

MASTER CAPACITY ANALYSIS REPORT

for

JEA WATER RECLAMATION FACILITIES

WATER & WASTEWATER SYSTEM PLANNING

May 2023



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MASTER CAPACITY ANALYSIS REPORT

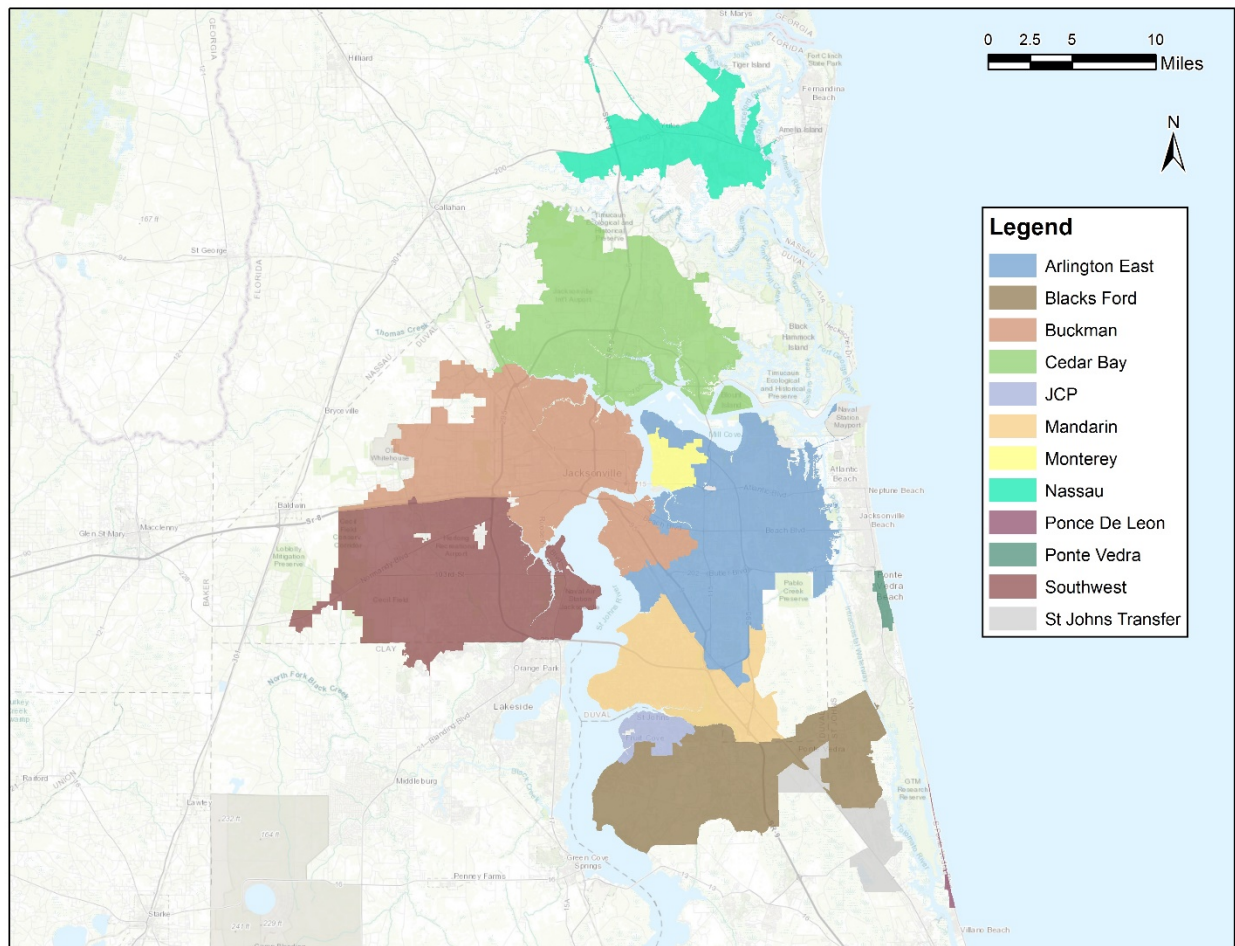
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1 Introduction

In this Capacity Analysis Report you will find historical and projected flows for each existing JEA wastewater treatment facility. Major capacity improvements are identified where needed to support new growth; in some cases new wastewater facilities are required. JEA operates 11 wastewater reclamation facilities (WRFs) with an overall wastewater service area that covers four counties including Nassau, Duval, Clay and St Johns.

Figure 1: Current Wastewater Service Areas



2 Historical Wastewater Flow

Over the past 10 years the overall treated wastewater flows have increased from 71 mgd (FY13) to 84 mgd (FY22), Table 1 and Figure 2. The source of historical data is from wastewater facility flow meters.

Figure 2: Historical System Wide Wastewater Flows (Oct. 2011 through Feb. 2023)

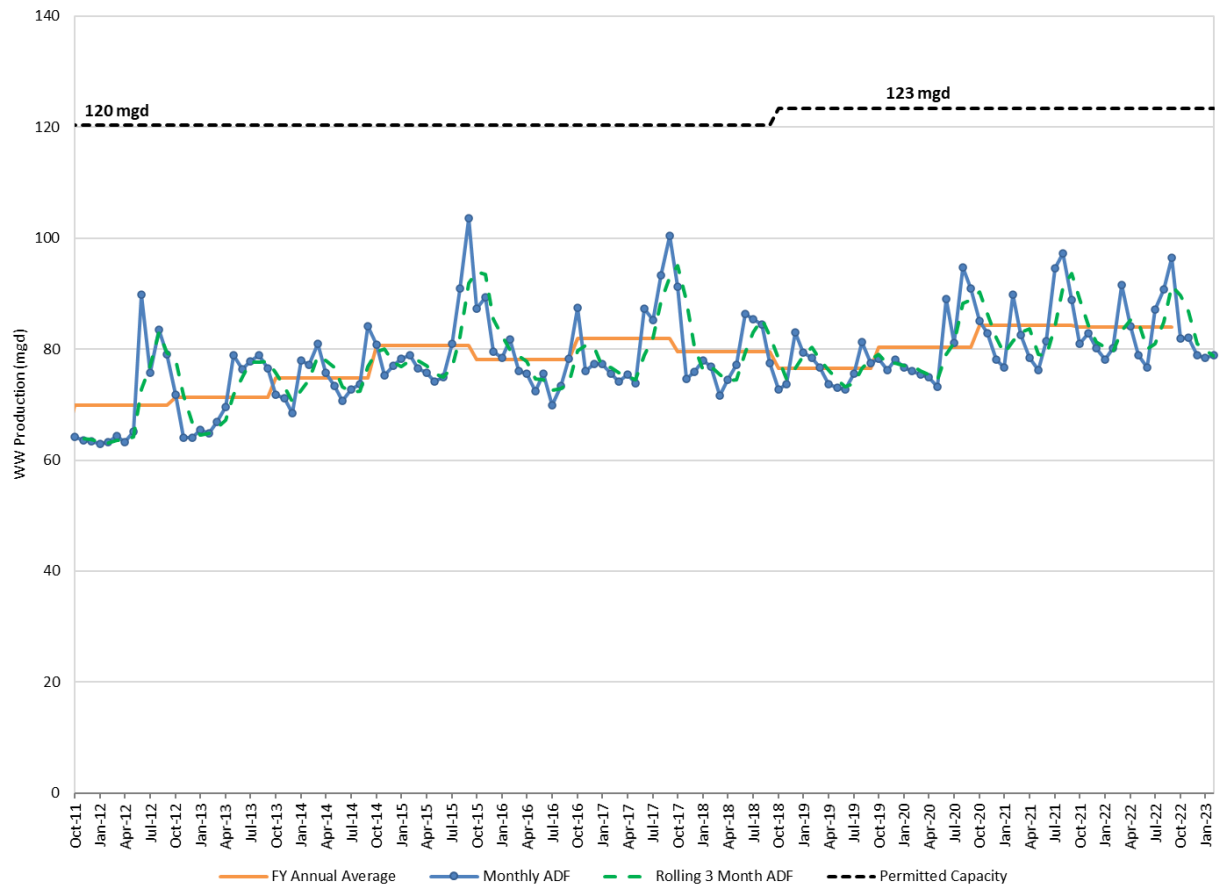


Table 1: Historical System Wid Wastewater Flows

Date	Rolling 3		FY	Monthly	Permitted
Mo/Year	ADF	Month	Average	Max Day	Capacity
Oct-12	71.86	78.15	71.29	85.18	120.44
Nov-12	64.10	71.66	71.29	72.96	120.44
Dec-12	64.08	66.68	71.29	71.55	120.44
Jan-13	65.52	64.57	71.29	77.61	120.44
Feb-13	64.85	64.82	71.29	79.85	120.44
Mar-13	66.92	65.76	71.29	82.84	120.44
Apr-13	69.62	67.13	71.29	80.47	120.44
May-13	78.86	71.80	71.29	127.19	120.44
Jun-13	76.36	74.95	71.29	89.58	120.44
Jul-13	77.84	77.69	71.29	89.23	120.44
Aug-13	78.95	77.72	71.29	92.84	120.44
Sep-13	76.54	77.78	71.29	98.00	120.44
Oct-13	71.73	75.74	74.82	84.52	120.44
Nov-13	71.16	73.14	74.82	83.17	120.44
Dec-13	68.49	70.46	74.82	78.44	120.44
Jan-14	78.01	72.55	74.82	100.68	120.44
Feb-14	77.18	74.56	74.82	92.26	120.44
Mar-14	80.95	78.71	74.82	114.53	120.44
Apr-14	75.75	77.96	74.82	94.02	120.44
May-14	73.31	76.67	74.82	83.74	120.44
Jun-14	70.62	73.23	74.82	82.89	120.44
Jul-14	72.78	72.24	74.82	84.71	120.44
Aug-14	73.70	72.37	74.82	83.35	120.44
Sep-14	84.20	76.90	74.82	111.22	120.44
Oct-14	80.73	79.55	80.60	96.95	120.44
Nov-14	75.27	80.07	80.60	92.53	120.44
Dec-14	77.00	77.67	80.60	97.89	120.44
Jan-15	78.22	76.83	80.60	88.21	120.44
Feb-15	78.87	78.03	80.60	95.48	120.44
Mar-15	76.62	77.90	80.60	84.26	120.44
Apr-15	75.77	77.09	80.60	82.30	120.44
May-15	74.16	75.52	80.60	80.36	120.44
Jun-15	74.95	74.96	80.60	87.30	120.44
Jul-15	81.02	76.71	80.60	102.15	120.44
Aug-15	90.92	82.29	80.60	112.37	120.44
Sep-15	103.66	91.87	80.60	131.48	120.44
Oct-15	87.32	93.97	78.13	107.44	120.44
Nov-15	89.33	93.44	78.13	137.22	120.44
Dec-15	79.58	85.41	78.13	88.08	120.44
Jan-16	78.44	82.45	78.13	86.73	120.44
Feb-16	81.78	79.93	78.13	101.00	120.44
Mar-16	76.07	78.77	78.13	82.64	120.44
Apr-16	75.51	77.79	78.13	84.79	120.44
May-16	72.50	74.69	78.13	81.25	120.44
Jun-16	75.54	74.52	78.13	88.42	120.44
Jul-16	69.86	72.63	78.13	76.29	120.44
Aug-16	73.39	72.93	78.13	81.02	120.44
Sep-16	78.27	73.84	78.13	87.62	120.44
Oct-16	87.43	79.69	81.97	129.14	120.44
Nov-16	76.11	80.60	81.97	84.10	120.44
Dec-16	77.35	80.30	81.97	95.11	120.44
Jan-17	77.29	76.92	81.97	86.85	120.44
Feb-17	75.62	76.76	81.97	84.50	120.44
Mar-17	74.23	75.71	81.97	82.99	120.44
Apr-17	75.45	75.10	81.97	90.23	120.44
May-17	73.81	74.49	81.97	91.67	120.44
Jun-17	87.25	78.83	81.97	110.06	120.44
Jul-17	85.30	82.12	81.97	135.73	120.44
Aug-17	93.35	88.64	81.97	119.34	120.44
Sep-17	100.41	93.02	81.97	204.03	120.44
5 Year (Oct. 2012 - Sep. 2017)			10 Year (Oct. 2012 - Sep. 2022)		
Average:	77.36		Average:	79.15	
Min.:	64.08		Min.:	64.08	
Max.:	103.66		Max.:	103.66	

Date	Rolling 3		FY	Monthly	Permitted
Mo/Year	ADF	Month	Average	Max Day	Capacity
Oct-17	91.21	94.99	79.47	141.63	120.44
Nov-17	74.64	88.76	79.47	86.70	120.44
Dec-17	75.84	80.56	79.47	93.85	120.44
Jan-18	77.95	76.14	79.47	96.72	120.44
Feb-18	76.88	76.89	79.47	87.41	120.44
Mar-18	71.64	75.49	79.47	79.11	120.44
Apr-18	74.51	74.34	79.47	84.00	120.44
May-18	77.22	74.46	79.47	98.44	120.44
Jun-18	86.39	79.37	79.47	104.20	120.44
Jul-18	85.48	83.03	79.47	97.98	120.44
Aug-18	84.47	85.45	79.47	109.81	120.44
Sep-18	77.43	82.46	79.47	90.50	120.44
Oct-18	72.76	78.22	76.49	80.97	123.44
Nov-18	73.70	74.63	76.49	82.90	123.44
Dec-18	82.99	76.49	76.49	100.01	123.44
Jan-19	79.41	78.70	76.49	101.87	123.44
Feb-19	78.48	80.29	76.49	86.97	123.44
Mar-19	76.66	78.18	76.49	88.22	123.44
Apr-19	73.70	76.28	76.49	80.31	123.44
May-19	73.01	74.46	76.49	83.01	123.44
Jun-19	72.75	73.16	76.49	79.68	123.44
Jul-19	75.57	73.78	76.49	86.45	123.44
Aug-19	81.28	76.54	76.49	95.61	123.44
Sep-19	77.51	78.12	76.49	89.67	123.44
Oct-19	78.26	79.02	80.41	96.24	123.44
Nov-19	76.26	77.34	80.41	92.76	123.44
Dec-19	78.17	77.56	80.41	94.49	123.44
Jan-20	76.74	77.05	80.41	84.10	123.44
Feb-20	76.08	77.00	80.41	93.32	123.44
Mar-20	75.49	76.11	80.41	83.95	123.44
Apr-20	74.92	75.50	80.41	84.71	123.44
May-20	73.23	74.55	80.41	83.17	123.44
Jun-20	89.08	79.08	80.41	132.94	123.44
Jul-20	81.06	81.13	80.41	89.75	123.44
Aug-20	94.78	88.31	80.41	129.11	123.44
Sep-20	90.87	88.90	80.41	106.01	123.44
Oct-20	85.07	90.24	84.32	98.99	123.44
Nov-20	82.92	86.29	84.32	101.40	123.44
Dec-20	78.09	82.03	84.32	87.02	123.44
Jan-21	76.69	79.23	84.32	84.16	123.44
Feb-21	89.75	81.51	84.32	112.38	123.44
Mar-21	82.57	83.00	84.32	105.89	123.44
Apr-21	78.47	83.60	84.32	93.74	123.44
May-21	76.18	79.07	84.32	84.76	123.44
Jun-21	81.38	78.68	84.32	95.81	123.44
Jul-21	94.61	84.06	84.32	127.63	123.44
Aug-21	97.28	91.09	84.32	129.64	123.44
Sep-21	88.88	93.59	84.32	102.64	123.44
Oct-21	80.96	89.04	84.00	90.57	123.44
Nov-21	82.90	84.25	84.00	105.95	123.44
Dec-21	80.14	81.33	84.00	91.37	123.44
Jan-22	78.11	80.38	84.00	83.28	123.44
Feb-22	80.19	79.48	84.00	88.41	123.44
Mar-22	91.54	83.28	84.00	130.87	123.44
Apr-22	84.14	85.29	84.00	97.67	123.44
May-22	78.97	84.88	84.00	86.11	123.44
Jun-22	76.75	79.95	84.00	82.16	123.44
Jul-22	87.15	80.96	84.00	106.72	123.44
Aug-22	90.79	84.90	84.00	110.40	123.44
Sep-22	96.41	91.45	84.00	126.22	123.44
Oct-22	81.97	89.72		96.42	123.44
Nov-22	82.05	86.81		110.75	123.44
Dec-22	78.96	81.00		86.56	123.44
Jan-23	78.37	79.79		91.09	123.44
Feb-23	78.91	78.75		86.14	123.44

Note: all units in mgd

3 Projected Flow

Projected wastewater can be found in Table 2 and also in Figure 3. Section 5.2 details facility specific projected wastewater data. Historical wastewater flows and customer connection data were used as a basis to calculate the projected wastewater flows.

Figure 3: Projected Wastewater & Total System Capacity

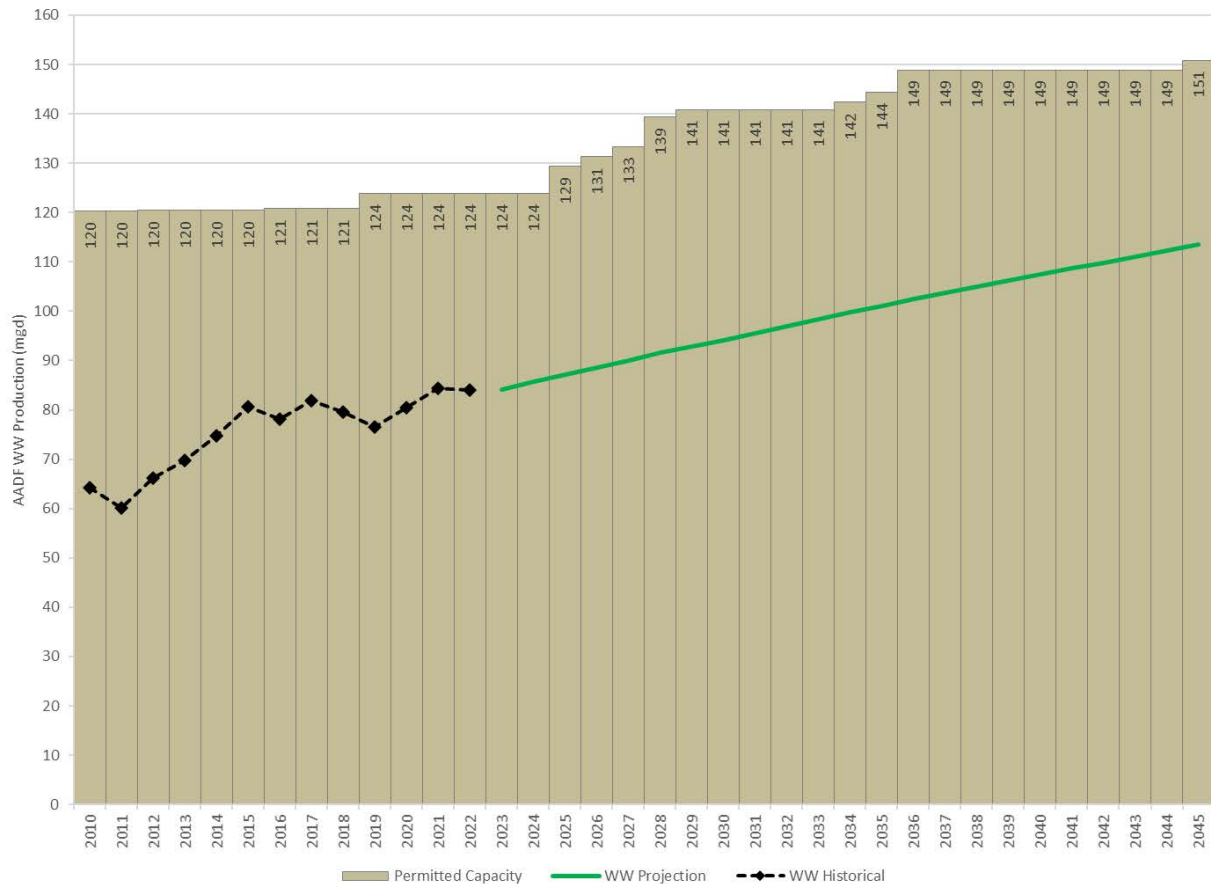


Table 2: Projected Wastewater Flows

Year	Buckman	District 2	Northwest	Southwest	301	Greenland	Arlington East	Monterey	Mandarin	Blacks Ford	JCP	Ponte Vedra	Ponce De Leon	Nassau	Total
2023	26.09	6.14	0.00	12.38	0.00	0.00	20.77	2.02	7.84	5.74	0.91	0.52	0.07	1.69	84.17
2024	26.22	6.38	0.00	12.64	0.00	0.00	20.93	2.04	8.34	5.76	0.91	0.53	0.07	1.81	85.63
2025	26.35	6.65	0.00	12.91	0.00	2.01	21.07	2.05	6.88	5.75	0.91	0.53	0.07	1.93	87.10
2026	26.49	6.94	0.00	13.17	0.00	2.30	21.19	2.07	7.11	5.75	0.91	0.53	0.07	2.05	88.59
2027	26.62	7.28	0.00	13.03	0.31	2.53	21.29	2.08	7.43	5.75	0.91	0.53	0.07	2.17	90.02
2028	26.75	7.67	0.00	13.26	0.39	2.69	21.37	2.10	7.78	5.80	0.92	0.54	0.07	2.29	91.62
2029	26.89	7.28	0.47	13.48	0.46	2.77	21.43	2.11	7.26	6.66	0.92	0.54	0.07	2.41	92.76
2030	27.02	7.47	0.67	13.71	0.53	2.86	21.47	2.13	7.26	6.98	0.92	0.54	0.07	2.53	94.18
2031	27.15	7.65	0.89	13.94	0.61	2.97	21.47	2.14	7.26	7.30	0.92	0.55	0.07	2.65	95.57
2032	27.29	7.84	1.10	14.17	0.68	3.09	21.47	2.16	7.26	7.60	0.92	0.55	0.07	2.77	96.97
2033	27.42	8.02	1.30	14.40	0.76	3.23	21.47	2.17	7.26	7.90	0.92	0.55	0.08	2.89	98.37
2034	27.56	8.19	1.48	14.63	0.84	3.43	21.47	2.19	7.26	8.15	0.93	0.55	0.08	3.00	99.76
2035	27.69	8.36	1.66	14.85	0.92	3.67	21.47	2.21	7.26	8.36	0.93	0.56	0.08	3.12	101.13
2036	27.82	8.52	1.80	15.08	0.99	3.90	21.47	2.22	7.26	8.55	0.93	0.56	0.08	3.24	102.44
2037	27.96	8.68	1.90	15.31	1.07	4.14	21.47	2.24	7.26	8.74	0.93	0.56	0.08	3.36	103.71
2038	28.09	8.84	2.01	15.54	1.16	4.38	21.47	2.25	7.26	8.91	0.93	0.56	0.08	3.48	104.97
2039	28.22	8.99	2.09	15.77	1.25	4.62	21.47	2.27	7.26	9.08	0.93	0.57	0.08	3.60	106.20
2040	28.36	9.14	2.17	16.00	1.34	4.86	21.47	2.28	7.26	9.24	0.93	0.57	0.08	3.72	107.42
2041	28.49	9.28	2.25	16.22	1.43	5.10	21.47	2.30	7.26	9.41	0.94	0.57	0.08	3.84	108.63
2042	28.62	9.42	2.33	16.45	1.52	5.32	21.47	2.31	7.26	9.57	0.94	0.58	0.08	3.96	109.83
2043	28.76	9.55	2.41	16.68	1.66	5.49	21.47	2.33	7.26	9.77	0.94	0.58	0.08	4.08	111.06
2044	28.89	9.68	2.49	16.91	1.81	5.65	21.47	2.34	7.26	9.98	0.94	0.58	0.08	4.20	112.27
2045	29.03	9.80	2.57	17.14	1.95	5.81	21.47	2.36	7.26	10.18	0.94	0.58	0.08	4.31	113.48

*units in mgd

4 Capital Improvement Summary

The following capital improvement totals are from the JEA Capital Improvement Plan, categorized by each WRF. Refer to Section 5.2 for details on the specific projects that make up the totals below.

Table 3: Summary of WRF Capital Improvements (\$s in \$1,000s)*

Treatment Facility	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Buckman	\$1,125,569	\$32,376	\$53,499	\$113,299	\$132,885	\$129,070	\$256,778	\$262,894	\$97,055	\$4,864	\$740
Arlington East	\$535,534	\$5,540	\$22,248	\$117,334	\$83,938	\$69,590	\$87,958	\$99,958	\$36,522	\$1,589	\$0
Greenland	\$187,627	\$76,972	\$37,333	\$11,170	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Southwest	\$449,890	\$40,902	\$41,998	\$53,174	\$17,304	\$31,285	\$93,384	\$105,384	\$38,505	\$1,740	\$0
301 Regional	\$36,400	\$2,700	\$4,700	\$18,000	\$11,000	\$0	\$0	\$0	\$0	\$0	\$0
District 2	\$222,482	\$1,532	\$125	\$25,170	\$11,572	\$20,614	\$60,585	\$72,585	\$27,706	\$1,163	\$0
Northwest	\$25,000	\$0	\$500	\$3,750	\$6,250	\$7,000	\$7,500	\$0	\$0	\$0	\$0
Mandarin	\$33,873	\$3,325	\$5,415	\$12,645	\$7,985	\$9	\$0	\$0	\$0	\$0	\$0
Monterey	\$141,908	\$1,407	\$11,460	\$25,529	\$8,829	\$9,854	\$27,512	\$39,512	\$14,437	\$633	\$0
Blacks Ford	\$211,331	\$803	\$9,482	\$26,911	\$117,190	\$55,110	\$1,835	\$0	\$0	\$0	\$0
Nassau Regional	\$177,143	\$49,622	\$64,438	\$22,672	\$0	\$405	\$4,340	\$12,998	\$10,397	\$501	\$0
Julington Creek Plantation	\$683	\$32	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ponte Vedra	\$62,460	\$114	\$712	\$1,115	\$12,530	\$17,356	\$18,104	\$7,000	\$4,000	\$500	\$376
Ponce de Leon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL	\$3,209,901	\$215,326	\$251,911	\$430,769	\$409,484	\$340,293	\$557,996	\$600,332	\$228,622	\$10,991	\$1,116

*Source: JEA capital budget as of 4/24/23

5 Treatment Plant Capacity Analysis

5.1 Summary of Plant Capacity

Available overall wastewater treatment capacity currently stands at 32%, with some facilities near or over 80% capacity. Facilities with less than 30% capacity remaining have projects planned or underway to accommodate future growth, with exception to treatment facilities in regions of low growth or close to build out of the service area. Section 5.2 looks specifically at each JEA WRF in relation to FDEP permitted treatment capacity and details planned projects needed to maintain continued compliance through 2045.

Table 4: Overall WRF Capacity Summary

Facility	AADF as of Sep 2022	Permitted Capacity	Percent Capacity Remaining	Non-Coincidental Monthly Max Day
Buckman	27.33	52.50	48%	58.37
Arlington East	20.35	25.00	19%	25.03
Southwest	12.29	14.00	12%	20.15
District 2	5.95	10.00	41%	7.69
Mandarin	7.10	8.75	19%	8.82
Monterey	2.38	3.60	34%	3.07
Blacks Ford	5.49	6.00	8%	7.14
Nassau Regional ¹	1.62	2.00	19%	1.97
Julington Creek	0.88	1.00	12%	1.15
Ponte Vedra	0.53	0.80	33%	0.93
Ponce de Leon	0.07	0.24	69%	0.12
TOTAL	84.00	123.89	32%	134.44

¹Consent order in effect allowing increased total effluent discharge from the normal 1.55 mgd to 2.0 mgd.

²Range of AADF and non-coincidental monthly max day is Oct 2021 through Sept 2022.

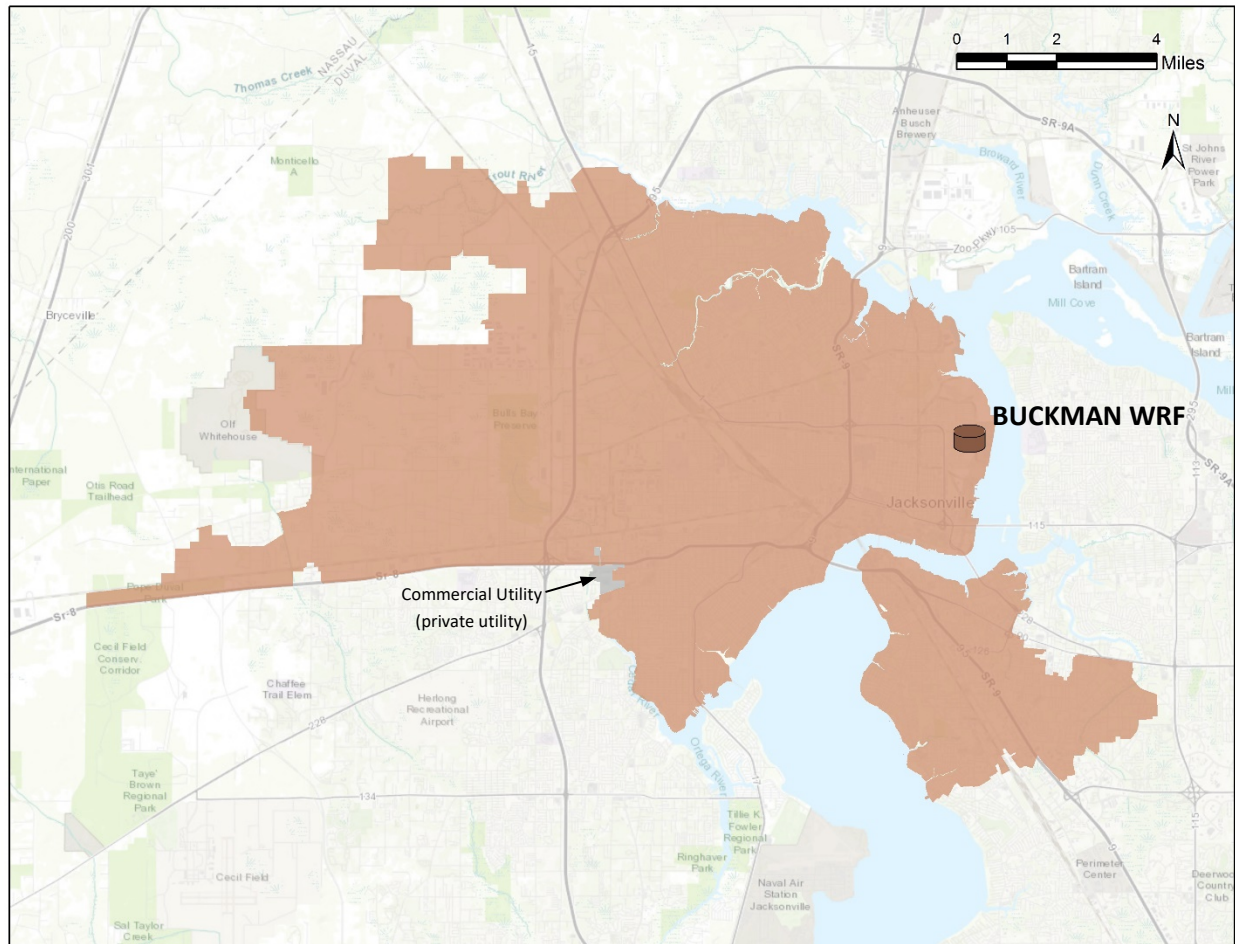
³Units in mgd

5.2 Individual Treatment Plant Analysis

5.2.1 Buckman WRF

Buckman is a 52.5 mgd AADF activated sludge WRF that serves a region well established with commercial and residential customers, with a significant contribution from industrial customers. Buckman WRF receives the highest volume, on average, of industrial waste compared to all other JEA wastewater treatment facilities.

Figure 4: Buckman Current Service Area



5.2.1.1 Plant Capacity

Historical and projected wastewater flow for Buckman WRF can be found in Figures 5 and 6 in comparison to the overall facility permitted capacity. Studies have found total nitrogen efficiency is impacted when AADF approaches 35 mgd; however, influent has averaged not much higher than 30 mgd during historically wet years and growth in this service area is low in comparison to other regions served by JEA. Below average rainfall over the last couple of years has reduced infiltration significantly due to a lower groundwater table; historically a reduction of influent to the Buckman WRF has been observed in relation to low groundwater. Most influent flow variation is due to inflow and infiltration. No major capacity expansions are planned at Buckman WRF prior to FY45. Section 5.2.1.2 details future planned O&M projects.

Figure 5: Buckman WRF Historical Flow

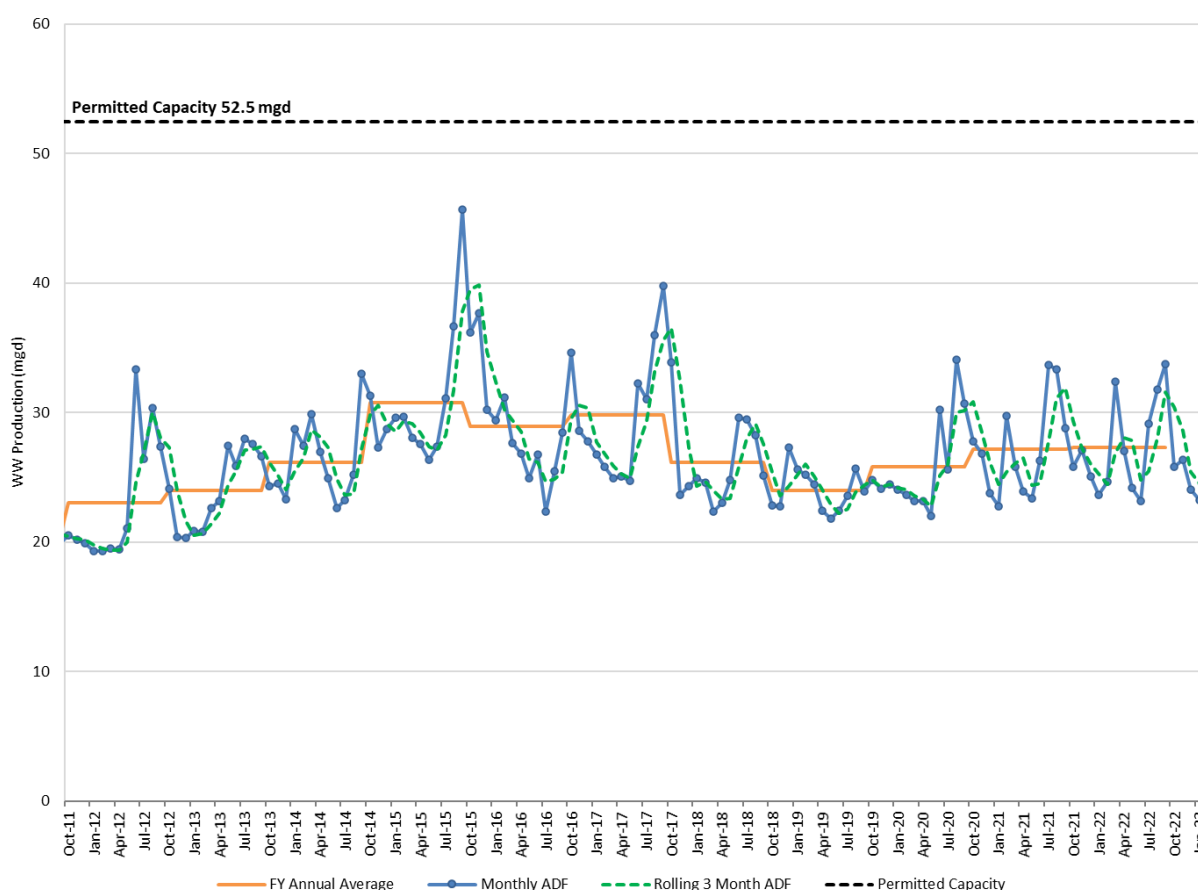


Figure 6: Buckman WRF Projected Flow

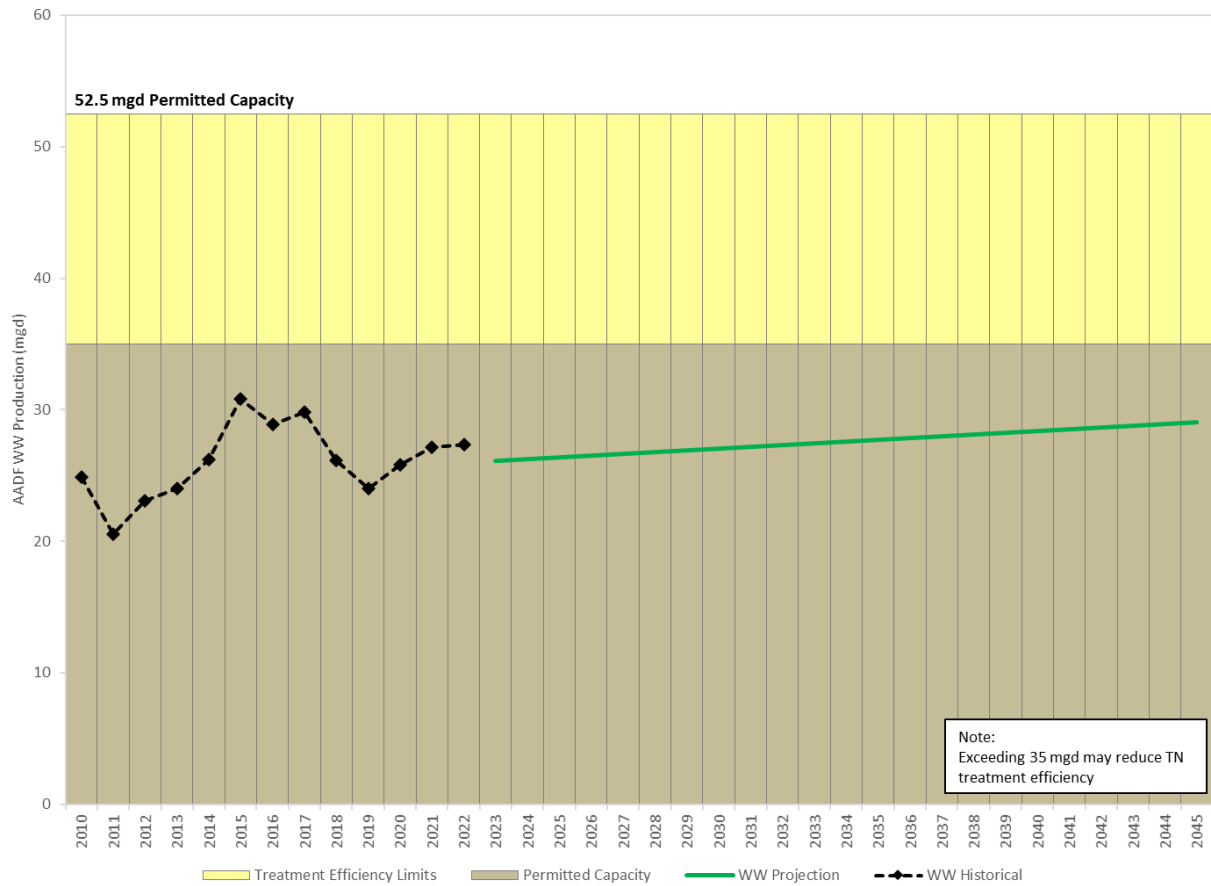


Table 5: Buckman WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	24.86	20.55	23.06	23.98	26.18	30.79	28.92	29.79	26.17	24.00
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
25.84	27.18	27.33		26.09	26.22	26.35	27.02	27.69	28.36	29.03

5.2.1.2 Capital Improvement List & Planned Future Projects

A majority of the projects currently in the JEA Capital Plan are focused upgrading the biosolids processing system. A major project was added recently to comply with Senate Bill 64, which focuses on elimination of surface water discharges. Projects related to Senate Bill 64 include the abbreviation SWDE (Surface Water Discharge Elimination). The preliminary SWDE plan for Buckman WRF consists of deep injection wells, this is one of a few options still under evaluation.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 6: Capital Project List

Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
711-26	Buckman WRF - Biosolids Conversion - Process Facility with Dual Dryers	\$278,632	\$15,053	\$32,996	\$77,982	\$89,431	\$46,678	\$3,079	\$0	\$0	\$0	\$0
711-53	Buckman WRF - Biosolids Dryer Rehabilitation - Andritz OEM	\$11,937	\$6,845	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-34	Buckman WRF - Disinfection System Replacement	\$16,404	\$2,492	\$12	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-01	Buckman WRF - Biosolids Process Renewal and Replacement	\$2,199	\$2,199	\$1,100	\$1,100	\$1,100	\$1,100	\$740	\$740	\$740	\$740	\$740
711-49	Buckman WRF - Fine Screen Replacement	\$4,137	\$1,738	\$1,704	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-44	Buckman WRF - Aeration Basin Air Header and Diffuser Replacement	\$18,563	\$1,363	\$1,195	\$5,080	\$4,816	\$3,305	\$2,804	\$0	\$0	\$0	\$0
711-54	Buckman WRF - Biosolids RAW Sludge Holding Tank Restoration	\$15,351	\$823	\$3,173	\$10,328	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-55	Buckman WRF - Biosolids Facility Rehabilitation	\$7,364	\$812	\$5,036	\$1,132	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-46	Buckman WRF - Blower System Improvements	\$14,715	\$517	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-42	Buckman WRF - Biosolids Conversion - Operations/Maintenance Bldgs	\$3,328	\$237	\$2,753	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
711-56	SWDE - Buckman WRF	\$728,976	\$200	\$2,401	\$16,285	\$24,040	\$73,301	\$250,154	\$262,154	\$96,315	\$4,124	\$0
711-58	Buckman WRF - Primary Clarifiers 1-8 Structural Rehabilitation	\$2,835	\$97	\$2,729	\$9	\$0	\$0	\$0	\$0	\$0	\$0	\$0

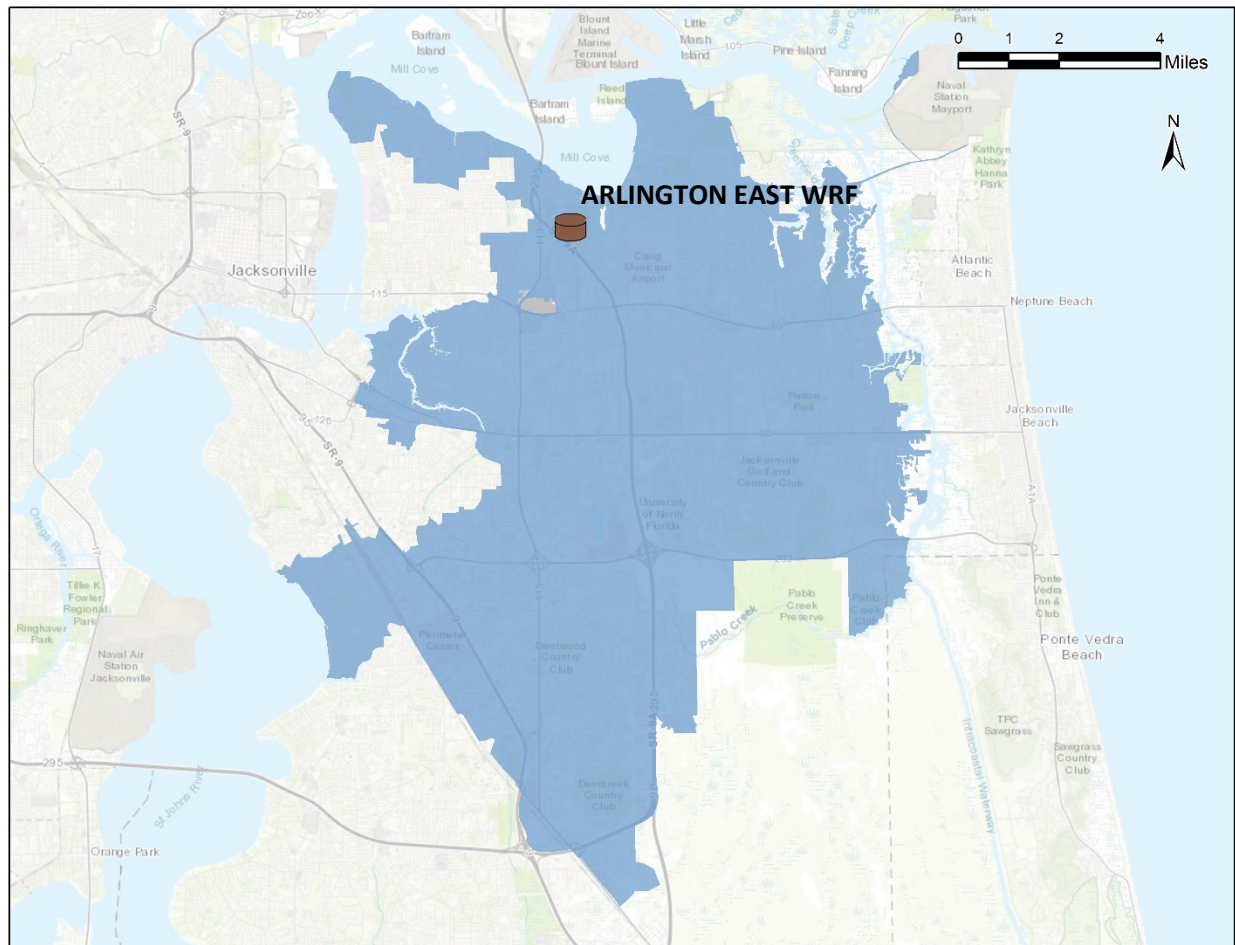
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
711-51	Buckman WRF - Outfall Improvements - Phase 1	\$9,175	\$0	\$200	\$725	\$4,125	\$4,125	\$0	\$0	\$0	\$0	\$0
711-57	Buckman WRF - Influent Pump Station Modifications	\$10,792	\$0	\$200	\$659	\$9,373	\$561	\$0	\$0	\$0	\$0	\$0
711-48	Buckman WRF - Primary Clarifier Rehabilitation	\$1,161	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL	\$1,125,569	\$32,376	\$53,499	\$113,299	\$132,885	\$129,070	\$256,778	\$262,894	\$97,055	\$4,864	\$740

Note: Current Estimate includes expenditures prior and post FY23.

5.2.2 Arlington East WRF

Arlington East is a complete mix activated sludge 25.0 mgd AADF facility providing service to commercial and residential customers. The current service area for Arlington East is shown in Figure 7. Population estimates show this service area is close to buildout.

Figure 7: Arlington East Current Service Area



5.2.2.1 Plant Capacity

Figure 9 shows the projected wastewater flow for Arlington East WRF in comparison to the overall facility permitted capacity. Nitrogen reduction efficiency was found to be a problem when flows increase above 20 mgd, a carbon feed system is in place to help maintain effective nitrogen removal. A project to add an aeration tank and upgrade blowers is underway and is expected to be complete by 2027; this project serves as an additional measure to help with nitrogen removal efficiency. Due to land constraints, Arlington East WRF will remain limited to 25 mgd capacity even after the addition of a new aeration tank.

Figure 8: Arlington East WRF Historical Flow

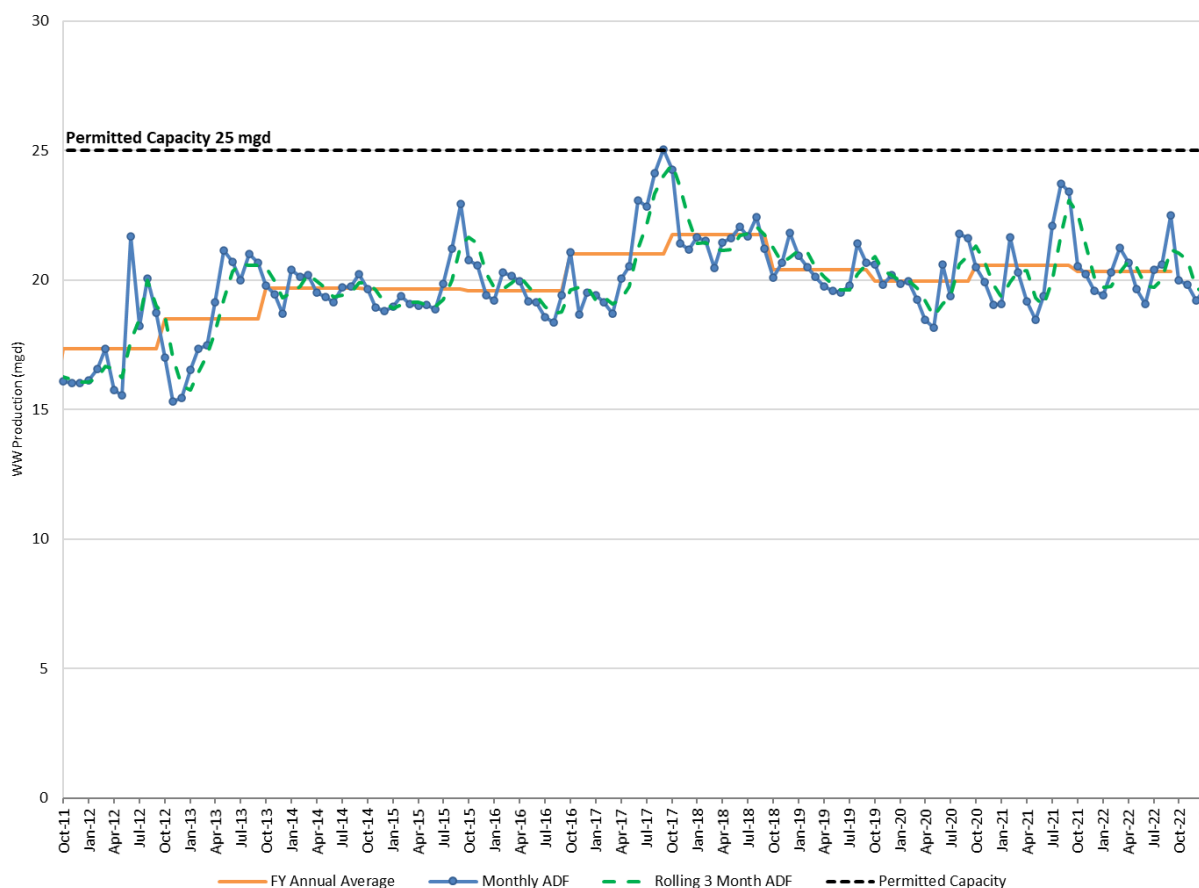


Figure 9: Arlington East WRF Projected Flow

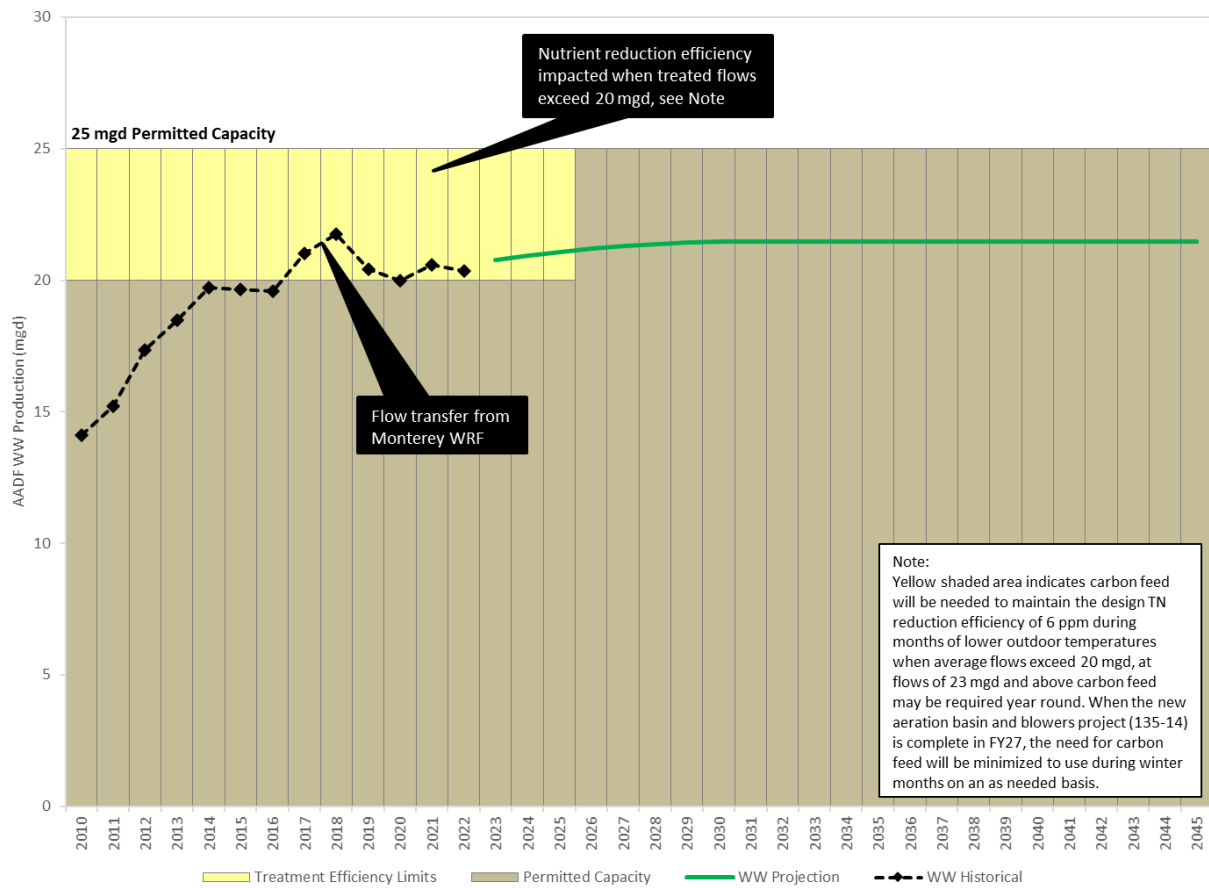


Table 7: Arlington East WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	14.09	15.22	17.36	18.49	19.70	19.65	19.59	21.02	21.75	20.41
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
19.97	20.57	20.35		20.77	20.93	21.07	21.47	21.47	21.47	21.47

5.2.2.2 Capital Improvement List & Planned Future Projects

Arlington East is JEA's second largest treatment facility. Major projects underway are focused on improving treatment efficiency, resiliency, and increasing reclaimed water delivery capacity. SWDE projects will focus on purified water production for aquifer recharge.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 8: Capital Project List

Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
135-15	Arlington East WRF - Secondary MCC Replacement	\$2,648	\$1,523	\$159	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
135-11	Arlington East WRF Upgrades - Influent Structure	\$32,677	\$805	\$4,997	\$23,692	\$1,317	\$0	\$0	\$0	\$0	\$0	\$0
135-14	Arlington East WRF Upgrades - Aeration Basin and Blowers	\$42,565	\$720	\$6,727	\$20,680	\$13,004	\$0	\$0	\$0	\$0	\$0	\$0
135-12B	Arlington East WRF - FM from Arlington East WRF to University Blvd	\$22,462	\$683	\$968	\$10,769	\$10,042	\$0	\$0	\$0	\$0	\$0	\$0
135-12	Arlington East WRF - Biosolids Forcemain from KGS to Buckman WRF	\$5,317	\$461	\$25	\$2,912	\$1,302	\$0	\$0	\$0	\$0	\$0	\$0
135-12A	Arlington East WRF - Biosolids FM - SJR Crossing from University Blvd to KGS	\$13,805	\$375	\$1,652	\$10,326	\$1,452	\$0	\$0	\$0	\$0	\$0	\$0
135-18	SWDE - Arlington East WRF Purification Facility	\$284,006	\$273	\$141	\$11,919	\$16,126	\$29,519	\$87,958	\$99,958	\$36,522	\$1,589	\$0
135-19	SWDE - Arlington East WRF – Reclaimed Water and Disinfection System Upgrades	\$102,471	\$250	\$2,100	\$20,000	\$40,050	\$40,071	\$0	\$0	\$0	\$0	\$0
135-20	SWDE - Arlington East DI Exploratory Well	\$17,553	\$238	\$4,991	\$12,324	\$0	\$0	\$0	\$0	\$0	\$0	\$0
135-12C	Arlington East WRF - Biosolids Pump Station Rehabilitation	\$5,988	\$142	\$488	\$4,713	\$645	\$0	\$0	\$0	\$0	\$0	\$0
417-76	Arlington East WRF Upgrades - Odor Control	\$6,042	\$68	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL	\$535,534	\$5,540	\$22,248	\$117,334	\$83,938	\$69,590	\$87,958	\$99,958	\$36,522	\$1,589	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.3 Greenland WRF

Greenland WRF is a new 4 mgd facility planned to be in service by 2025 (Figure 10), construction is underway now. The new facility will capture flow from the Nocatee development in St. Johns County, St. Johns County Utilities, and the Twin Creeks development. Upgrades to the Twin Creeks Master Pump Station (MPS) are underway now to give it the flexibility to split flows, from the regions shown in light blue in Figure 11, between Blacks Ford and Greenland WRFs. Prior to Greenland WRF coming online, Twin Creeks MPS will split flow between Mandarin and Blacks Ford WRFs.

Figure 10: Greenland WRF Projected Flow

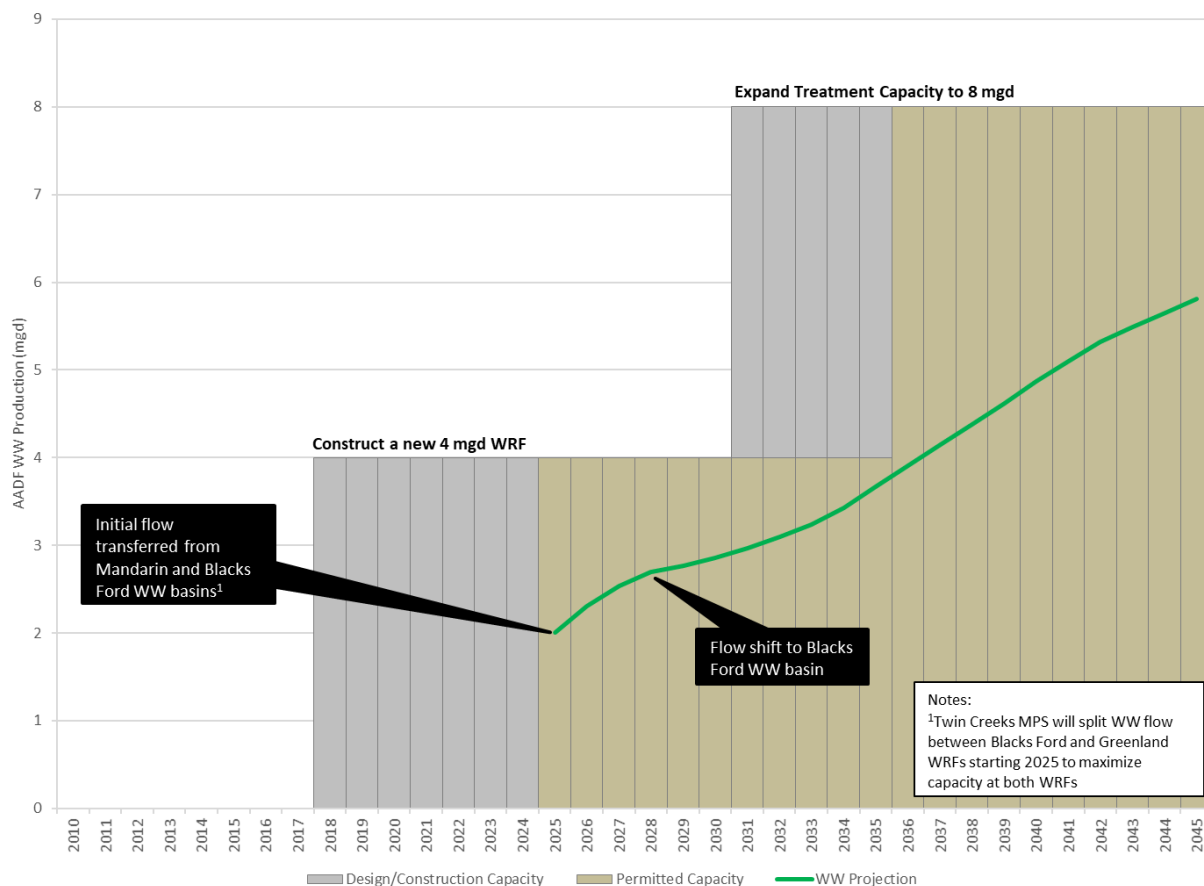
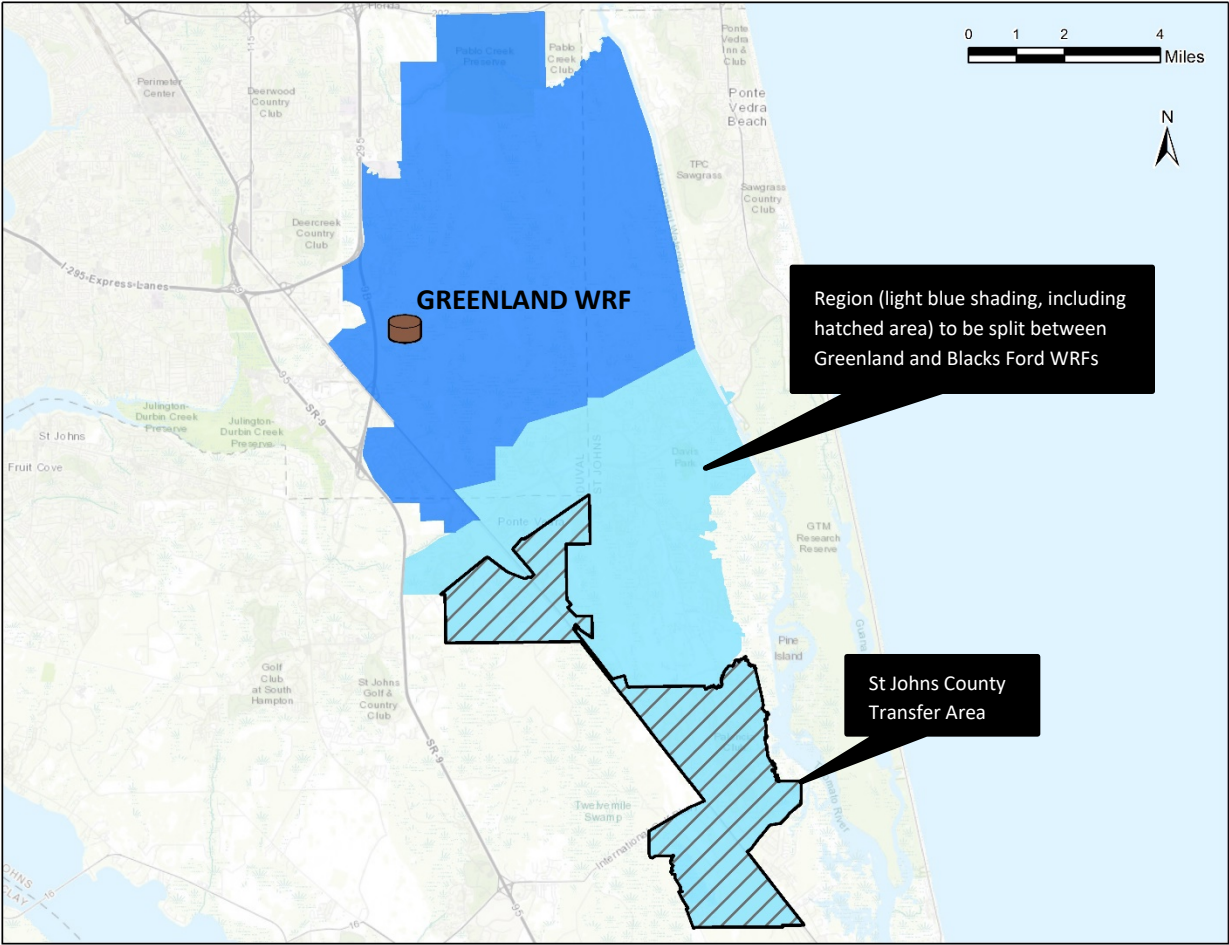


Table 9: Greenland WRF Flow Summary (fiscal year average, mgd)

Projected	2022	2023	2024	2025	2030	2035	2040	2045
	0.00	0.00	0.00	2.01	2.86	3.67	4.86	5.81

Figure 11: Greenland Planned Service Area



5.2.3.1 Capital Improvement List & Planned Future Projects

Greenland WRF is under construction now.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 10: Capital Project List

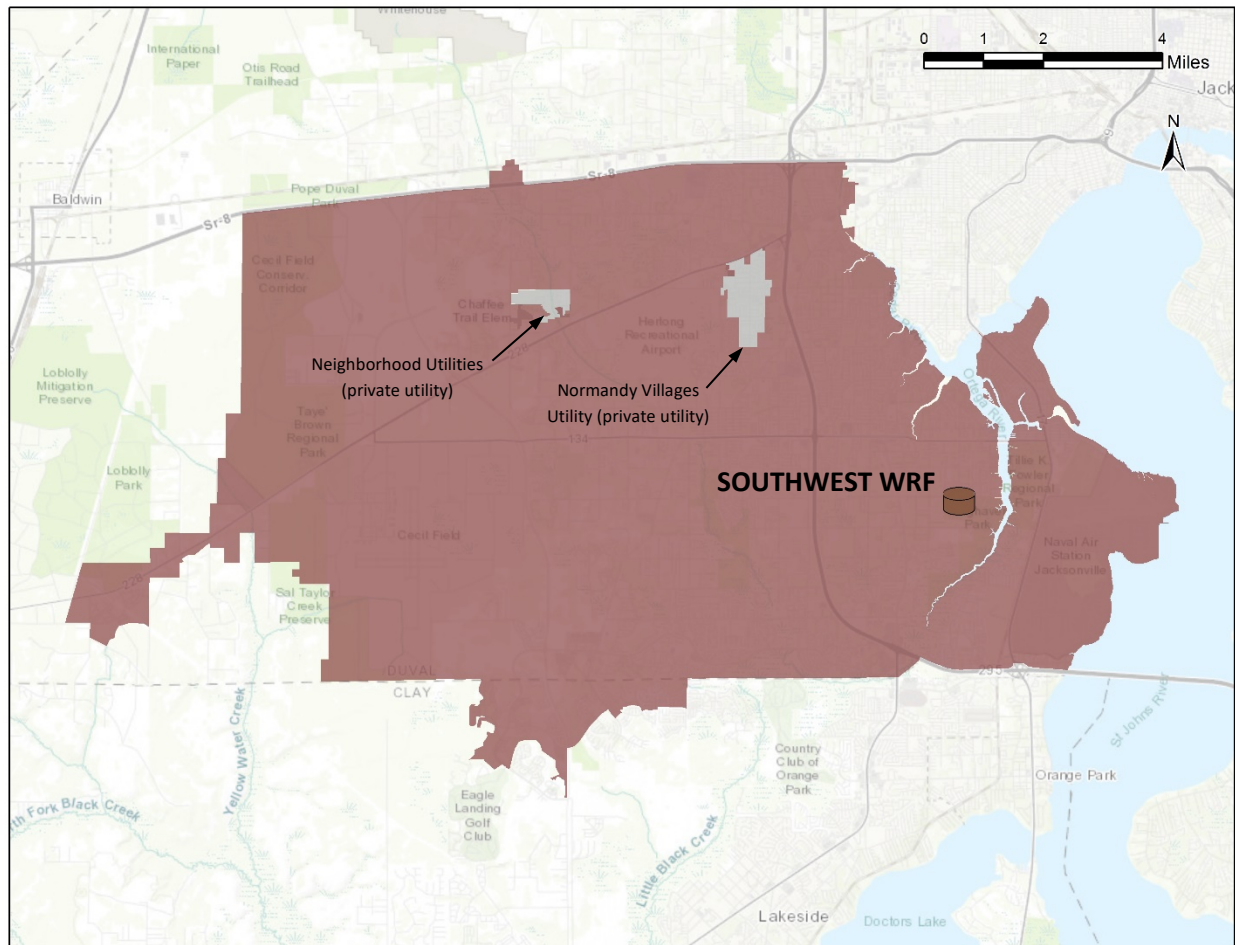
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
268-W3	Greenland WRF - 4.0 MGD	\$150,705	\$59,926	\$34,484	\$11,170	\$0	\$0	\$0	\$0	\$0	\$0	\$0
730-12	US 1 - Greenland WRF to CR 210 - Trans - New - R	\$29,612	\$12,000	\$1,068	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
417-94	Mandarin-Greenland Interconnect - R - ENV	\$7,311	\$5,046	\$1,781	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL	\$187,627	\$76,972	\$37,333	\$11,170	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.4 Southwest WRF

Southwest is a 14.0 mgd AADF WRF providing advanced secondary treatment with nitrogen reduction. Similar to the Buckman service area, Southwest serves a region mostly built out around the facility consisting of a higher density population of mostly residential homes.

Figure 12: Southwest Current Service Area



5.2.4.1 Plant Capacity

Figure 14 shows the projected wastewater flow for Southwest WRF in comparison to the overall facility permitted capacity. Construction is underway for expanding treatment capacity to 16 mgd and is expected to be completed in 2025, expansion to 18 mgd is planned further into the future. A new wastewater facility named 301 Regional WRF, currently in the preliminary design phase, will be located west of US-301 and south of I-10; see Section 5.2.5. A portion of the Southwest wastewater basin will be redirected to 301 Regional WRF for initial startup.

Figure 13: Southwest WRF Historical Flow

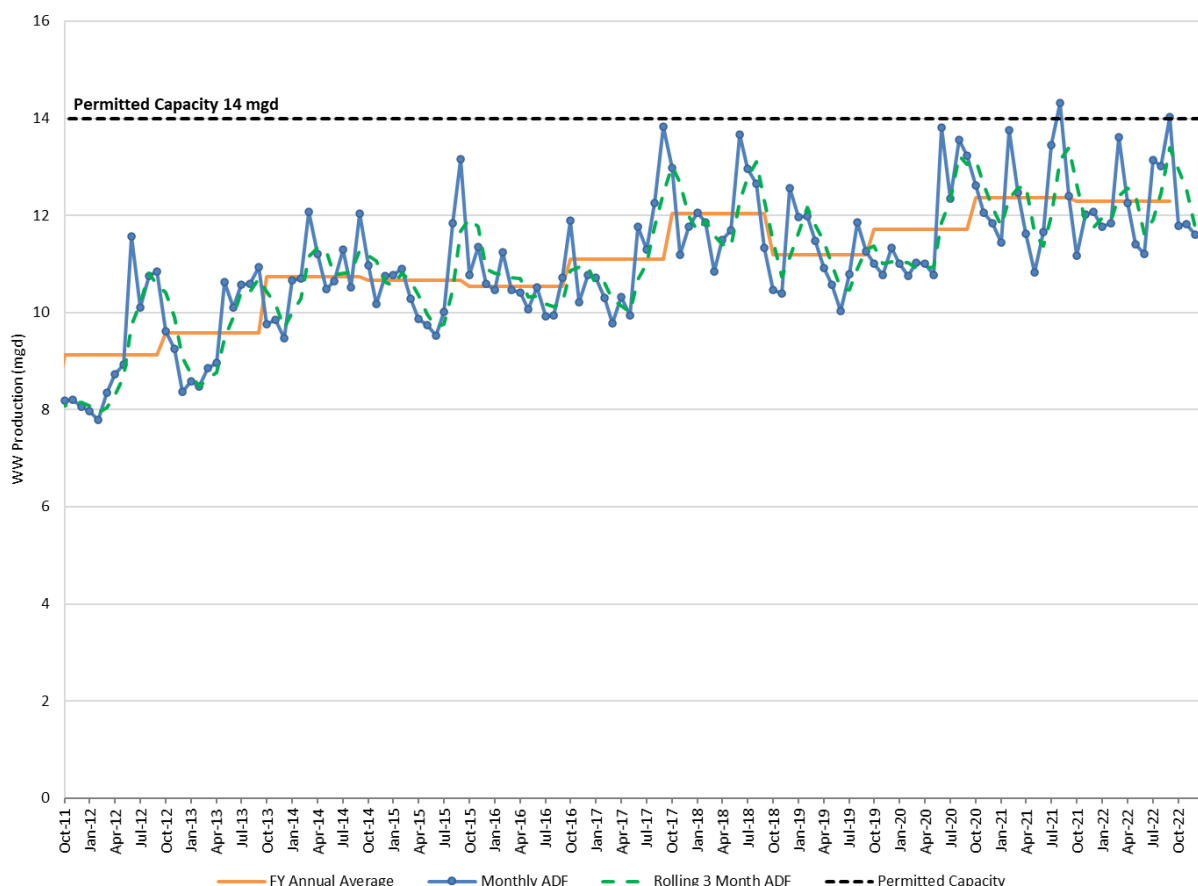


Figure 14: Southwest WRF Projected Flow

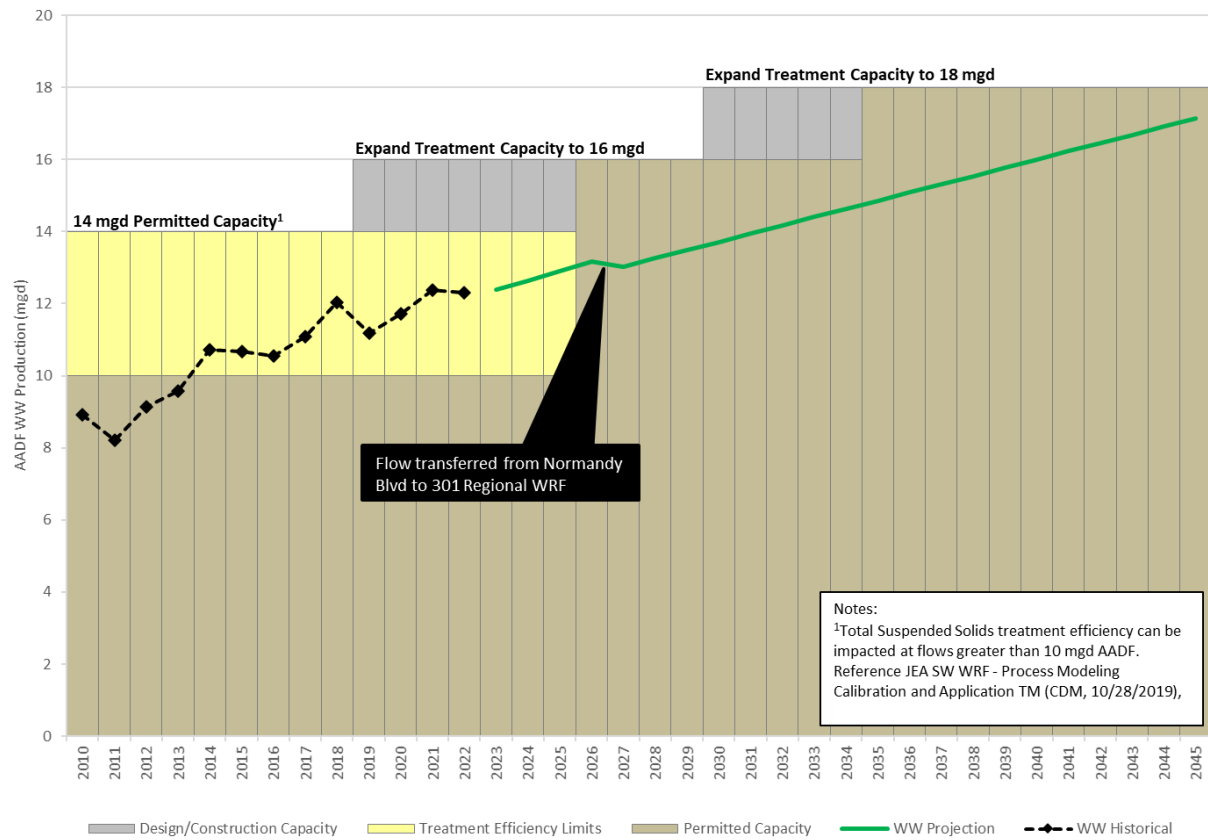


Table 11: Southwest WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	8.92	8.22	9.12	9.58	10.73	10.67	10.54	11.09	12.04	11.19
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
11.72	12.37	12.29		12.38	12.64	12.91	13.71	14.85	16.00	17.14

5.2.4.2 Capital Improvement List & Planned Future Projects

Southwest WRF expansion construction is currently underway. The SWDE projects will focus on purified water production for aquifer recharge.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 12: Capital Project List

Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
150-11	Southwest WRF - Expansion to 16 MGD	\$132,033	\$40,431	\$36,866	\$28,248	\$274	\$0	\$0	\$0	\$0	\$0	\$0
150-16	SWDE - Southwest DI Exploratory Well	\$17,550	\$235	\$4,991	\$12,324	\$0	\$0	\$0	\$0	\$0	\$0	\$0
150-15	SWDE - Southwest WRF Purification Facility	\$300,306	\$235	\$141	\$12,603	\$17,029	\$31,285	\$93,384	\$105,384	\$38,505	\$1,740	\$0
	TOTAL	\$449,890	\$40,902	\$41,998	\$53,174	\$17,304	\$31,285	\$93,384	\$105,384	\$38,505	\$1,740	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.5 301 Regional WRF

The 301 Regional WRF will be constructed within the planned residential development (ICI Villages) just west of US-301 and south of I-10. Initial capacity will be constructed to treat 2 mgd AADF with a future expansion to 4 mgd. Preliminary design is underway now. The planned service area is west of the Southwest service area, with a northern boundary reaching up into Nassau County (west of the Buckman wastewater service area), Figure 16.

Figure 15: 301 Regional WRF Projected Flow

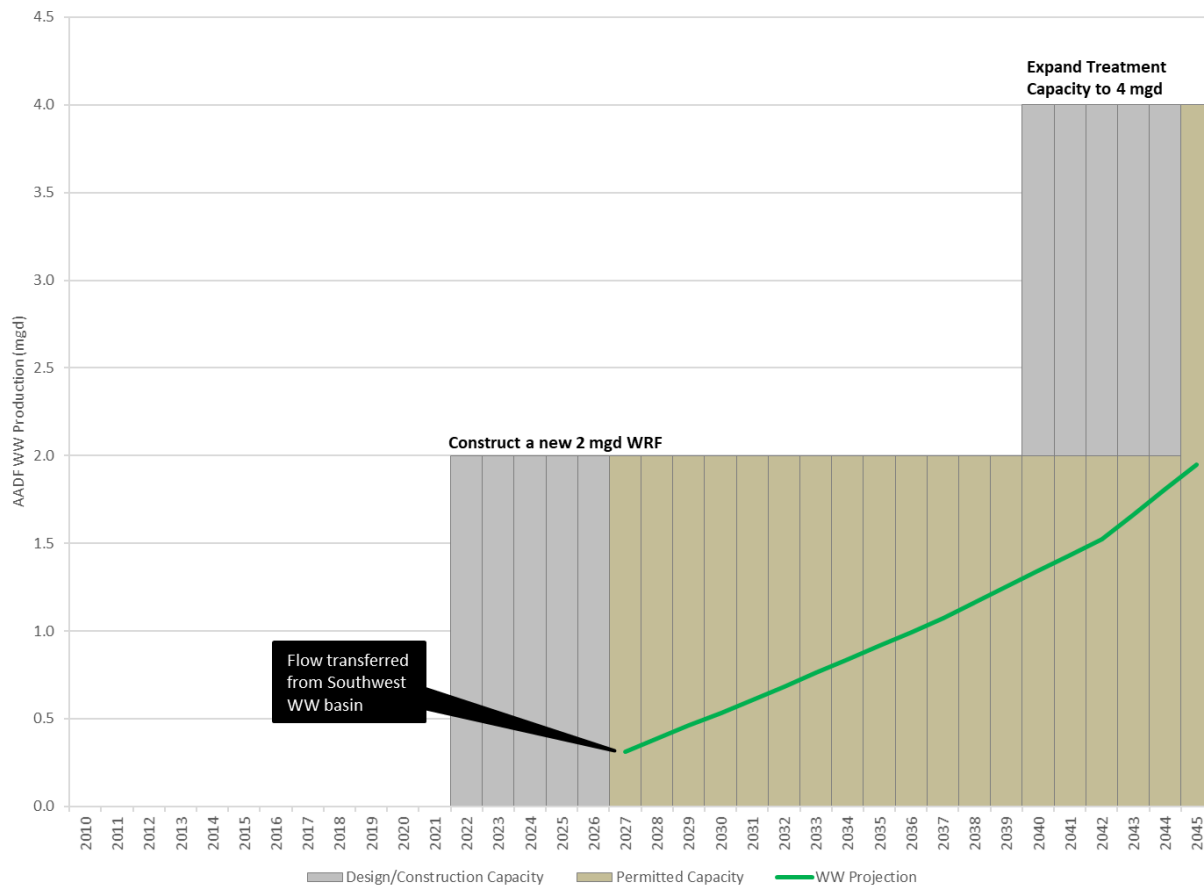
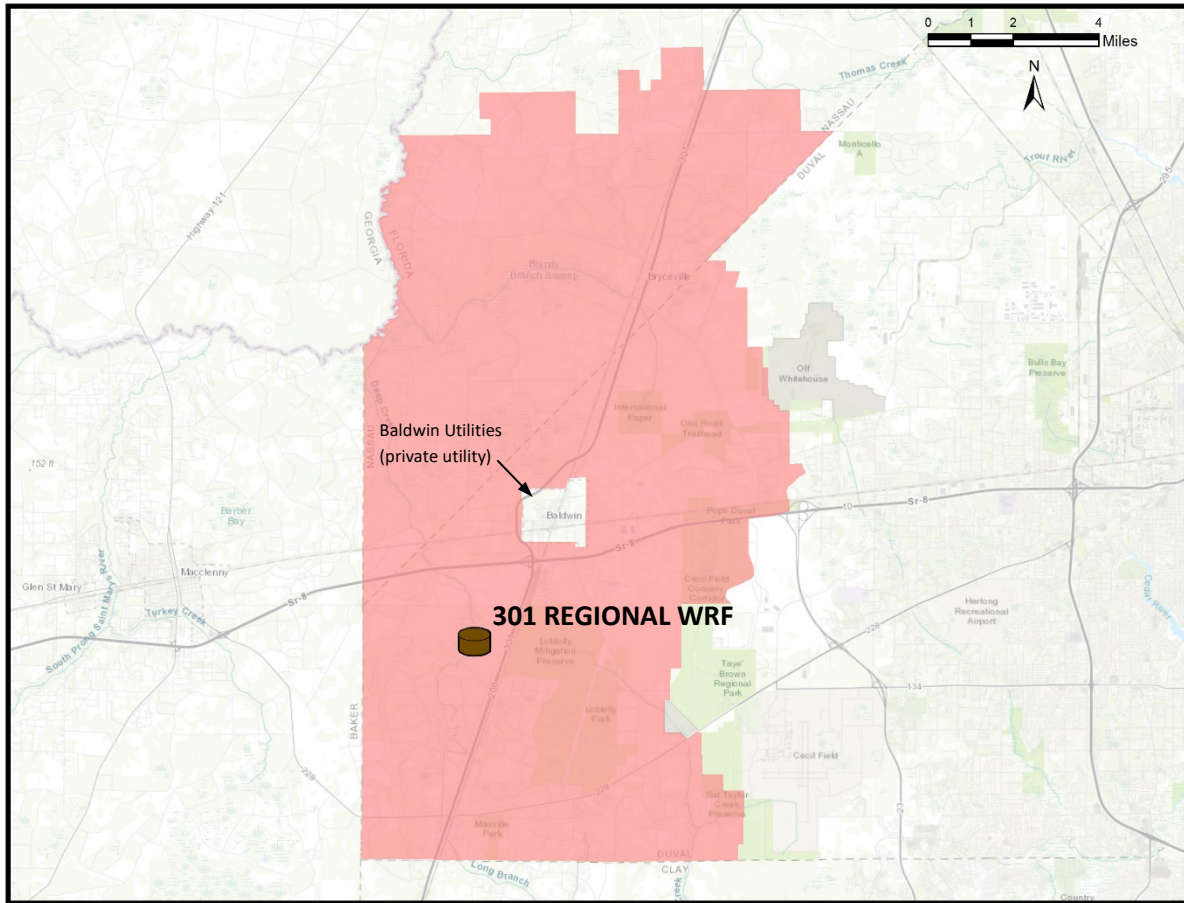


Table 13: 301 Regional WRF Flow Summary (fiscal year average, mgd)

Projected	2022	2023	2024	2025	2030	2035	2040	2045
	0.00	0.00	0.00	0.00	0.53	0.92	1.34	1.95

Figure 16: 301 Regional Planned Service Area



5.2.5.1 Capital Improvement List & Planned Future Projects

301 Regional WRF is in the preliminary design phase at this time.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 14: Capital Project List

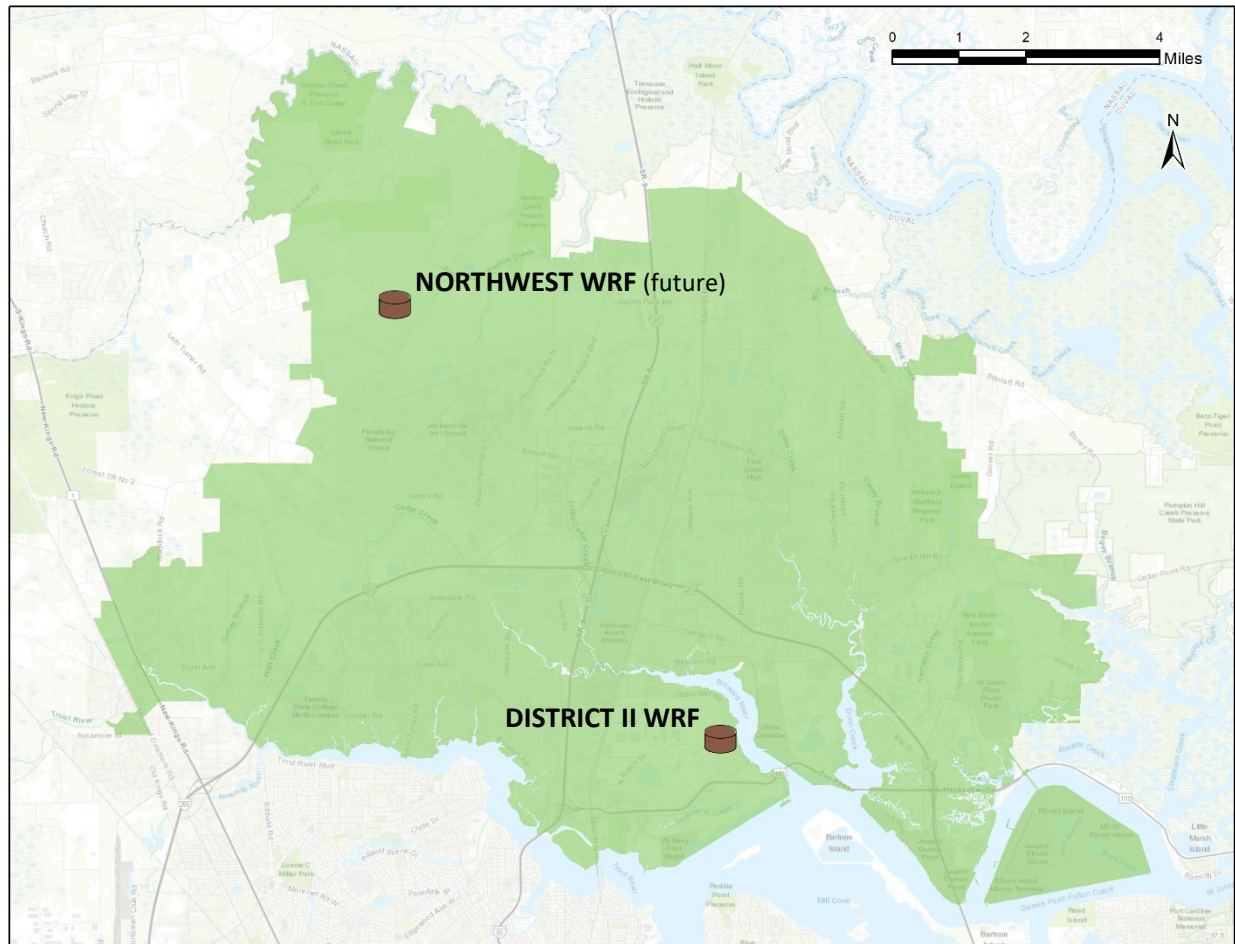
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
996-02	301 Development - New 1.0 MGD WRF	\$36,400	\$2,700	\$4,700	\$18,000	\$11,000	\$0	\$0	\$0	\$0	\$0	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.6 District 2 WRF

District 2 (aka Cedar Bay) is a 10.0 mgd AADF WRF that provides advanced secondary treatment with nitrogen reduction. Residential and commercial development is still progressing at a moderate pace in the north and west regions of the service area. Northwest WRF is a future treatment facility planned to capture flows in the northwestern region of the Cedar Bay wastewater basin. Projected flows and project details for Northwest WRF are discussed in Section 5.2.7.

Figure 17 District 2 Current Service Area



5.2.6.1 Plant Capacity

Figure 19 shows the projected wastewater flow for District 2 WRF in comparison to the overall facility permitted capacity. Sufficient capacity is available to support growth through 2040; however, a portion of the District 2 service area will be redirected to the future Northwest WRF when it initially goes online, future transfers will occur to maintain District 2 WRF below its permitted capacity limit of 10 mgd.

Figure 18: District 2 WRF Historical Flow

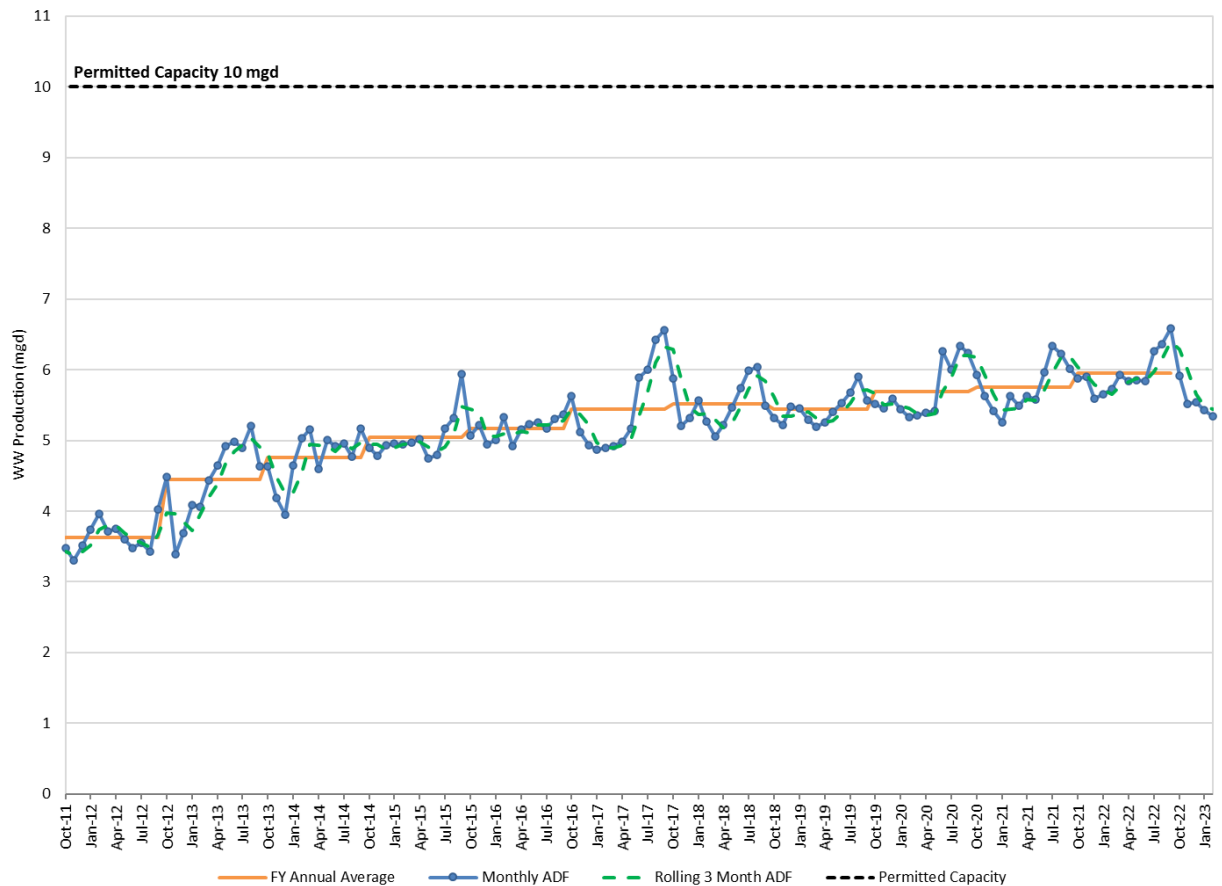


Figure 19: District 2 WRF Projected Flow

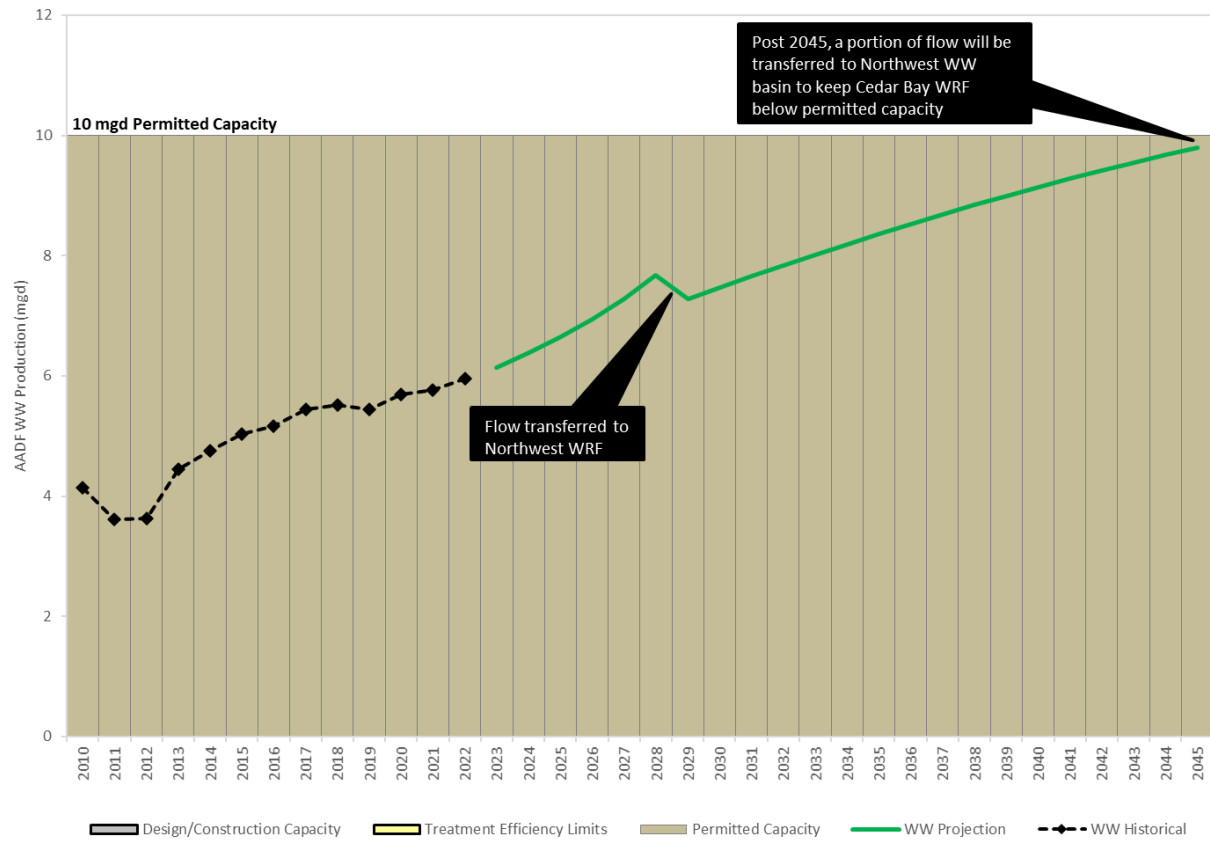


Table 15: District 2 WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	4.14	3.61	3.63	4.45	4.75	5.04	5.16	5.45	5.52	5.44
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
5.69	5.76	5.95		6.14	6.38	6.65	7.47	8.36	9.14	9.80

5.2.6.2 Capital Improvement List & Planned Future Projects

The current focus at District 2 WRF is operational upgrades and rehabilitation projects. The SWDE projects will focus on purified water production for aquifer recharge.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 16: Capital Project List

Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
151-03	SWDE - Cedar Bay Purification Facility	\$201,782	\$998	\$123	\$7,620	\$11,572	\$20,614	\$60,585	\$72,585	\$26,521	\$1,163	\$0
138-09	District II WRF - South Headwork Rehabilitation	\$1,700	\$272	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
151-04	SWDE - Cedar Bay DI Exploratory Well	\$17,814	\$262	\$2	\$17,550	\$0	\$0	\$0	\$0	\$0	\$0	\$0
129-12	District II WRF - Effluent Outfall Land Acquisition	\$1,185	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,185	\$0	\$0
	TOTAL	\$222,482	\$1,532	\$125	\$25,170	\$11,572	\$20,614	\$60,585	\$72,585	\$27,706	\$1,163	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.7 Northwest WRF

A wastewater treatment facility, similar in design to the Greenland WRF, will ultimately serve the new Northwest wastewater service area (Figure 21). A study was completed in 2021 comparing if it is more economical to produce traditional reclaimed water or implement a purified water system that would be beneficial to both potable and irrigation demands, a purified water system was determined to provide the greatest overall benefit. Initially a 1.5 mgd WRF will be constructed by 2029. Initial estimates expect this region to buildout to 9 mgd.

Figure 20: Northwest WRF Projected Flow

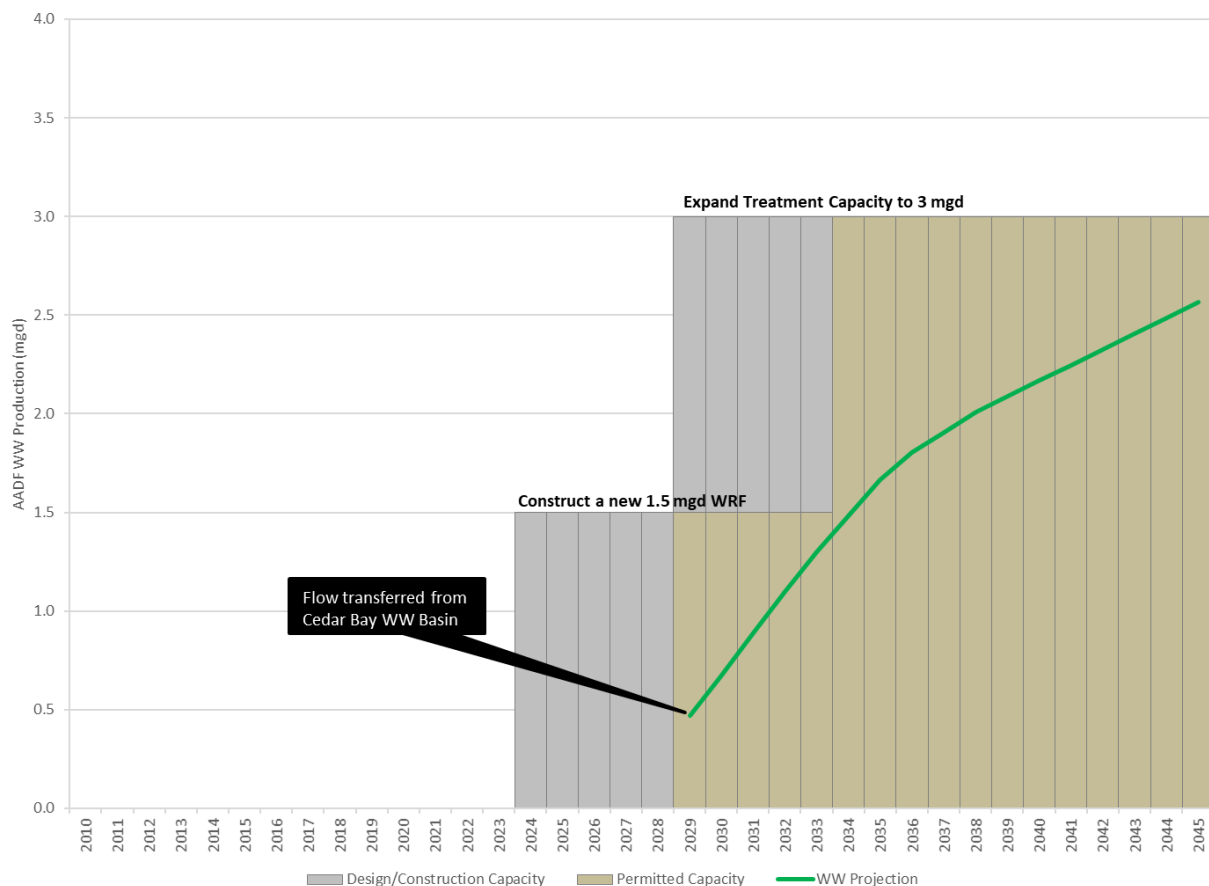
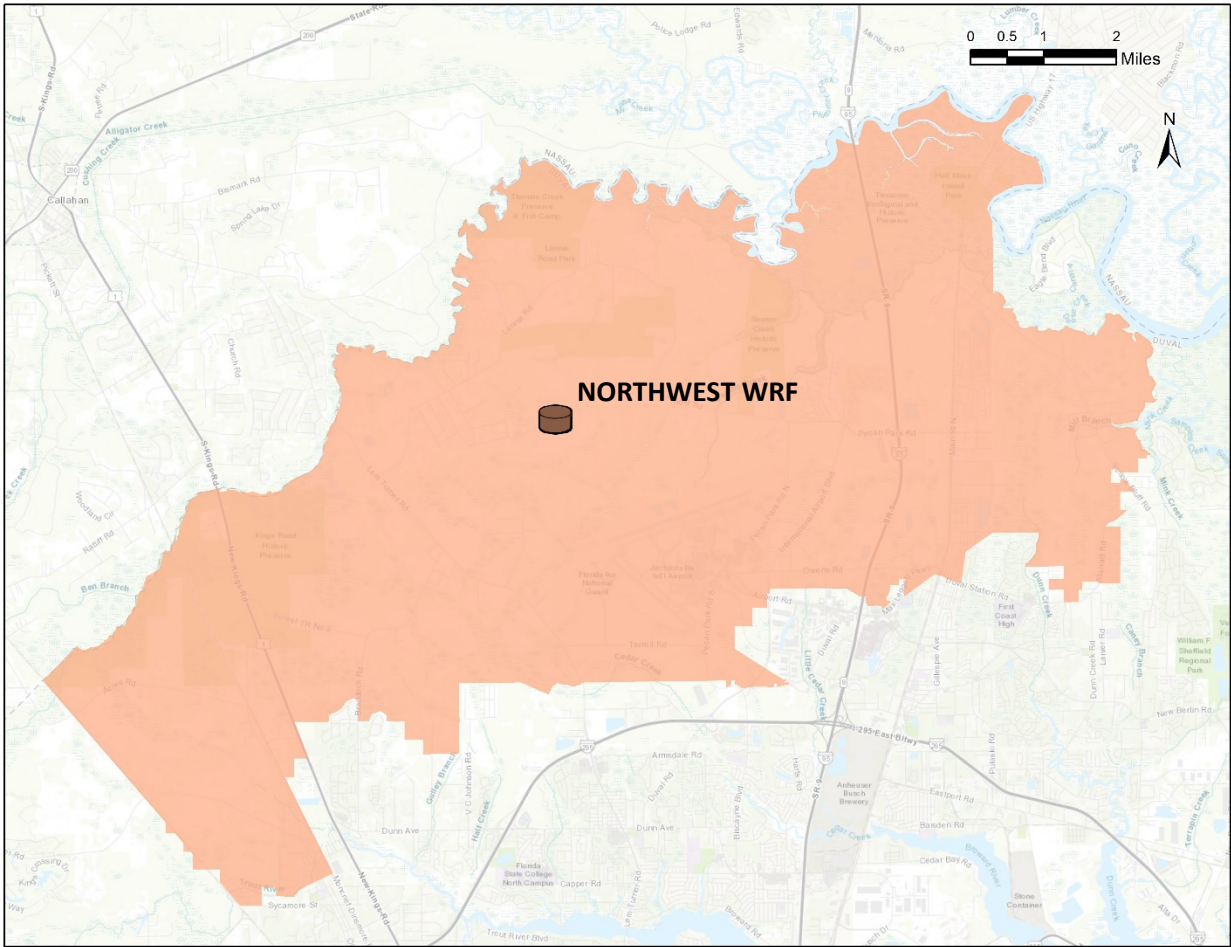


Table 17: Northwest WRF Flow Summary (fiscal year average, mgd)

Projected	2022	2023	2024	2025	2030	2035	2040	2045
	0.00	0.00	0.00	0.00	0.67	1.66	2.17	2.57

Figure 21: Northwest Planned Service Area



5.2.7.1 Capital Improvement List & Planned Future Projects

Northwest WRF is in the planning phase at this time. Property for Northwest WRF was purchased in 2022.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 18: Capital Project List

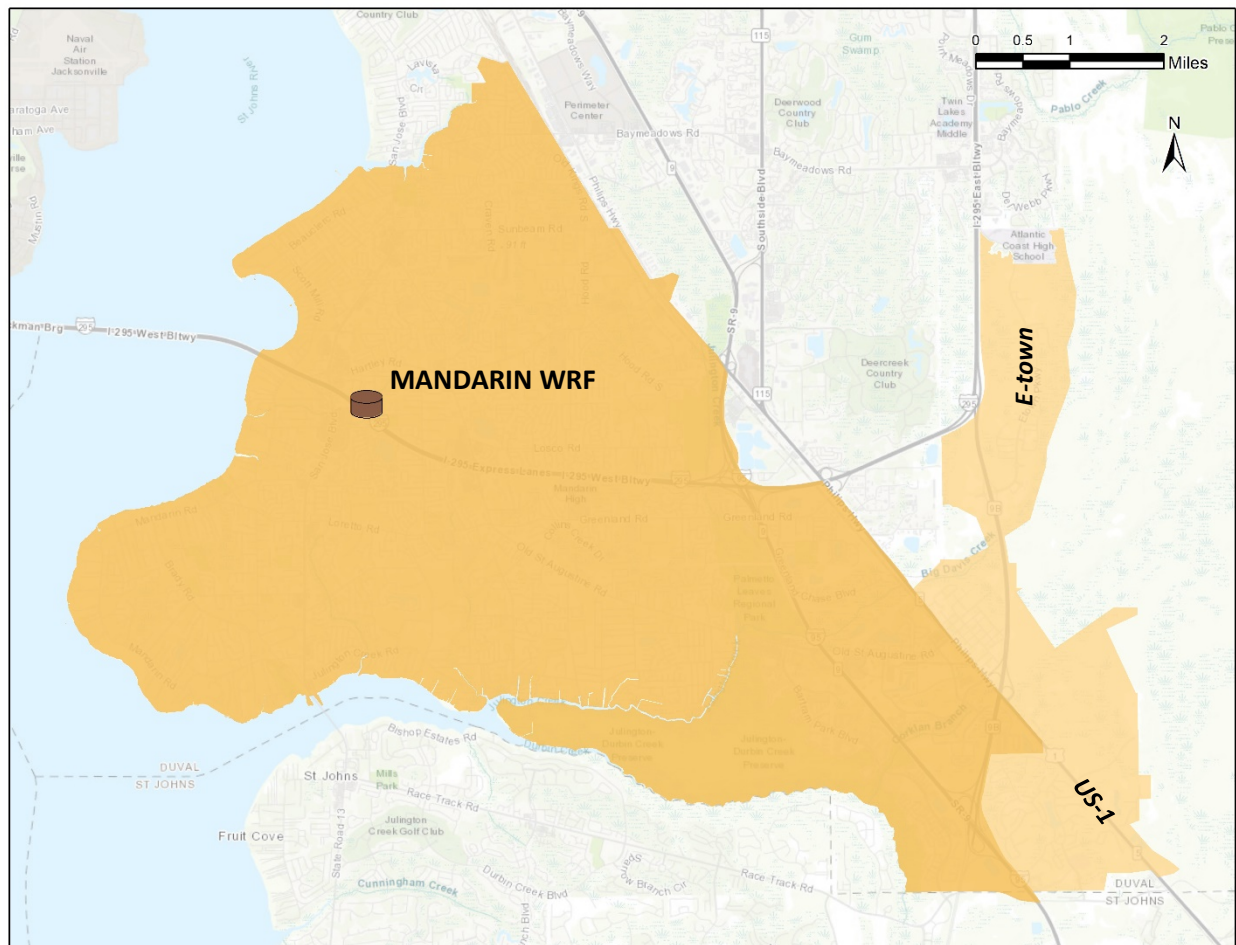
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
139-02	Northwest WRF - 1.5 MGD	\$25,000	\$0	\$500	\$3,750	\$6,250	\$7,000	\$7,500	\$0	\$0	\$0	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.8 Mandarin WRF

Mandarin WRF provides advanced secondary treatment for up to 8.75 mgd AADF of wastewater flow. E-town and a portion of US-1 currently flows to Mandarin WRF (light orange area in Figure 22); when Greenland WRF goes into service, this area will be redirected to Greenland WRF from the Mandarin service area.

Figure 22: Mandarin Current Service Area



5.2.8.1 Plant Capacity

Treatment capacity at Mandarin WRF is 8.75 mgd. In FY19, a portion of the Mandarin service area was rerouted to Blacks Ford WRF. Figure 24 shows the projected wastewater flow for Mandarin WRF in comparison to the overall facility permitted capacity. After Greenland WRF goes online, flows to Mandarin WRF should average around 7 mgd; this is based on the post FY25 service area boundary and projected density of future development. Some wastewater flow will be temporarily redirected to Mandarin WRF from Blacks Ford service area prior to Greenland WRF first coming online and again just prior the next expansion at Blacks Ford WRF.

Figure 23: Mandarin WRF Historical Flow

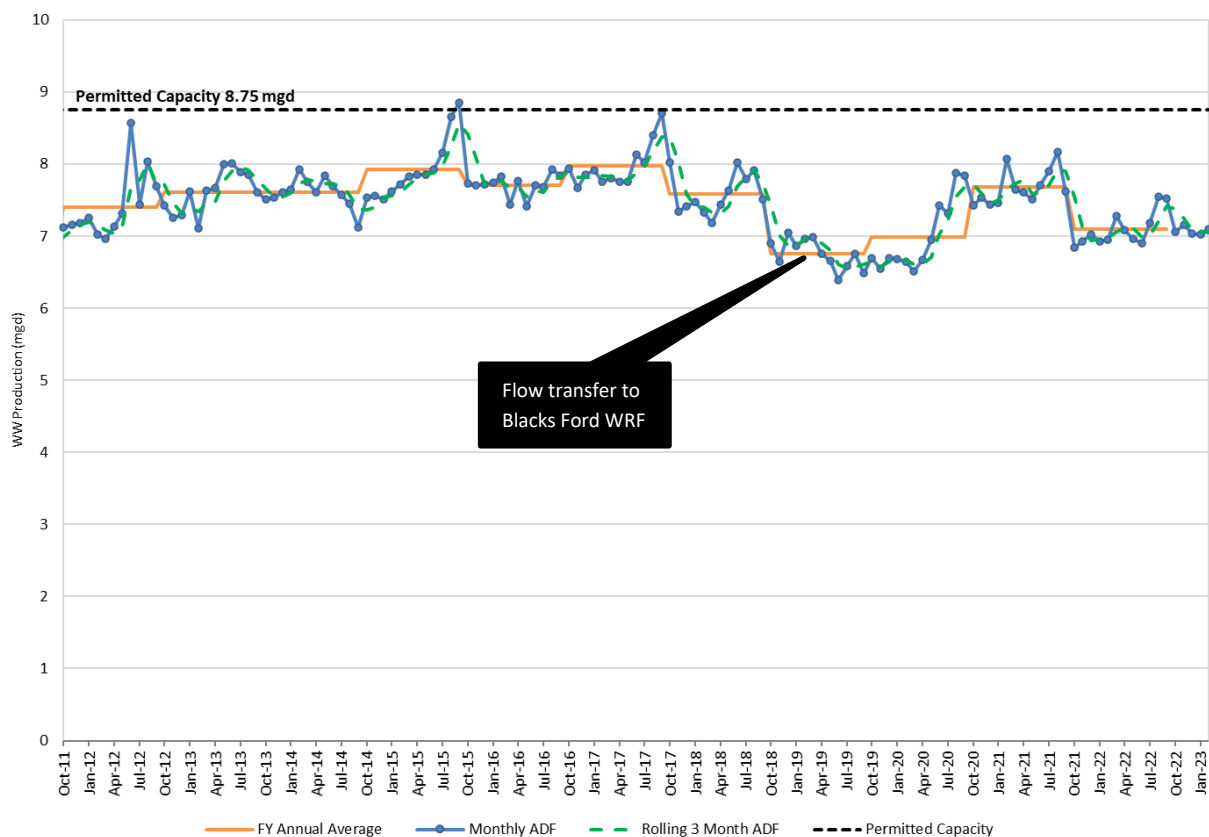


Figure 24: Mandarin WRF Projected Flow

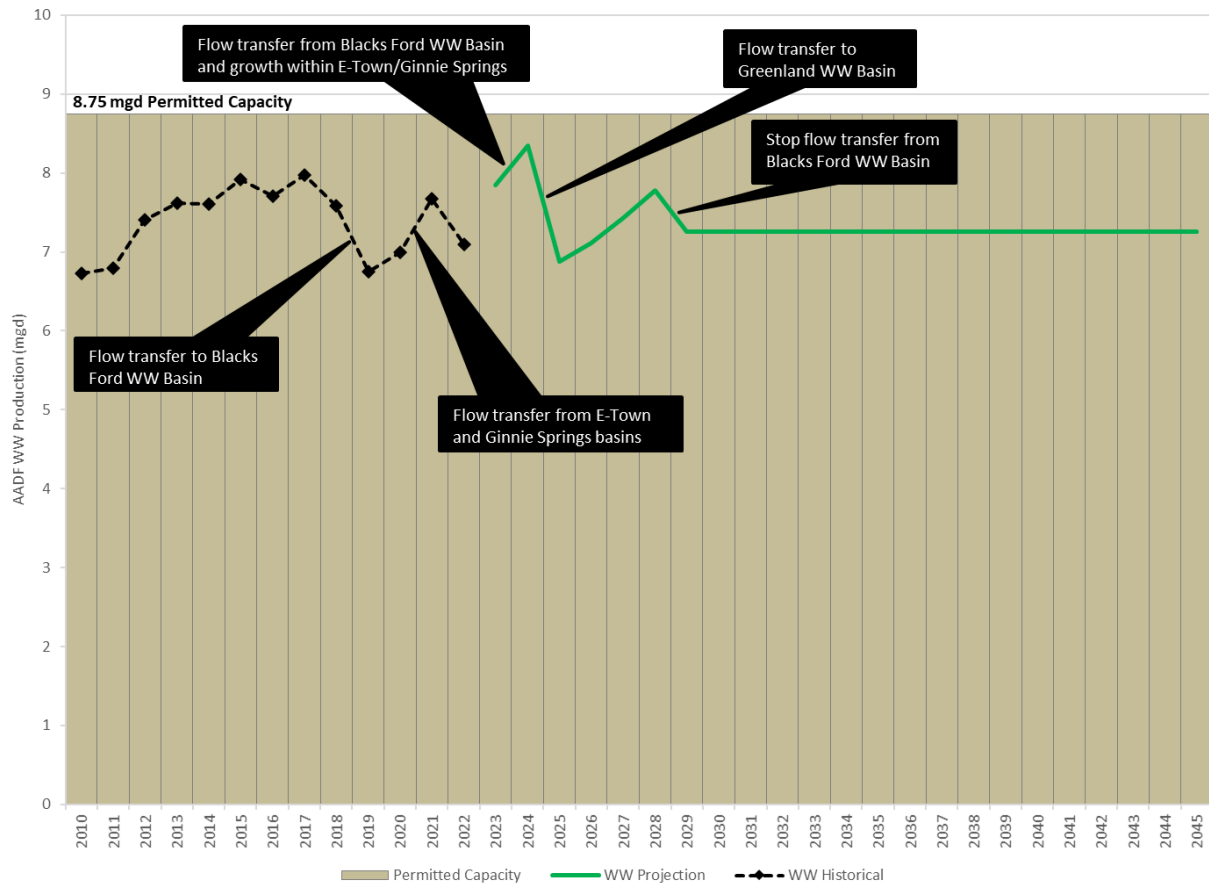


Table 19: Mandarin WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	6.72	6.80	7.41	7.61	7.61	7.92	7.71	7.98	7.59	6.76
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
6.99	7.68	7.10		7.84	8.34	6.88	7.26	7.26	7.26	7.26

5.2.8.2 Capital Improvement List & Planned Future Projects

Multiple rehabilitation projects are planned or underway at Mandarin WRF. A project will soon be underway to install a booster pump station on Old St. Augustine Rd to assist with the temporary redirection of flow from Blacks Ford service area to Mandarin WRF during the next Blacks Ford WRF expansion.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 20: Capital Project List

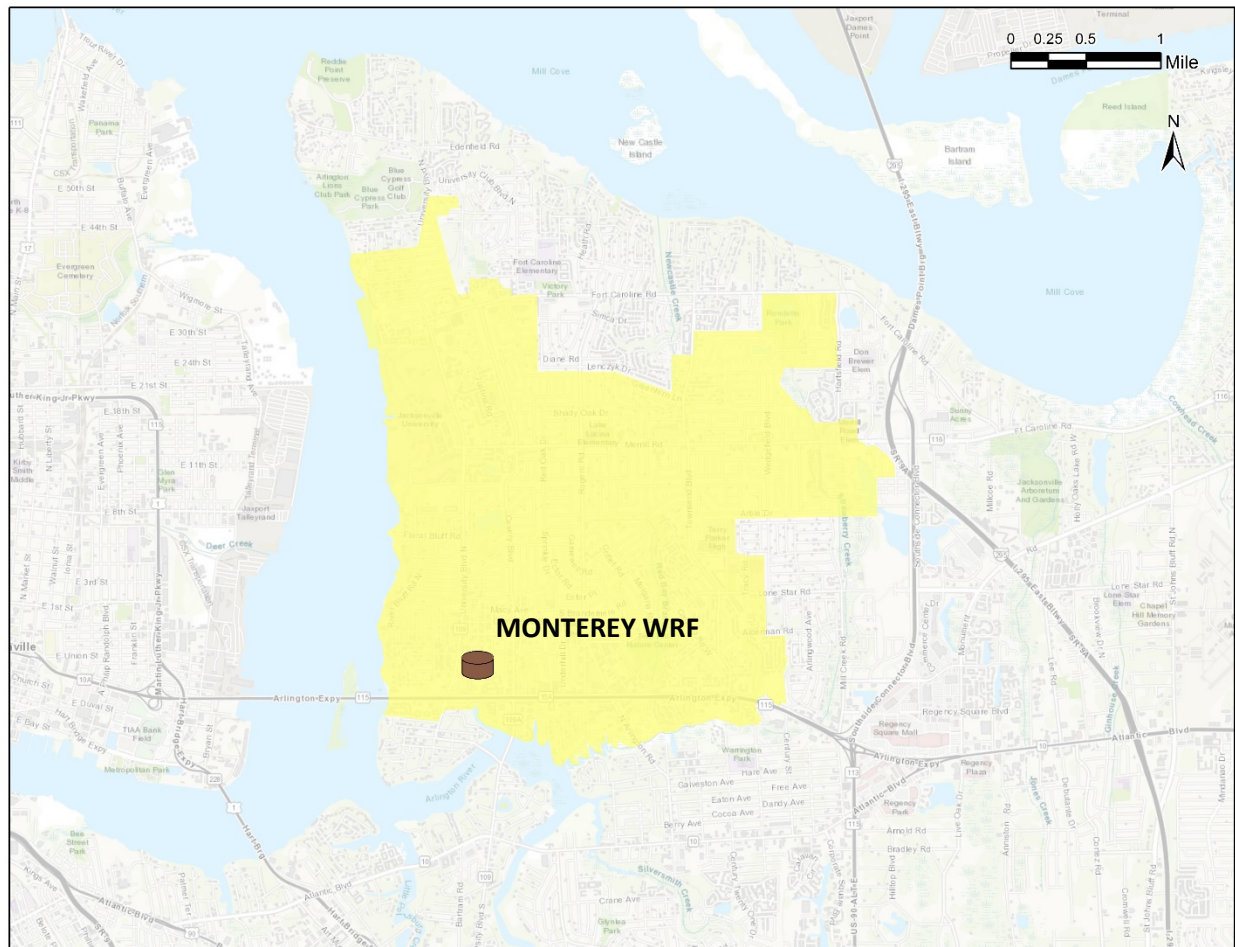
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
138-10	Mandarin WRF - Sludge Holding Tanks Rehabilitation	\$4,344	\$1,859	\$1,668	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
138-11	Mandarin WRF - Outfall Stabilization	\$684	\$684	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
138-04	JP - SJRWMD - Mandarin WRF - High Level UV Upgrade - (Reimb-33)	\$4,032	\$357	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
180-75	Old St Augustine Rd Booster Pump Station	\$5,120	\$236	\$1,753	\$3,132	\$0	\$0	\$0	\$0	\$0	\$0	\$0
138-13	Mandarin WRF - River UV Replacement	\$3,862	\$123	\$364	\$3,375	\$0	\$0	\$0	\$0	\$0	\$0	\$0
138-14	Mandarin WRF - Influent Piping Modifications	\$8,967	\$42	\$895	\$2,701	\$5,319	\$9	\$0	\$0	\$0	\$0	\$0
138-15	Mandarin WRF - Sand Filters Rehabilitation	\$5,035	\$25	\$657	\$2,777	\$1,576	\$0	\$0	\$0	\$0	\$0	\$0
138-12	Mandarin WRF - Emergency Pumping System	\$1,827	\$0	\$79	\$659	\$1,089	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL	\$33,873	\$3,325	\$5,415	\$12,645	\$7,985	\$9	\$0	\$0	\$0	\$0	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.9 Monterey WRF

Monterey is an activated sludge 3.6 mgd AADF facility providing service to a mostly residential population. This region is nearly built out.

Figure 25: Monterey Current Service Area



5.2.9.1 Plant Capacity

Figure 27 shows the projected wastewater flow for Monterey WRF in comparison to the overall facility permitted capacity. Sufficient capacity is available to support the existing as well as the remaining growth throughout the projected period. There is flexibility in the infrastructure adjacent to the Arlington East service area that allows for some Monterey wastewater flow to be redirected to the Arlington East WRF area as needed. Flow variations seen in Figure 26 from 2015 through 2020 are a result of maintenance projects at Monterey where flows transfers were implemented and stopped.

Figure 26: Monterey WRF Historical Flow

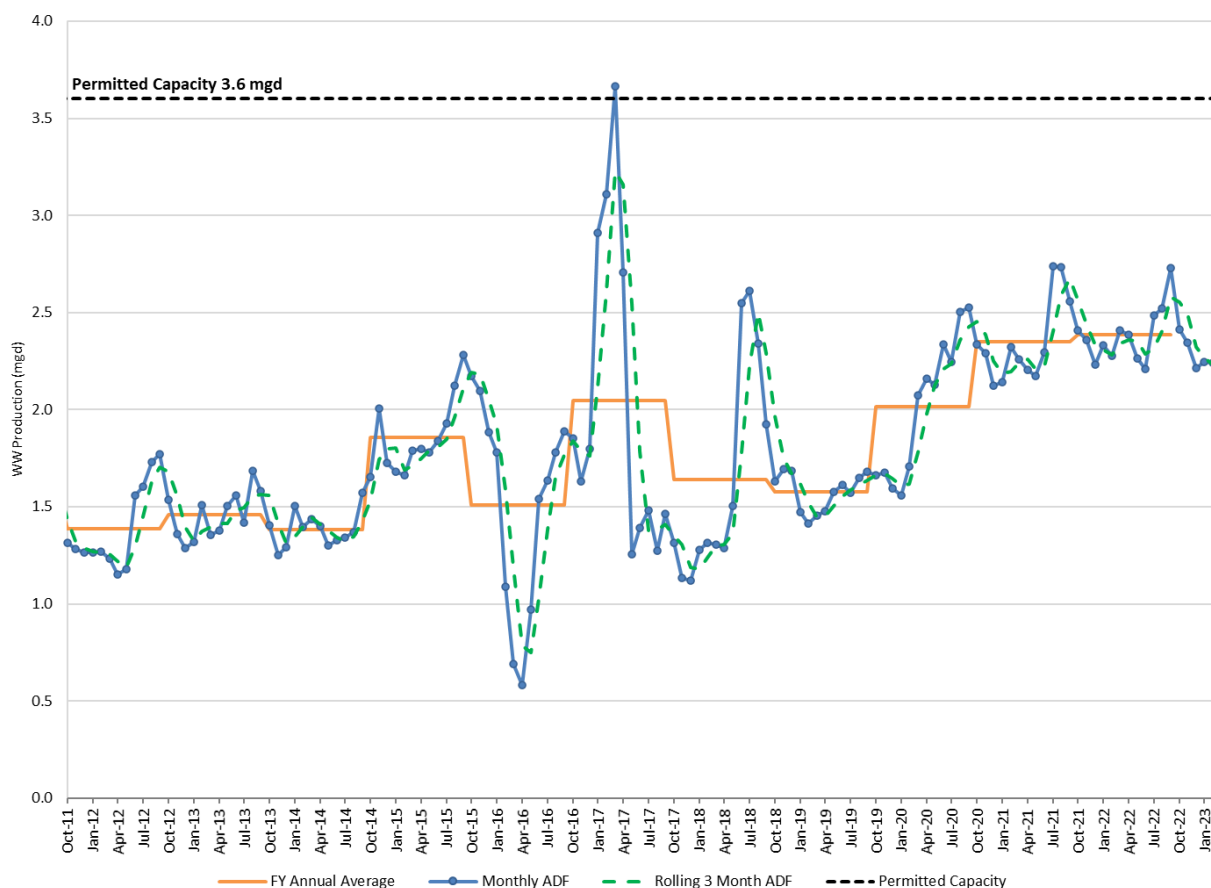


Figure 27: Monterey WRF Projected Flow

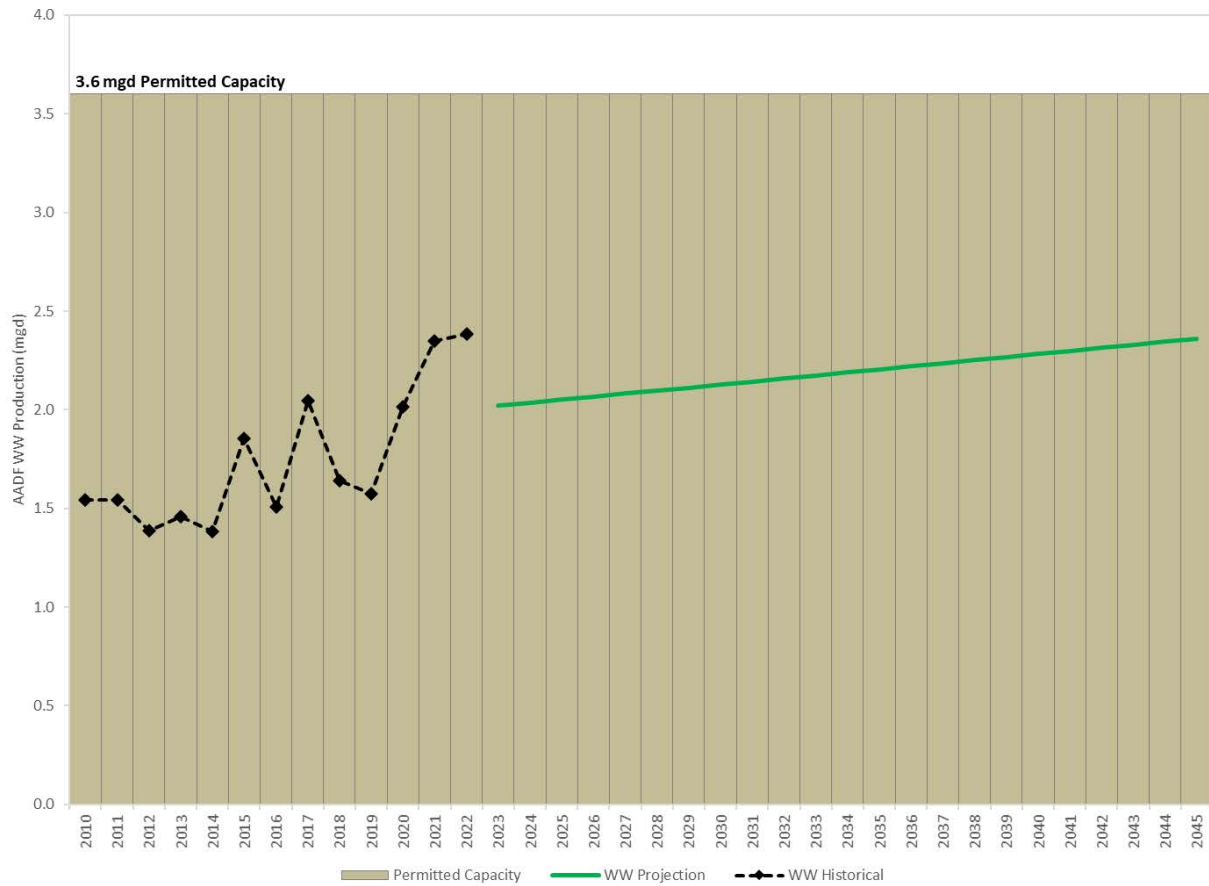


Table 21: Monterey WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	1.54	1.54	1.39	1.46	1.38	1.86	1.51	2.04	1.64	1.58
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
2.01	2.35	2.38		2.02	2.04	2.05	2.13	2.21	2.28	2.36

5.2.9.2 Capital Improvement List & Planned Future Projects

Most of the equipment at Monterey WRF is near or greater than 20 years old; this is the first major rehabilitation project performed at the WRF in order to provide a reliable treatment facility for years to come. Construction is currently underway. The SWDE project planned for this facility is deep injection wells.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 22: Capital Project List

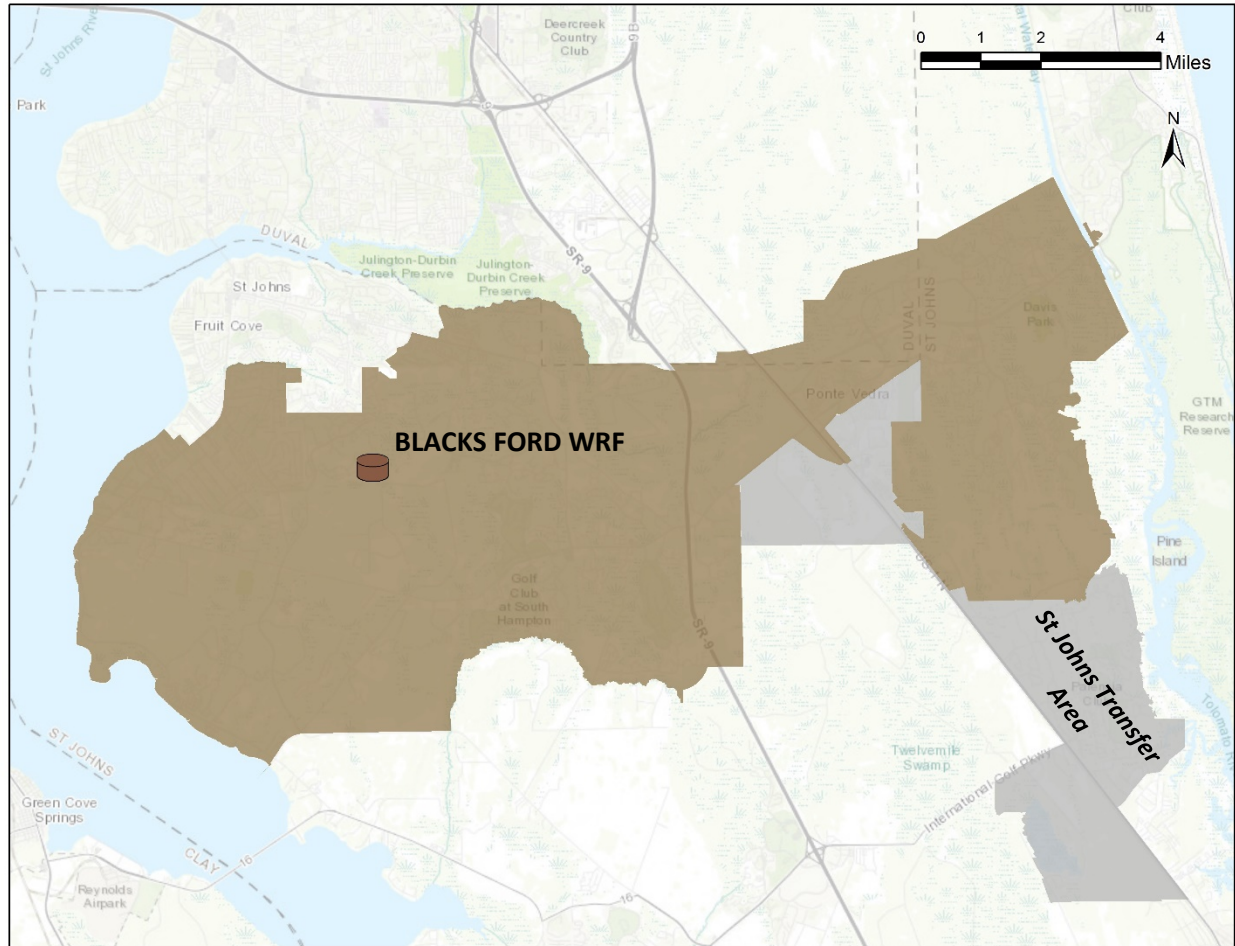
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
131-04A	Monterey WRF Improvements - Phase 2	\$35,963	\$905	\$11,329	\$20,725	\$2,259	\$0	\$0	\$0	\$0	\$0	\$0
131-04	Monterey WRF Improvements - Phase 1	\$2,492	\$503	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
131-05	SWDE - Monterey WRF	\$103,453	\$0	\$131	\$4,804	\$6,570	\$9,854	\$27,512	\$39,512	\$14,437	\$633	\$0
	TOTAL	\$141,908	\$1,407	\$11,460	\$25,529	\$8,829	\$9,854	\$27,512	\$39,512	\$14,437	\$633	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.10 Blacks Ford WRF

In late FY18 Blacks Ford WRF was converted from a sequential batch reactor activated sludge process to a 5-stage Bardenpho process with an oxidation ditch, permitted to treat up to 6.0 mgd AADF of wastewater flow.

Figure 28: Blacks Ford Current Service Area



5.2.10.1 Plant Capacity

The expanded treatment facility was brought online late in FY18 with flows redirected from Mandarin service area in FY19, Figure 29. Figure 31 shows the projected wastewater flow for Blacks Ford WRF in comparison to the overall facility permitted capacity.

Figure 29: Blacks Ford WRF Historical Flow



St Johns County continues to be the fastest growing region within JEA's four county service area. The past three years have averaged just over 2,200 connections per year; prior to 2018, the average was closer to 1,500 connections per year. Once Greenland WRF goes online in FY25, up to 2 mgd of flow can be diverted away from Blacks Ford to the Greenland wastewater basin via the Twin Creeks Master Pump Station (MPS). Current average flows at Blacks Ford WRF are over 90% of the treatment capacity. Three projects are underway to not only help Blacks Ford WRF maintain permit compliance until Greenland WRF comes online, but also during the design and construction phase of Blacks Ford's expansion from 6 to 12 mgd.

Racetrack Rd Flow Redirect – Three pump stations along Racetrack Rd, that currently pump to Blacks Ford WRF, will be temporarily redirected to Mandarin WRF via the force main on Bartram Park Blvd. Initial transfer flows are estimated to be around 200,000 gpd. A portion of the transfer area includes Durbin Park, just south of Racetrack Rd and Bartram Park Blvd; this is a growing new

mixed use development. Including Durbin Park in the transfer area will remove a portion of the growth Blacks Ford WRF has been experiencing. This transfer will remain in effect until Greenland WRF is complete and may also be used while the Blacks Ford WRF expansion to 12 mgd is underway. Improvements are expected to be completed by Spring 2024.

Twin Creeks MPS Off-peak Pumping – Setting up a portable pump at the existing Twin Creek MPS will allow for up to 700,000 gpd (off-peak) to be redirected to Mandarin from Blacks Ford wastewater basin. This will only be beneficial until Greenland WRF comes online. When Greenland WRF is placed into service, Twin Creeks MPS will only be able to split flow between Blacks Ford and Greenland WRFs. Improvements are expected to be completed by Fall 2023.

Blacks Ford Package Plant Rehab – A DAVCO package plant was used during the last expansion at Blacks Ford WRF to provide additional capacity. Once the Blacks Ford expansion was completed in 2018, the package plant was taken offline. Since that time, some of the components were removed. A recent evaluation of the package plant looked at multiple options of how to get the most beneficial use, while also increasing the overall treatment capacity at Blacks Ford WRF until the new Greenland WRF is online and the Blacks Ford WRF expansion to 12 mgd is complete. Renovating the package plant to use as a side stream process to reduce organic loading to the main plant was chosen as the top option; this option has the potential to lower BOD and TKN and then return the effluent to the influent force main feeding the two BNR trains, increasing the overall Blacks Ford WRF treatment capacity from 6.0 to 6.95 mgd. Improvements are expected to be completed by Spring/Summer 2024.

Figure 30: Blacks Ford Flow Reduction Options

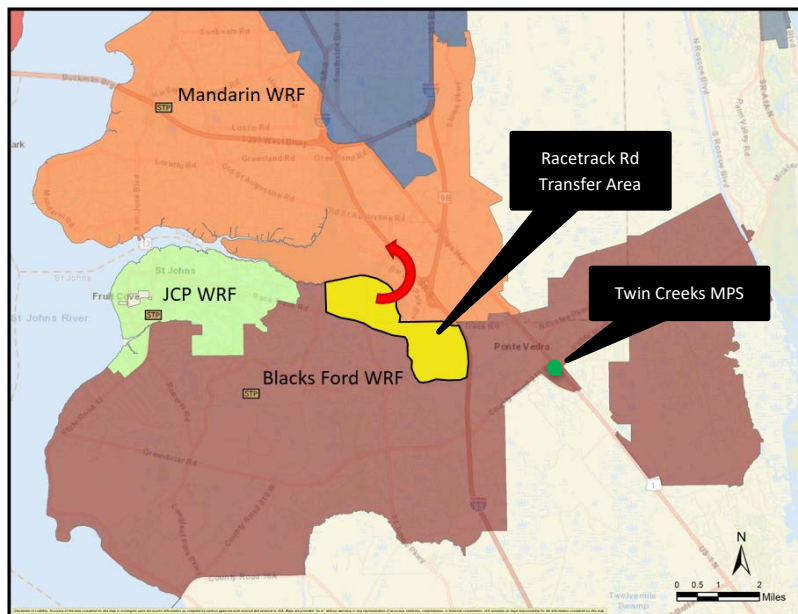


Figure 31: Blacks Ford WRF Projected Flow

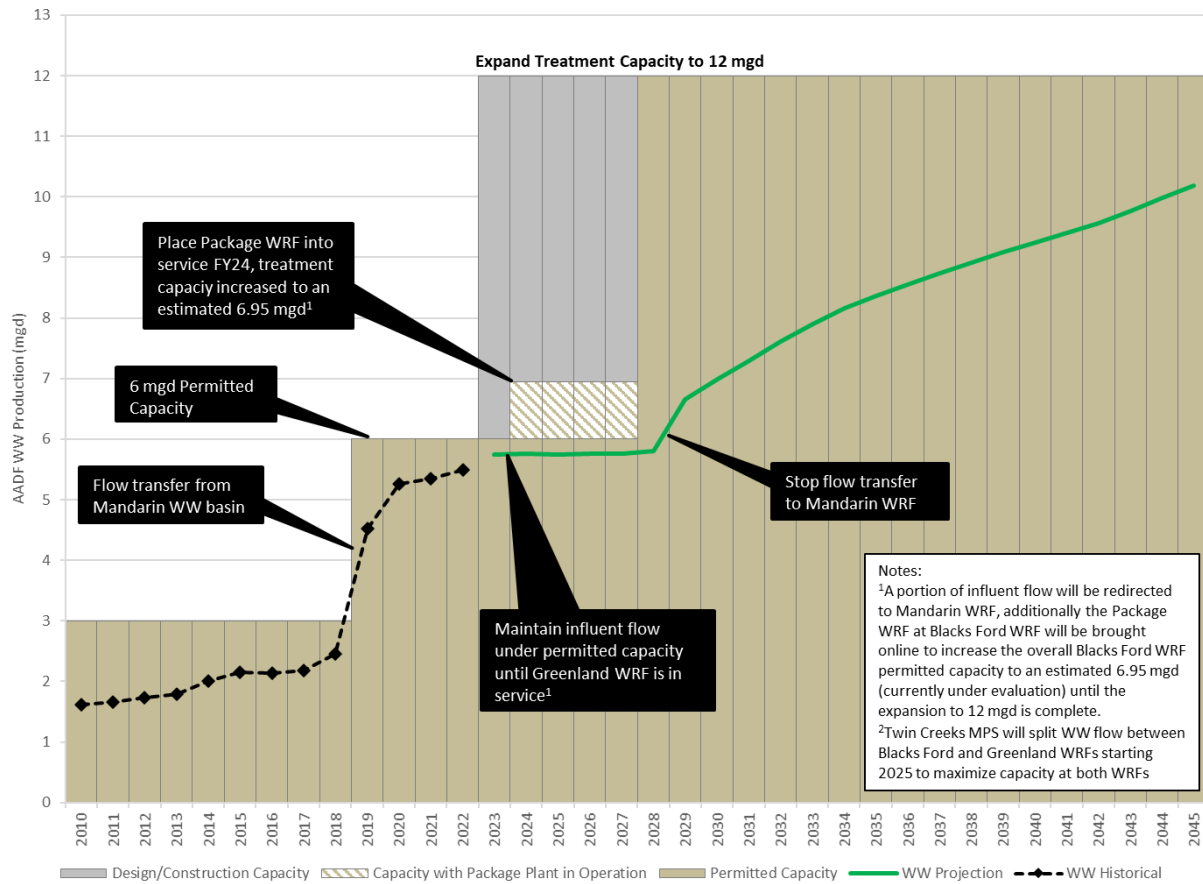


Table 23: Blacks Ford WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	1.62	1.65	1.73	1.79	2.01	2.15	2.14	2.18	2.45	4.52
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
5.27	5.34	5.49		5.74	5.76	5.75	6.98	8.36	9.24	10.18

5.2.10.2 Capital Improvement List & Planned Future Projects

The next major project planned for Blacks Ford is a capacity expansion from 6 to 12 mgd, starting design FY24.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/22.

Table 24: Capital Project List

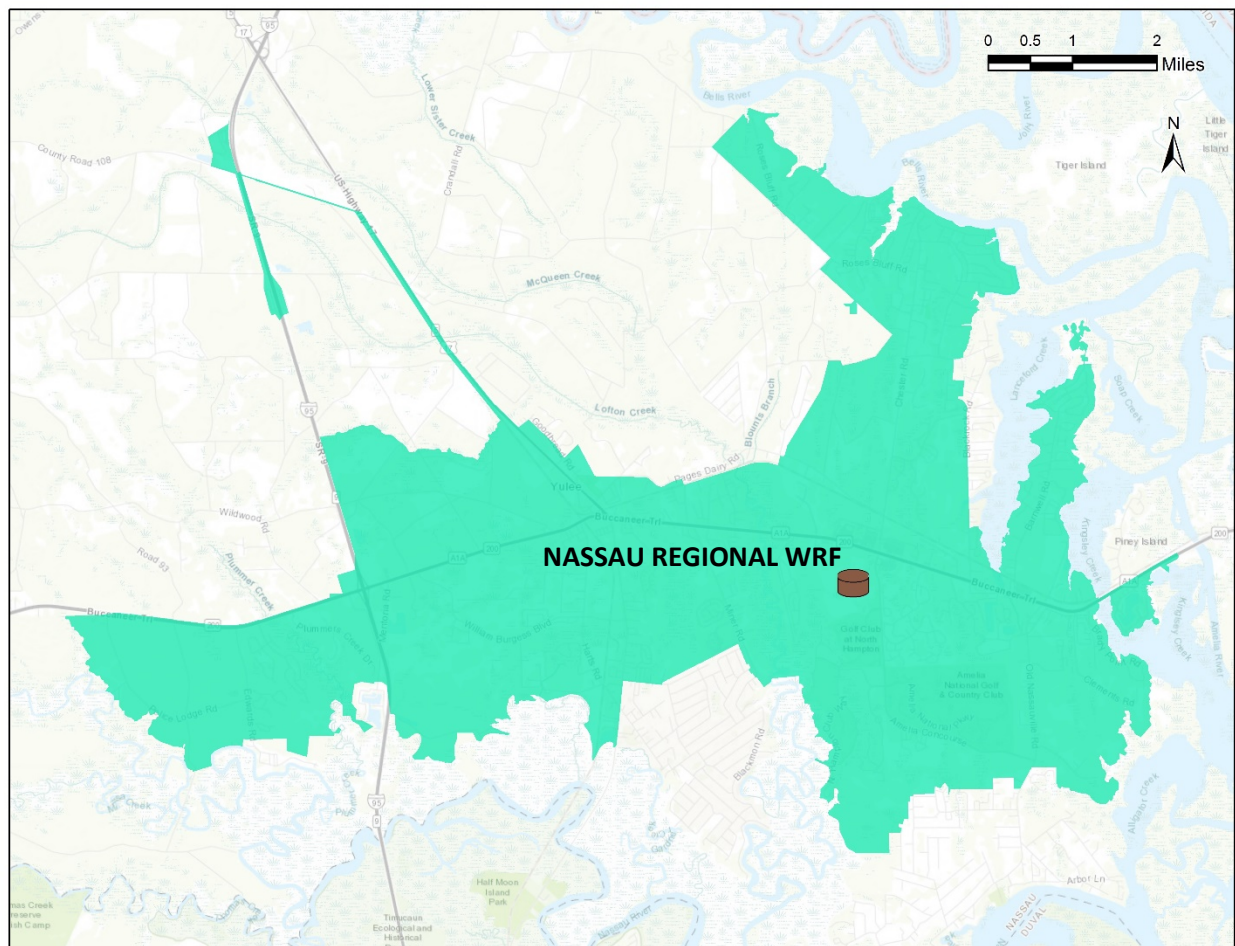
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
103-05	Blacks Ford WRF - Flow Re-Direct to Mandarin WRF	\$705	\$705	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
103-04	Blacks Ford WRF - Expansion from 6 to 12 MGD	\$210,626	\$98	\$9,482	\$26,911	\$117,190	\$55,110	\$1,835	\$0	\$0	\$0	\$0
	TOTAL	\$211,331	\$803	\$9,482	\$26,911	\$117,190	\$55,110	\$1,835	\$0	\$0	\$0	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.11 Nassau Regional WRF

Nassau Regional is a membrane bioreactor WRF, designed to treat up to 2.0 mgd AADF of wastewater flow, permitted to discharge up to 1.55 mgd (consent order currently in effect until through July 2024 increasing permitted capacity to 2.0 mgd). The permitted capacity is less than design capacity due to limitations of the combined effluent discharge capacities (see Figure 34). Flow to the WRF is from a mix of commercial and residential developments. Wildlight and TerraPointe are the two major developments west of US-17 currently driving growth.

Figure 32: Nassau Regional Current Service Area



5.2.11.1 Plant Capacity

Figure 34 shows the projected wastewater flow for Nassau Regional WRF in comparison to the overall facility permitted capacity. Growth is expected to continue at a moderate pace over the next 10-20 years, driving the need for a capacity upgrade to the existing treatment facility. Construction is underway now expanding WRF treatment capacity to 3.5 mgd, leaving room for a minor capacity bump to 4.0 mgd when needed. Serving growth beyond 4 mgd will require construction of a new WRF at a location more central to new development.

Figure 33: Nassau Regional WRF Historical Flow

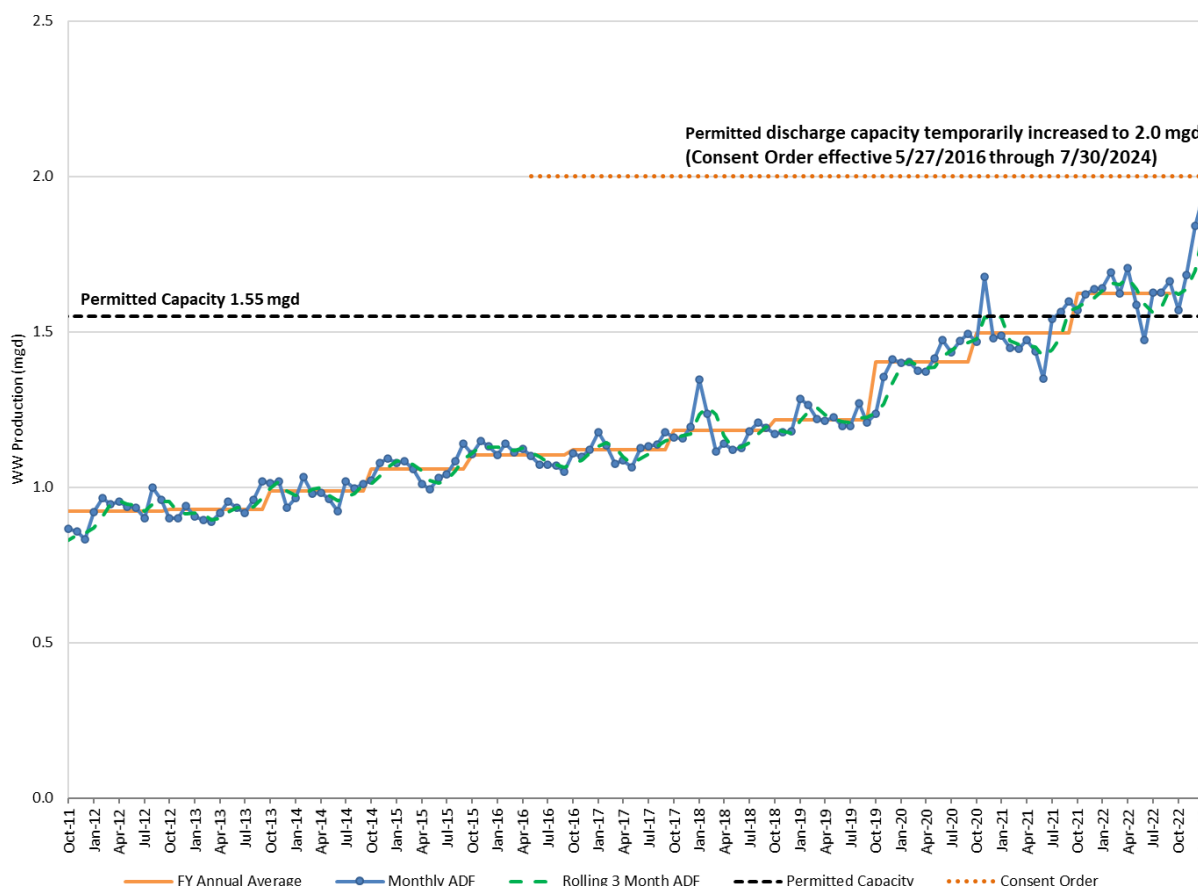


Figure 34: Nassau Regional WRF Projected Flow

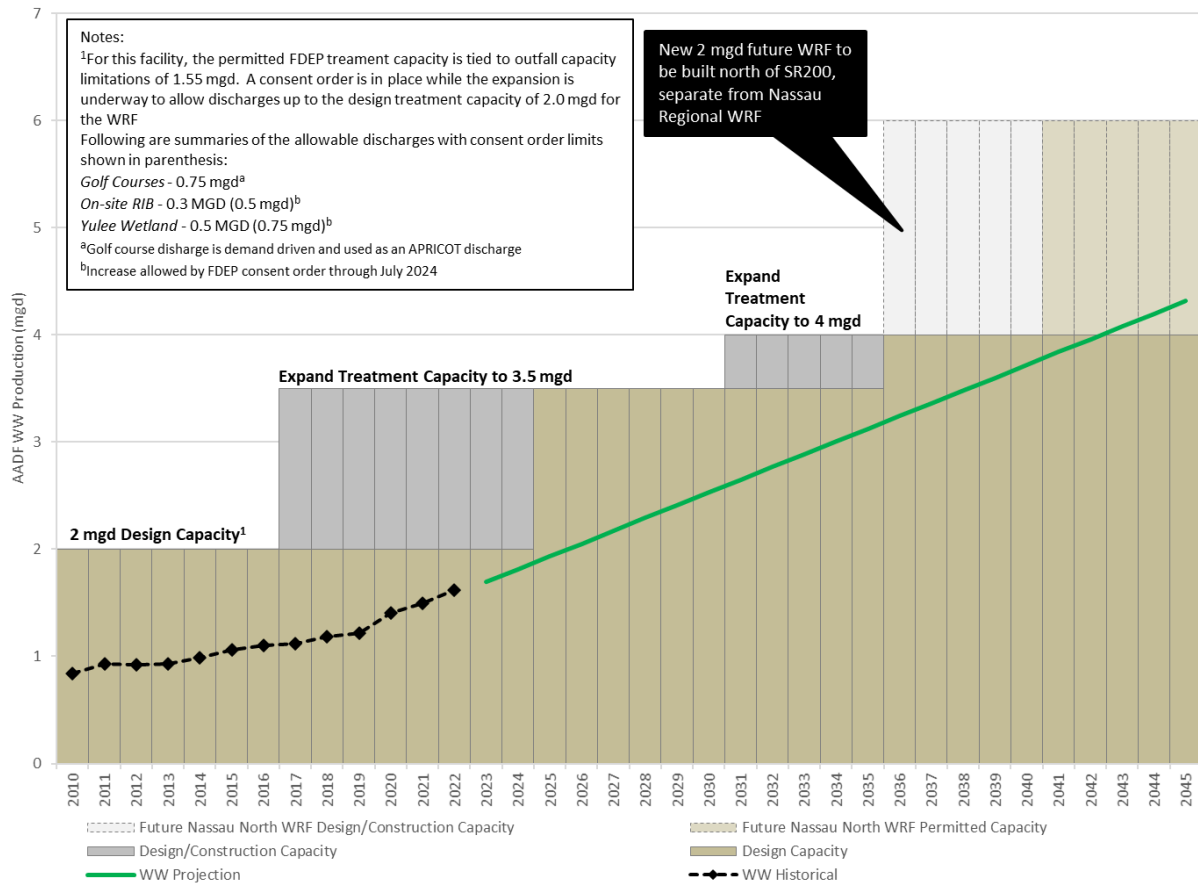


Table 25: Nassau Regional WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	0.84	0.93	0.92	0.93	0.99	1.06	1.10	1.12	1.18	1.22
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
1.40	1.50	1.62		1.69	1.81	1.93	2.53	3.12	3.72	4.31

5.2.11.2 Capital Improvement List & Planned Future Projects

Construction is underway to expand Nassau Regional WRF. The SWDE project for this facility is deep injection wells.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 26: Capital Project List

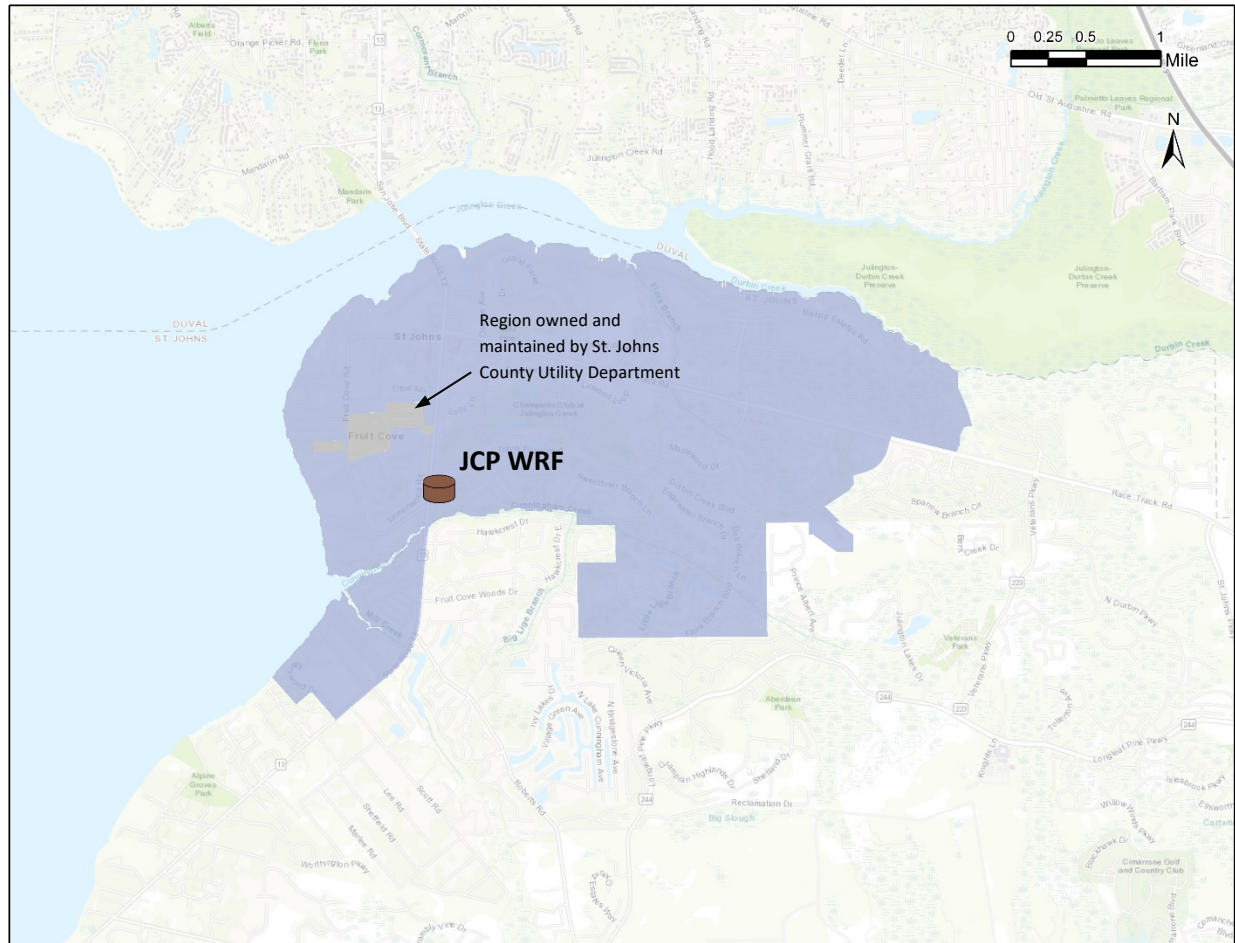
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
870-08	Nassau Regional WRF - Expansion to 3 MGD	\$135,827	\$42,770	\$58,642	\$22,672	\$0	\$0	\$0	\$0	\$0	\$0	\$0
870-15	Nassau Regional WRF - Effluent Management	\$12,675	\$6,853	\$5,796	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
870-16	SWDE - Nassau Regional WRF	\$28,642	\$0	\$0	\$0	\$0	\$405	\$4,340	\$12,998	\$10,397	\$501	\$0
	TOTAL	\$177,143	\$49,622	\$64,438	\$22,672	\$0	\$405	\$4,340	\$12,998	\$10,397	\$501	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.12 Julington Creek Plantation WRF

Julington Creek Plantation (JCP) is an advanced secondary activated sludge WRF, permitted to treat up to 1.0 mgd AADF of wastewater flow. JCP serves residential customers in a region mostly built out.

Figure 35: Julington Creek Current Service Area



5.2.12.1 Plant Capacity

Figure 37 shows the projected wastewater flow for JCP WRF in comparison to the overall facility permitted capacity. The treatment process at JCP is most efficient at flows less than 1 mgd. An interconnect between JCP and Blacks Ford service areas allows for a portion of JCP flow to be sent to Blacks Ford WRF, helping keep average wastewater flows to JCP WRF below 1 mgd.

Figure 36: Julington Creek WRF Historical Flow

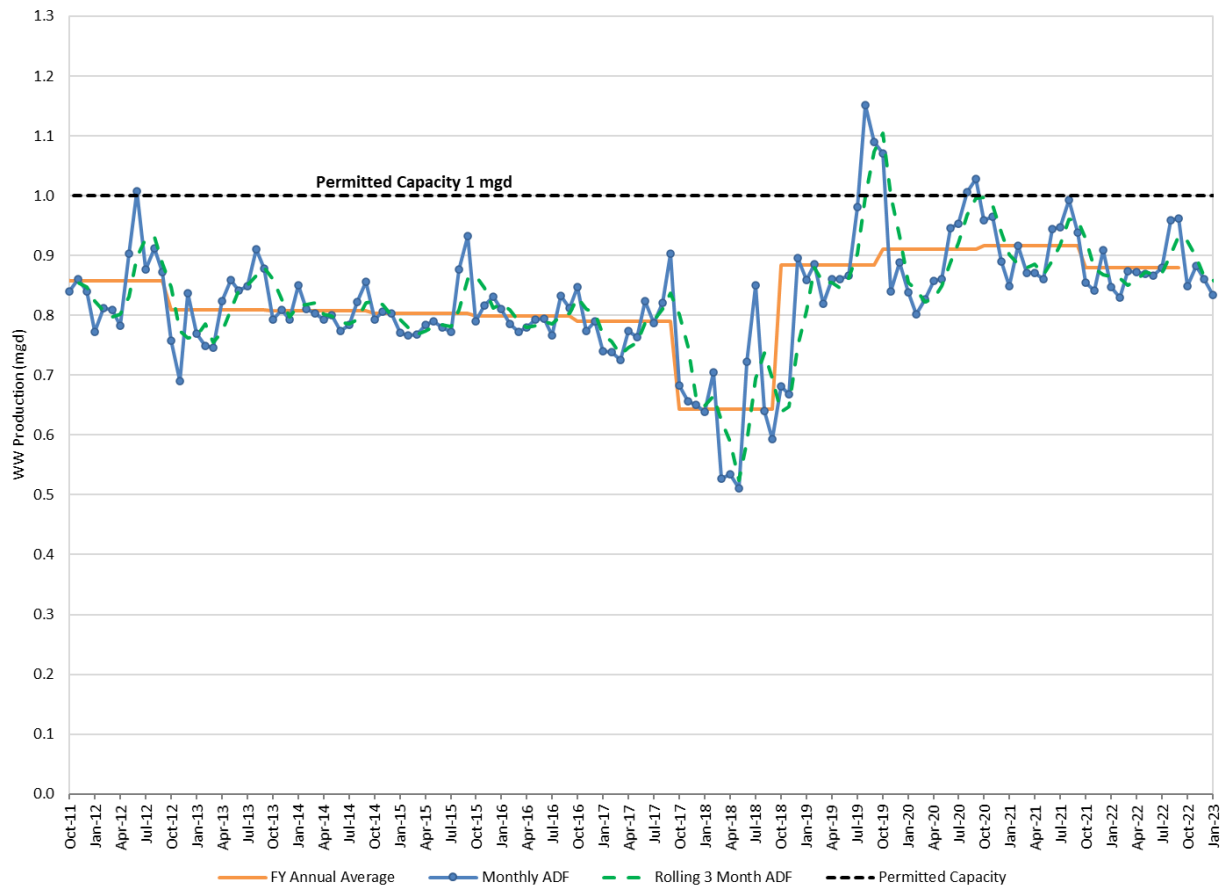


Figure 37: Julington Creek WRF Projected Flow

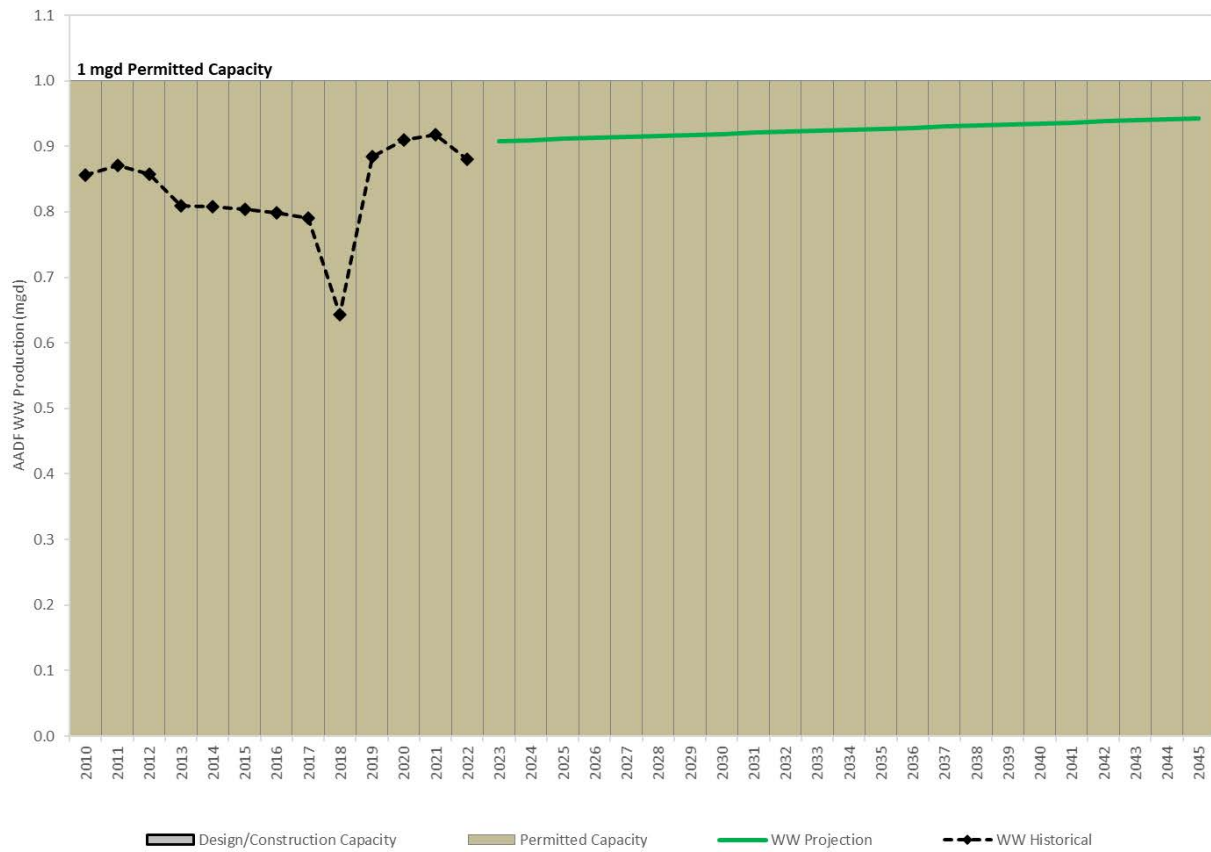


Table 27: Julington Creek WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	0.86	0.87	0.86	0.81	0.81	0.80	0.80	0.79	0.64	0.88
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
0.91	0.92	0.88		0.91	0.91	0.91	0.92	0.93	0.93	0.94

5.2.12.2 Capital Improvement List & Planned Future Projects

An electrical grounding improvement project is currently underway.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 28: Capital Project List

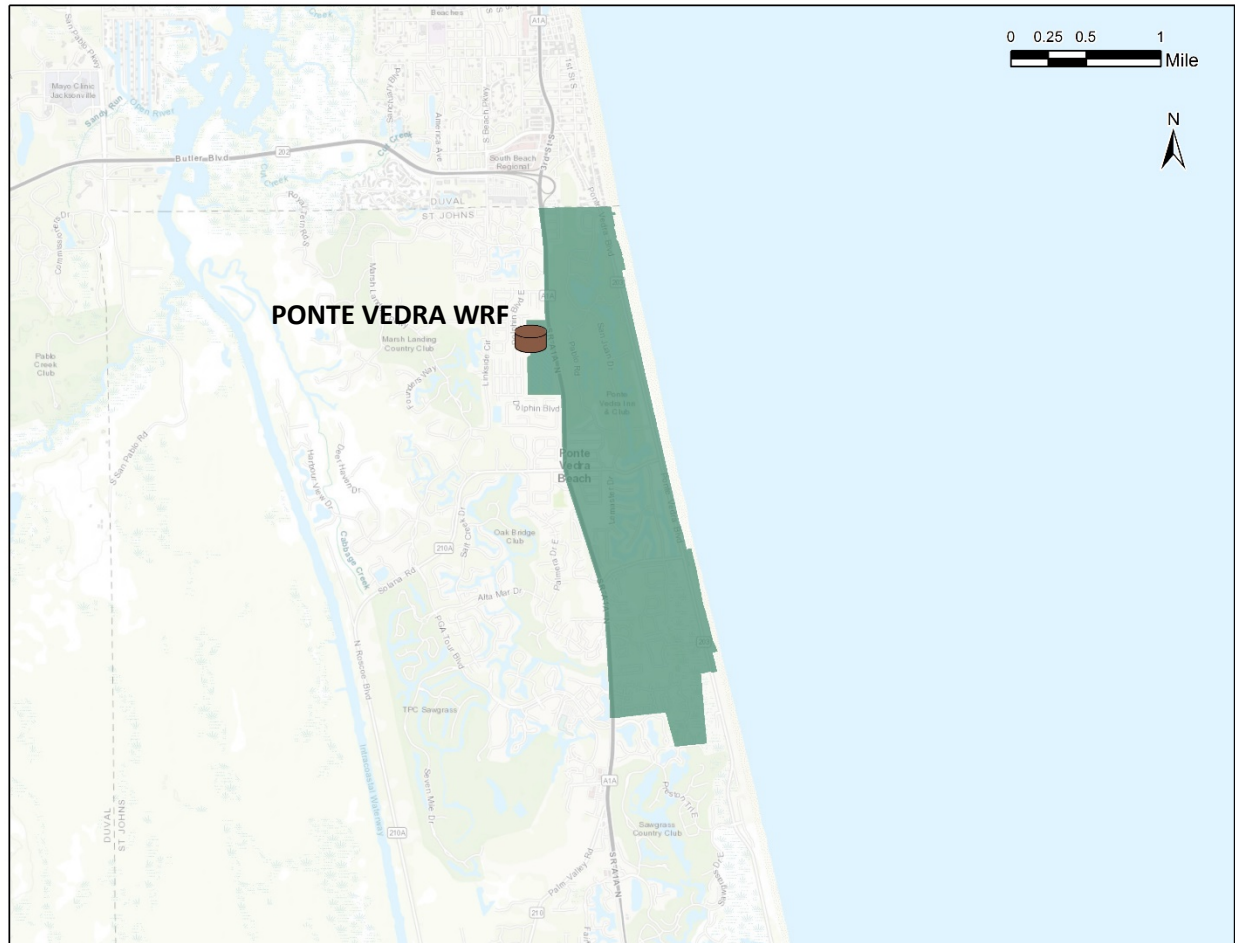
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
731-06	Julington Creek WRF and Ponte Vedra WRF - Electrical Grounding/Lightning Improvements	\$683	\$32	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Note: Current Estimate includes expenditures prior and post FY23.

5.2.13 Ponte Vedra WRF

Ponte Vedra is an activated sludge WRF, permitted to treat up to 0.8 mgd AADF of wastewater flow, serving mostly residential customers.

Figure 38: Ponte Vedra Current Service Area



5.2.13.1 Plant Capacity

Figure 40 shows the projected wastewater flow for Ponte Vedra WRF in comparison to the overall facility permitted capacity. This region is mostly built out with very little new growth expected in the future. The reduction of flow FY17 - FY18 was due to a faulty meter.

Figure 39: Ponte Vedra WRF Historical Flow

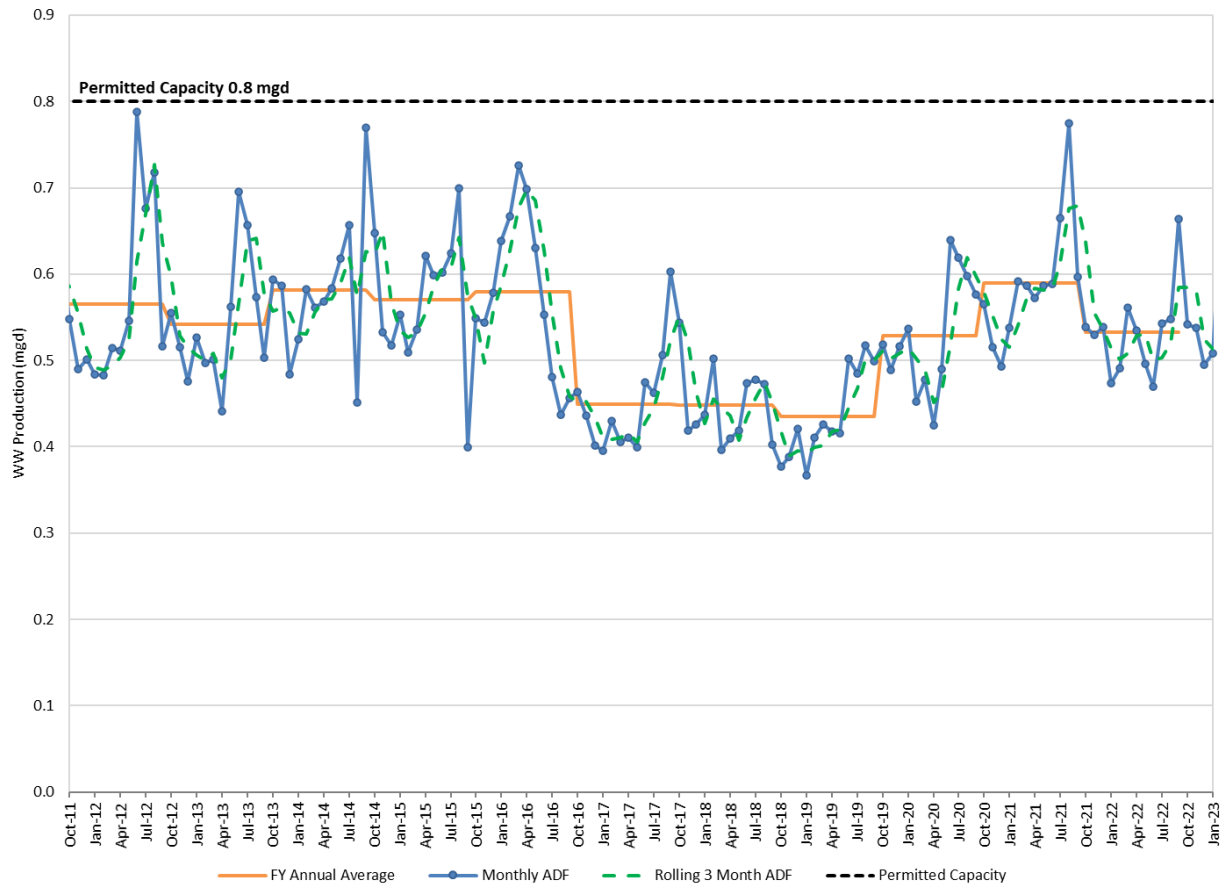


Figure 40: Ponte Vedra WRF Projected Flow

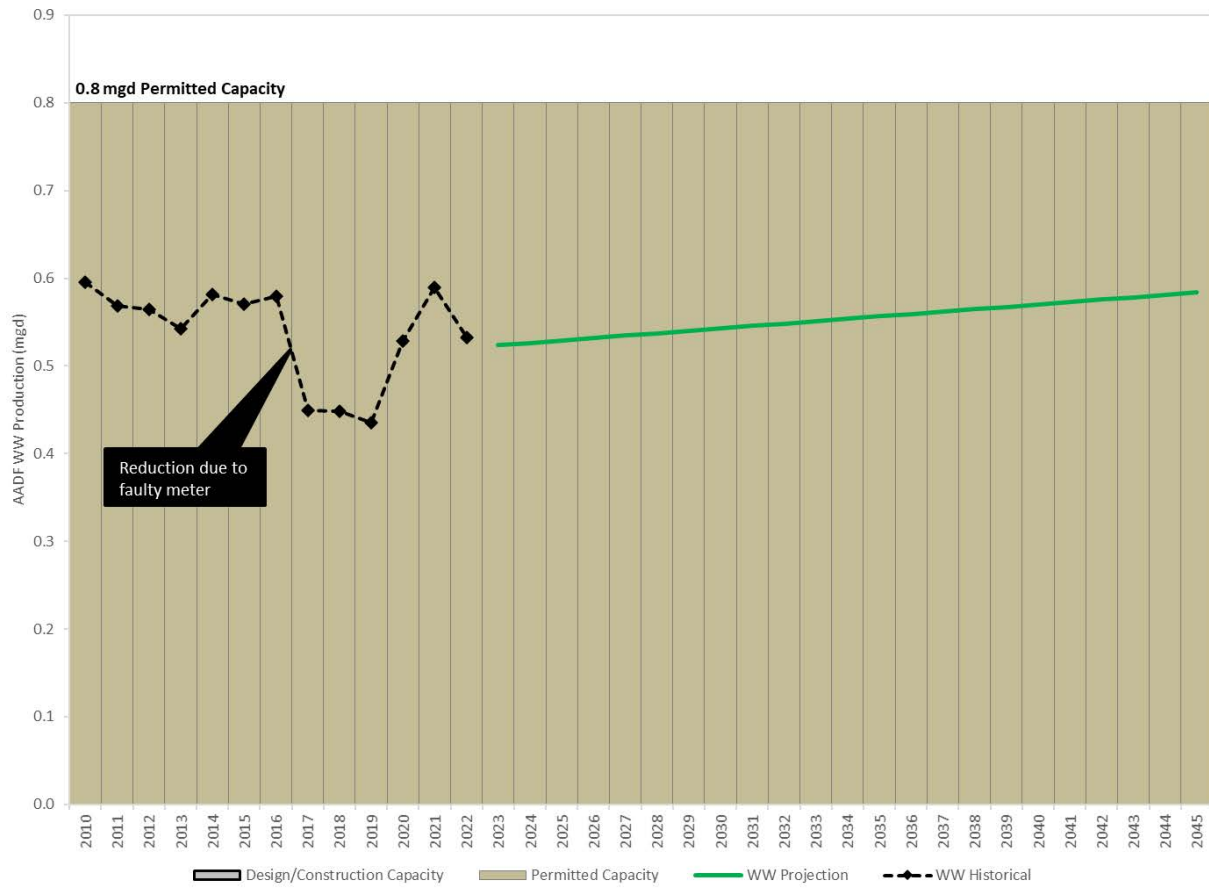


Table 29: Ponte Vedra WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	0.60	0.57	0.56	0.54	0.58	0.57	0.58	0.45	0.45	0.44
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
0.53	0.59	0.53		0.52	0.53	0.53	0.54	0.56	0.57	0.58

5.2.13.2 Capital Improvement List & Planned Future Projects

Projects to add system redundancy along with process improvements is planned to start design in FY23. The planned SWDE project for this facility is deep injection wells.

The following table shows planned projects through FY32 (\$s in \$1,000s) and is a snapshot of the capital budget as of 4/24/23.

Table 30: Capital Project List

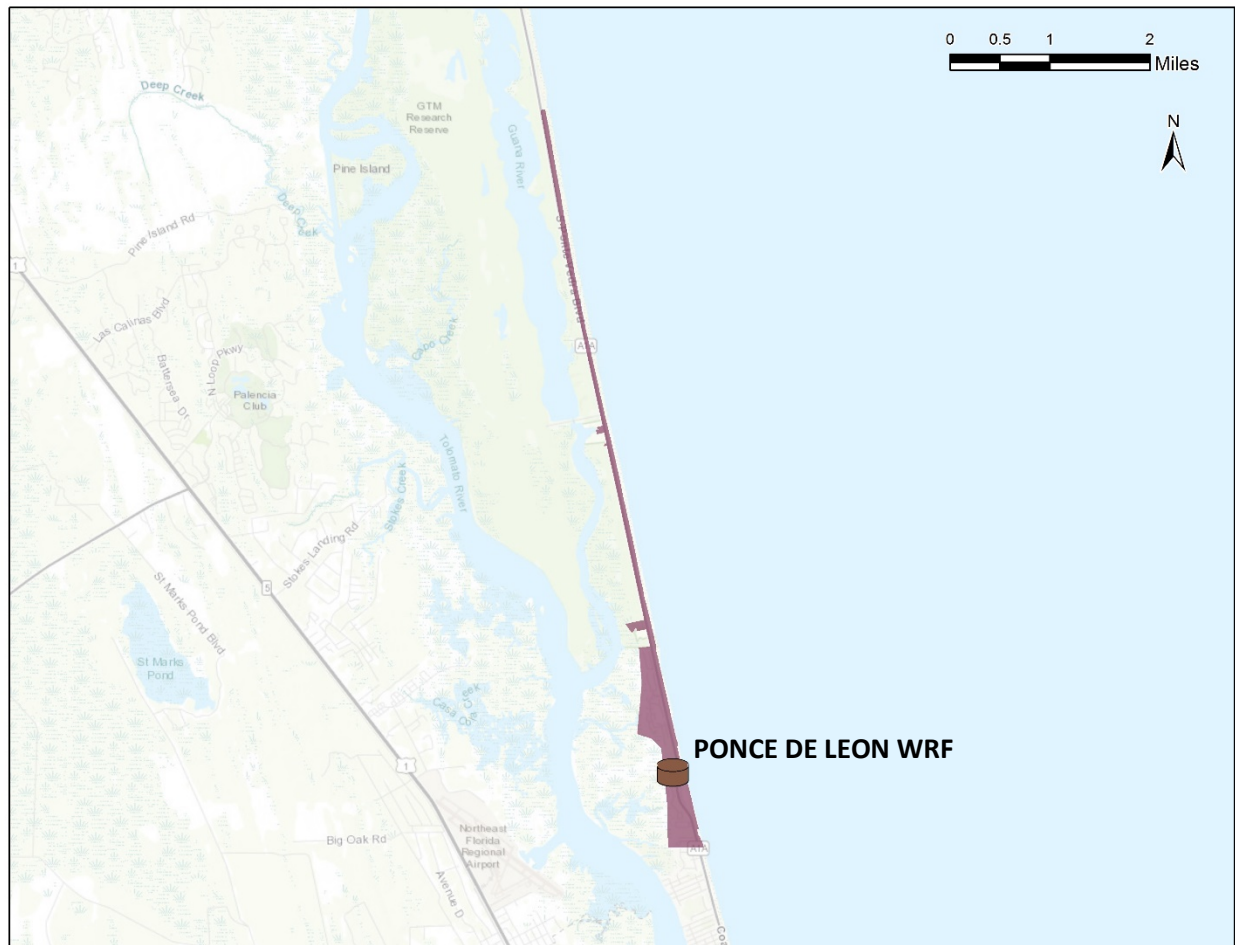
Index No	Project Description	Current Estimate	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
146-07	Ponte Vedra WRF - Improvements	\$18,651	\$82	\$712	\$865	\$7,530	\$9,356	\$104	\$0	\$0	\$0	\$0
731-06	Julington Creek WRF and Ponte Vedra WRF - Electrical Grounding/Lightning Improvements	\$683	\$32	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
146-08	SWDE - Ponte Vedra WRF	\$43,126	\$0	\$0	\$250	\$5,000	\$8,000	\$18,000	\$7,000	\$4,000	\$500	\$376
	TOTAL	\$62,460	\$114	\$712	\$1,115	\$12,530	\$17,356	\$18,104	\$7,000	\$4,000	\$500	\$376

Note: Current Estimate includes expenditures prior and post FY23.

5.2.14 Ponce de Leon WRF

A new extended air treatment facility was placed into service Summer 2019, permitted to treat up to 0.24 mgd AADF of wastewater flow. Ponce de Leon WRF serves mostly residential customers.

Figure 41: Ponce de Leon Current Service Area



5.2.14.1 Plant Capacity

Figure 43 shows the projected wastewater flow for Ponce de Leon (PDL) WRF in comparison to the overall facility permitted capacity. This region is mostly built out with very little new growth expected in the future. The reduction of flow FY17 - FY18 was due to a faulty meter.

Figure 42: Ponce de Leon WRF Historical Flow

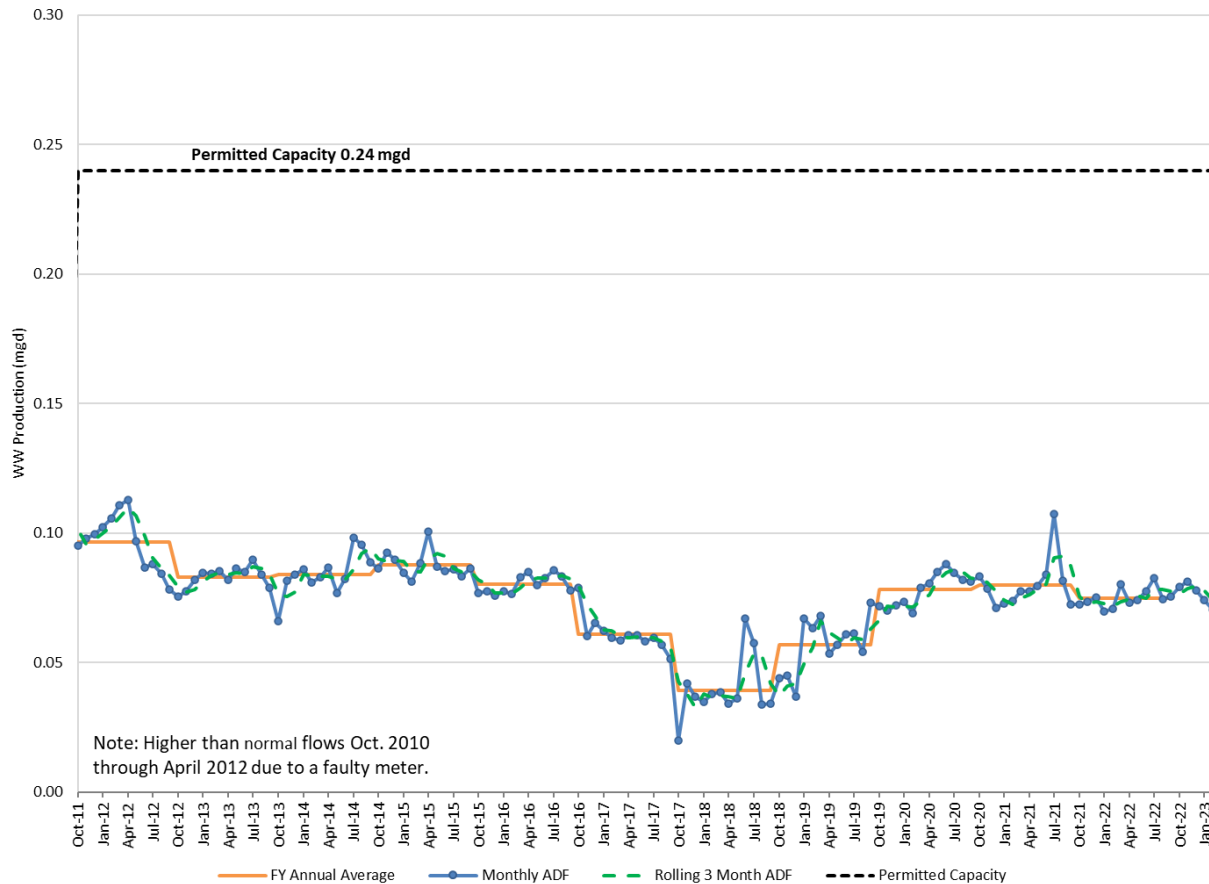


Figure 43: Ponce de Leon WRF Projected Flow

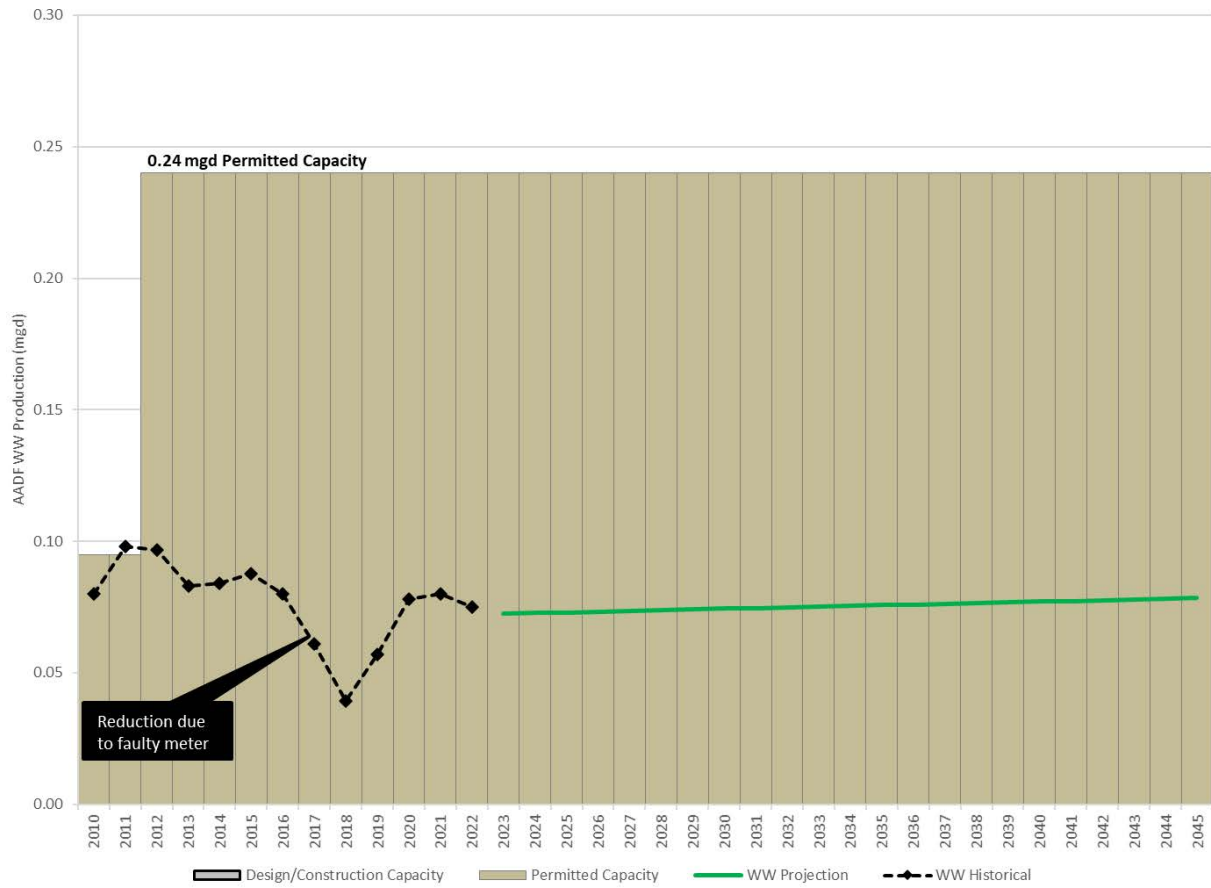


Table 31: Ponce de Leon WRF Flow Summary (fiscal year average, mgd)

Historical	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	0.08	0.10	0.10	0.08	0.08	0.09	0.08	0.06	0.04	0.06
2020	2021	2022	Projected	2023	2024	2025	2030	2035	2040	2045
0.08	0.08	0.07		0.07	0.07	0.07	0.07	0.08	0.08	0.08

5.2.14.2 Capital Improvement List & Planned Future Projects

There are no projects underway or planned at this time.