotable water system with an approved backflow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

Customer. Person, persons or entity whose name appears on the water bill or benefits from water service to the premises in question.

Department of Environmental Protection. Department of Environmental Protection (DEP) State of Florida agency empowered to review, permit, and monitor public and private potable water systems.

Hazard, degree of. The term is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system.

(1) *Hazard, health.* A cross connection or potential cross connection involving any substance that could, if introduced in the potable water supply, cause death, illness, spread disease or have a high probability of causing such effects.

(2) *Hazard, plumbing.* A plumbing type cross connection in a consumer's potable water system that has not been properly protected by an approved air gap or an approved backflow prevention assembly.

(3) *Hazard, nonhealth.* A cross connection or potential cross connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable, if introduced into the potable water supply.

(4) *Hazard, system.* An actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system or of a pollution or contamination that would have a protracted effect on the quality of the potable water in the system.

Industrial fluids system. Any system containing a fluid or solution that may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration, such as would constitute a health, system, pollution, or plumbing hazard, if introduced into an approved water supply. This may include, but not be limited to: polluted or contaminated waters; all types of process waters and used waters originating from the public.

Pollution. The presence of any foreign substance in the water that tends to degrade its quality so as to constitute a nonhealth hazard or impair the usefulness of the water.

Service connection. The terminal end of a service connection from the public potable water system, that is, where the water department loses jurisdiction and sanitary control over the water at its point of delivery to the customer's water system. If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. There shall be no unprotected takeoffs from the service line ahead of any meter or backflow prevention assembly located at the point of delivery to the customer's water system. Service connection shall also include water service connections from a fire hydrant and all other temporary or emergency water service connections from the potable water system.

Utility director. The utility director of the City of LaBelle is invested with the authority and responsibility for the implementation of an effective cross connection control program and for the enforcement of the provisions of this program.

Water, nonpotable. Water that is not safe for human consumption or that is of questionable quality.

Water, potable. Water that is safe for human consumption as described by the Florida Department of Environmental Protection.

(Ord. No. 2006-27, § I(2), 6-8-06)

Sec. 18-124. - Requirements.

(a) *Water system.*

(1) The water system shall be considered as made up of two (2) parts: the utility system and the customer system.

(2) Utility system shall consist of the source facilities and the distribution system, and shall include all those facilities of the water system under the complete control of the utility, up to the point where the customer's system begins.

(3) The source shall include all components of the facilities utilized in the production, treatment, storage and delivery of the water to the distribution system.

(4) The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system.

(5) The customer's system shall include those parts of the facilities beyond the termination of the utility distribution system that are utilized in conveying utility delivered domestic water to the points of use.

(b) *Policy.*

(1) The city shall review plumbing plans for compliance with cross connection and backflow prevention requirements as established by this program. No water service connection to any premises shall be permitted, installed or maintained by the city unless the water supply is protected as required by Rule 62-555.360 F.A.C. and this program. Service of water to any premises shall be withheld or discontinued by the city if a backflow prevention assembly required by the program is not installed, tested and maintained, or if it is found that a backflow prevention assembly has been removed, bypassed or if an unprotected cross connection exists on the premises. Service will not be restored until the conditions or defects are corrected.

(2) Prior to final connection of the customer's system to the public supply system, the city shall perform an inspection to determine whether cross connections or other structural or sanitary hazards, including violations of these regulations, exist. When such a condition becomes known, the city shall deny or immediately discontinue service to the premises by providing for a physical break in the service line until the customer has corrected the condition(s) in conformance with DEP regulations and city ordinances relating to plumbing and water supplies and the regulations adopted pursuant thereto.

(3)

The customer shall cause an approved backflow prevention assembly to be installed on each service line to said customer's water system at or near the property line or immediately inside the building being served; but in all cases, before the first branch line leading off the service line wherever the following conditions exist:

a. In case of premises having an auxiliary water supply that is not or may not be of safe bacteriological or chemical quality and that is not acceptable as an additional source by the city or DEP.

b. In case of premises on which any industrial fluids or any other objectionable substances are handled in such a fashion as to create an actual or potential hazard to the public water system. This shall include the handling of process waters. Process waters are waters originating from the utility system that have been subject to deterioration in quality or from auxiliary sources.

c. In case of premises having (1) internal cross connections that cannot be permanently corrected and controlled, or (2) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross connections exist.

(4) The type of protective assembly required under subsections (b)(3)a., b., and c., above, shall depend upon the degree of hazard that exists as follows:

a. In the case of any premises where there is an auxiliary water supply as stated in subsection (b)(3)a., of this section, and is not subject to any of the following rules, the public water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow prevention assembly.

b. In case of any premises where there is water or substance that would be objectionable but not hazardous to health, if introduced into the public water system, the public water system shall be protected by an approved double check valve assembly.

c. In case of any premises where there is any material dangerous to health that is handled in such a fashion as to create an actual or potential hazard to the public water system, the public water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow prevention assembly. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries and plating plants.

d. In case of any premises where there are "uncontrolled" cross connections, either actual or potential, the public water system shall be protected by an approved air gap separation or an approved reduced pressure principle backflow prevention assembly at the service connection.

e. In case of any premises where, because of security requirements or other prohibitions or restrictions, it is impossible to make a complete in-plant cross connection survey, the public water system shall be protected against backflow from the premises by either an approved air gap separation or an approved reduced pressure principle backflow prevention assembly on each service to the premises.

f. In case of any premises where, in the opinion of the city or DEP, an undue health threat is posed because of the presence of extremely toxic substances, the city may require an air gap at service connection to protect the public water system. The requirement will be at the discretion of the city and is dependent on the degree of hazard.

(5) Any backflow prevention assembly required herein shall be a model and size approved by the city. The term "approved backflow prevention assembly" shall mean an assembly that has been manufactured in full conformance with the standards established by the American Water Works Association (AWWA) titled:

AWWA CS510-89 Standard for Double Check Valve Backflow Prevention Assembly, and

AWWA CS511-89 Standard for Reduced Pressure Principle Backflow Prevention Assembly,

and have met completely the laboratory and field performance specifications of the Foundation for Cross Connection Control and Hydraulic Research (FCCCHR) of the University of Southern California established by Specification of Backflow Prevention Assemblies Section 10 of the most current issue of the Manual of Cross Connection Control.

The referenced AWWA and FCCHR standards and specifications are hereby adopted by the city. Final approval shall be evidenced by a certificate of approval issued by an approved testing agent certifying full compliance with said AWWA standards and FCCHR specifications. The city utility director shall maintain a list of approved testing agents who may provide certification.

Backflow preventers that may be subjected to backpressure or backsiphonage that have been fully tested and have been granted a certificate of approval by a qualified agent and are listed on the city's current list of approved backflow prevention assemblies may be used without further testing or qualification.

(6) It shall be the duty of the customer-user at any premises where backflow prevention assemblies are installed to have certified inspections and operational tests made at least once per year. In those instances where the city deems the hazard to be great enough, certified inspections may be required at more frequent intervals. These inspections and tests shall be at the expense of the water user and shall be performed by city personnel or by a certified tester approved by the city. It shall be the duty of the utility director to see that these tests are made in a timely manner. The customer-user shall notify the city in advance when the tests

are to be undertaken so that the city may witness the tests, if so desired. These assemblies shall be repaired, overhauled or replaced at the expense of the customer-user whenever the assemblies are found to be defective. Records of such tests, repairs, and overhaul shall be documented by the agent and copied to the utility director within ten (10) days of completion of said tests, repairs or overhauls. All records shall be maintained by the city for a minimum of ten (10) years.

(7) All presently installed backflow prevention assemblies that do not meet the requirements of this section but were approved assemblies for the purpose described herein at the time of installation and that have been properly maintained, shall, except for the inspection and maintenance requirements under subsection (6), be excluded from the requirements of these rules so long as the city is assured that they will satisfactorily protect the utility system. Whenever the existing assembly is moved from the present location, requires more than minimum maintenance or when the city finds that the maintenance constitutes a hazard to health, the unit shall be replaced by an approved backflow prevention assembly meeting the requirements of this section.

(Ord. No. 2006-27, § I(3), 6-8-06)

Secs. 18-125—18-135. - Reserved.

ARTICLE IV. - WATER SHORTAGE PLAN

Sec. 18-136. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

District shall mean the South Florida Water Management District.

Water resource means any and all water on or beneath the surface of the ground, including natural or artificial watercourses, lakes, ponds, or diffused surface water, and water percolating, standing, or flowing beneath the surface of the ground.

Water shortage condition is when sufficient water is not available to meet present or anticipated needs of persons using the water resource, or when conditions are such as to require temporary reduction in total water usage within a particular area to protect the water resource from serious harm. A water shortage usually occurs due to drought.

Water shortage emergency means that situation when the powers which can be exercised under part II of the Florida Administrative Code, are not sufficient to protect the public health, safety, or welfare, or the health of animals, fish or aquatic life, or a public water supply, or commercial, industrial, agricultural, recreational or other reasonable uses.

(Ord. No. 85-2, § 2.01, 4-11-85)

Cross reference— Definitions and rules of construction generally, § 1-2.

Sec. 18-137. - Intent and purpose.

It is the intent and purpose of this article to protect the water resources of the city from the harmful effects of overutilization during periods of water shortage and allocate available water supplies by assisting the South Florida Water Management District in the implementation of its water shortage plan.

(Ord. No. 85-2, § 1.01, 4-11-85)

Sec. 18-138. - Application.

The provisions of this article shall apply to all persons using the water resources within the geographical areas subject to the water shortage or water shortage emergency, as determined by the district, whether from public or privately owned water utility systems, private wells, or private connections with surface water bodies. This article shall not apply to persons using treated effluent or saltwater.

(Ord. No. 85-2, § 3.01, 4-11-85)

Sec. 18-139. - Amendments to water shortage plan.

Chapter 40E-21, Florida Administrative Code, as the same may be amended from time to time, is incorporated herein by reference as a part of the LaBelle Code.

(Ord. No. 85-2, § 4.01, 4-11-85)

Sec. 18-140. - Declaration of water shortage; water shortage emergency.

The declaration of a water shortage or water shortage emergency within all or part of the city by the city commission or the executive director of the district shall invoke the provisions of this article. Upon such declaration all water use restrictions or other measures adopted by the district applicable to the city, or any portion thereof, shall be subject to enforcement action pursuant to this ordinance. Any violation of the provisions of chapter 40-E-21, Florida Administrative Code, or any order issued pursuant thereto, shall be a violation of this article.

(Ord. No. 85-2, § 5.01, 4-11-85)

Sec. 18-141. - Enforcement.

Every police officer or sheriff having jurisdiction in the area governed by this article shall, in connection with all other duties imposed by law, diligently enforce the provisions of this article. In addition, the city administrator may also delegate enforcement responsibility for this article to agencies and departments of city government, or cities in the service areas governed by this article in accordance with state and local law.

(Ord. No. 85-2, § 6.01, 4-11-85)

Sec. 18-142. - Penalties.

(a) Violation of any provision of this article shall be subject to the following penalties:

(1)	First violation	$25.00
(2)	Second and subsequent violations	Fine not to exceed five hundred dollars ($500.00) and/or imprisonment in the county jail not to exceed sixty (60) days.

(b) Each day in violation of this article shall constitute a separate offense. In the initial states of a water shortage or water shortage emergency, law enforcement officials may provide violators with no more than one (1) written warning. The city, in addition to the criminal sanctions contained herein, may take any other appropriate legal action, including but not limited to emergency injunctive action, to enforce the provisions of this article.

(Ord. No. 85-2, § 7.01, 4-11-85)

Sec. 18-143. - Water users to accept provisions of article.

No water service shall be furnished to any person by a public or private utility unless such person agrees to accept all the provisions of this article. The acceptance of water service shall be in itself the acceptance of the provisions thereof.

(Ord. No. 85-2, § 8.01, 4-11-85)

Secs. 18-144—18-150. - Reserved.

ARTICLE V. - WATER SERVICE DISTRICT

Sec. 18-151. - Creation of district.

There is hereby created the City of LaBelle Water and Wastewater Service District (hereafter "district").

(Ord. No. 2004-07, § 1, 4-8-04; Ord. No. 2004-11, § 1, 5-13-04)

Sec. 18-152. - District boundaries.

The district shall have the boundaries set forth in Exhibit "A" to Ord. No. 2004-11, which are intended not to include any area within the territorial limits of another incorporated municipality or village, nor shall such boundaries extend more than five (5) miles from the territorial limits of the city.

(Ord. No. 2004-07, § 2, 4-8-04; Ord. No. 2004-11, § 2, 5-13-04)

Sec. 18-153. - Connection to wastewater system required.

(a) All persons or corporations developing property for any purpose within the district after the effective date of this ordinance are required to connect to the wastewater system when available. The wastewater system shall be deemed available as that term is defined in F.S. (2003) § 381.0065(2).

(b) For property located within the district that has a building or other structure connected to a properly functioning onsite sewage treatment and disposal system, as that term is defined in F.S. (2003) § 381.0065(2), on the effective date of this ordinance, the building or other structure shall connect to the wastewater system in accordance with the provisions of F.S. (2003) § 381.00655.

(c) For property located within the district that has a building or other structure connected to an onsite sewage treatment and disposal system that, after the effective date of this ordinance, needs repair or modification to function in a sanitary manner or to comply with the requirements of F.S. (2003) §§ 381.0065 through 381.0067, or rules adopted under those sections, the building or other structure shall connect to the wastewater system in accordance with the provisions of F.S. (2003) § 381.00655.

(d) Nothing herein contained shall be construed to conflict with the City of LaBelle Code section 18-91 which is specifically applicable to properties within the territorial boundaries of the City of LaBelle.

(Ord. No. 2004-07, § 3, 4-8-04; Ord. No. 2004-11, § 3, 5-13-04)

Sec. 18-154. - Connection to water system required.

(a) Subject to subsection (b) immediately below, all persons or corporations developing property for any purpose within the district after the effective date of this ordinance are required to connect to the water system, when available. The water system shall be deemed available as follows:

(1) For a residential lot or single-family residence, duplex, triplex, townhouse, multiple-family or commercial establishment, when a water main is located within a public right-of-way or easement that abuts the property on which the residential lot or single-family residence, duplex, triplex, townhouse, multiple-family or commercial establishment is located; and

(2) For a proposed residential subdivision, when the water system is located within one-fourth (¼) of a mile from the proposed subdivision, measured via existing easements and rights-of-way.

(b) For property located within the district that has a building or other structure connected to an individual well on the effective date of this ordinance, the building or other structure shall connect to the water system when a water main is located within a public right-of-way or easement that abuts the property on which the building or other structure is located and the well system fails, becomes contaminated, experiences a dry well condition or a permit is requested for a replacement well.

(c) Nothing herein contained shall be construed to conflict with the City of LaBelle Code section 18-91 which is specifically applicable to properties within the territorial boundaries of the City of LaBelle.

(Ord. No. 2004-07, § 4, 4-8-04; Ord. No. 2004-11, § 4, 5-13-04)

Sec. 18-155. - Inclusion in Code of Ordinances.

The provisions of this ordinance shall be made a part of the City of LaBelle Code of Ordinances and the sections may be renumbered accordingly.

(Ord. No. 2004-07, § 5, 4-8-04; Ord. No. 2004-11, § 5, 5-13-04)

Sec. 18-156. - Partial invalidity.

If any portion, clause, phrase, sentence or definition of this ordinance is held or declared by a court of competent jurisdiction to be unconstitutional, invalid, inoperative or void, such holding shall not be construed to affect the validity of the other portions of this ordinance.

(Ord. No. 2004-07, § 6, 4-8-04; Ord. No. 2004-11, § 6, 5-13-04)

Sec. 18-157. - Effective date.

This ordinance shall take effect immediately upon its final adoption by the city commission.

(Ord. No. 2004-07, § 7, 4-8-04; Ord. No. 2004-11, § 7, 5-13-04)

Secs. 18-158—18-160. - Reserved.

ARTICLE VI. - WATER CONSERVATION

> *Footnotes:*
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> ***Editor's note—*** *Part I of Ord. No. 2004-18, adopted Sept. 9, 2004, added provisions designated as a new Art. V. Inasmuch as there already exists an Art. V, said provisions have been redesignated as Art. VI.*

Sec. 18-161. - Intent.

The intent of this article is to set forth uniform citywide water conservation principles in order to provide for the safe and prudent use of a scarce and valuable resource.

(Ord. No. 2004-18, pt. II, § 1, 9-9-04; Ord. No. 2006-26, §§ I, II, 6-8-06)

Sec. 18-162. - Definitions.

For purposes of this article, the following words shall be defined as follows:

Agricultural irrigation means the use of equipment and devices specifically designed to provide water to the surface area or root zone of vegetation being grown for harvesting for commercial purposes.

Freeze protection means the use of water to protect vegetation from freeze damage in situations in which official weather forecasting services predict temperatures likely to cause permanent damage to vegetation.

Irrigation means the use of equipment and devices to provide water to the surface area or root zone of vegetation.

Irrigation quality (IQ) water means tertiary treated wastewater effluent under a DER permit.

Hand watering means irrigating by one (1) hose attended by one (1) person.

Low-volume irrigation means the use of equipment and devices specifically designed to allow the volume of water delivered to be limited to a level consistent with the water requirement of the vegetation being irrigated and to allow that water to be placed with a high degree of efficiency in the root zone of the vegetation.

Person means any person, natural or artificial, individual, firm, association, organization, partnership, business trust, corporation, company, agent, employee, or any other legal entity, the United States of America, and the state and all political subdivisions, regions, districts, municipalities, and public agencies.

Syringing means wetting down golf course greens by hand watering or sprinkling with water that is at air temperature.

Vegetation means any living plant, shrub, or tree material.

Water resource means any and all water on or beneath the surface of the ground including, but not limited to, natural or artificial water courses, lakes, ponds or diffused surface water and water percolating, standing, or flowing beneath the ground.

(Ord. No. 2004-18, pt. II, § 2, 9-9-04; Ord. No. 2006-26, §§ I, II, 6-8-06)

Sec. 18-163. - Requirements.

Any person who installs an automatic lawn sprinkler system must install a rain sensor device or switch which will override the irrigation cycle of the sprinkler system when adequate rainfall has occurred.

(Ord. No. 2004-18, pt. II, § 3, 9-9-04; Ord. No. 2006-26, §§ I, II, 6-8-06)

Sec. 18-164. - Prohibitions.

No person shall irrigate or cause to be irrigated vegetation, whether from public or private water resources, between the hours of 10:00 a.m. and 4:00 p.m.

(Ord. No. 2004-18, pt. II, § 4, 9-9-04; Ord. No. 2006-26, §§ I, II, 6-8-06)

Sec. 18-165. - Exemptions.

(1) Notwithstanding the general prohibition in section 18-164, vegetation may be irrigated between the hours of 10:00 a.m. and 4:00 p.m. under the following conditions:

  (a) If the vegetation is irrigated using a low-volume irrigation system.

  (b) If the vegetation is irrigated using hand watering.

  (c) If the vegetation is irrigated for freeze protection.

  (d) If the water resource is used for agricultural irrigation.

  (e) If the irrigation system is operated for cleaning or maintenance purposes. However, such operation shall be limited to the minimum time necessary to perform the cleaning or maintenance operation. Maintenance includes syringing on golf courses.

  (f) If the irrigation system's sole source is IQ water.

  (g) If the water resource is used to irrigate new lawns and landscaping for a first time wet down.

(2) Any businesses, such as car washes, that use water in the normal course of business.

(Ord. No. 2004-18, pt. II, § 5, 9-9-04; Ord. No. 2006-26, §§ I, II, 6-8-06)

Sec. 18-166. - Penalties.

(a) Any person who violates any provision of this article for which another penalty is not specifically provided shall, upon conviction, be subject to a civil penalty in accordance with the schedule set forth herein:

(1) First violation $25.00

(2) Second violation within any twelve-month period 50.00

(3) Third violation within any twelve-month period, each offense 75.00

(4) Fourth and consecutive violations within any twelve-month period, each offense 500.00

(b) Each day is considered a separate offense.

(Ord. No. 2004-18, pt. II, § 6, 9-9-04; Ord. No. 2006-26, §§ I, II, 6-8-06)

APPENDIX I: SAFHI PROJECT DESCRIPTION

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