
Wastewater Treatment Plan Report for Winter Park Estates Wastewater Treatment Facility

City of Winter Park Orange County, FL

Report Date: February 1, 2024

Permit # FLA010819



City of Winter Park Water and Wastewater Department
1409 Howell Branch Road
Building 10
Winter Park, FL 32789

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Item 1

Permitted Capacity

The Winter Park Estates Wastewater Treatment Facility (the WWTP) has a permitted disposal capacity of 0.750 million gallons per day (MGD). The design capacity of the facility is 1.15 MGD.

Item 2

Permitted TN and TP Effluent Limits

The permit for the WWTP does not set total nitrogen (TN) and total phosphorus (TP) effluent limits. Monthly monitoring for TN and TP is required within the permit as allowed by FAC 62-600.650(3) to evaluate impacts of reclaimed water to ground and surface waters in an impaired water basin.

Item 3

TN and TP Discharges – 2019 through 2023

Table 1: Winter Park Estates WWTP Annual Average Discharge Flow and TN/TP Loads

Year	Discharge Flow (MGD)	TN Load (mg/L)	TP Load (mg/L)
2019	0.498	11.72	2.17
2020	0.511	11.45	1.97
2021	0.503	9.5	1.82
2022	0.477	10.75	1.87
2023	0.519	9.97	1.3

Item 4

20 Year Capacity Analysis

The 2023 Updated Capacity Analysis Report for the Winter Park Estates WWTP is included as *Attachment A* of this plan for reference. To summarize, the City does not expect to see a significant increase in flow to the facility over the next 20 years. Most of the service area is built out, and existing septic areas are not currently scheduled to be converted to City sewer. The facility currently operates at approximately 78% of its permitted flow capacity, 22% of its TSS loading capacity, and 24% of its CBOD loading capacity. Based on the permitted capacity, approximately 0.165 MGD of additional wastewater could be treated by the WWTP. The WWTP's current flow is limited by reclaim disposal agreements. If needed in the future, the City may submit a permit modification in order to run the facility at the design capacity of 1.15 MGD. The City's sewer system also sends raw wastewater to Altamonte Springs and the City of Orlando (Conserv II and Iron Bridge) for treatment. Additional wastewater flow capacity is available within both of these agreements if needed.

Currently, the facility provides reclaimed irrigation to golf courses, cemeteries, and public parks. These particular locations and flows are described in *Attachment B*. The City's Consumptive Use Permit (CUP) indicates that expansion of the reclaimed irrigation system into residential areas should be pursued in order to help reduce the quantity of potable water being used for irrigation purposes. At this time there is no set plan to expand the reclaimed system nor is funding available for these improvements.

Item 5

Facility Construction or Expansion Projects

The Winter Park Estates Wastewater Treatment Facility discharges 100% of its treated water to land applications for irrigation purposes. At this time the City of Winter Park meets the water quality standards imposed by State regulations. Based on this, no necessary construction, expansion or upgrades to the facility are required.

Item 6

Item 5 Timeline

The City of Winter Park portion of its basin is meeting state regulations an BMAPS limits. No WWTP improvements are planned at this time.

Attachment A

Updated Capacity Analysis Report: Winter Park Estates Wastewater Treatment Facility

Attachment

Operation & Maintenance Performance Report: Winter Park Estates Wastewater Treatment Facility



1409 Howell Branch Road • Building 10
Winter Park, Florida 32789

407-599-3219 • 407-643-1680 fax
cityofwinterpark.org

**Water &
Wastewater
Utilities**

February 1, 2024

Florida Department of Environmental Protection
BMAPProgram@FloridaDEP.gov

Subject: Clean Waterway Act – Senate Bill 712 (2020) – Wastewater Treatment Plan for BMaps

Dear Moira Homann,

Please find the City of Winter Park's Wastewater Treatment Plan report in response to Senate Bill 712 and the following supporting information.

Attachments:

1. Attachment A: Updated Capacity Analysis Report: Winter Park Estates Wastewater Treatment Facility, 2023
2. Attachment B: Operation & Maintenance Performance Report: Winter Park Estates Wastewater Treatment Facility, 2023

Should you have questions or need additional information please contact us at 407-599-3219 or waterwastewater@cityofwinterpark.org.

Best Regards,

City of Winter Park, Water and Wastewater Utility Department Team

CC: David L. Zusi, City of Winter Park
Tara Lamoureux, P.E., City of Winter Park
Deneshwar Dewdat, City of Winter Park

Updated Capacity Analysis Report

Winter Park Estates Wastewater Treatment Facility

Facility Address: 2655 Bongart Road, Winter Park, FL 32789

County: Orange

Permit Number: FLA010819

Groundwater Monitoring System Identification Number: 3048M02580

Permit Expiration: January 7, 2024

Report Date: June 2023



City of Winter Park Water and Wastewater Department

1409 Howell Branch Road

Building 10

Winter Park, FL 32789

Certifications

Permittee:

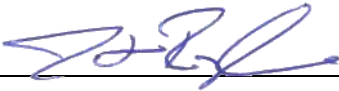
The Permittee is fully aware and intends to comply with the recommendations and schedules included in the report.



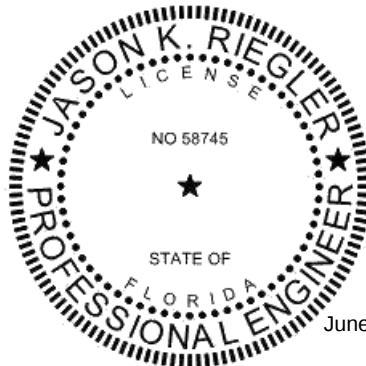
David Zusi, Director
Water and Wastewater Department
1409 Howell Branch Road, Building 10
Winter Park, FL 32789
Phone: 407-599-3335
Email: dzusi@cityofwinterpark.org

Professional Engineer:

The information contained in this report is true and correct to the best of my knowledge, the report was prepared in accordance with sound engineering principles, and I have discussed the recommendations and schedules with the permittee or the permittee's delegated representative and the lead operator and agrees that if the recommended schedules for corrective action are met, the facilities, when properly operated and maintained, will comply with all applicable statutes of the State of Florida and rules of the Florida Department of Environmental Protection, or for temporary operation permits, that the wastewater facilities, when properly operated and maintained, will discharge an effluent that complies with the limitations specified in the permit application.



Jason Riegler, P.E.
Jacobs
200 South Orange Avenue, Suite 900
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Phone: 689-265-7891
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June 23, 2023

Jason K. Riegler, State of Florida, Professional Engineer, License No. 58745
This item has been digitally signed and sealed by Jason K. Riegler on the date indicated here.
Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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CHAPTER 1

Introduction

The Winter Park Estates Wastewater Treatment Facility (WWTF) is owned and operated by the City of Winter Park and treats a portion of the City's wastewater service area. Wastewater from part of the City's wastewater service area is collected at the Winter Park Estates Pump Station adjacent to the City's WWTF. This lift station is owned and maintained by the South Seminole North Orange County Wastewater Transmission Authority (SSNOCWTA) but operated by the City in accordance with the State of Florida Legislature SSNOCWTA Authority Act of 1978 (Chapter 78-617). Wastewater into this pump station can be pumped to either the WWTF or the SSNOCWTA wastewater transmission system. The SSNOCWTA transmission system ultimately discharges to the City of Orlando Iron Bridge Regional Wastewater Reclamation Facility.

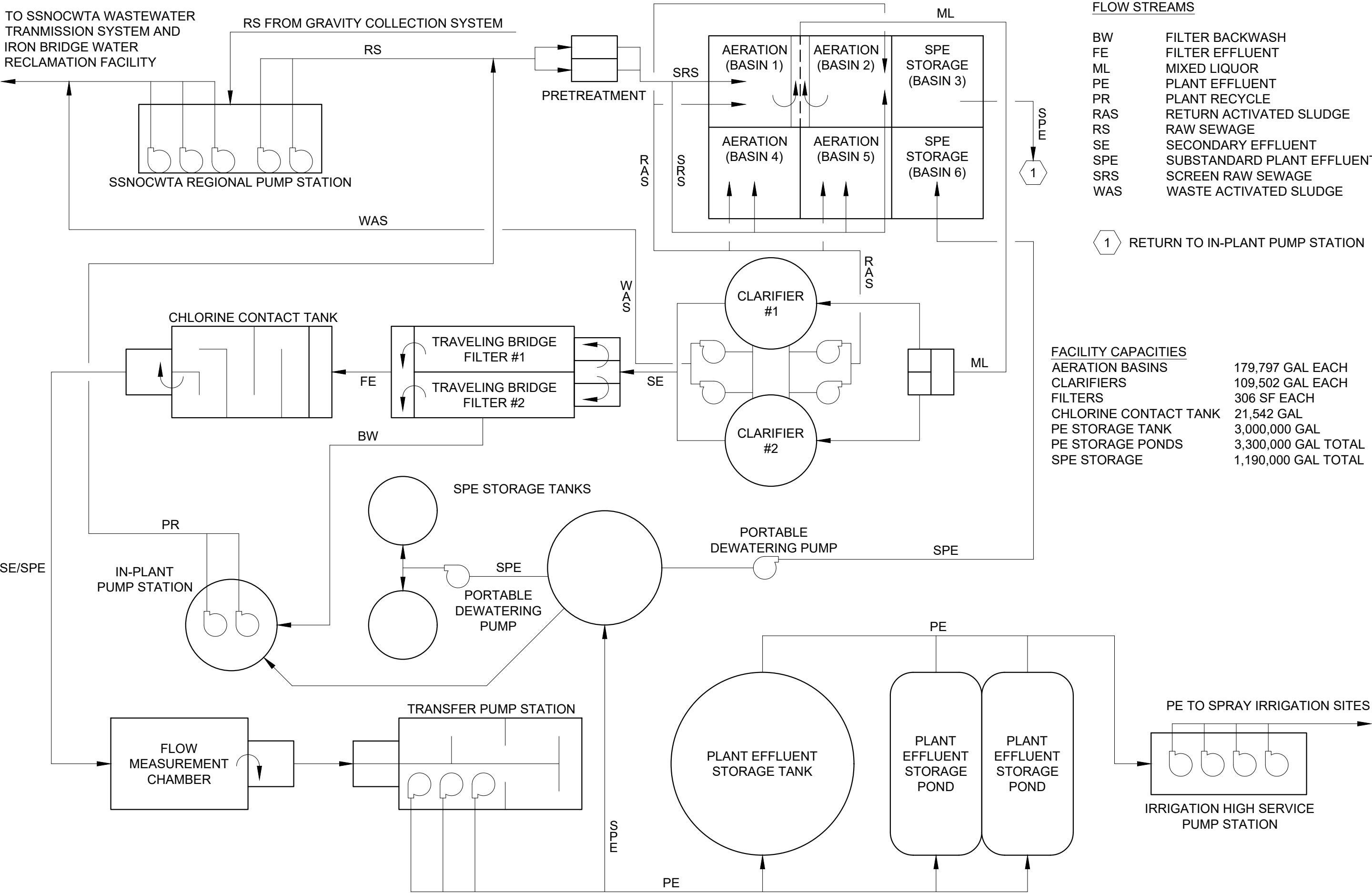
The WWTF consists of the following facilities and processes:

TABLE 1-1
Facilities and Processes

Facility/Process	Description
Influent Pumping	Two pumps at 800 gpm each
Preliminary Treatment	One mechanical bar screen One manual bar screen
Biological Treatment	Complete-mix activated sludge Two parallel aeration trains (4 basins total; 179,797 gallons per basin) Three centrifugal blowers (1,150 scfm each) and fine bubble diffused air system
Sedimentation	Two 48-foot diameter clarifiers
Filtration	Two traveling bridge filters (306 square feet surface area each)
Disinfection	One chlorine contact basin (21,542 gallons) with sodium hypochlorite bulk storage and chemical feed system
Effluent Transfer Pumping	
Effluent Storage	One aboveground effluent storage tank (3 MG) Two lined effluent storage ponds (3.3 MG total)
High Service Effluent Pumping	
Substandard Effluent Storage	Five (1.19 MG total)
Effluent Disposal	Interlachen Golf Course (0.19 MGD capacity) Glen Haven Cemetery (0.15 MGD capacity) Showalter Field/Cady Way Park (0.12 MGD capacity) Winter Park Pines Golf Course (0.155 MGD capacity)

TABLE 1-1
Facilities and Processes

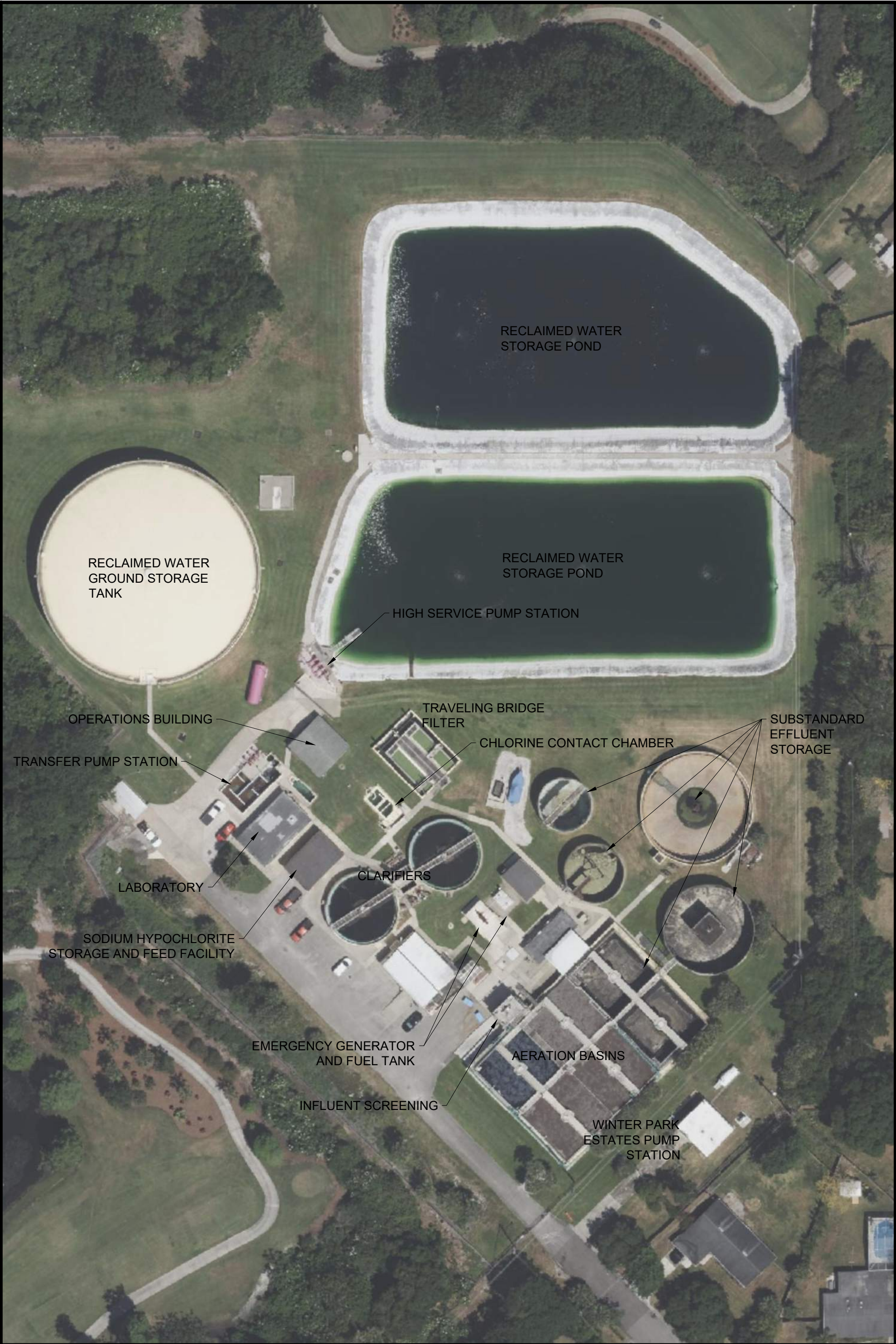
Facility/Process	Description
Residuals	Waste activated sludge generated at the plant is discharged to the SSNOCWTA Winter Park Estates Lift Station and pumped with the raw wastewater to the Iron Bridge Regional Wastewater Reclamation Facility.
Support Facilities	Emergency generator, in-plant pump station, operations building/laboratory



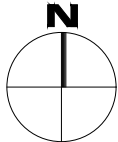
FLOW STREAMS	
BW	FILTER BACKWASH
FE	FILTER EFFLUENT
ML	MIXED LIQUOR
PE	PLANT EFFLUENT
PR	PLANT RECYCLE
RAS	RETURN ACTIVATED SLUDGE
RS	RAW SEWAGE
SE	SECONDARY EFFLUENT
SPE	SUBSTANDARD PLANT EFFLUENT
SRS	SCREEN RAW SEWAGE
WAS	WASTE ACTIVATED SLUDGE

1 RETURN TO IN-PLANT PUMP STATION

FACILITY CAPACITIES	
AERATION BASINS	179,797 GAL EACH
CLARIFIERS	109,502 GAL EACH
FILTERS	306 SF EACH
CHLORINE CONTACT TANK	21,542 GAL
PE STORAGE TANK	3,000,000 GAL
PE STORAGE PONDS	3,300,000 GAL TOTAL
SPE STORAGE	1,190,000 GAL TOTAL



SITE PLAN



CHAPTER 2

Existing Conditions

2.1 Permitted Capacity

The permitted capacity of the WWTF is 0.750 million gallons per day (MGD) based on the annual average daily flow (AADF). The WWTF also has a design treatment capacity of 1.15 million gallons per day annual average. The total effluent disposal capacity at the 4 land application sites is 0.615 MGD AADF.

2.2 Historical Flows

Monthly average daily flow (ADF), three month ADF and AADF for the past 10 years is presented in Table 2-1 and Table 2-2.

TABLE 2-2
Monthly and 3-Month Influent Flows (MGD)

Month	Monthly ADF	3-Month ADF
January 2013	0.208	
February 2013	0.486	
March 2013	0.462	0.385
April 2013	0.541	0.496
May 2013	0.496	0.499
June 2013	0.308	0.448
July 2013	0.289	0.364
August 2013	0.273	0.290
September 2013	0.527	0.363
October 2013	0.513	0.438
November 2013	0.380	0.473
December 2013	0.383	0.425
January 2014	0.236	0.333
February 2014	0.172	0.263
March 2014	0.343	0.250
April 2014	0.417	0.311
May 2014	0.578	0.446
June 2014	0.458	0.484
July 2014	0.189	0.408
August 2014	0.322	0.323
September 2014	0.388	0.300

TABLE 2-2
Monthly and 3-Month Influent Flows (MGD)

Month	Monthly ADF	3-Month ADF
October 2014	0.389	0.366
November 2014	0.456	0.411
December 2014	0.275	0.373
January 2015	0.276	0.336
February 2015	0.253	0.268
March 2015	0.354	0.294
April 2015	0.475	0.361
May 2015	0.628	0.486
June 2015	0.570	0.558
July 2015	0.456	0.551
August 2015	0.316	0.448
September 2015	0.277	0.350
October 2015	0.442	0.345
November 2015	0.411	0.377
December 2015	0.384	0.413
January 2016	0.358	0.384
February 2016	0.340	0.361
March 2016	0.460	0.386
April 2016	0.402	0.400
May 2016	0.588	0.483
June 2016	0.473	0.488
July 2016	0.565	0.542
August 2016	0.456	0.498
September 2016	0.394	0.472
October 2016	0.416	0.422
November 2016	0.582	0.464
December 2016	0.429	0.476
January 2017	0.391	0.467
February 2017	0.418	0.413

TABLE 2-2
Monthly and 3-Month Influent Flows (MGD)

Month	Monthly ADF	3-Month ADF
March 2017	0.518	0.442
April 2017	0.662	0.533
May 2017	0.683	0.621
June 2017	0.451	0.599
July 2017	0.440	0.525
August 2017	0.518	0.470
September 2017	0.467	0.475
October 2017	0.461	0.482
November 2017	0.465	0.464
December 2017	0.438	0.455
January 2018	0.473	0.459
February 2018	0.522	0.478
March 2018	0.688	0.561
April 2018	0.591	0.600
May 2018	0.553	0.611
June 2018	0.453	0.532
July 2018	0.442	0.483
August 2018	0.446	0.447
September 2018	0.462	0.450
October 2018	0.626	0.511
November 2018	0.462	0.516
December 2018	0.478	0.522
January 2019	0.446	0.462
February 2019	0.444	0.456
March 2019	0.441	0.444
April 2019	0.544	0.476
May 2019	0.613	0.533
June 2019	0.544	0.567
July 2019	0.488	0.548

TABLE 2-2
Monthly and 3-Month Influent Flows (MGD)

Month	Monthly ADF	3-Month ADF
August 2019	0.465	0.499
September 2019	0.500	0.484
October 2019	0.538	0.501
November 2019	0.467	0.502
December 2019	0.489	0.498
January 2020	0.489	0.482
February 2020	0.481	0.486
March 2020	0.616	0.529
April 2020	0.605	0.567
May 2020	0.599	0.606
June 2020	0.462	0.555
July 2020	0.480	0.513
August 2020	0.485	0.475
September 2020	0.504	0.489
October 2020	0.472	0.487
November 2020	0.471	0.482
December 2020	0.472	0.472
January 2021	0.453	0.465
February 2021	0.456	0.460
March 2021	0.572	0.493
April 2021	0.578	0.535
May 2021	0.661	0.604
June 2021	0.588	0.609
July 2021	0.430	0.560
August 2021	0.500	0.506
September 2021	0.482	0.471
October 2021	0.447	0.476
November 2021	0.364	0.431
December 2021	0.504	0.439

TABLE 2-2
Monthly and 3-Month Influent Flows (MGD)

Month	Monthly ADF	3-Month ADF
January 2022	0.495	0.454
February 2022	0.500	0.500
March 2022	0.514	0.503
April 2022	0.518	0.511
May 2022	0.588	0.540
June 2022	0.533	0.546
July 2022	0.462	0.528
August 2022	0.483	0.493
September 2022	0.456	0.467
October 2022	0.395	0.444
November 2022	0.355	0.402
December 2022	0.425	0.392
January 2023	0.382	0.387

2.3 Seasonal Flow Variation

Tabulation of the maximum 3-Month ADF, AADF and maximum 3-Month ADF to AADF ratios are presented in Table 2-3 and graphically in Figure 2-1. The higher 3-month ADF values typically occur in May and June.

As described in the Introduction, influent flow to the SSNOCWTA lift station may be pumped to the SSNOCWTA transmission system or to the WWTF. The WWTF is operated to only receive influent flows based on irrigation reuse demands; therefore, irrigation demand dictates the amount of influent flow that is received by the WWTF. All the influent flow to the SSNOCWTA lift station can be pumped to the SSNOCWTA transmission system as necessary. Due to this mode of operation to meet irrigation demands, the seasonal variation is attributed to the higher irrigation demands in generally the spring and early summer months.

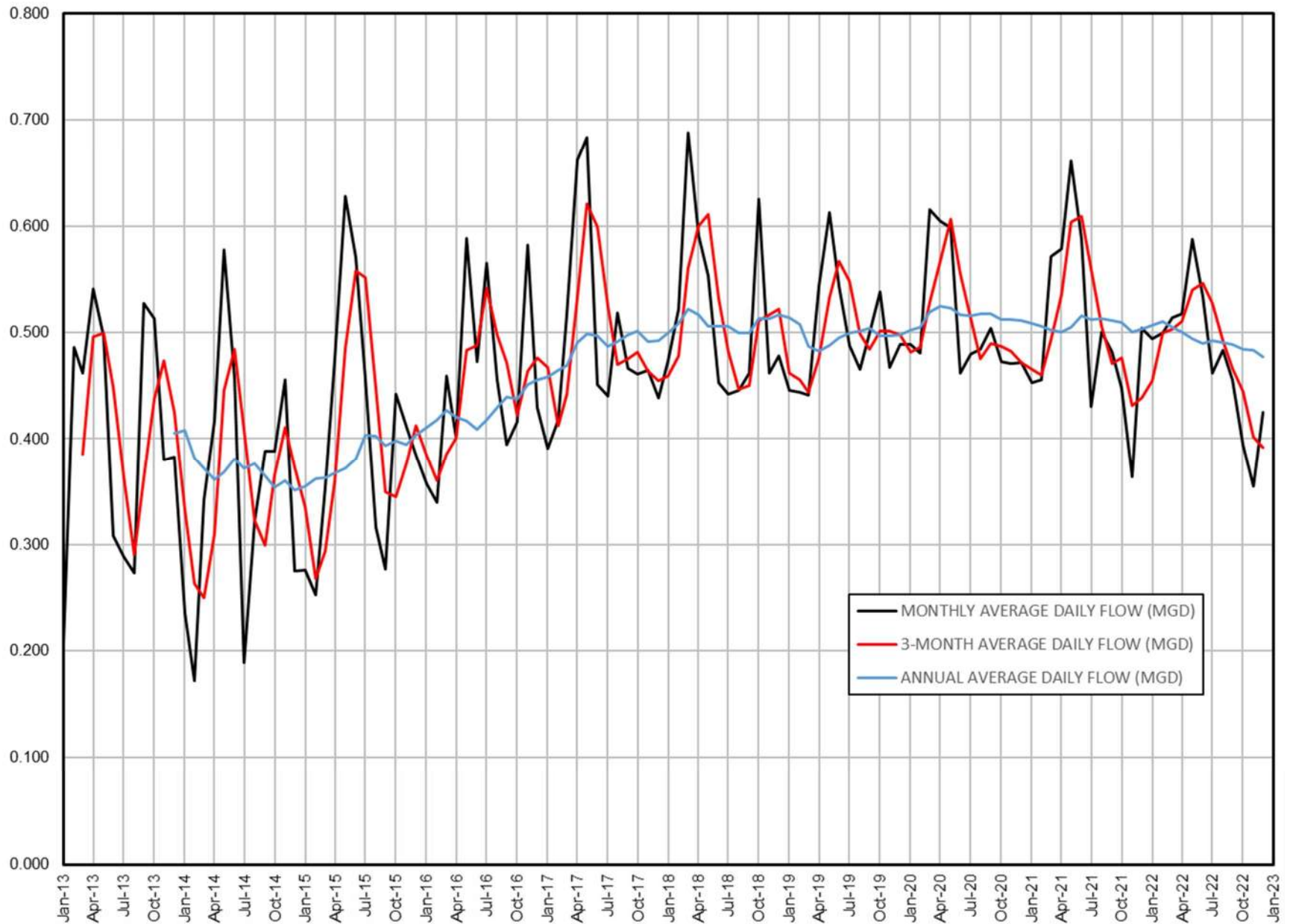
TABLE 2-3
Influent Flows Seasonal Variations (MGD)

Year	Maximum 3-Month ADF	Month with Maximum 3-Month ADF	AADF	3-Month ADF to AADF Ratio
2013	0.499	May	0.404	1.23
2014	0.484	June	0.352	1.37
2015	0.558	June	0.404	1.38

TABLE 2-3
Influent Flows Seasonal Variations (MGD)

Year	Maximum 3-Month ADF	Month with Maximum 3-Month ADF	AADF	3-Month ADF to AADF Ratio
2016	0.542	July	0.456	1.19
2017	0.621	May	0.493	1.26
2018	0.611	May	0.516	1.18
2019	0.567	June	0.498	1.14
2020	0.606	May	0.511	1.19
2021	0.609	June	0.503	1.21
2022	0.546	June	0.477	1.15
Average Ratio:				1.23

Figure 2-1
Influent Flows



2.4 Updated Flow and Loading Information

Current loadings based on the past 12 months of influent flow data is presented in Table 2-4. Based on the past 12 months flow and loading data, the plant is approximately at 78% flow capacity when compared to the land application capacity; and 24% CBOD5 and 22% TSS loading capacity when compared to the treatment design capacity. The current flows and loadings are within the design capacity.

TABLE 2-4
Design and Updated Flow and Loadings

Condition	AADF (MGD)	CBOD5 Loading (pounds per day)	TSS Loading (pounds per day)
Permitted Capacity	0.750	---	---
Treatment Design Capacity	1.15	2,670	2,670
Land Application Capacity	0.615	---	---
Past 12-Month Flow & Loading	0.477	631	599
10-Year Maximum Flow & Loading	0.516	997	1,005

Note 1: Design loadings based on 1.6 MGD design flow

Figure 2-2
Influent CBOD Loading
(Solid line shows three-month average concentration)

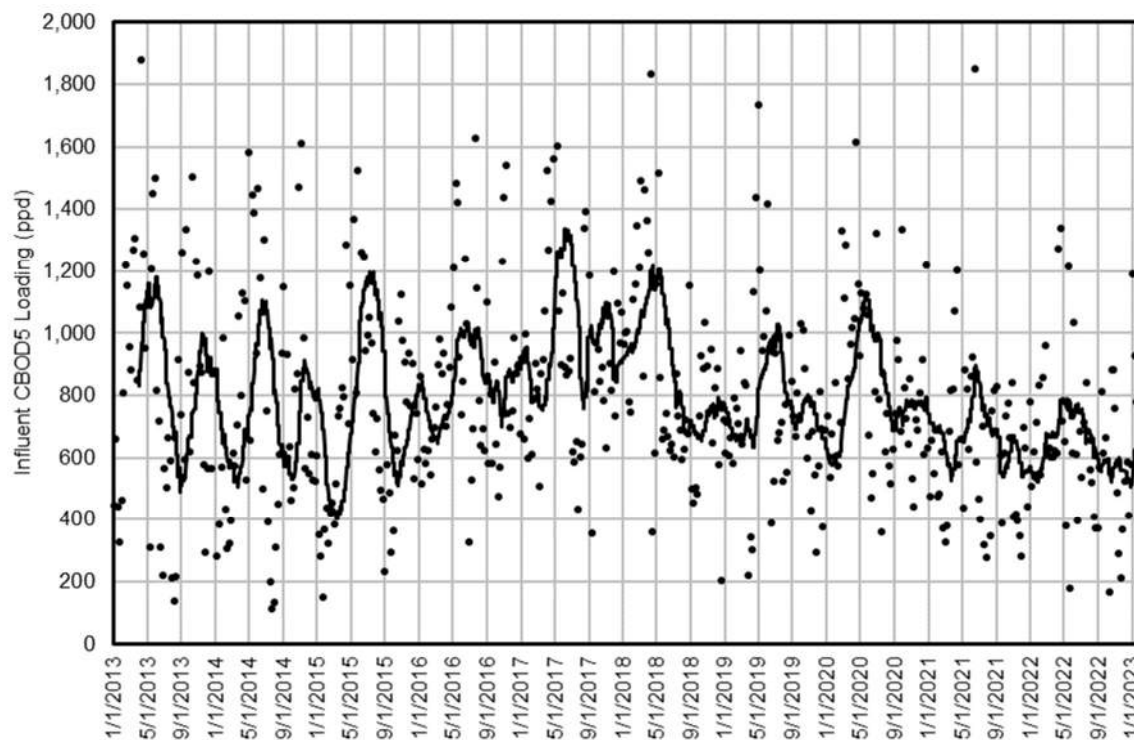
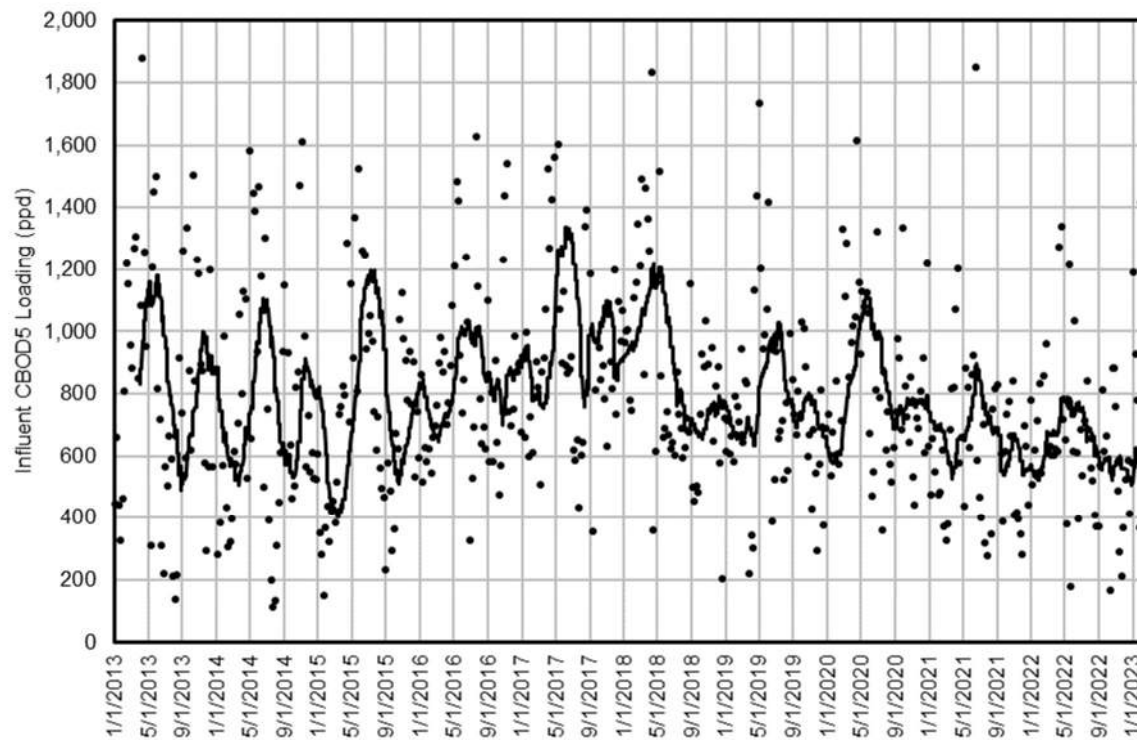


Figure 2-3
Influent TSS Loading
(Solid line shows three-month average concentration)



CHAPTER 3

Future Conditions

As discussed in the Seasonal Flow Variation section in Chapter 2, the City voluntarily pumps wastewater from the SSNOCWTA pump station as needed to meet existing irrigation demands. At this time, there are no plans to expand the land application area therefore the flow projections for the WWTF are anticipated to not increase above the existing irrigation demands.

CHAPTER 4

Summary and Conclusions

Flows and loads into the WWTF are at 78% and 22-24% capacity respectively. Although the land application capacity is at 78%, there are no plans for expansion of the reuse system at this time and the flow into the WWTF is voluntarily treated only to meet irrigation demands. Any future request for additional irrigation water shall require an FDEP permit application to expand the land application area. No expansion is needed or recommended at this time.

Operation & Maintenance Performance Report

Winter Park Estates Wastewater Treatment Facility

Facility Address: 2655 Bongart Road, Winter Park, FL 32789

County: Orange

Permit Number: FLA010819

Groundwater Monitoring System Identification Number: 3048M02580

Permit Expiration: January 7, 2024

Field Evaluation: April, 19 2023

Report Date: June 2023



City of Winter Park Water and Wastewater Department

1409 Howell Branch Road

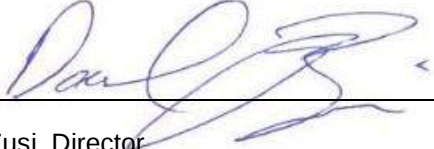
Building 10

Winter Park, FL 32789

Certifications

Permittee:

The Permittee has reviewed and is fully aware of the recommendations and schedules included in the report.



David Zusi, Director
Water and Wastewater Department
1409 Howell Branch Road, Building 10
Winter Park, FL 32789
Phone: 407-599-3335
Email: dzusi@cityofwinterpark.org

Lead Operator:

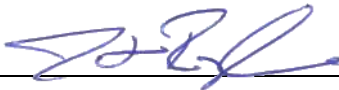
The Lead Operator has reviewed and is fully aware of the recommendations and schedules included in the report.



Samuel Cruz (License WWA 0009639), Assistant Manager, Wastewater Treatment Division
Water and Wastewater Department
2655 Bongart Road
Winter Park, FL 32789
Phone: 407-599-3461
Email: scruez@cityofwinterpark.org

Professional Engineer:

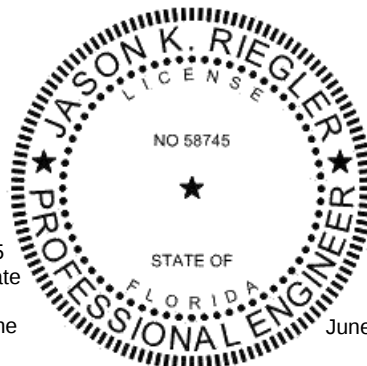
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Jason K. Riegler, State of Florida, Professional Engineer, License No. 58745
This item has been digitally signed and sealed by Jason K. Riegler on the date indicated here.

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June 23, 2023

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CHAPTER 1

Introduction

The Winter Park Estates Wastewater Treatment Facility (WWTF) is owned and operated by the City of Winter Park and treats a portion of the City's wastewater service area. Wastewater from part of the City's wastewater service area is collected at the Winter Park Estates Pump Station adjacent to the City's WWTF. This lift station is owned and maintained by the South Seminole North Orange County Wastewater Transmission Authority (SSNOCWTA) but operated by the City in accordance with the State of Florida Legislature SSNOCWTA Authority Act of 1978 (Chapter 78-617). Wastewater into this pump station can be pumped to either the WWTF or the SSNOCWTA wastewater transmission system. The SSNOCWTA transmission system ultimately discharges to the City of Orlando Iron Bridge Regional Wastewater Reclamation Facility.

The WWTF consists of the following facilities and processes:

TABLE 1-1
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Facility/Process	Description
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High Service Effluent Pumping	
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Effluent Disposal	Interlachen Golf Course (0.19 MGD capacity) Glen Haven Cemetery (0.15 MGD capacity) Showalter Field/Cady Way Park (0.12 MGD capacity) Winter Park Pines Golf Course (0.155 MGD capacity)

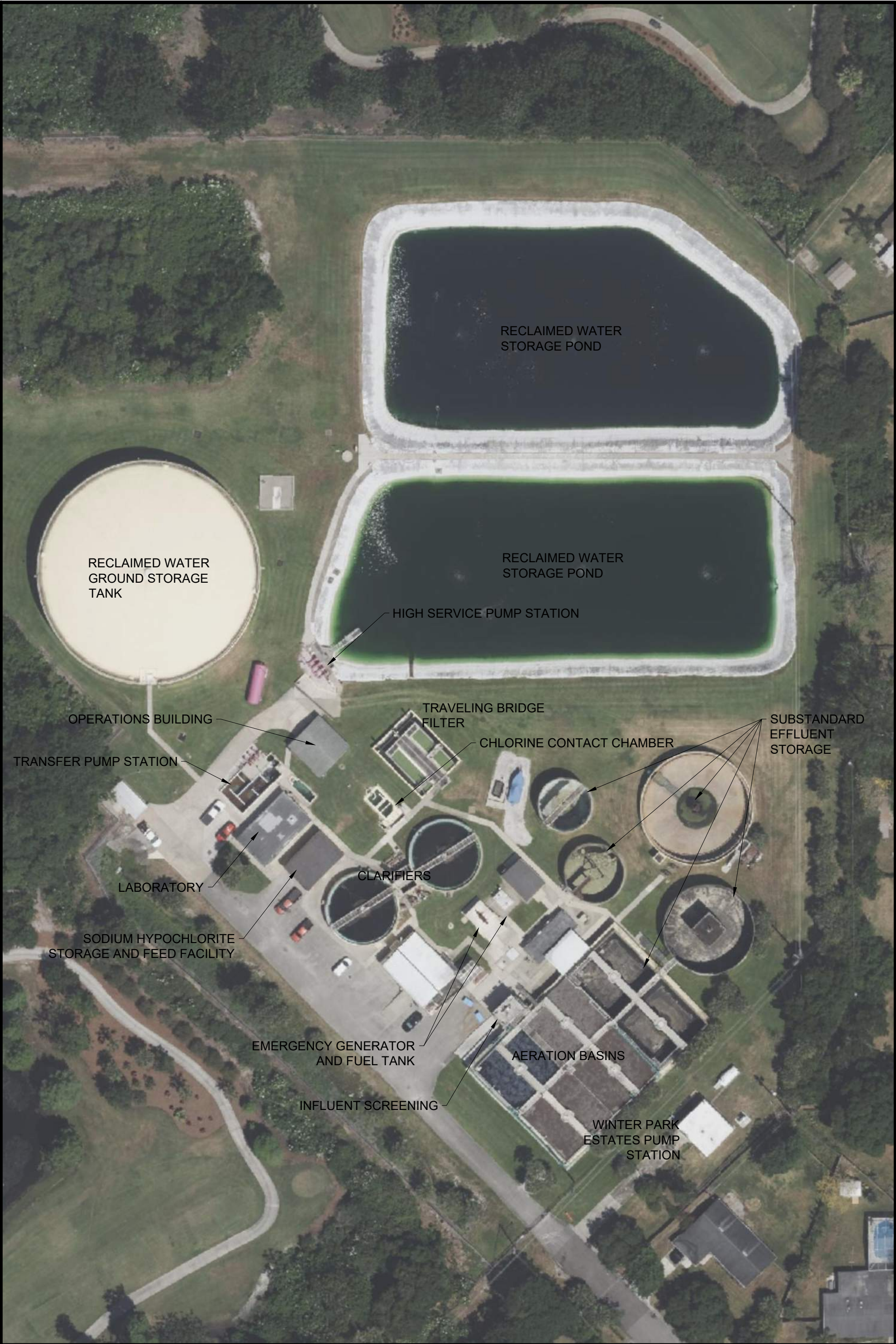
**TABLE 1-1
Facilities and Processes**

Facility/Process	Description
Residuals	Waste activated sludge generated at the plant is discharged to the SSNOCWTA Winter Park Estates Lift Station and pumped with the raw wastewater to the Iron Bridge Regional Wastewater Reclamation Facility.
Support Facilities	Emergency generator, in-plant pump station, operations building/laboratory

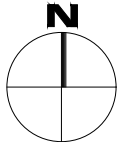
Table 1-2 describes the permitted capacities and reclaimed water and effluent limitations.

**TABLE 1-2
Permitted Capacities and Reclaimed Water/Effluent Limitations**

Parameter	Limitation
Flow Thru Plant	0.750 MGD annual average
5-Day Carbonaceous Biochemical Oxygen Demand	20.0 mg/L annual average 30.0 mg/L monthly average 45.0 mg/L weekly average 60.0 mg/L single sample
Total Suspended Solids	5.0 mg/L single sample
Fecal Coliform	25 per 100 mL single sample
Fecal Coliform, % less than detection	75% monthly total minimum
pH	6.0 – 8.5
Total Residual Chlorine	1.0 mg/L single sample minimum
Flow (Interlachen Golf Course)	0.19 MGD annual average
Flow (Glen Haven Cemetery)	0.15 MGD annual average
Flow (Showalter Field/Cady Way)	0.12 MGD annual average
Flow (Winter Park Pines Golf Course)	0.155 MGD annual average
Ground Water Wells:	
Total Nitrate (as N)	10 mg/L quarterly
Total Dissolved Solids	500 mg/L quarterly
Chloride (as Cl)	250 mg/L quarterly
Fecal Coliform	4 per 100 mL quarterly
pH	6.5 – 8.5



SITE PLAN



CHAPTER 2

Physical Condition

The physical condition of the facility along with the various components, systems and processes are summarized below in this section.

2.1 Hydraulic or Organic Overloading

There was no evidence of hydraulic or organic overloading at the facility. The activated sludge process mixed liquor color and odor was normal; water clarity from the sedimentation, filtration and chlorination processes was clear. No signs of high water levels within channels or basins indicating hydraulic issues were observed.

2.2 General Condition

The general condition of each component, system and process was evaluated and summarized in Table 2-1. Overall, the facility is in good condition with no signs of excessive rust, corrosion, noise, malfunction, wear, etc.).

TABLE 2-1
General Condition of Components, Systems and Processes

Process	General Condition
Pumping	
Influent Pump Station	Good
RAW/WAS Pumps	Good/Fair
Effluent Transfer Pumps	Good
High Service Pumps	Good
In-Plant Pump Station	Good
Flow Measurement	Good
Preliminary Treatment	
Mechanical Screen	Excellent/Good
Manual Bar Screen	Good
Washer/Compactor	Excellent/Good
Biological Treatment	
Activated Sludge	Excellent/Good
Blowers	Good
Diffusers	Good
Sedimentation	
Clarifiers	Good
Clarifier Mechanisms	Good/Fair

TABLE 2-1
General Condition of Components, Systems and Processes

Process	General Condition
Weirs	Good/Fair
Filtration	
Traveling Bridge Filters	Good
Media	Good
Disinfection	
Chlorine Contact Chamber	Good
Sodium Hypochlorite Storage/Feed System	Good
Reuse System	
Ground Storage Tank	Good
Effluent Ponds	Good/Fair
Substandard Effluent Storage	Good
Hydropneumatic Tank	Good
Support Systems	
Instrumentation	Good
Sampling Equipment	Good
Monitoring Equipment	Good
Laboratory	Excellent
Generator/Fuel Storage	Excellent
Condition ratings used for evaluation are excellent, good, fair and poor.	

2.3 Proper Operation

All components, systems and processes are operating properly and expected to continue to operate properly for the permit period with proper preventative maintenance.

2.4 Safety Features

All components, systems and processes have adequate safety features and are operated safely. The site has a perimeter fence and gated access recently replaced in 2023. Basins and stairs have railing around operator access areas and life rings.

CHAPTER 3

Treatment Efficiency

As part of the previous permit renewal cycle, the WWTF was evaluated to establish the design flows and loadings. The design parameters along with the current flows and loads for the calendar year 2022 is presented below in Table 3-1. The comparison between the design flows and loads versus the current flows and loads demonstrates the plant operates below the design parameters.

The overall treatment efficiency of the facility in 2022 is summarized in Table 3-2. Based on the given removal percentages of contaminants at the WWTF, it is expected that the facility will meet permit requirements for the duration of the next permit period.

TABLE 3-1
Flows and Loads Comparison (Note 1)

Parameter	Design Value	Current Value
Flow (Note 2)	0.750 MGD AADF permitted capacity 0.615 MGD AADF land application 1.15 MGD AADF design capacity 1.60 MGD AADF treatment capacity	0.477 MGD AADF
CBOD5	200 mg/L 2,670 lbs/d (Note 3)	631 lbs/day
TSS	200 mg/L 2,670 lbs/d (Note 3)	599 lbs/day

Note 1: Current values are from January 1, 2022 to December 31, 2022.

Note 2:

a) Design capacity is the treatment capacity of the plant from influent pumping to high service pumping and is limited by the capacity of the influent pumping capacity.

b) Treatment capacity is the capacity through the aeration basins, clarifiers, filters and disinfection process.

Note 3: Design loadings based on 1.6 MGD design flow

TABLE 3-2
Overall Treatment Efficiency (Note 1)

Parameter	Influent	Reclaimed Water	Percent Removal
CBOD5	158	2.04 mg/L	98.7%
TSS	148	0.22 mg/L	99.9%
Total Nitrogen	Note 2	10.75 mg/L	---
Total Phosphorus	Note 2	1.87 mg/L	---

Note 1: Values are from January 1, 2022 to December 31, 2022.

Note 2: Influent Total Nitrogen and Total Phosphorus not tested at plant.

CHAPTER 4

Performance Trends

Data collected from monthly discharge monitoring reports and quarterly groundwater discharge monitoring reports were used to evaluate historical and current trends in influent, reclaimed water and groundwater parameters. Data for the past 10 years (January 2013 to January 2023) from the monthly discharge monitoring reports and the past 5-1/2 years (3rd quarter 2017 to 1st quarter 2023) were used to evaluate the performance trends.

The following performance trends are summarized below in this chapter:

- Influent Flows and Loading
- Reclaimed Water
- Groundwater Quality

4.1 Flows and Loading

Influent flows, reuse land application flows, and influent loadings are presented in the following subchapter. The list of tables and figures is as follows:

- Table 4-1, Influent Flows and Loadings
- Figure 4-1, Influent Annual Average Daily Flow
- Figure 4-2., Three Month Average Daily Flow
- Figure 4-3, Influent CBOD Concentration
- Figure 4-4, Influent CBOD Loading
- Figure 4-5, Influent TSS Concentration
- Figure 4-6, Influent TSS Loading
- Figure 4-7, Interlachen Golf Course Annual Average Daily Flow
- Figure 4-8, Glen Haven Cemetery Annual Average Daily Flow
- Figure 4-9, Showalter Field/Cady Way Annual Average Daily Flow
- Figure 4-10, Winter Park Pines Golf Course Annual Average Daily Flow

The influent flows have increased over the past 10 years due to higher demands from the irrigation end users, but have been relatively steady the last 5 years. As shown in the three-month average daily flow, the flow through the plant is dependent upon the need to supply irrigation and is typically higher in the drier and warmer spring season.

Influent CBOD5 and TSS concentrations and loadings are within an acceptable range for domestic wastewater. Based on the influent trends, it is expected the facility will be capable of meeting permit limitations during the period for which the operation permit is requested. The three-month average daily flow has exceeded the annual average daily flow permitted capacity; however, no planning for an expansion is required since flow to this facility is driven by irrigation demand and not residential or commercial wastewater generation. Any flow in excess of the permitted capacity is pumped to the City of Orlando Iron Bridge Regional Wastewater Reclamation Facility via the SSNOCWTA wastewater transmission system.

TABLE 4-1
Historical Influent Flows and Loadings

Year	Influent Flow (MGD)	CBOD5 (mg/L)	CBOD5 (lbs/day)	TSS (mg/L)	TSS (lbs/day)
2013	0.404	247	835	244	836
2014	0.352	248	744	206	607
2015	0.404	216	756	244	836
2016	0.456	226	855	159	599
2017	0.493	241	997	244	1,005
2018	0.516	200	861	229	983
2019	0.498	182	760	190	793
2020	0.511	193	838	149	639
2021	0.503	151	636	145	614
2022	0.477	158	631	148	599
2023	0.382	299	936	159	498

TABLE 4-2
Typical Domestic Wastewater Characteristics (Note 1)

Parameter	Low Strength	Medium Strength	High Strength
CBOD5 (mg/L)	110	190	350
TSS (mg/L)	120	210	400

Note 1: Information from Metcalf & Eddy, *Wastewater Engineering: Treatment and Reuse*, 4th ed.)

Figure 4-1
Influent Annual Average Daily Flow

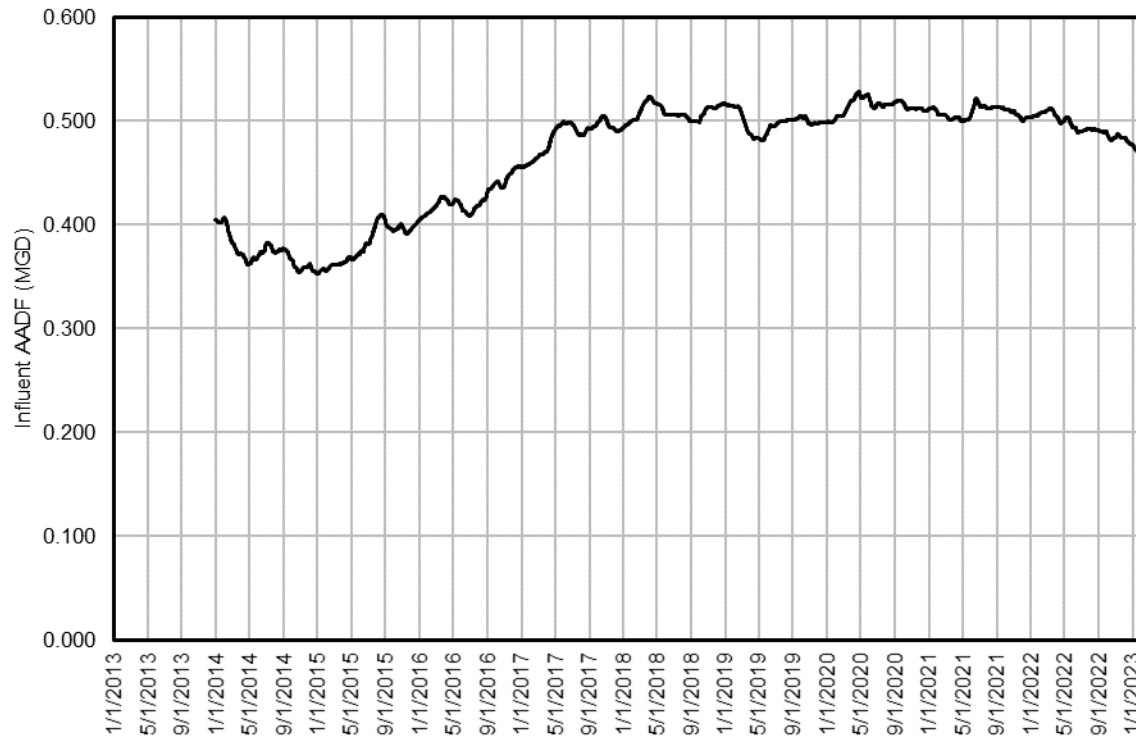


Figure 4-2
Three Month Average Daily Flow

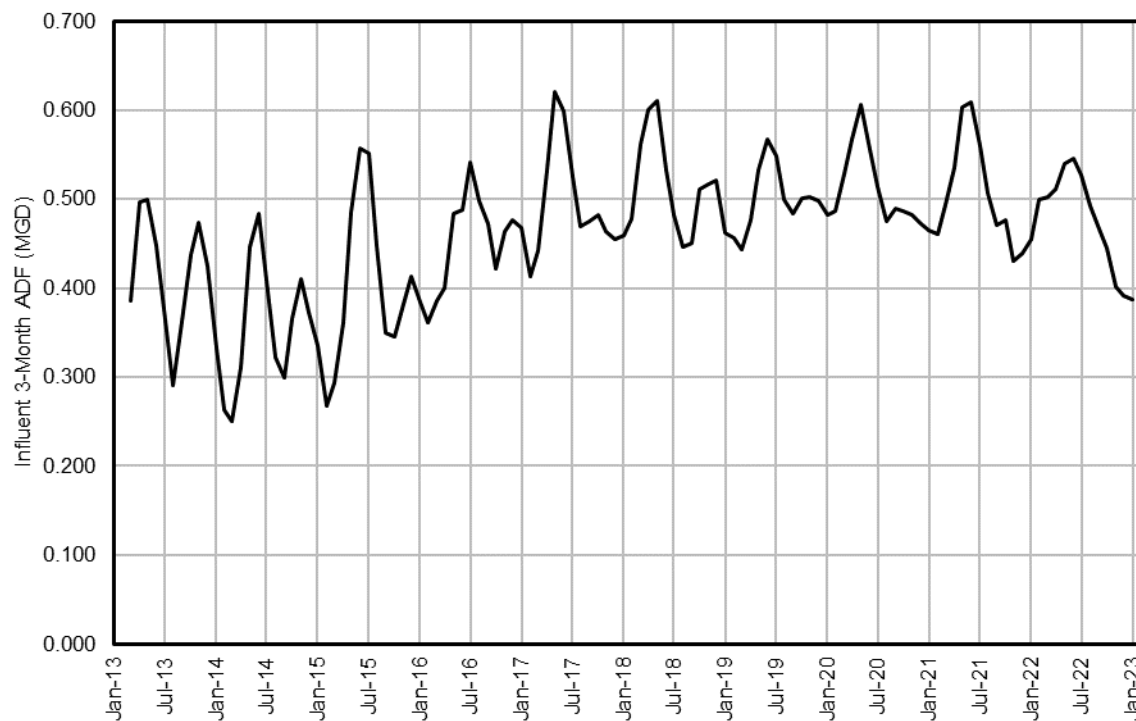


Figure 4-3
Influent CBOD Concentration
(Solid line shows three-month average concentration)

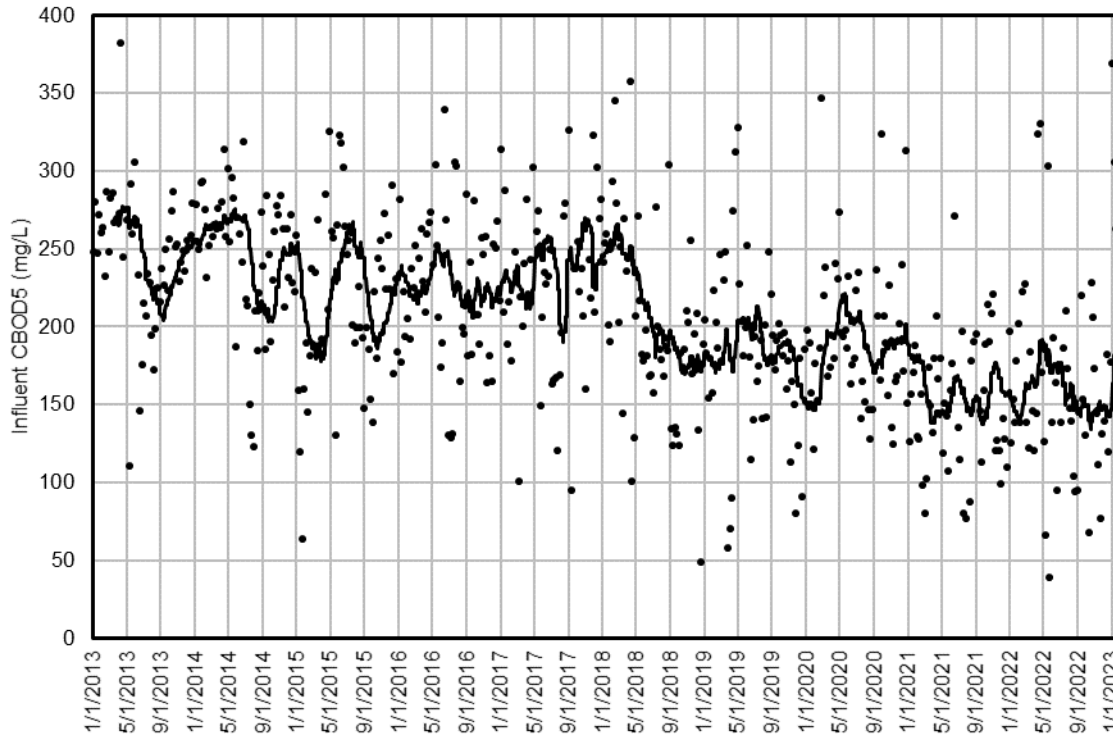


Figure 4-4
Influent CBOD Loading
(Solid line shows three-month average concentration)

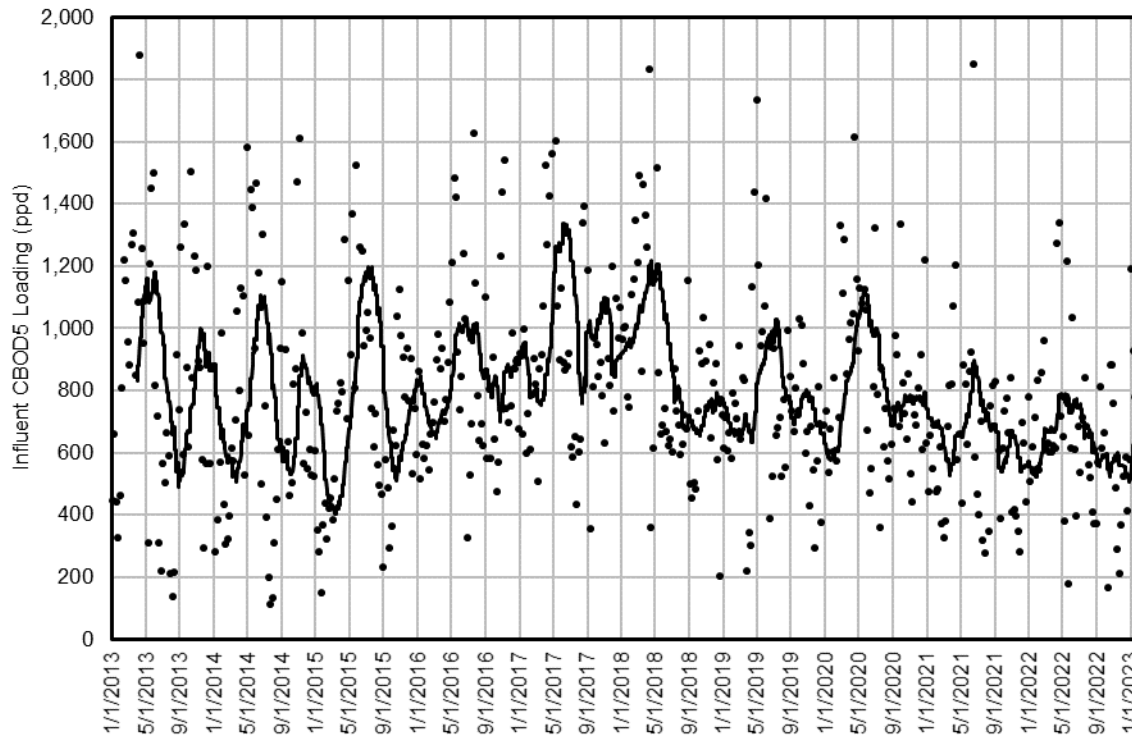


Figure 4-5
Influent TSS Concentration
(Solid line shows three-month average concentration)

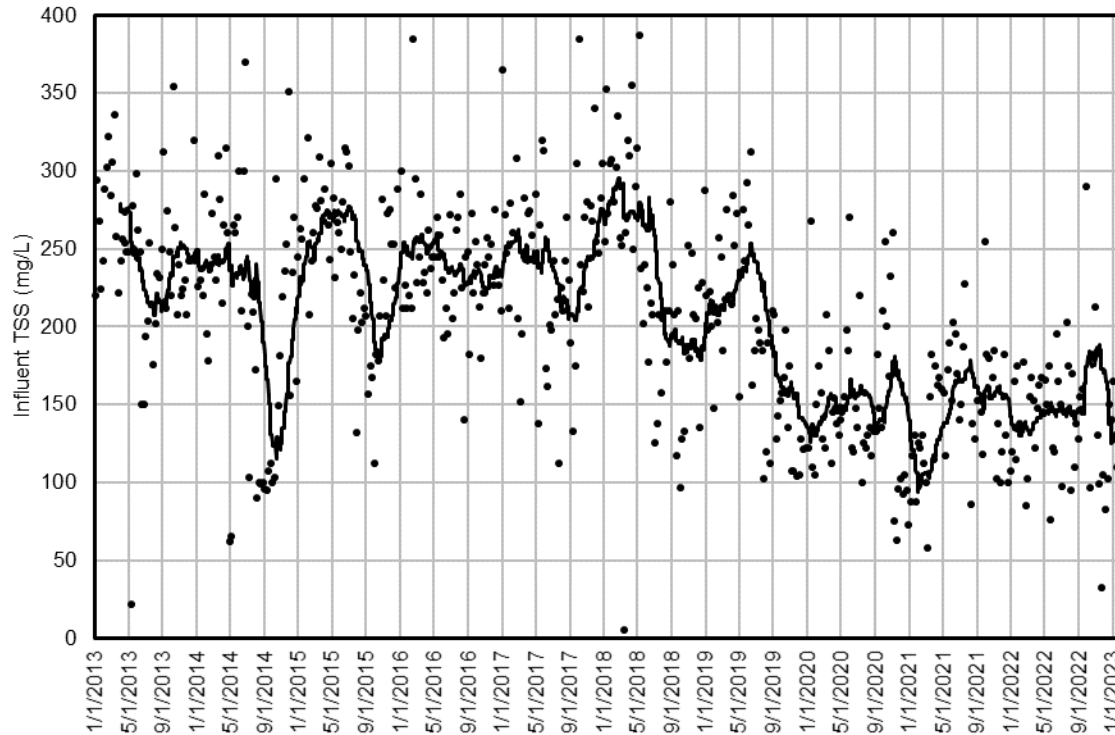


Figure 4-6
Influent TSS Loading
(Solid line shows three-month average concentration)

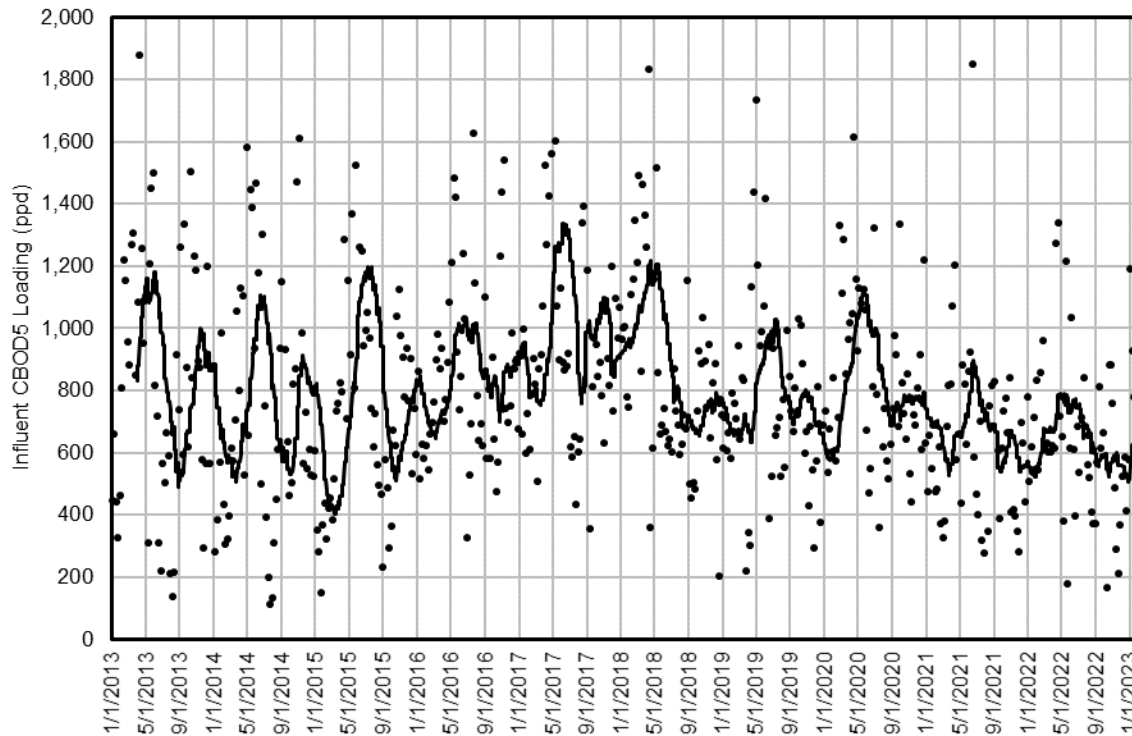


Figure 4-7
Interlachen Golf Course Annual Average Daily Flow



Figure 4-8
Glen Haven Cemetery Annual Average Daily Flow

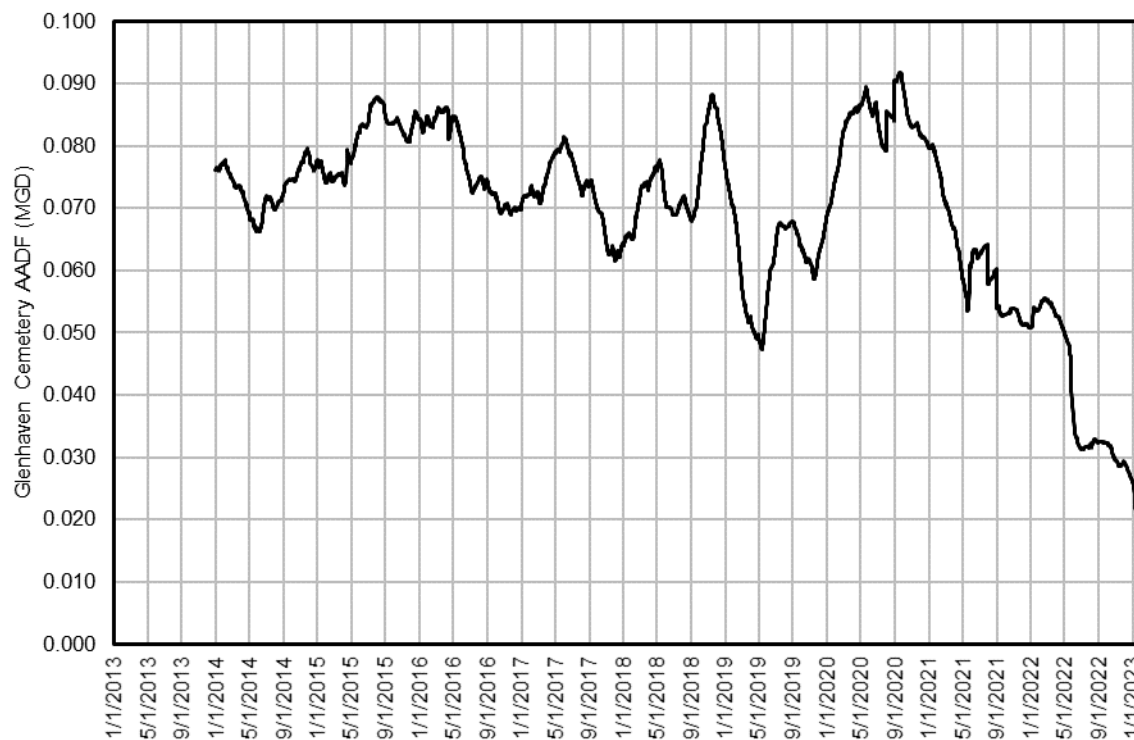
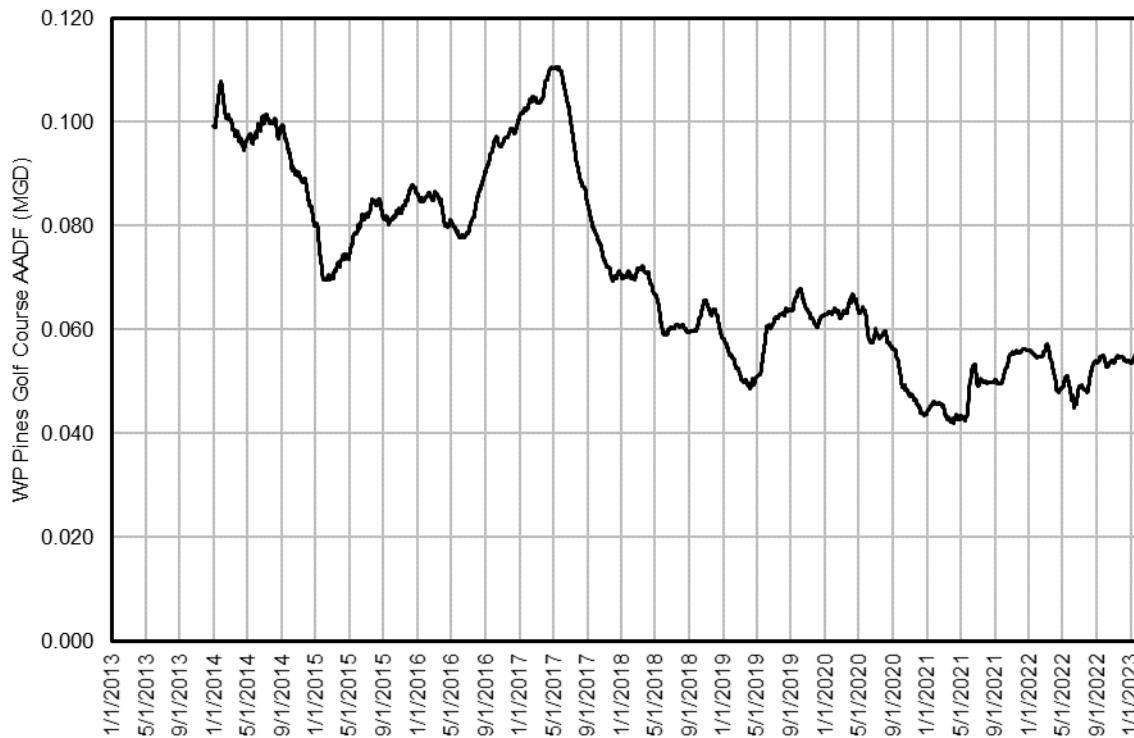


Figure 4-9
Showalter Field/Cady Way Annual Average Daily Flow



Figure 4-10
Winter Park Pines Golf Course Annual Average Daily Flow



4.2 Reclaimed Water

Reclaimed water quality is presented in the following subchapter. The list of tables and figures is as follows:

- Table 4-2, Reclaimed Water Fecal Coliform Concentration
- Figure 4-11, Reclaimed Water CBOD5 Concentration
- Figure 4-12, Reclaimed Water TSS Concentration
- Figure 4-13, Reclaimed Water Total Nitrogen Concentration
- Figure 4-14, Reclaimed Water Total Phosphorus Concentration

As shown in the following table and graphs, the reclaimed water has consistently met the permit requirements. Based on the trends for each parameter, it is expected the facility will be capable of meeting permit limitations during the period for which the operation permit is requested.

TABLE 4-2
Reclaimed Water Fecal Coliform Concentration (Note 1)

Fecal Coliform Concentration (#/100 mL)	Number of Samples	Frequency
<1	2,792	99.71%
1	2	0.071%
2	2	0.071%
6	1	0.036%
15	1	0.036%
41	1	0.036%
200	1	0.036%
Analysis Not Collected (Note 2)	883	---
Total Number of Samples Collected:	2,800	100%

Note 1: Values are from January 1, 2013 to January 31, 2023.

Note 2: Analysis not collected on days when reclaimed water for irrigation is not being produced due to low demand by end users and effluent is being rejected to the Winter Park Estates Pump Station and pumped to the City of Orlando Iron Bridge Water Reclamation Facility.

Figure 4-11
Reclaimed Water CBOD5 Concentration

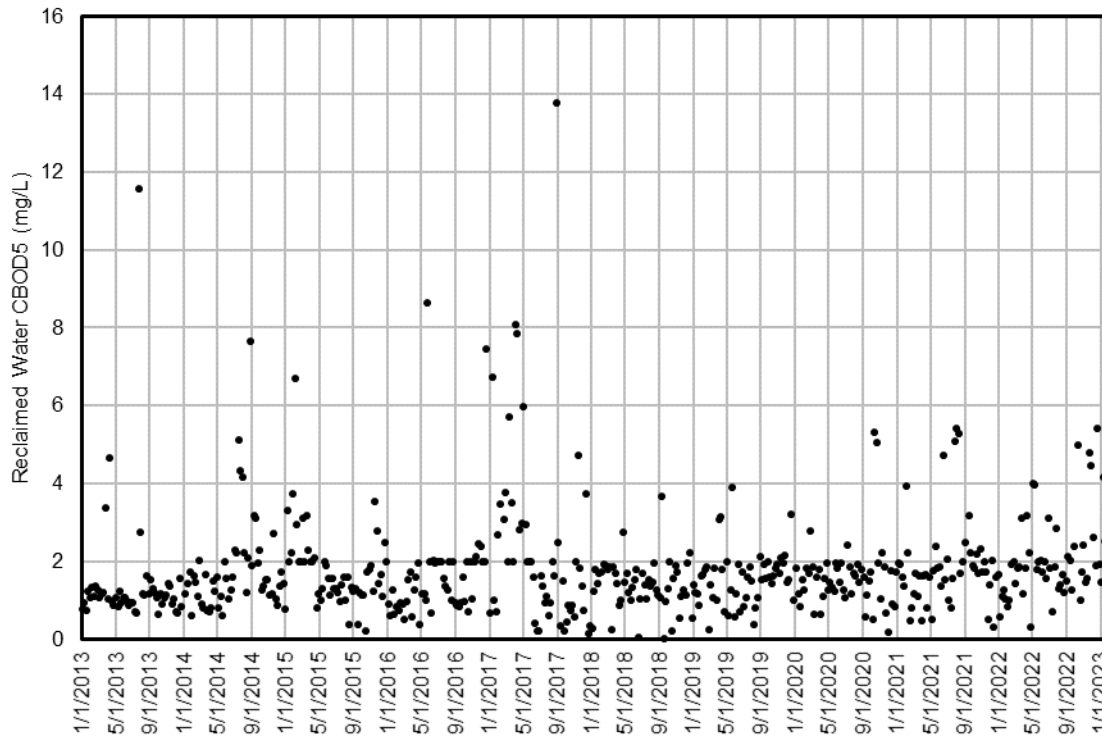


Figure 4-12
Reclaimed Water TSS Concentration

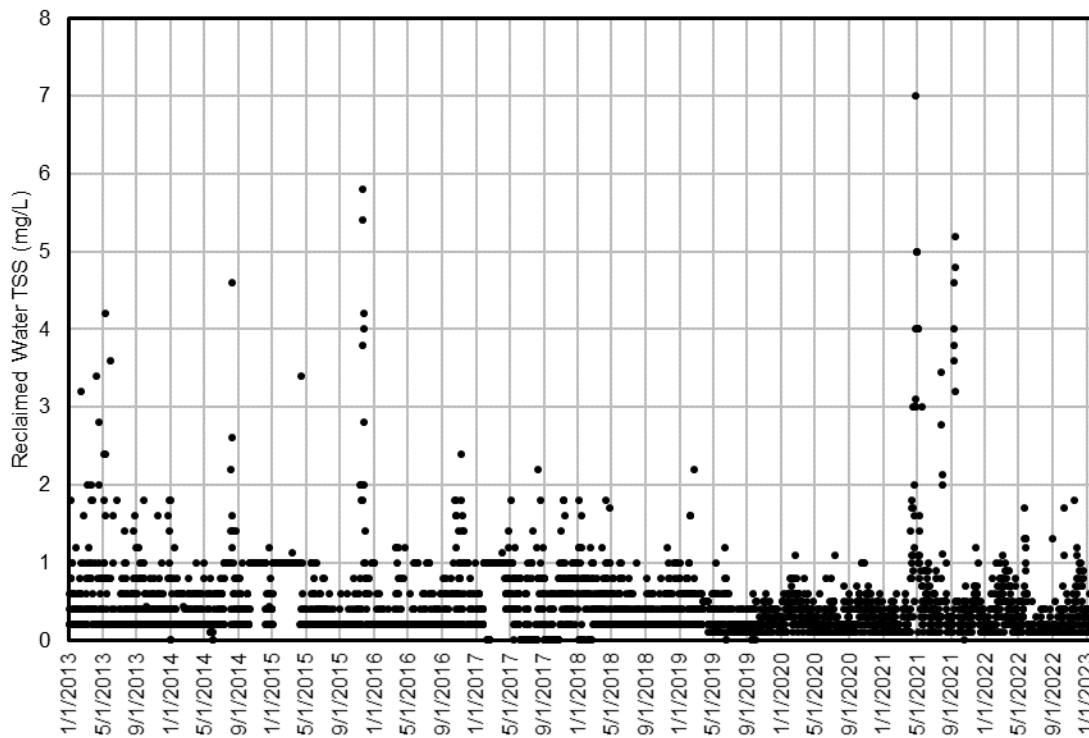


Figure 4-13
Reclaimed Water Total Nitrogen Concentration

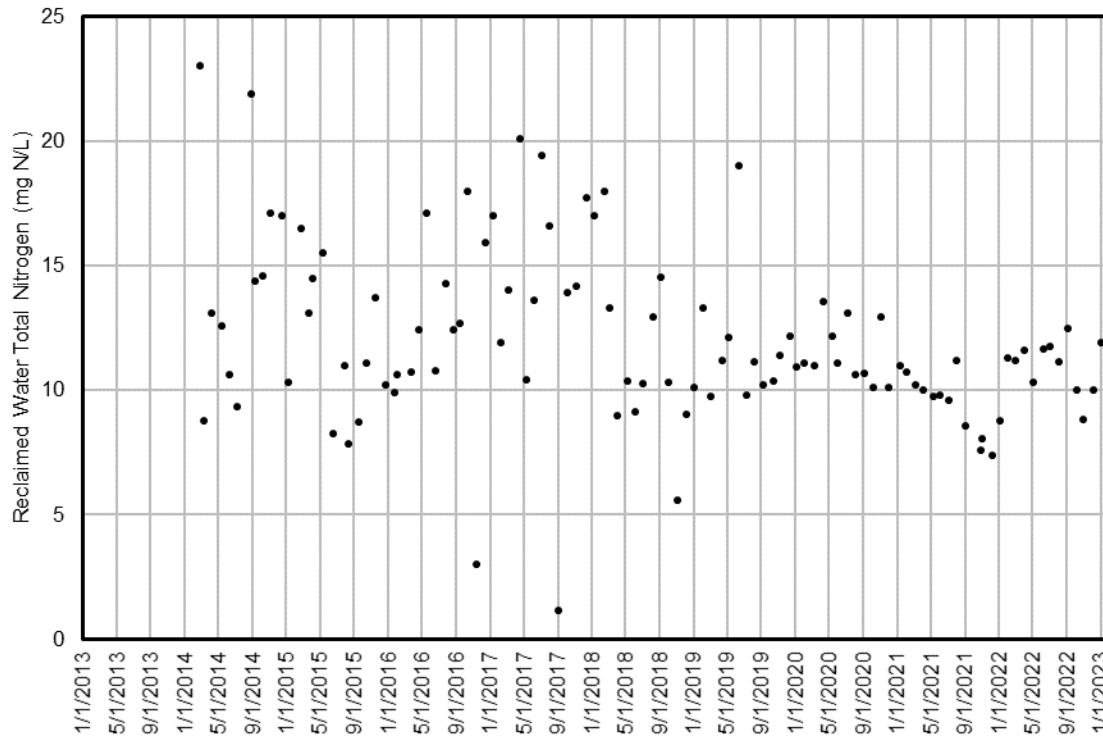
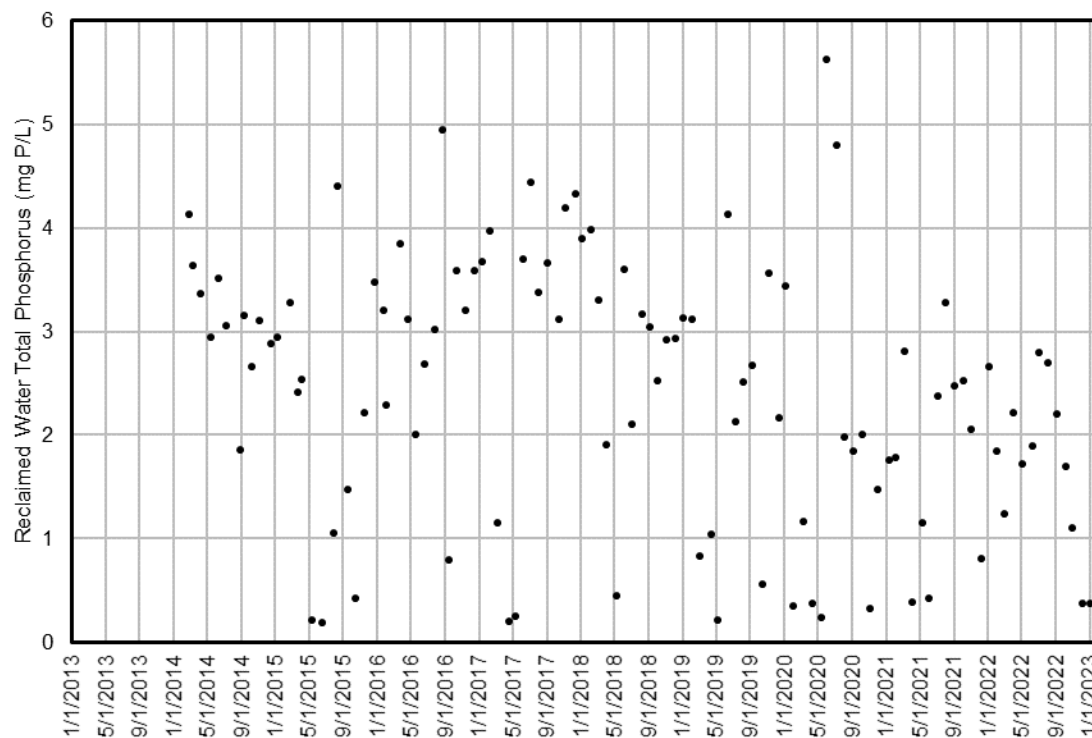


Figure 4-14
Reclaimed Water Total Phosphorus Concentration



4.4 Groundwater Quality

Groundwater quality is presented in the following subchapter for the background well (MWB-5), intermediate well (MWI-7), and the two compliance wells (MWC-6 and MWC-8) for the land application monitoring site. The list of tables and figures is as follows:

- Figure 4-15, Groundwater Total Nitrate Concentration
- Figure 4-16, Groundwater Total Dissolved Solids Concentration
- Figure 4-17, Groundwater Chloride Concentration
- Figure 4-18, Groundwater Fecal Coliform Concentration
- Figure 4-19, Groundwater pH
- Figure 4-20, Groundwater Turbidity

As shown in the following graphs, the groundwater quality has consistently met the permit requirements. Based on the trends for each parameter, the groundwater monitoring test results are within acceptable ranges established in the permit.

Figure 4-15
Groundwater Total Nitrate Concentration

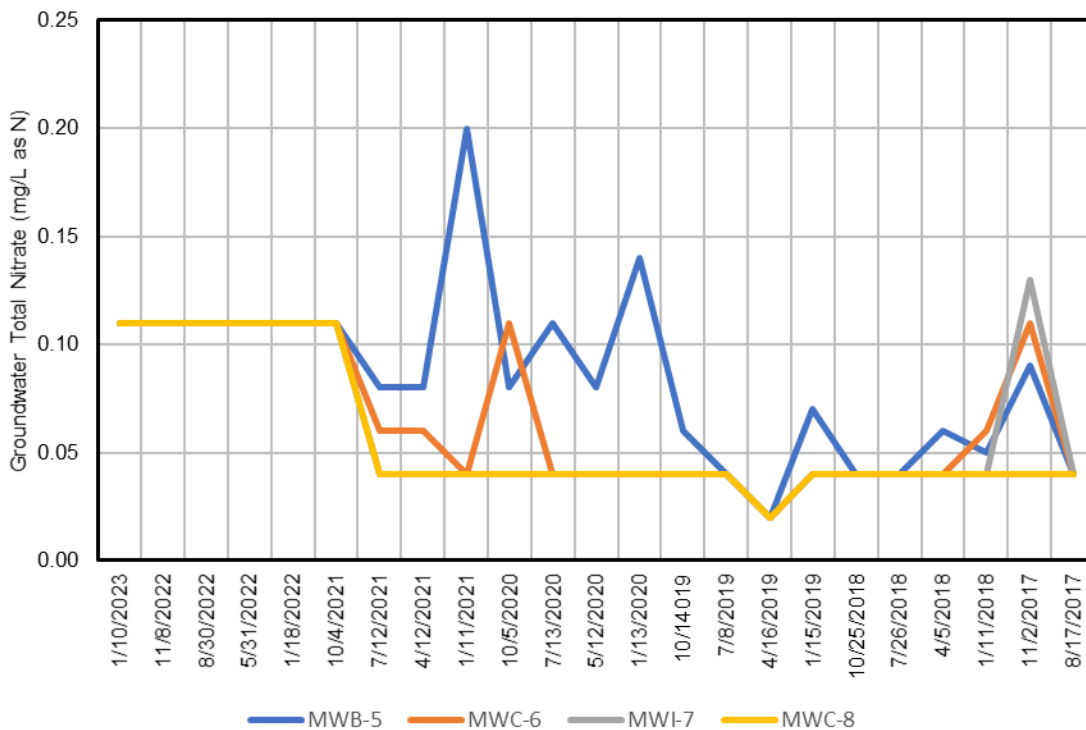


Figure 4-16
Groundwater Total Dissolved Solids Concentration

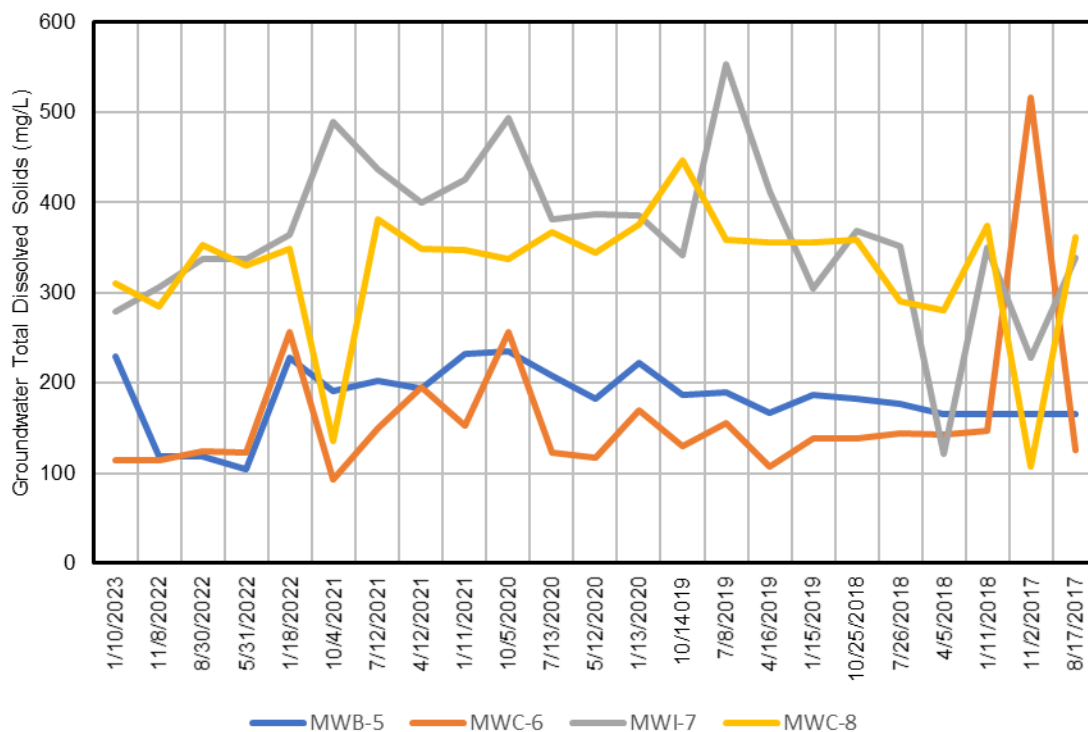


Figure 4-17
Groundwater Chloride Concentration

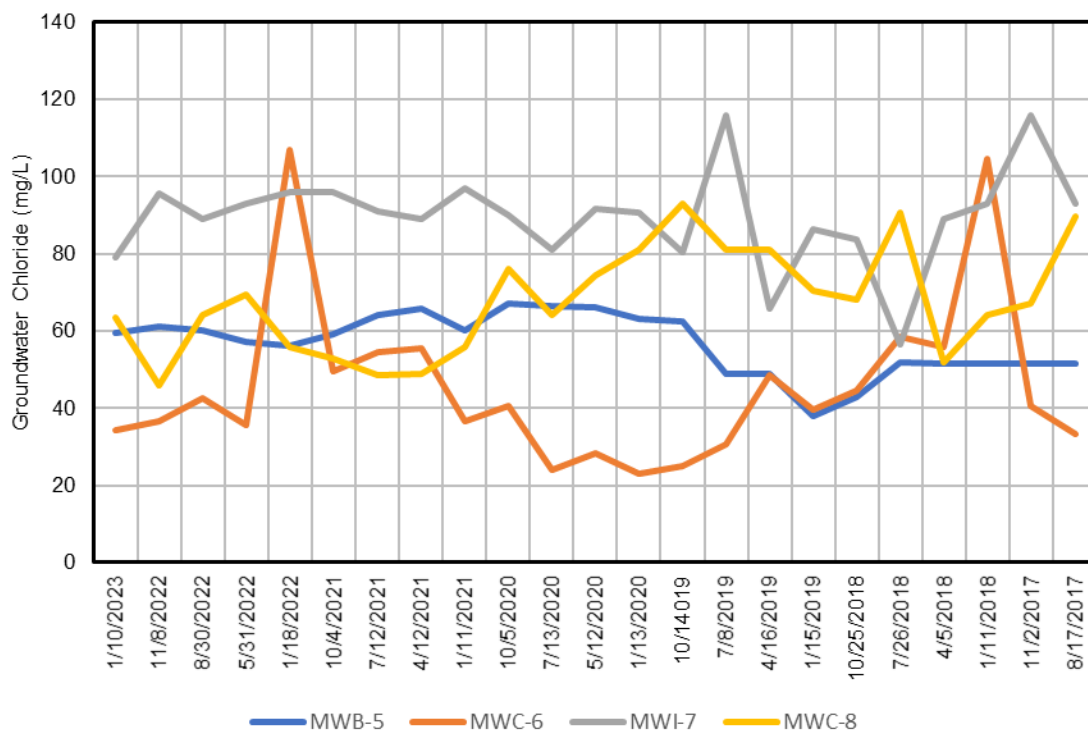


Figure 4-18
Groundwater Fecal Coliform Concentration

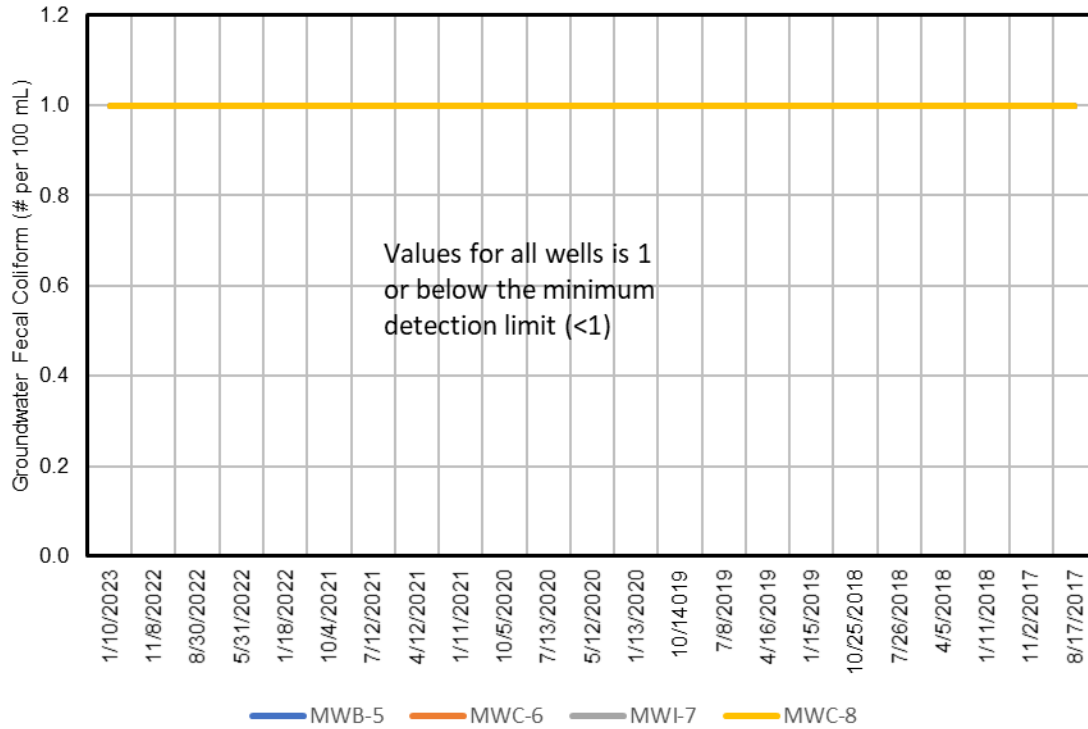


Figure 4-19
Groundwater pH

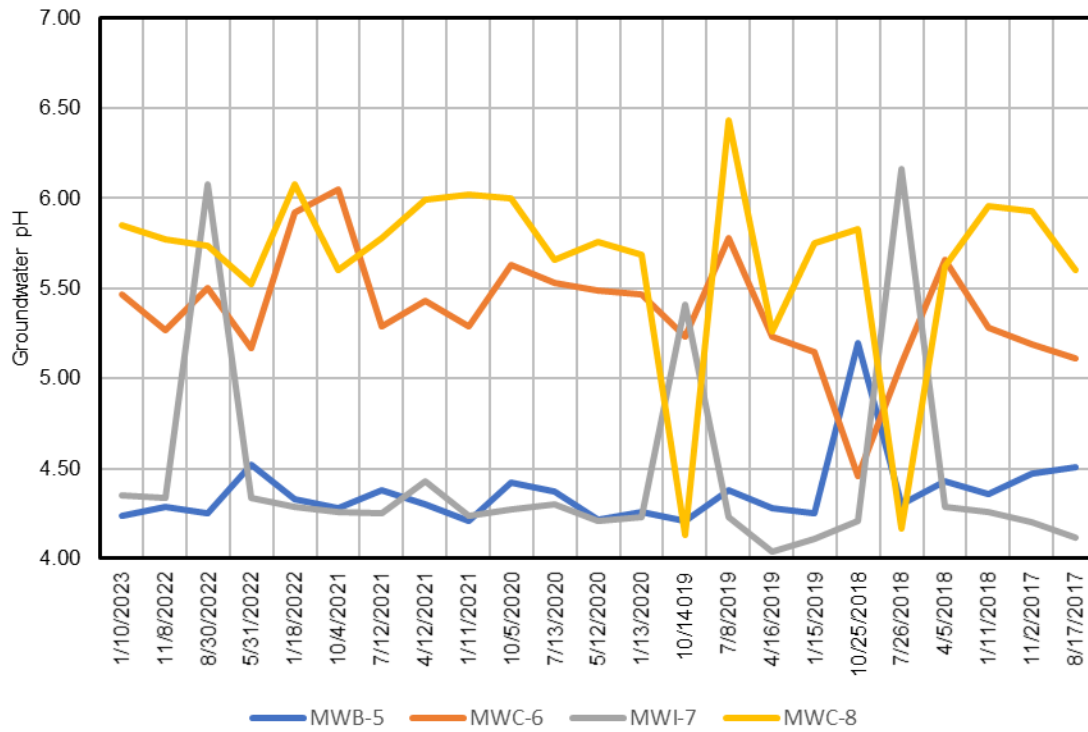
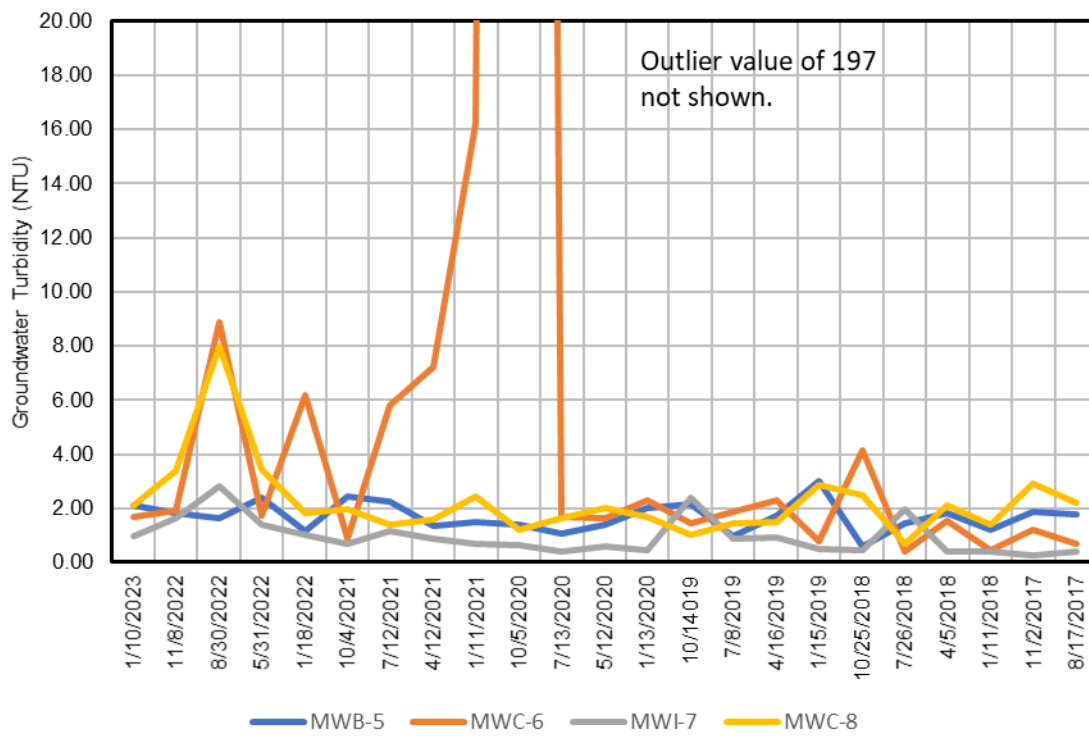


Figure 4-20
Groundwater Turbidity



CHAPTER 5

Operation and Maintenance Program

5.1 Record Drawings

Record drawings are located at the wastewater treatment plant located at 2655 Bongart Road, Winter Park, FL 32789. Additionally, record drawings of the plant are kept electronically on the City's server. Various record drawings of the plant are available as modifications to the plant have occurred over the years of operation.

5.2 Operation & Maintenance Manual

The operation and maintenance manuals are located at the wastewater treatment plant located at 2655 Bongart Road, Winter Park, FL 32789. Additionally, manuals are kept electronically on the City's server. The manuals provide basic hydraulic and engineering design criteria, procedures for operation, and equipment maintenance and troubleshooting descriptions.

5.3 Operation & Maintenance Log

The staff maintains an operation and maintenance log at the operations building at the plant that is accessible 24 hours a day. The log is organized with operator time entries and documentation of appropriate operational information.

The log is in a hard-bound book with consecutive page numbering, identification of plant, signature/license number of operator making entries, dates and time of events, tests performed, notifications, etc.

5.4 Staffing

A list of City staff responsible for the management and operation of the Wastewater Treatment Division is provided in Table 5-1. The Wastewater Treatment Division is managed overall by the City's Water and Wastewater Treatment Divisions Manager who also manages the City's Water Treatment Division. Staff underneath the Water and Wastewater Divisions Manager reside at the wastewater treatment plant and manage and operate the plant on a daily basis. Staffing is provided to operate the plant 24 hours per day for 7 days per week with a minimum C licensed operator. Five of the staff are licensed to be available as lead/chief operators.

TABLE 5-1
Wastewater Treatment Division Staffing

Staff and Role	Title	License
Deneshwar Dewdat	Manager, Water and Wastewater Treatment Divisions	DWA 0015168
Samuel Cruz	Assistant Manager, Wastewater Treatment Division	WWA 0009639
William Longley	Lead Plant Operator	WWA 0013249
David Hritz	Plant Operator	WWB 0013714
Brian Pauline	Plant Operator	WWA 0013303
Jameson David	Plant Operator	WWB 0026919
Tabias Modeste	Plant Operator	WWC 0027709
Michael Gray	Plant Operator	WWC 0027554

TABLE 5-1
Wastewater Treatment Division Staffing

Staff and Role	Title	License
Timothy Ellis	Industrial Waste Technician	WWC 0016580
Vacant (position currently advertised)	Plant Operator	TBD
Vacant (position currently advertised)	Senior Industrial Waste Technician	TBD

CHAPTER 6

Collection System Evaluation

The Winter Park Estates Wastewater Treatment Facility (WWTF) is owned and operated by the City of Winter Park and treats a portion of the City's wastewater service area. Wastewater from part of the City's wastewater service area is collected at the Winter Park Estates Pump Station adjacent to the City's WWTF. This lift station is owned and maintained by the South Seminole North Orange County Wastewater Transmission Authority (SSNOCWTA) but operated by the City in accordance with the State of Florida Legislature SSNOCWTA Authority Act of 1978 (Chapter 78-617). Wastewater into this pump station can be pumped to either the WWTF or the SSNOCWTA wastewater transmission system. The SSNOCWTA transmission system ultimately discharges to the City of Orlando Iron Bridge Regional Wastewater Reclamation Facility.

Approximately 20-25% of the wastewater generated within the City's service area flows to the Winter Park Estates Pump Station in which a portion of that flow is pumped into the WWTF for irrigation supply. The flow into the plant is a function of irrigation demand with the remaining flow pumped into the SSNOCWTA system and ultimately to the Iron Bridge Regional Wastewater Reclamation Facility; due to this, review of the flow records does not allow an evaluation of excessive infiltration or inflow. However, review of the influent carbonaceous biochemical oxygen demand and total suspended solids concentrations did indicate some dilution of the influent concentrations during the wet season but not considered excessive.

The City's Wastewater Collection Division is equipped with a vehicle and tools (e.g. camera, WinCan sewer inspection/asset management software, etc.) dedicated for CCTV inspection of the collection system along with the supporting staff on a continuous basis. Additionally, the City allocates funding sewer lining on an annual basis under the Capital Improvement budget.

The majority of the wastewater within the City's collection system is domestic wastewater and the City has an Industrial Waste Pretreatment Program. The treatment plant does not experience any issues with excessive infiltration and inflow, sewers that are under capacity, septic wastewater, toxic substances or industrial waste discharges.

CHAPTER 7

Problems, Deficiencies, and Corrective Actions

Overall, the facility is operating properly, meeting reclaimed water quality requirements, maintained and in good condition. The staff is proactive with the renewal and replacement of assets and budgets for replacement of equipment components annually in the Capital Improvement Plan budget. The following is a list of projects and renewal and replacement activities over the permit period:

1. Replacement of the mechanical bar screen and washer compactor
2. Replacement of the filter underdrain in one train of the traveling bridge filter.
3. Replacement of the emergency generator and automatic transfer switch.
4. Replacement of the perimeter fence and automatic access gate.
5. Replacement and upgrade of the facility programmable logic controllers (PLCs)
6. Remodeling of the operations building

In addition to the projects listed above, the staff continuously perform maintenance and replacement of pumps, gearboxes, paint, instrumentation, etc.

During the field visit, the following observations were noted.

1. One clarifier was not in operation due to scheduled maintenance.
2. One train of the traveling bridge filter is not backwashing effectively. The City is working with the manufacturer for a quote for the replacement of the backwash underdrains.

Planned future projects are as follows:

1. Replacement of the effluent storage pond HDPE liner.
2. Replacement of the traveling bridge filter underdrains.
3. Replacement and upgrade of the facility programmable logic controllers (PLCs)