

EXHIBIT A

POTABLE WATER ELEMENT APPENDIX A: BREVARD COUNTY WATER SUPPLY FACILITIES WORK PLAN

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Prepared for:



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EXECUTIVE SUMMARY

The purpose of the Water Supply Facilities Work Plan (WSFWP) is to establish future water demands and potential water sources and facilities to meet those demands for the 2035 planning horizon. Brevard County's WSFWP has been prepared in accordance with Section 163.3177 and Section 373.709, F.S.

Unincorporated Brevard County is served by several potable water suppliers, including the Brevard County Utility Services Department (BCUSD), the utilities of the Cities of Cocoa, Melbourne, Palm Bay, Titusville, and West Melbourne, and a number of neighborhood-scale plants. BCUSD and Municipal utilities draw and treat groundwater as well as surface water from Lake Washington and Taylor Creek Reservoir.

Brevard County's unincorporated population is projected to rise 17% to 261,809 by 2035. Most of this population growth is projected to be served by municipal water utilities and Domestic Self-Supply (DSS).

Brevard County	2020	2035	Delta	% Increase
Unincorporated Population	223,591	261,809	38,218	17.1%
BCUSD Population	17,769	20,806	3,037	17.1%
BCUSD Water Demand	1.30 MGD	1.74 MGD	0.44 MGD	34.2%

Recent historical production data from BCUSD's three Water Treatment Plants (WTP) – Mims, Barefoot Bay, and San Sebastian - shows that current potable water consumption falls well within adopted Level of Service (LOS) standards, design capacities, and Consumptive Use Permit (CUP) allocations. Further, there is adequate CUP allocation and capacity to serve projected BCUSD customer demand through 2035.

		2020	2025	2030	2035
Mims WTP	Population	7,958	8,548	8,989	9,318
	Permitted Surplus (MGD)	0.26	0.16	0.08	0.03
	Design Surplus (MGD)	1.46	1.36	1.28	1.23
Barefoot Bay WTP	Population	9,665	10,382	10,917	11,317
	Permitted Surplus (MGD)	0.34	0.25	0.18	0.13
	Design Surplus (MGD)	0.40	0.31	0.24	0.19
San Sebastian WTP	Population	146	157	165	171
	Permitted Surplus (MGD)	0.033	0.032	0.031	0.030
	Design Surplus (MGD)	0.027	0.025	0.024	0.024

The St. Johns River Water Management District's (SJRWMD) most recent 2020 Regional Water Supply Plan (RWSP) finds that traditional groundwater supply is insufficient to meet projected increasing demands region-wide. This plan highlights conservation and reuse policies to mitigate local demand.

As required by statute, this plan lists and amends as necessary Comprehensive Plan policies which coordinate the WSFWP with all applicable Elements and the SJRWMD RWSP, and also includes adopted and proposed potable and reuse water Capital Improvement Plan (CIP) projects.

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PURPOSE

The purpose of this document is to assess and plan for adequate water supply for the County's future unincorporated population. This Water Supply Facilities Work Plan (WSFWP) has been prepared in accordance with Chapter 163, Part II, Florida Statutes (F.S.) and 373.709, F.S. The F.S. requires local governments to maintain a WSFWP to assess the water supply sources and facilities necessary to meet existing and projected water use demands for a minimum planning period of 10 years in coordination with the Regional Water Supply Plan (RWSP) of their Water Management District(s). This WSFWP addresses projected supply and demand for the years 2020-2035.

INTRODUCTION

An important role of the St. Johns River Water Management District is to ensure there are adequate and sustainable water supplies to meet future needs while protecting the environment. In addressing water supply, the District divided its water supply planning into three plan areas: Central Florida Water Initiative (CFWI); Central Springs/East Coast (CSEC) Planning Area and North Florida Regional Water Supply Partnership. Brevard County is in the CSEC Regional Water Supply Plan (RWSP) area which includes all or part of six counties — Volusia, Lake, Marion, Brevard (excluding the City of Cocoa, which is included in the CFWI), Indian River and Okeechobee counties. This plan is coordinated with the CSEC 2020 RWSP and the CFWI 2020 RWSP to assess all of Brevard County including the City of Cocoa. There are six public providers of potable water for Brevard County's unincorporated areas: the Cities of Cocoa, Melbourne, Palm Bay, Titusville and West Melbourne, and Brevard County.



PLANNING PERIOD

The Planning Horizon for the Brevard Water Supply Facilities Work Plan (WSFWP) is 2020-2035. Florida Statutes require local governments plan to a 10-year horizon at minimum.

RWSPs are based on available data at the time of plan development. The base year for both the CSEC and CFWI RWSPs is 2015, which was the most current year with population and water use data available at the time the projections were developed. RWSP demand projections were based on actual use data over the 2011-2015 period to incorporate per-capita trends. For BCUSD's own Water Treatment Plants (WTP), demand projections were based on more current actual use data (2018-2023).

Pursuant to Chapter 163, F.S., local governments are required to update their WSFWP and Comprehensive Plan every 5 years, within 18 months of an update to their related Water Management District RWSP. For governments comprised of more than one RWSP area, updates must be made within 18 months of the most recent RWSP update. Brevard County is included in two RWSP areas: the CSEC, covering all of Brevard except for the City of Cocoa, and the CFWI, covering the City of Cocoa.

STATUTORY REQUIREMENTS

FLORIDA REGULATIONS FOR WATER SUPPLY AND FACILITY PLANNING

Brevard County is required by Florida Statutes to adopt a Water Supply Facilities Work Plan that complies with the following regulations for water supply and facility planning and related Comprehensive Elements:

- I. {163.3177(4)(a), F.S.}: Coordinate with the St. Johns River Water Management District Coordinate aspects of the comprehensive plan with the associated regional water supply plan and adjacent utilities.
- II. {163.3177(6)(a), F.S.}: Ensure the Future Land Use Plan is based upon availability of adequate water supplies and public facilities and services. Data and analyses demonstrating adequate water supplies and public facilities available to meet project growth demands. **(Future Land Use)**
- III. {163.3180(2), F.S.}: Consult with the water supplier, ensure adequate water supplies and potable water facilities are available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent. **(Future Land Use)**
- IV. {163.3177(6)(c), F.S.}: Work plan will cover at least a 10-year planning period to meet existing and projected demand. The work plan must address those facilities that provide service within the local government jurisdiction and include any facilities needed to develop alternative water supplies. The work plan must also identify conservation and reuse measures to meet future needs identified in the RWSP. **(Potable Water)**
- V. {163.3177(3)(a)4, F.S.}: Identify water supply capital projects over next 5 years for which the county is responsible (both publicly and privately funded) needed to achieve and maintain adopted levels of service. The projects would include funded and unfunded projects. If unfunded include the level of priority for funding. **(Capital Improvements)**
- VI. {163.3177(6)(d)3, F.S.} & {163.3167(9), F.S.}: Assess current and projected water needs and sources for at least a 10-year planning period considering existing levels of water conservation, use and protection, and applicable policies of the water management district. Address water supply sources for existing and projected water use demand. **(Conservation)**
- VII. {163.3177(6)(h)1}: Ensure internal consistency between the Comprehensive Plan and the Water Supply Plan. **(Intergovernmental Coordination)**

DATA & ANALYSIS

SOURCES AND METHODS

Population projection trends are derived from the most recent 2023 University of Florida Bureau of Economic Business Research (BEBR) reports. The Unincorporated County population is based on 2022 UF BEBR data. County-wide water demand projections are sourced from the SJRWMD CSEC 2020 RWSP and CFWI 2020 RWSP. Brevard County Utilities Services Department (BCUSD) WTP population and water demands are based on 5-year analyses of Monthly Operation Reports (MORs).

WATER SUPPLY FACILITIES WORK PLAN SCHEDULES

Municipal water utilities are planned for and managed in accordance with their respective WSWFPs. The dates of the most current Work Plan (at the time this plan was drafted) are summarized in **Table 1** below.

TABLE 1 – WATER SUPPLY FACILITIES WORK PLAN DATES

Municipal Utility	Last WSWFP
City of Cocoa	2009
City of Melbourne	2021
City of Palm Bay	N/A
City of Titusville	2023
City of West Melbourne	N/A

Due to recent changes in state law requiring regular 5-year updates to all WSWFPs, Brevard County anticipates that the less recent municipal Work Plans will be updated within the next Fiscal Year.

WATER INFRASTRUCTURE

Potable water is provided to unincorporated Brevard County by several large and small suppliers, including three (3) BCUSD Water Treatment Plants (WTP), five (5) municipal utilities, and eight (8) other suppliers comprised of mostly smaller, neighborhood-specific plants. The majority of potable water is supplied by BCUSD and Municipal utilities. Maps of the existing BCUSD and Municipal potable water utility service areas, as well as the proposed BCUSD potable water area expansion, are included in this report.

The BCUSD potable water distribution facilities include more than 121 miles of pipe ranging from smaller than 4 inches to 24 inches in diameter. Throughout the potable water service areas identified, the existing water mains are composed mostly of PVC pipe. There are also small areas of BCUSD water mains constructed of ductile iron, asbestos, or high-density polyethylene (HDPE).

Descriptions of the potable water infrastructure maintained by the municipal suppliers to unincorporated Brevard County are included in their respective Work Plans.

POPULATION

By 2035, the population of unincorporated Brevard County is projected to rise by 38,218 (+17.1%) to a total of 261,809. This population analysis can be found later in **Tables 7 and 8** of this document. This plan addresses these trends in the population projections and anticipated demands, identifying conservation initiatives to accommodate additional users while conserving water supply.

DEMAND AND LOS

The SJRWMD RWSPs analyze prior actual use data against BEBR population projections to estimate demand into the future. The most recent RWSPs estimate demand through 2040 based on use data from 2011-2015. These figures represent projections for total Public Supply demand and use rates in Gallons/Capita/Day in Brevard County, served by BCUSD, Municipal, and other large public supply utilities.

TABLE 2 - RWSP PUBLIC SUPPLY POPULATION, DEMAND, AND RATE 2020-2035

Planning Area	2020	2025	2030	2035
CSEC – Brevard PS Population	419,811	441,484	455,304	472,027
CSEC – Brevard PS Demand (MGD)	37.51	39.00	39.95	41.07
CSEC – Brevard Rate (GPCD)	89	88	88	87
CFWI – Cocoa PS Population*	190,375	199,285	206,178	211,309
CFWI – Cocoa PS Demand (MGD)*	25.13	29.91	30.82	31.49
CFWI – Cocoa Rate (GPCD)*	132	150	149	149

Sources: CSEC and CFWI 2020 RWSP; *Cocoa's utility included as it serves some unincorporated County

Level of Service (LOS) standards are adopted by Brevard County to ensure sufficient water supply for existing and future development. LOS standards are used in land use decisions to estimate increased demand from development; and they are an important measure for estimating the necessity of utility expansion. Brevard County proposes to amend its LOS standards in the Potable Water Element and Capital Improvements Element to align with current rate resolutions, shown below in **Table 3A**. Service areas are proposed to be reorganized into two groups, one comprising the Barefoot Bay Water and Sewer District service area, which also includes the San Sebastian WTP, and the other comprising all other BCUSD potable water facilities.

TABLE 3A – PROPOSED BCUSD POTABLE WATER LEVEL OF SERVICE STANDARDS

Service Area	LOS
BCUSD (Countywide)	200 GPD / ERC
Barefoot Bay Water and Sewer District	150 GPD / ERC

Source: BCUSD Rate Resolutions

To calculate per-capita rates for the following updated demand projection analysis, proposed LOS are divided by the current BEBR Average Household Size for Brevard (2.33), resulting in a per-capita LOS of 86 GPCD for BCUSD and 64 GPCD for Barefoot Bay.

Municipal Utility per capita LOS are included per their respective Comp Plans, shown in **Table 3B**.

TABLE 3B – MUNICIPAL POTABLE WATER LEVEL OF SERVICE (LOS)

Service Area	LOS (Avg Daily Demand)	LOS (Max Daily Demand)
City of Cocoa	340 GPD / ERC 122 GPCD	510 GPD / ERC
City of Titusville	96.4 GPCD	-
City of Melbourne	100 GPCD	-
City of Palm Bay	225 GPD / ERC	-
City of West Melbourne	210 GPD / ERC	575 GPD / ERC

Source: Comprehensive Plans of City of Cocoa, City of Titusville, City of Melbourne, City of Palm Bay, and City of West Melbourne

Because Brevard County cannot manage municipal utility LOS, it relies upon intergovernmental coordination to ensure sufficient facilities for unincorporated Brevard County within municipal utility service areas. Brevard County maintains agreements with municipalities for potable and wastewater services and maintains Comprehensive Plan policies outlining concurrency analysis for development decisions in municipal service areas. As specified in Intergovernmental Coordination and Capital Improvements Elements, Brevard County requires (1) written acknowledgement of sufficiency within a municipal water service area prior to permits and (2) requires availability of water service at levels within the adopted LOS prior to issuance of certificate of occupancy.

TABLE 4 – POTABLE WATER AGREEMENTS BETWEEN BREVARD COUNTY AND MUNICIPAL UTILITIES

Agreement With	Type	Established	Expiration	Recommendation
City of Cocoa	Merritt Island Agreement	1982	-	Maintain
City of Melbourne	Franchise Agreement	2000	2030	Maintain
City of Melbourne	Joint Settlement Agreement	2001	-	Maintain
City of Palm Bay	Joint Settlement Agreement	2001	-	Maintain
City of Titusville	Interconnect ILA	1997	-	Maintain
City of West Melbourne	Joint Settlement Agreement	2001	-	Maintain

WATER USE PERMIT INFORMATION

The SJRWMD issues Consumptive Use Permits (CUPs) authorizing withdrawal of ground and surface waters for public supply within Brevard County.

Table 5 below is a summary of the primary BCUSD and Municipal potable water utilities serving unincorporated Brevard County and their source allocations.

TABLE 5 – PUBLIC WATER PROVIDERS TO UNINCORPORATED BREVARD COUNTY

Provider	CUP Allocation (MGY)	Source	Permit #	Permit Expiration
Barefoot Bay WTP*	291.72	Groundwater from surficial aquifer, with backup from Upper Floridan Aquifers (UFA)	236	2029
Mims WTP*	383.3	Groundwater from surficial aquifer	233	2038
San Sebastian WTP*	29.15	Groundwater from surficial aquifer	1742	2031
City of Titusville	2,193.65	Groundwater from surficial aquifer	10647, 99052	2031
City of Palm Bay	6,267.05	Groundwater from surficial aquifer and Floridan Aquifers	202	2029
City of Melbourne	8,592.23	Surface water from Lake Washington and groundwater from the brackish Upper Floridan aquifer (UFA)	50301	2049
City of West Melbourne	1,372.40	Groundwater from the Upper Floridan Aquifers (UFA).	173509	2041
City of Cocoa	14,537.95	Surface water from the Taylor Creek Reservoir, Groundwater from the intermediate aquifer system and UFA	50245	2052

Source: OCULUS, FL Department of Environmental Protection (DEP) 2023 Current consumptive use permits

* = BCUSD Facilities

INVENTORY OF EXISTING WATER SUPPLY & FACILITIES

BCUSD WATER TREATMENT PLANTS

MIMS WATER TREATMENT PLANT (WTP) (FACID: 3050834, CUP PERMIT #: 233)

The Mims WTP is a 1.05 million gallon per day (MGD) annual average daily flow (AADF) permitted potable water treatment facility. The facility treats raw water from surficial aquifer wells located in the Mims area through aeration, lime softening, secondary clarification, tertiary filtration, and high-level disinfection to generate potable water meeting all FDEP and Potable Water criteria requirements. It has a SJRWMD CUP authorization limit of 383.3 MGY, with source water obtained from the surficial aquifer. This WTP is permitted by SJRWMD through 2038 to serve a population of 9,700.

BAREFOOT BAY WATER TREATMENT PLANT (WTP) (FACID: 3050057, CUP PERMIT #: 236)

The Barefoot Bay WTP is a 0.8 MGD AADF permitted potable water treatment facility. The facility treats raw water from surficial aquifer wells located in Barefoot Bay through softening, filtration, and primary disinfection to generate potable water meeting all FDEP and Potable Water criteria requirements. It has a SJRWMD CUP authorization limit of 291.72 MGY, with source water obtained from the surficial aquifer and Upper Floridian aquifer as a backup. This WTP is permitted by SJRWMD through 2029 to serve a population of 10,600.

SAN SEBASTIAN WATER TREATMENT PLANT (WTP) (FACID: 3054170, CUP PERMIT #: 1742)

The San Sebastian WTP is a 0.08 MGD AADF permitted potable water treatment facility. The facility treats raw water from surficial aquifer wells located at the facility through aeration and disinfection to generate potable water meeting all FDEP and Potable Water criteria requirements. It has a SJRWMD CUP authorization limit of 29.15 MGY, with source water obtained from the surficial aquifer. This WTP is permitted by SJRWMD through 2031 to serve a population of 330.

MUNICIPALLY OWNED WATER TREATMENT PLANTS (WTP):

CITY OF TITUSVILLE (CUP PERMIT #: 10647)

The City of Titusville owns 61 wells. It has a SJRWMD CUP authorization of 6.01 MGD (2,193.65 MGY) of groundwater from the surficial aquifer system and the Floridan aquifer. The city is permitted by SJRWMD through 2031 to serve a population of 63,369.

CITY OF PALM BAY (CUP PERMIT #: 202)

The City of Palm Bay owns 59 wells. It has a SJRWMD CUP authorization of 4.9 MGD of groundwater from the surficial aquifer system and 12.27 MGD of groundwater from the Floridan aquifer (6267.05 MGY total). The city is permitted by SJRWMD through 2029 to serve a population of 144,867.

CITY OF MELBOURNE (CUP PERMIT #: 50301)

The City of Melbourne owns 12 wells. It has a SJRWMD CUP authorization of 23.54 MGD (8,592.1 MGY) of surface water from Lake Washington and groundwater from the brackish Upper Floridan aquifer (UFA). The city is permitted by SJRWMD through 2049 to serve a population of 233,937.

CITY OF WEST MELBOURNE (CUP PERMIT #:173509)

The City of West Melbourne owns 5 wells. It has a SJRWMD CUP authorization of 3.76 MGD (1372.4 MGY) of groundwater from the Upper Floridan Aquifer (UFA). The city is permitted by SJRWMD through 2041 to serve a population of 41,570.

CITY OF COCOA (CUP PERMIT #: 50245)

The City of Cocoa owns 63 wells. It has a SJRWMD CUP authorization of 8.83 MGD of surface water from the Taylor Creek Reservoir, 3 MGD of groundwater from the intermediate aquifer system and 28 MGD of groundwater from the Upper Floridan Aquifer (UFA) (14,537.95 MGY total). The city is permitted by SJRWMD through 2052 to serve a population of 256,385.

OTHER LARGE AND SMALL PUBLIC SUPPLY UTILITIES SERVING UNINCORPORATED COUNTY

Portions of unincorporated Brevard County are served by other CUP-permitted suppliers listed in **Table 6**, the majority of which are neighborhood-scale providers.

Some larger utilities are located primarily outside Brevard County, but have service territory extensions within the unincorporated County. Farmton Services LLC is not yet active, but it will serve a portion of northwest Brevard County within the “Farmton Local Plan”. Similarly, Deseret Ranches extends into western Brevard County from Orange and Osceola Counties, though the majority of its public-supply use allocation is for seasonal camp residents primarily outside of Brevard County.

SJRWMD defines “Large” suppliers as those producing at least 0.1 MGD and “Small” suppliers as those producing less than 0.1 MGD potable water. CUP allocations below reflect quantities for public supply type use only; some CUPs have additional allocations for non-potable uses such as irrigation.

TABLE 6 – OTHER POTABLE WATER SUPPLIERS TO BREVARD COUNTY

Utility	Size	CUP PS Allocation (MGY)	Source	Permit #	Permit Expiration
Farmton Services LLC*	Large	5.0 MGD	Groundwater from the Floridan aquifer	127579	2034
CSWR-Florida Utility Operating Company, LLC (aka Aquarina Utilities)	Large	156.7	Groundwater from the Upper Floridan aquifer	1719	2039
South Brevard County Utilities (aka South Brevard Water CO-OP)	Large	46.355	Groundwater from the Upper Floridan aquifer	1606	2041
South Shores Utility Assoc	Small	29.2	Groundwater from the Floridan aquifer	1749	2032
East Central Florida Services Inc (aka Deseret Ranches)	Small	16.41	Groundwater from the surficial and Floridan aquifers	3426	2032
Pelican Bay Communities LLC	Small	10.95	Groundwater from the surficial aquifer	1738	2042
River Grove mobile Home Village 1 & 2	Small	10.22	Groundwater from the surficial aquifer	1804	2024
Sebastian Inlet State Park	Small	6.95	Groundwater from the Upper Floridan aquifer	1807	2041
Summit Cove Condo Assoc	Small	3.25	Groundwater from the surficial aquifer	1808	2043

Source: Current SJRWMD CUPs; * Farmton Services LLC is not yet active and has varying annual allocations of varying sources for varying uses. 5.0 MGD is the maximum public supply type use allocation.

UNINCORPORATED BREVARD COUNTY POPULATION ANALYSIS

As required by all Comprehensive Plan amendments, the WSFWP must be based upon data relevant to Brevard County. Per Section 163.3177, F.S., comprehensive plans shall be based upon permanent and seasonal population estimates. However, RWSPs are based on the University of Florida's Bureau of Economic and Business Research (BEBR) "medium" projections as required by 373.709(2)(a)1a, F.S., and as such they do not include seasonal or other types of temporary residents.

The CSEC and CFWI RWSPs identify the "Public Supply Population" as a discrete portion of the overall population, since not all developments receive public water services. **Table 7** provides the estimated Public Supply Population in the RWSPs across the 2020 – 2035 planning horizon including customers for all BCUSD, Municipal, and other large and small public water suppliers. These projections were based on BEBR publications from 2016-2017, which were the most up-to-date reports available at that time. Note that CFWI - City of Cocoa includes a Public Supply Population larger than the municipal population, due to its utility's service to non-Cocoa areas, including portions of unincorporated Brevard County.

TABLE 7 – 2020 RWSP PUBLIC SUPPLY POPULATION PROJECTIONS 2020-2035

Public Supply Population	2020	2025	2030	2035
CSEC (Brevard)	421,797	443,557	457,385	474,114
CFWI (City of Cocoa)	190,375	199,285	206,178	211,309
Total Brevard - All RWSP	612,172	642,842	663,563	685,423
% Growth 5-Year		+ 5.0%	+ 3.2%	+ 3.3%
% Growth over 2020		+ 5.0%	+ 8.4%	+ 12.0%

Source: CSEC 2020 RWSP Appendix B; CFWI 2020 RSWP Appendices

To account for known increases in population growth trends over time since the publication of the RWSP, more recent BEBR projections are used in this WSFWP. **Table 8** provides the "Medium" BEBR growth trend projections released in April 2023 for Brevard County through 2035 and associated projections for unincorporated County population. These increased growth rates are used in the BCUSD demand projections later in this WSFWP to estimate future demand more accurately.

TABLE 8 - 2023 BEBR POPULATION PROJECTIONS 2020-2035

Brevard County	2020	2025	2030	2035
Total Population	606,612	651,600	685,200	710,300
% Growth 5-Year		+ 7.4%	+ 5.2%	+ 3.7%
% Growth over 2020		+ 7.4%	+ 13.0%	+ 17.1%
Unincorporated Population	223,591	240,173	252,558	261,809

Sources: BEBR: Projections of Florida Population by County, 2025–2050, Medium, (April 2023)

BCUSD WTP POTABLE WATER PER CAPITA DEMAND

Monthly Operation Reports (MOR) covering January 2018 – April 2023 from each Water Treatment Plant (WTP) were used to establish the rates of water demand across the populations served in each service area. These figures were based on the actual water produced by each WTP by month and include the populations served by each.

MORs were analyzed for both Average and Maximum monthly production to project both typical and maximum demands over the planning horizon.

Tables 9A and 9B analyze MOR data for each BCUSD WTP to establish Average and Maximum demand per capita per day.

TABLE 9A - AVERAGE DEMAND PER DAY FROM MOR DATA (2018-2023)

WTP	Average Month Demand (GPM)	Average Total WTP GPD	Average Per Capita GPD	Population Served	AADF Permitted (GPD)
Mims	23,723,071	780,261	99	7,947	1,050,000
San Sebastian	1,417,650	46,612	320	146	80,000
Barefoot Bay	13,998,466	461,569	48	9,636	800,000
TOTAL	39,139,187	1,288,442	73	17,729	1,930,000

TABLE 9B - MAXIMUM DEMAND PER DAY FROM MOR DATA (2018-2023)

WTP	Maximum Month Demand (GPM)	Max Total WTP GPD	Max Per Capita GPD	Population Served	Design Capacity (GPD)
Mims	28,907,000	932,484	118	7,947	2,400,000
San Sebastian	2,270,000	73,226	502	146	100,000
Barefoot Bay	18,244,000	588,516	62	9,636	1,000,000
TOTAL	49,421,000	1,594,226	91	17,729	2,700,000

**Tables 9A & 9B were calculated using maximum demand per day from January 2018-April 2023 MOR data for each BCUSD WTP.*

The per capita use rates were calculated by determining both the average and maximum volume of potable water produced by the BCUSD WTPs from January 2018 to April 2023 and dividing it by the population served. Using this method, the Mims WTP averaged 99 GPD per capita (GPCD) with a max day of 118 GPCD; the Barefoot Bay WTP averaged 48 GPCD with a max day of 62 GPCD; and the San Sebastian WTP averaged 320 GPCD with a max day of 502 GPCD. Overall, the total demand across the three BCUSD WTPs averaged 73 GPCD with a max day of 91 GPCD.

BCUSD WTP LEVEL OF SERVICE (LOS)

Brevard County has adopted Level of Service (LOS) standards to ensure sufficient water quantity for current and future development. Per the County's Comp Plan, LOS considers maximum daily demand. There are separate LOS standards for Mims and South Brevard. Mims' LOS varies across Residential and Non-Residential uses, ranging from 400 gallons per Residential Unit per day for residential uses to 250 gallons per Equivalent Unit per day for non-residential uses. Because the scope of this Work Plan contemplates per capita consumption, Brevard's per-capita LOS can be calculated using BEBR Average Household Size for Brevard (2.33), resulting in a per-capita LOS of 172 GPCD. South Brevard LOS is a standard 125 GPCD. This Work Plan defines the South Brevard region as comprising the Barefoot Bay and San Sebastian WTPs combined.

TABLE 10 - CURRENT DEMAND LEVEL OF SERVICE COMPARISON

BCUSD Service Area	Average GPCD	Max GPCD	Current Level of Service GPCD	Meets LOS?
Mims	99	118	172	Yes
South Brevard	52	68	125	Yes

**This table was calculated using maximum demand per day over 5 years of MOR data from each BCUSD WTP. LOS from Brevard County Comp Plan, adjusted with BEBR average Household Size of 2.33*

As shown, current maximum daily demand falls well below adopted LOS for both regions. It is recommended that the Comprehensive Plan be amended to revise LOS standards to reflect current ERC rate resolutions for BCUSD and Barefoot Bay Water and Sewer District.

BCUSD POTABLE WATER PROJECTIONS

BEBR population figures and projections were used to establish overall growth rates in 5-year increments through 2035. These rates as shown previously in **Table 7** are applied to each current BCUSD WTP service area population.

The projected demand is calculated by multiplying the current GPCD average and max use rates from **Tables 9A & 9B** for the existing population as of 2020 and multiplying all incremental population by adopted LOS for each service area as shown in **Table 3A**. Because LOS standards are used for concurrency planning, it is appropriate to plan for new users at those standards while assuming existing users are likely to consume at historical rates.

MIMS WTP FUTURE WATER DEMAND

FIGURE 1 - MIMS WTP FUTURE DAILY WATER DEMAND

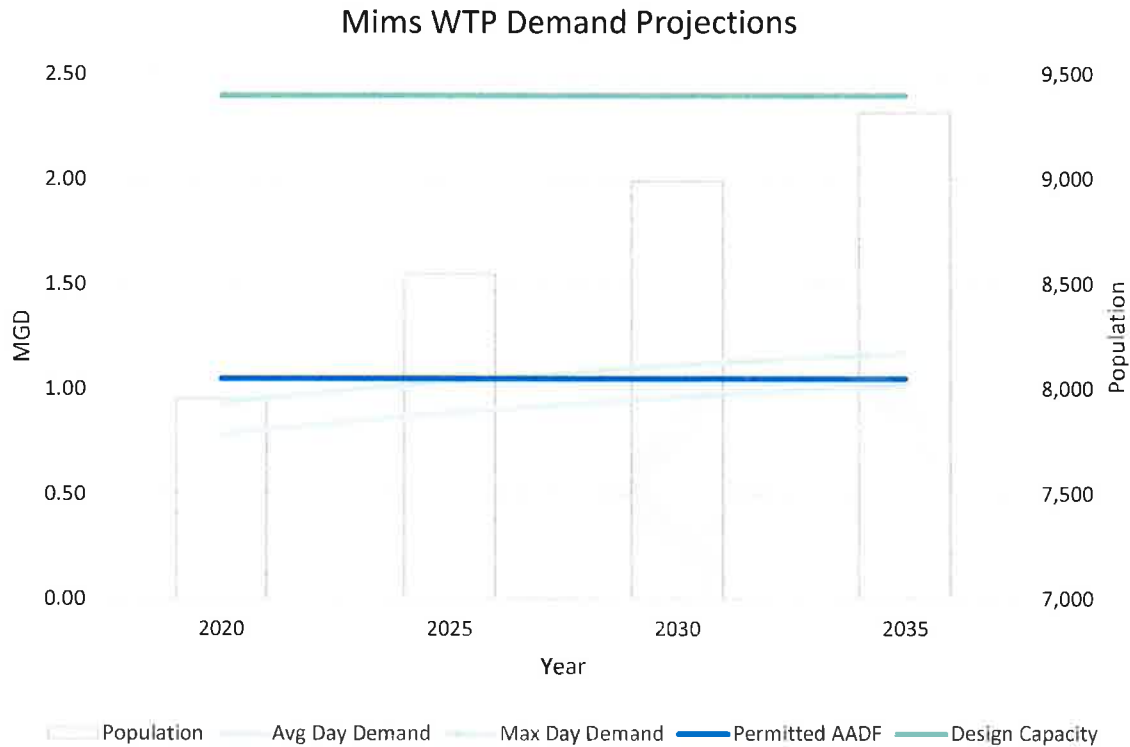


TABLE 11 - MIMS WTP FUTURE POTABLE WATER DEMAND (2020-2035)

Year	Total Population Estimated	Average Gal. Per Capita (GPCD)	Average Day Demand (MGD)	Maximum Gal. Per Capita (GPCD)	Maximum Day Demand (MGD)	Permitted Surplus on Average Day (MGD)	Design Surplus on Max. Day (MGD)
2020	7,958	99	0.79	118	0.94	0.26	1.46
2025	8,548	104	0.89	122	1.04	0.16	1.36
2030	8,989	107	0.97	124	1.12	0.08	1.28
2035	9,318	110	1.02	126	1.17	0.03	1.23

As shown in **Table 11**, Mims WTP is projected to have an average daily demand of 1.02 MGD and a maximum daily demand of 1.17 MGD across 9,318 customers by 2035. With 1.05 MGD CUP allocation through 2038 and 2.4 MGD design capacity, It is estimated to be able to accommodate estimated demand through 2035.

BAREFOOT BAY WTP FUTURE WATER DEMAND

FIGURE 2 - BAREFOOT BAY WTP FUTURE DAILY WATER DEMAND

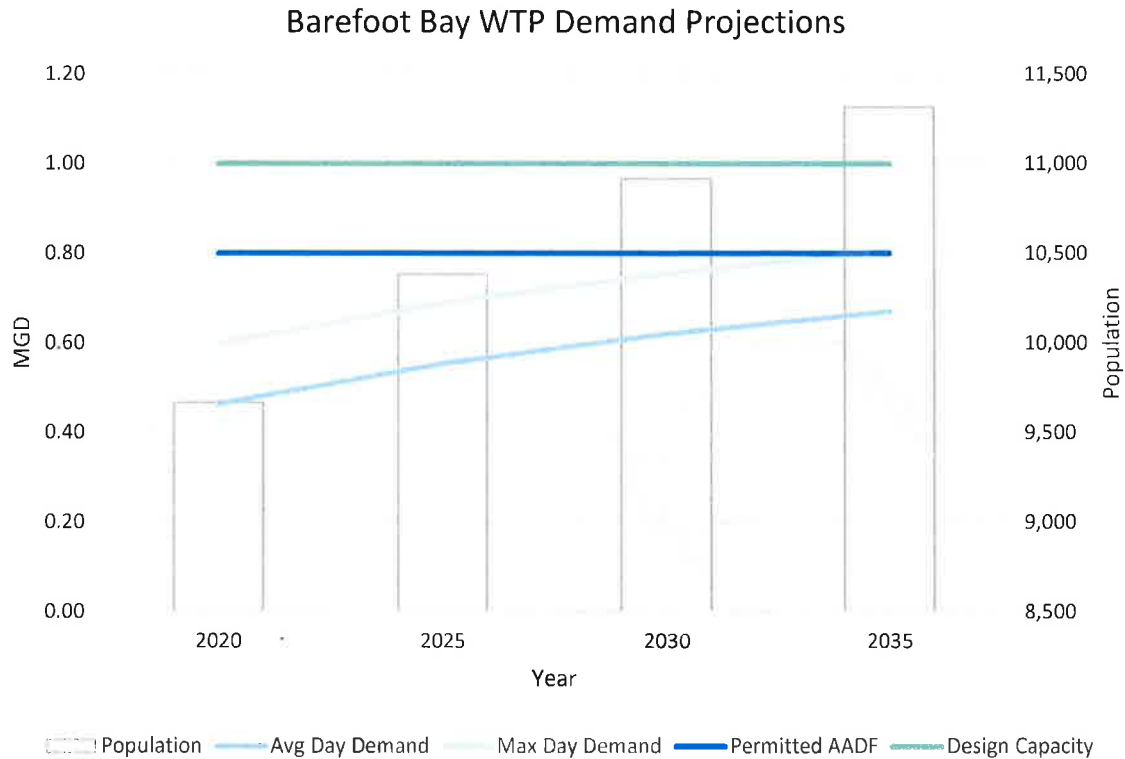


TABLE 12 - BAREFOOT BAY WTP FUTURE POTABLE WATER DEMAND (2020-2035)

Year	Total Population Estimated	Average Gal. Per Capita (GPCD)	Average Day Demand (MGD)	Maximum Gal. Per Capita (GPCD)	Maximum Day Demand (MGD)	Permitted Surplus on Average Day (MGD)	Design Surplus on Max. Day (MGD)
2020	9,665	48	0.46	62	0.60	0.34	0.40
2025	10,382	53	0.55	66	0.69	0.25	0.31
2030	10,917	57	0.62	69	0.76	0.18	0.24
2035	11,317	59	0.67	71	0.81	0.13	0.19

As shown in **Table 12**, the Barefoot Bay WTP is projected to have an average daily demand of 0.67 MGD and a maximum daily demand of 0.81 MGD by 2035, serving 11,317 customers. As it is currently permitted for 0.8 MGD through 2029 with a design capacity of 1.0 MGD, Barefoot Bay is projected to be able to satisfy demand through the expiration of its CUP and beyond, assuming maintained allocation.

SAN SEBASTIAN WTP FUTURE WATER DEMAND

FIGURE 3 - SAN SEBASTIAN WTP FUTURE DAILY WATER DEMAND

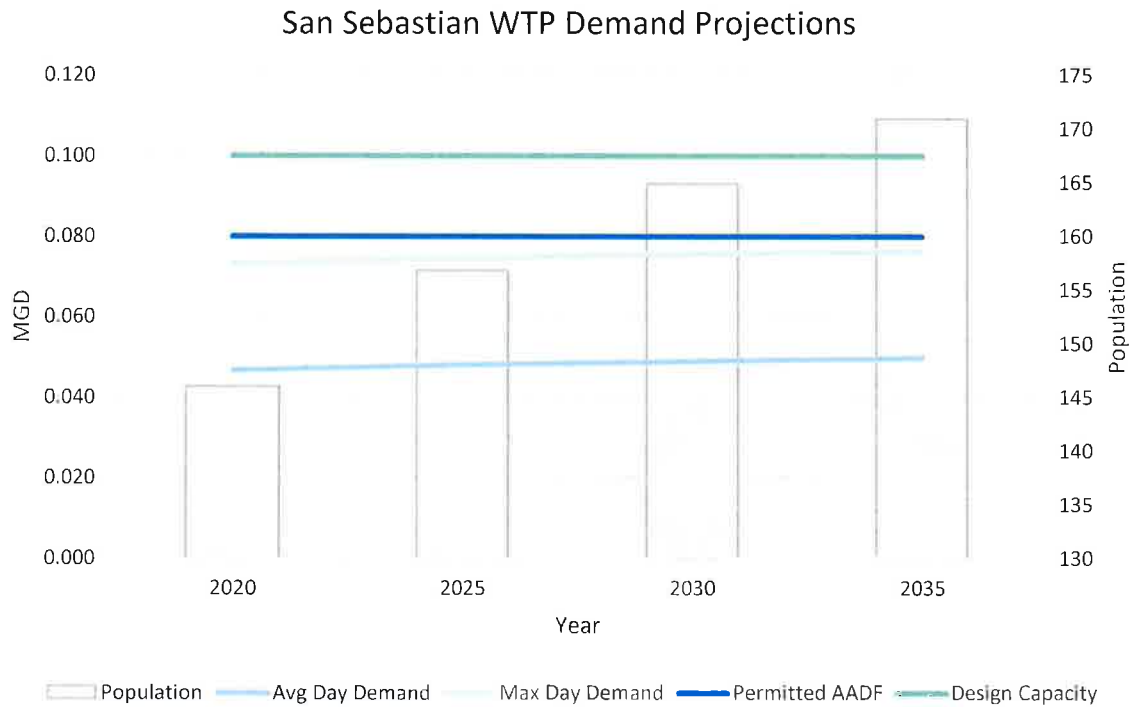


TABLE 13 - SAN SEBASTIAN WTP FUTURE POTABLE WATER DEMAND (2020-2035)

Year	Total Population Estimated	Average Gal. Per Capita (GPD)	Average Day Demand (MGD)	Maximum Gal. Per Capita (GPD)	Maximum Day Demand (MGD)	Permitted Surplus on Average Day (MGD)	Design Surplus on Max. Day (MGD)
2020	146	320	0.047	502	0.073	0.033	0.027
2025	157	307	0.048	476	0.075	0.032	0.025
2030	165	298	0.049	459	0.076	0.031	0.024
2035	171	292	0.050	447	0.076	0.030	0.024

As shown in **Table 13**, the San Sebastian WTP is projected to have an average daily demand of 0.050 MGD and a maximum daily demand of 0.076 MGD by 2035, serving a projected 171 residents. As it is permitted for 0.08 MGD through 2031 with a design capacity of 0.10 MGD, it can accommodate projected future demands through the expiration of its CUP and beyond, assuming maintained allocation.

San Sebastian currently exceeds South Brevard LOS. Despite the relatively small size of the San Sebastian WTP service territory, its per capita consumption is significantly higher than other BCUSD areas and in the region. This may be due to irrigation of large single-family lots, or other non-potable or non-residential uses. Water conservation measures are recommended.

POTABLE WATER SERVICE AREA BOUNDARIES AND DOMESTIC SELF-SUPPLY

This WSFWP addresses demands for potable water within the established planning horizon of 2020-2035. Demand is driven by general population growth trends and changes to utility service area boundaries. For the purposes of this Work Plan, BCUSD demand projections assume static service area boundaries. As Brevard County does not govern municipal utilities, it is possible that unincorporated areas near current municipal utility service areas may be provided service within this planning horizon. However, any service expansion is properly accounted for during the plan review process by capacity verification prior to issuance of permit and certificate of occupancy.

Portions of Brevard County do not receive potable water service by public or small utilities and are instead served by Domestic Self-Supply (DSS). These include both unincorporated and incorporated municipal areas. Per the SJRWMD Central Springs/East Coast (CSEC) 2020 RWSP, there was a DSS population of more than 41,242 in 2020 with an estimated water use of 2.80 MGD. There were no DSS attributable to Brevard County in the SJRWMD Central Florida Water Initiative (CFWI) 2020 RWSP. The projected DSS growth rate is similar to the RWSP public supply population growth rate, but it is anticipated to be reduced due to new state regulation of septic systems and extension of utilities.

TABLE 14 – BREVARD COUNTY DOMESTIC SELF-SUPPLY POPULATION AND DEMAND 2020-2035

CSEC 2020 RWSP – Brevard County	2020	2025	2030	2035
DSS Population	41,242	43,305	44,946	46,130
DSS Pop 5-Year Growth Rate	-	+ 5.0%	+ 3.8%	+ 2.6%
DSS Water Use (MGD)	2.80	2.94	3.06	3.14
DSS Use Rate (GPCD)	67.9	67.9	68.1	68.1

Source: SJRWMD CSEC 2020 RWSP Appendix B – Population and Water Demand Projections

The Indian River Lagoon Protection Program (IRLPP), established in 2023, will impact BCUSD and unincorporated County DSS. The IRLPP sets deadlines for sewer hookup or septic system upgrade within IRL Basin Management Action Plan areas, which include much of the unincorporated area surrounding existing BCUSD service territories. As such, BCUSD will begin master planning in FY 2024 to respond to this regulation. Significant service area expansions are anticipated, which will include coordination with SJRWMD for new and revised permitting.

CONSERVATION MEASURES

Although not necessary to meet projected potable water demand through 2035, Brevard County has established and continues to develop a variety of conservation programs including outreach and educational programs, irrigation restrictions, leak detection audits, and water reuse.

BCUSD's reuse water systems help to significantly offset unnecessary use of potable water for non-potable uses such as landscape irrigation. The following table displays the reuse capacity permitted for BCUSD's

wastewater treatment facilities and 10-year average daily reuse. Note that reuse demand varies by season; average daily reuse figures do not fully communicate seasonal demand highs. In dry season, demand exceeds available reuse supply.

TABLE 15 - BCUSD WASTEWATER FLOW AND REUSE INFORMATION

Wastewater Treatment Facility	Permitted Reuse (MGD)	Average Daily Flow (MGD)	Average Daily Reuse (MGD)	Reuse %
Barefoot Bay	1.041	0.700	0.538	77%
Mims (North Brevard) aka John D. Wright	2.000	0.330	0.271	82%
Port St. John	0.606	0.470	0.368	78%
South Beaches	3.000	6.400	1.446	48%*
South Central	10.700	4.003	4.003	81%
Sykes Creek	4.500	1.466	1.466	43%

Source: OCULUS, FL Department of Environmental Protection (DEP) 2023

*South Beaches reuse % based on permitted rather than total flow.

SJRWMD 2020 RWSP PROJECT OPTIONS

One important aspect of the SJRWMD RWSP updates is to organize water resource development project options, water supply development project options, and water conservation project options for the various public and large private water users in the planning regions. The Water Supply Facilities Work Plan process requires local governments include all projects identified in the RWSP that correspond to the government listed as an implementing entity.

According to the most recent CSEC 2020 RWSP, Brevard County is listed as an implementing entity for one water resource development project option: the "Brevard County Abandoned Artesian Well Plugging Program (FY 2020 – FY 2022)". This project, in partnership with the SJRWMD, provides for abandonment of artesian wells throughout Brevard County resulting in an additional water resource capacity of 4.5 MGD. This project was completed as of FY 2022.

CAPITAL IMPROVEMENTS

The County established funding plans for potable and reuse water infrastructure in the annual Capital Improvement Plan (CIP) for Fiscal Year 2022-2023 to Fiscal year 2026-2027. It is a requirement that the WSWFP include all potable water, reuse, and water conservation CIP projects. **Table 16** includes applicable BCUSD capital improvement projects included in the County's CIP and proposed projects to meet future water demand.

TABLE 16 - 5-YEAR CAPITAL IMPROVEMENT PLAN THROUGH FY 2027 – POTABLE AND REUSE WATER PROJECTS

Timeline	Project Cost	Program Name	Project Name	Project Description	Funded Program	District
Oct 2019-Sept 2027	\$11,229,439	County Water and Wastewater	Mims: Watermain Asbestos Cement Pipe	This project will replace the asbestos cement and thin-walled PVC pipe in the Mims water distribution system and includes changing over the water service connections to the new pipes.	6980111	1
Oct 2019-Sept 2024	\$3,200,500	County Water and Wastewater	Mims: Plant Additional Wells	This project consists of installing new water wells to the Mims water system. Current wells have been underperforming in their water withdrawal resulting in the installation of new wells to meet customer water demand.	6983105	1
Oct 2019-Sept 2024	\$1,600,000	County Water and Wastewater	South Central: Additional Plant Reject Pond	Install additional reject pond and pumping system north of the two existing storage ponds needed to optimize reclaimed water production at SCWWTF and provide additional capacity.	6540423	4
Oct 2019-Sept 2024	\$992,741	County Water and Wastewater	Sykes: Reclaimed Water Improvements	This is phase 1 of 3 providing necessary improvements to the reclaimed water production facility to meet future demands of a growing population in the north Merritt Island region.	6300236	2
Aug 2023-	\$50,000,000	Barefoot Bay Water and Wastewater	*PROPOSED: New Water Treatment Plant in South Brevard	This proposed project will build a new water treatment facility in South Brevard to serve customers in the Barefoot Bay and San Sebastian service areas.	N/A	3
Aug 2023-	\$65,000,000	Barefoot Bay Water and Wastewater	*PROPOSED: Barefoot Bay: South Brevard Advanced WWTP (SF 1410) (HF 1586)	This proposed project will build an advanced wastewater treatment facility to serve customers in the Barefoot Bay service area so they may switch from septic tanks to a centralized system as required by subparagraph 403.067(7)(a)9. a. of the Florida Statutes. The County has received \$1,500,000 in state allocations for this project.	N/A	3
Aug 2023-	\$45,000,000	County Water and Wastewater	*PROPOSED: Mims Water: North WTP Expansion and Potable Water Wells (SF 1629) (HF 1040)	This proposed project consists of expanding the Mims Water Treatment Plant (WTP) and installing new potable water wells in order to increase plant capacity and be able to accommodate future demand after the desired expansion of the WTP's service area. The County has received \$1,500,000 in state allocations for this project.	N/A	1

*Proposed projects related to eventual expansion of BCUSD WTPs and service areas, not obtained from Brevard County Annual CIP

RELEVANT REGIONAL WATER SUPPLY ISSUES

The SJRWMD 2020 Central Springs/East Coast (CSEC) Regional Water Supply Plan (RWSP) does foresee water quality issues impacting traditional supply region-wide, primarily due to aquifer saltwater intrusion. District UFA monitoring wells in addition to public utility well water quality monitoring reports show increasing salinity concentrations, especially along the Indian River Lagoon, likely due to lateral intrusion as well as to vertical intrusion. Lateral intrusion is mostly due to coastal geography and sea-level rise, whereas vertical intrusion is due to excessive withdrawal. The District estimates that many of these wells already do or will exceed Secondary Drinking Water Standard chloride limits by 2040, its RWSP planning horizon. While this is unlikely to result in impacts to most municipal utilities due to existing Reverse Osmosis (RO) water treatment infrastructure, increasing withdrawals may compromise water quality for neighboring DSS systems and BCUSD WTP surficial wells.

Data from Surficial Aquifer System (SAS) public supply wells show that while saltwater intrusion is increasingly compromising this resource overall, adoption and adherence to wellfield protection plans are demonstrated to reduce and even reverse chloride concentration trends, as has been demonstrated around the Titusville wellfield protection area.

Brevard County is encouraged to consider investigation of alternative water supply projects including Reverse Osmosis treatment, and to continue to adopt and expand water conservation policies, wellfield protection plans, land conservation for groundwater recharge, Low-Impact Design (LID) and Green Stormwater Infrastructure (GSI) incentives or requirements, and reuse projects in line with the SJRWMD recommendations.

CONSERVATION, REUSE, AND SOURCE PROTECTION MEASURES

Although additional measures are not necessary to meet projected potable water demand through 2035 as demonstrated previously, Brevard County has established and continues to develop a variety of water conservation, reuse, and source protection practices and programs, some of which are enabled by Comprehensive Plan policies.

WATER CONSERVATION

Water conservation is important to ensure water supply is used in a sustainable way. The County's water conservation practices include the following:

- Implementation of the BCUSD Water Conservation Plans submitted to SJRWMD as part of the Consumptive Use Permit process.
- Increasing public awareness and acceptance of water conservation techniques
- Requiring that certain irrigation systems utilize micro-irrigation techniques.
- Requiring new development to utilize waterwise landscaping principles.
- Implementation of various water conservation-related programs including the following:
 - Showerhead exchange program
 - Toilet rebate program
 - Water main replacement program
 - Requiring low flow plumbing fixtures
 - Provision of leak detection/water conservation kits
 - Provision of water conservation and restriction messages on utility bills
- Development of a water conservation program in the Code of Ordinances including plumbing feature requirements and water shortage emergency regulations
- Implementing a conservation rate structure in the Mims/North Brevard service area
- Promoting information on water conservation strategies via the BCUSD website

REUSE

Utilization of non-potable (reuse) water is important to reduce potable water demand. The County's reuse practices include the following:

- Maximizing reuse water to reduce the demand of potable water.
- Implementation of the wastewater reuse ordinance
- Requiring certain irrigation systems to be designed to use reuse water.
- Requiring dual piping for reclaimed water

SOURCE PROTECTION

Water source protection is important to ensure the sustainability of the County's water supplies. The County water source protection practices include the following:

- Implementing an aquifer protection ordinance
- Coordination with the City of Titusville on aquifer protection
- Conducting public education on importance of protecting the surficial and Floridan aquifers
- Regulating septic tanks, underground storage tanks, hazardous materials and other substances in certain aquifer recharge areas

CONCLUSION AND RECOMMENDATIONS

Unincorporated Brevard County's population is expected to increase by more than 17% cumulatively by 2035. This population will be served primarily by public supply utilities including BCUSD and municipal utilities. The BCUSD potable water customer population is expected to increase to an estimated 20,806 customers, and overall water demand will increase 34% to 1.74 MGD on average, by 2035.

	2020	2035	Delta	% Increase
BCUSD Population	17,769	20,806	3,037	17.1%
BCUSD Water Demand	1.30 MGD	1.74 MGD	0.44 MGD	34.2%

Current CUP allocations and infrastructure are projected to be sufficient to accommodate future water demands through 2035 for all three BCUSD WTPs. Portions of unincorporated Brevard County served by municipal potable water utilities are planned for in those respective WSFWPs. Concurrency for all unincorporated County development, whether served by BCUSD or other utilities, is managed during the development review process as verification of facility capacity is required prior to permit and CO issuance.

		2020	2025	2030	2035
Mims WTP	Population	7,958	8,548	8,989	9,318
	Potable Water Demand (MGD)	0.79	0.89	.097	1.02
	CUP Allocation (MGD)	1.05	1.05	1.05	1.05
	Design Capacity (MGD)	2.40	2.40	2.40	2.40
Barefoot Bay WTP	Population	9,665	10,382	10,917	11,317
	Potable Water Demand (MGD)	0.46	0.55	0.62	0.67
	CUP Allocation (MGD)	0.80	0.80	0.80	0.80
	Design Capacity (MGD)	1.00	1.00	1.00	1.00
San Sebastian WTP	Population	146	157	165	171
	Potable Water Demand (MGD)	0.047	0.048	0.049	0.050
	CUP Allocation (MGD)	0.080	0.080	0.080	0.080
	Design Capacity (MGD)	0.100	0.100	0.100	0.100

Current BCUSD potable water use falls within adopted LOS standards overall, however, despite its relatively low population, San Sebastian WTP customers exceed South Brevard LOS, where additional investigation and conservation measures are recommended. It is also recommended that Brevard County's LOS standards be revised downward to reflect actual use trends, as well as amended to include non-residential per-ERC rates for the South Brevard region to plan for other land uses.

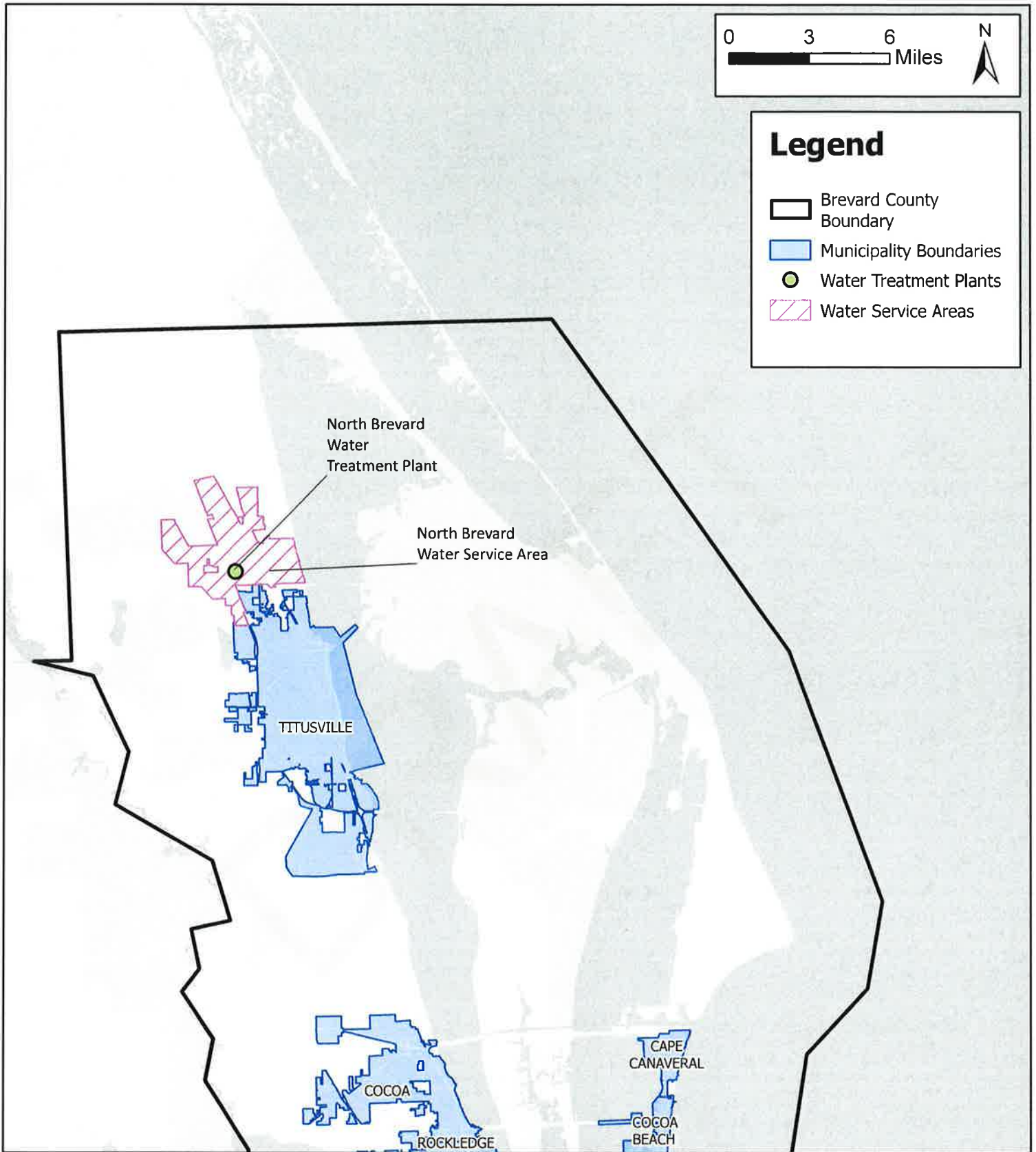
The Brevard County Comprehensive Plan includes policies which enable coordination and implementation of this WSFWP and the SJRWMD RWSP. Additional Comprehensive Plan amendments have been proposed with this WSFWP to ensure consistency.

The 2023 Indian River Lagoon Protection Program requires expedited utility extension to unincorporated County areas. BCUSD will begin master planning to address these and other new regulations in FY 2024.



EXISTING WATER SERVICE AREA BOUNDARY MAPS

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Source: ESRI, FDOT, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Existing Water Service Area Boundary (North)

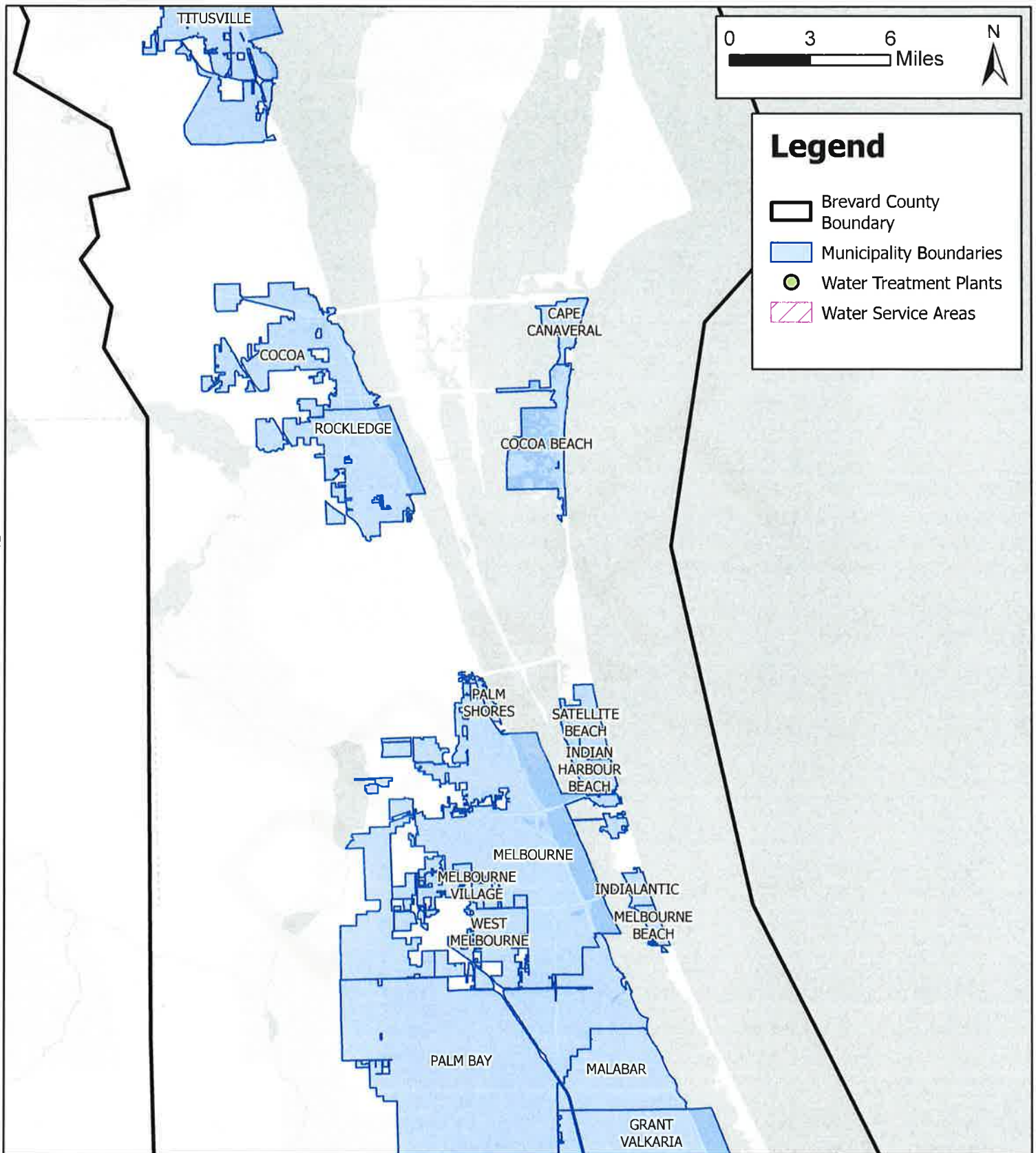
**Brevard County
Utility Service Area Map**

1 inch = 4.7 miles

PROJECT NUMBER: 140600003.1.300

FEBRUARY 2024

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Existing Water Service Area Boundary (Central)

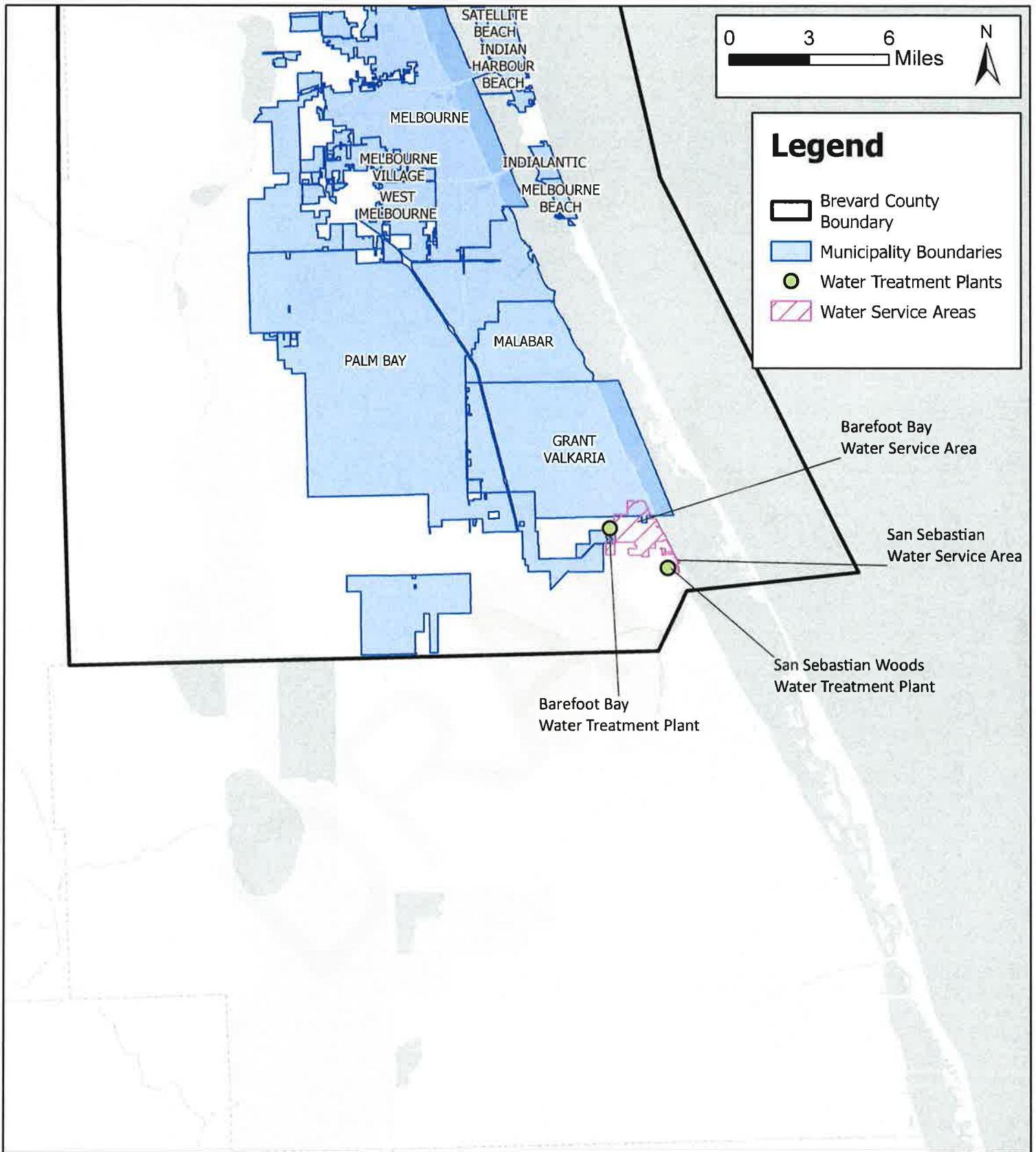
**Brevard County
Utility Service Area Map**

1 inch = 4.7 miles

PROJECT NUMBER: 140600003.1.300

FEBRUARY 2024

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Existing Water Service Area Boundary (South)

**Brevard County
Utility Service Area Map**

1 inch = 4.7 miles

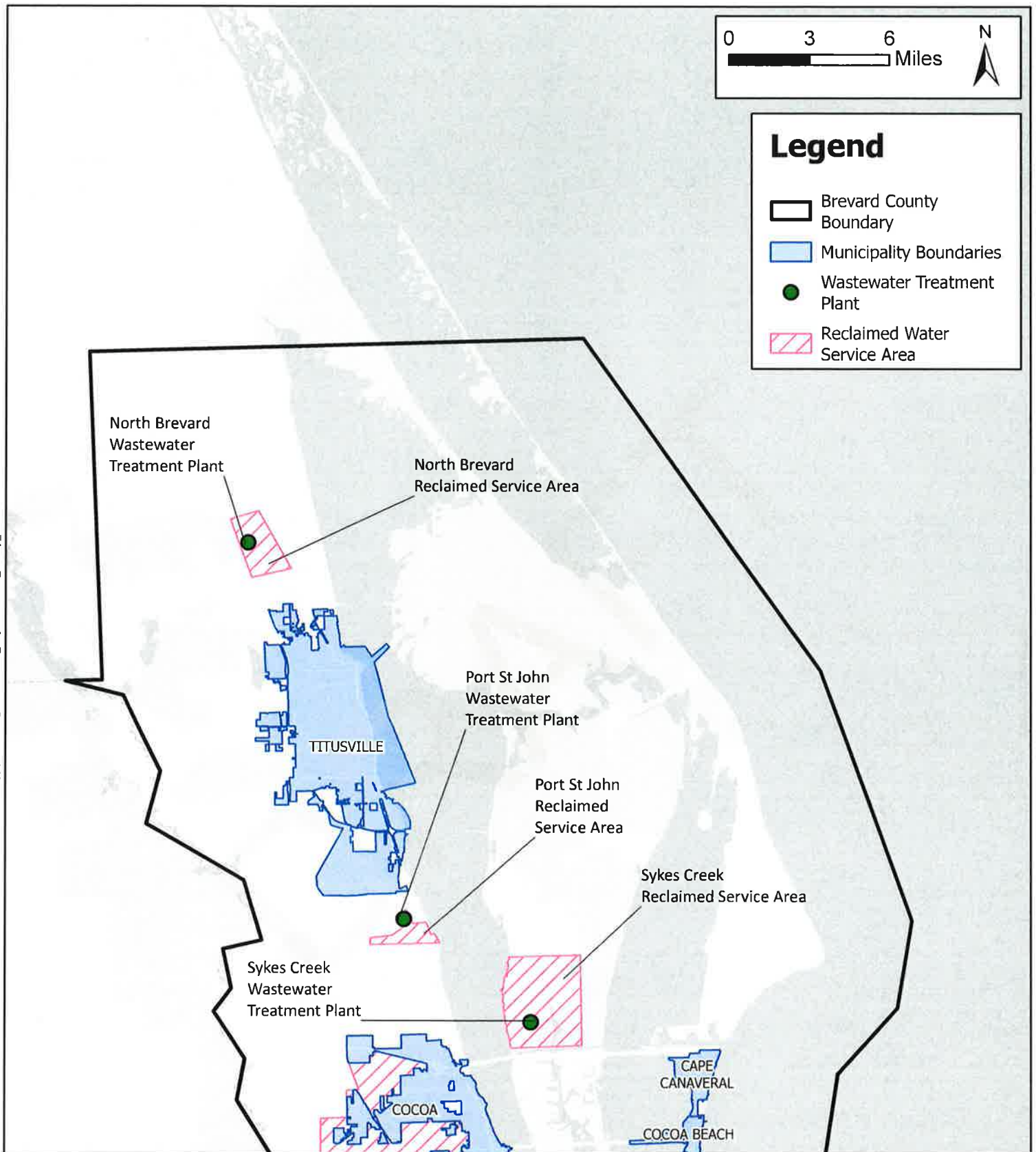
PROJECT NUMBER: 140600003.1.300

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EXISTING RECLAIMED SERVICE AREA BOUNDARY MAPS

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Existing Reclaimed Service Area Boundary (North)

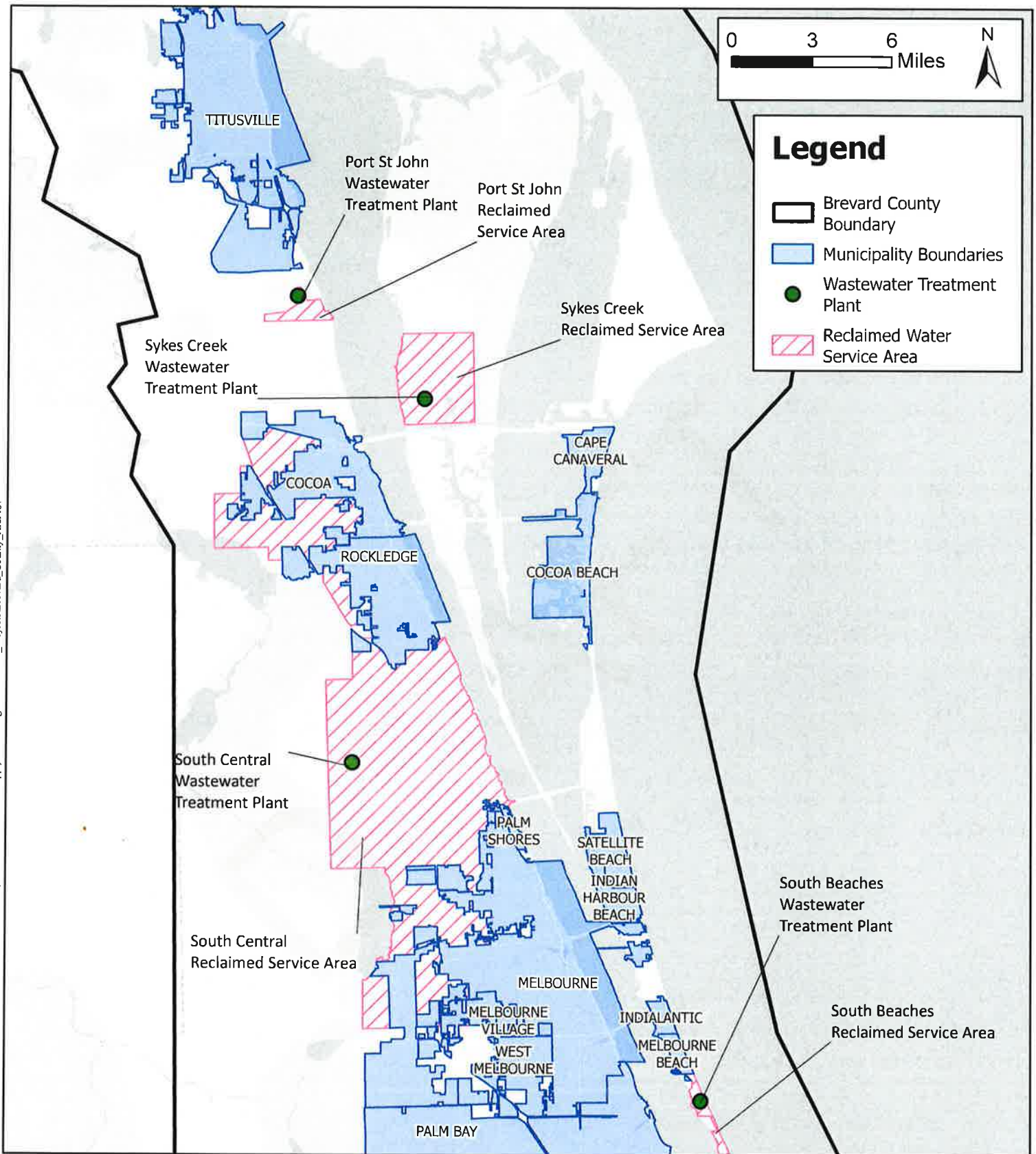
**Brevard County
Utility Service Area Map**

1 inch = 4.7 miles

PROJECT NUMBER: 140600003.1.300

FEBRUARY 2024

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Existing Reclaimed Service Area Boundary (Central)

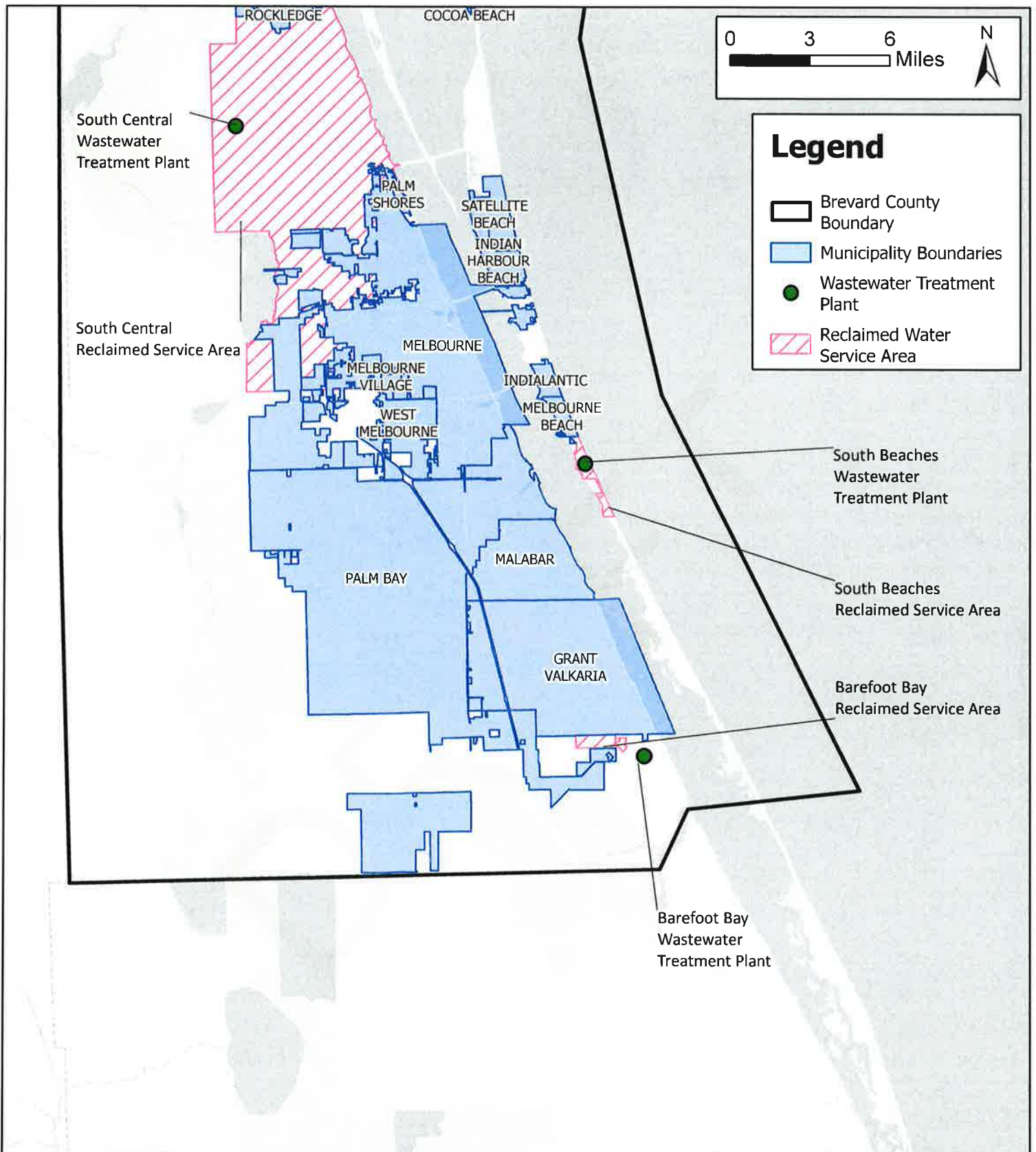
**Brevard County
Utility Service Area Map**

1 inch = 4.7 miles

PROJECT NUMBER: 140600003.1.300

FEBRUARY 2024

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Existing Reclaimed Service Area Boundary (South)

**Brevard County
Utility Service Area Map**

1 inch = 4.7 miles

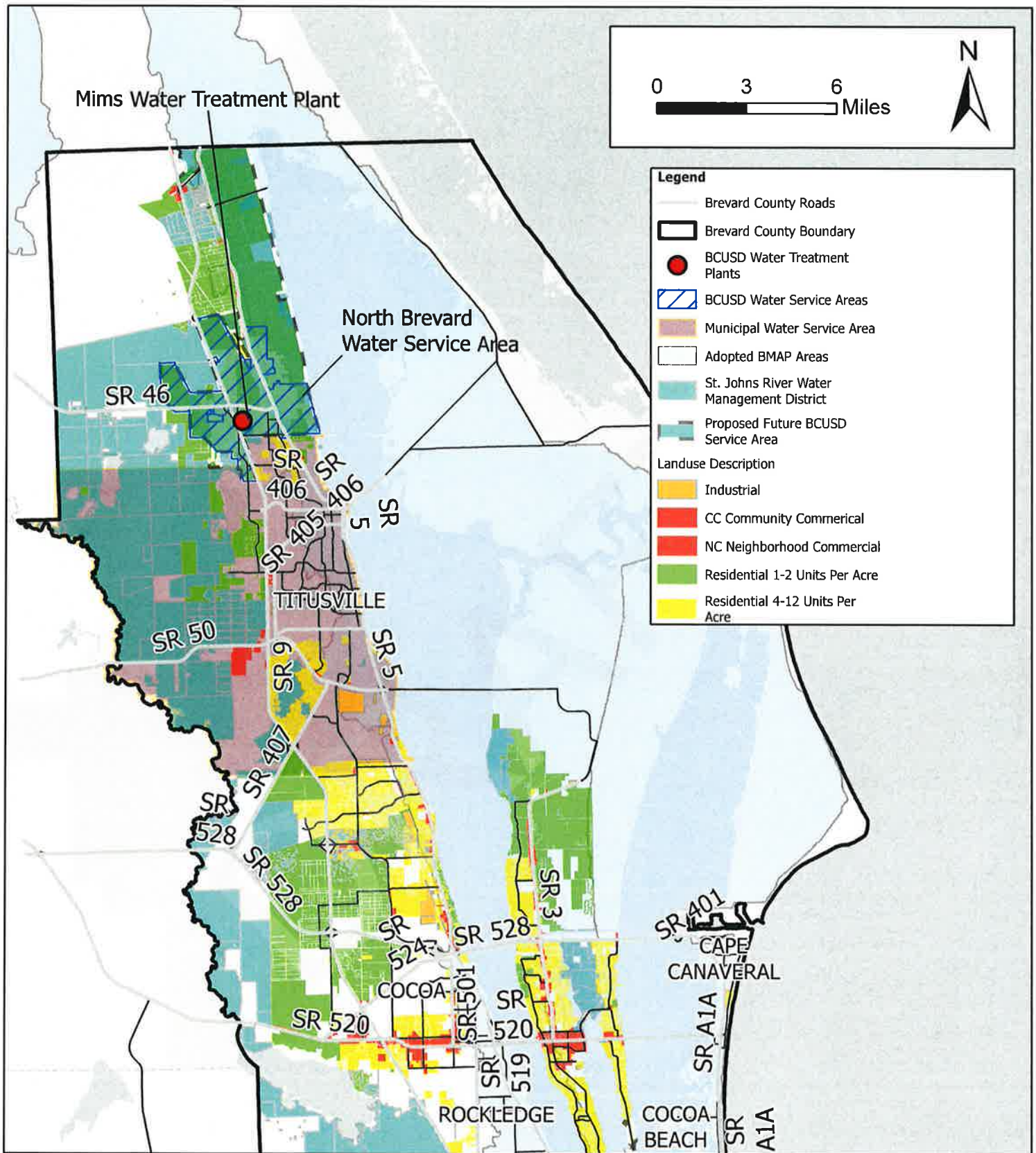
PROJECT NUMBER: 140600003.1.300

FEBRUARY 2024



PROPOSED WATER SERVICE AREA BOUNDARY MAPS

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Future Water Service Area Boundary (North)

**Brevard County
Utility Service Area Map**

1 inch = 4.2 miles

PROJECT NUMBER: 140600003.1.300

FEBRUARY 2024

