



UNIONCOUNTY
WATER

Wastewater
Performance
Summary Fiscal
Year 2022-2023

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Dear Customer,

We are proud to share this year's Annual Wastewater Performance Summary with you. This report outlines last year's wastewater treatment efforts. Included are details about your treatment facilities, collection system performance, and how it compares to standards set by regulatory agencies.

Wastewater is all the water that leaves the inside of your home or business through sinks, toilets, washing machines, etc. and enters Union County's wastewater (sewage) collection system. The wastewater then flows through pipes into the County's regional sewage system, where it is treated to meet federal and state water quality standards.

We have a responsibility to manage our water resources in a sustainable manner to ensure there is sufficient water and its quality is protected. While we are committed to conserving resources and protecting the environment through wastewater treatment, this can only occur if it is done in a safe manner. Protection of public health and safety is, and must remain, our first priority. We are proud of our achievements to date, but we aim to constantly improve the way we manage the wastewater generated by our residents.

If you have any questions regarding this report or your water, please contact us at 704.296.4210. If you want additional information, please visit our website at: www.unioncountync.gov

Sincerely,

Josh Brooks

Josh Brooks
Interim Water & Wastewater Division Director
4600 Goldmine Road, Monroe, NC 28110



1.0 Introduction

Nature has an amazing ability to cope with small amounts of water waste and pollution, but it would be overwhelmed if we didn't treat the wastewater and sewage produced every day before releasing it back to the environment. Treatment plants reduce pollutants in wastewater to a level nature can handle. Wastewater is used water. It includes substances such as human waste, food scraps, oils, soaps and chemicals. In homes, this may be water from sinks, showers, bathtubs, toilets, washing machines and dishwashers. Businesses and industries also contribute their share of used water that must be cleaned.

If wastewater is not properly treated, then the environment and human health can be negatively impacted. These impacts include harm to fish and wildlife populations, oxygen depletion, restrictions on recreational water use, and contamination of drinking water.

House Bill 1160, the Clean Water Act of 1999, was ratified by the North Carolina General Assembly on July 20, 1999 and signed into law by the Governor on July 21, 1999.

This legislation placed significant reporting requirements on entities that own or operate wastewater systems. This Performance Summary is intended to establish compliance with this rule.

Union County Water (UCW) is charged with the management, operation and maintenance of the County's sanitary sewer system. During fiscal year 2022-2023 the wastewater system was comprised of five active water reclamation facilities (WRF), 49 wastewater pumping stations, and over 757 miles of pipe with 42,963 connections. In addition to the five WRF's, which have a combined rated treatment capacity of 9.65 million gallons per day (MGD), the County, through contractual agreement, has 2.65 MGD and 3.0 MGD of purchased capacity at the City of Monroe WRF and Charlotte's McAlpine Creek WRF.

2.0 Definitions

For the purposes of this Performance Report the following definitions apply:

AEROBIC

A condition in which atmospheric or dissolved molecular oxygen is present in the aquatic environment.

BIOLOGICAL NUTRIENT REMOVAL

The process of removing nitrogen and phosphorus from wastewater using biological processes as opposed to chemical means.

BIOSOLIDS

A primarily organic solid product, produced by wastewater treatment processes that can be beneficially recycled. The word biosolids replaces the word sludge.

BOD – BIOCHEMICAL OXYGEN DEMAND

The rate at which organisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. The BOD test is a procedure that measures the rate of oxygen use under controlled conditions of time and temperature. BOD is typically used to express the “strength” of wastewater.

CL2 – CHLORINE RESIDUAL

The amount of chlorine present in the final effluent after disinfection. Typically measured in micrograms per liter or milligrams per liter.

D.O. – DISSOLVED OXYGEN

Molecular (atmospheric) oxygen dissolved in a liquid.

EFFLUENT

Treated wastewater flowing from the treatment system.

EXTENDED AERATION

A type of wastewater treatment facility in which the wastewater is retained and treated for a minimum of 24 hours at design flow before discharge occurs.

INFLOW AND INFILTRATION (I&I)

Extraneous water that enters the sanitary sewer system through openings and/or defects in the collection system.

FECAL COLIFORM

The coliform (bacteria) found in the feces of warm-blooded animals. The presence of coliform-group bacteria is an indication of possible pathogenic bacterial contamination.

MGD – MILLION GALLONS PER DAY

Volumetric measurement of flow converted to millions. Example: 150,000 gallons per day (gpd) / 1,000,000 = 0.150 MGD.

NH3 – NITROGEN AS AMMONIA

A compound found naturally in wastewater. The compound is produced by the deamination of organic nitrogen containing compounds

NPDES PERMIT – NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Permits, required by the Federal Water Pollution Control Act Amendments of 1972, which regulate discharges to surface waters.

PH

The expression of the intensity of the basic or acidic condition of a liquid.

PUMP STATION

A holding tank with pumps that forces wastewater uphill when flow by gravity is not possible.

RECLAIMED WATER

Highly treated wastewater that has undergone advanced treatment processes to re- move solids, organics, and pathogens meeting the State’s Health and Safety Standards for Beneficial Reuse.

SSES

Sanitary Sewer Evaluation Survey

SOC

An Order that establishes a schedule of corrective actions necessary to achieve compliance and alternative limitations that will be effective until corrective actions are completed or until the completion date specified in the Order, whichever comes first.

SSO

Acronym for “sanitary sewer overflow”

TSS – TOTAL SUSPENDED SOLIDS

Particles suspended in a liquid.

TURBIDITY

The measurement of the clearness or cloudiness of a liquid.

3.0 Synopsis of Water Reclamation Facilities (Fiscal Year 2022-2023)

During fiscal year 2022-2023 Union County Water operated and maintained a total of five (5) active water reclamation facilities. Although each Permit requires facility visitation daily, excluding weekends and holidays, UCW’s water reclamation facilities are checked 7 days per week, 365 days per year. All treatment facilities are equipped with emergency back-up power generators. In addition to SCADA, each facility has both audible and visual trouble alarms. Water reclamation facility staff rotate “call duty” for after hour situations that may arise.

A brief overview of each facility and a performance summary table for each facility is provided herein.

TWELVE MILE CREEK WATER RECLAMATION FACILITY

Permit No. NC0085359.

Twelve Mile Creek WRF is a conventional biological aeration facility utilizing biological nutrient removal and tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). Twelve Mile effluent is discharged into Twelve Mile Creek, which is part of the Catawba River Basin. The facility is permitted to discharge up to 7.5 MGD of treated wastewater. Twelve Mile Creek WRF is located at 8299 Kensington Drive and serves Waxhaw as well as portions of Indian Trail, Stallings and Weddington. Please refer to Table 3-1.

CROOKED CREEK WATER RECLAMATION FACILITY

Permit No. NC0069841.

Crooked Creek WRF is a biological extended aeration facility utilizing tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). Crooked Creek effluent is pumped over 17,000 feet to discharge into the North Fork Crooked Creek which lies in the Yadkin Pee Dee River Basin. This facility is permitted to discharge up to 1.9 MGD of treated wastewater. Crooked Creek is located at 4015 Sardis Church Road and serves the Indian Trail, Lake Park and Stallings areas. Please refer to Table 3-2.

OLDE SYCAMORE WATER RECLAMATION FACILITY

Permit No. WQ0011928.

Olde Sycamore is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to 0.150 MGD (150,000 per gallons per day) of treated wastewater. Olde Sycamore was “up-fitted” in early 2012 to improve operating efficiency (reduced electrical consumption) by implementing usage of fine-bubble diffused aeration versus the former “coarse-bubble” aeration. Olde Sycamore serves the Olde Sycamore Golf Community located off Highway 218 and Rock Hill Church Road. Olde Sycamore effluent is discharged to a man-made impoundment from which it is then pumped onto the Olde Sycamore Golf Course as a source of irrigation. Please refer to Table 3-3.

TALLWOOD ESTATES WATER RECLAMATION FACILITY

Permit No. NC0069523.

Tallwood is a biological extended aeration facility with cloth-disc filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to 0.05 MGD (50,000 gallons per day) of treated wastewater. The original Tallwood plant was replaced in 2012 with a new facility.

Tallwood WRF is located within the Tallwood subdivision on Brief road. It also serves the Belk Boy Scout Camp. Tallwood effluent is discharged to Clear Creek, which lies in the Yadkin Pee Dee River Basin. Please refer to Table 3-4.

GRASSY BRANCH WATER RECLAMATION FACILITY

Permit No. NC0085812.

Grassy Branch is a biological extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to 0.12 MGD (120,000 gallons per day) of treated wastewater. Grassy Branch is located at 1629 Old Fish Road and currently serves the Unionville Elementary, Piedmont Middle and Piedmont High Schools as well as one individual residence, Loxdale Farms Subdivision, and Smith Field Subdivision. Grassy Branch effluent is discharged to Crooked Creek, which lies in the Yadkin Pee Dee River Basin. Please refer to Table 3-5.



Table 3-1

**Twelve Mile Creek Water Reclamation Facility
 NPDES Permit #: NC0085359
 Fiscal Year: 2022-2023 Effluent Limits and Performance**

Parameter	Limit	Jul '22	Aug '22	Sep '22	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23
FLOW	7.5 MGD	5.95	5.29	5.13	4.77	5.04	5.57	6.02	5.82	5.30	5.60	5.16	4.96
pH	6-9 SU	7.0-7.6	7.1-7.5	7.0-7.4	7.1-7.4	7.2-7.4	7.1-7.4	6.9-7.4	7.0- 7.3	6.8- 7.3	6.8-7.3	6.8-7.4	7.3-7.8
CBOD5 Summer (Apr.1 - OCT.31)	5 mg/l	2.35	1.61	2.44	2.53	-	-	-	-	-	4.83	4.15	2.42
Winter (Nov.1 - Mar.31)	10 mg/l	-	-	-	-	3.69	4.38	5.13	4.36	5.47	-	-	-
Ammonia Nitrogen Summer	1 mg/l	0.20	0.17	0.33	0.14	-	-	-	-	-	0.07	0.05	0.13
Winter	2 mg/l	-	-	-	-	0.14	0.08	0.07	0.07	0.13	-	-	-
Total Suspended Residue	30 mg/l	2.39	2.85	3.01	1.64	2.83	3.93	5.01	3.73	4.46	4.11	2.99	3.10
Fecal Coliform	200/100 ml	1.36	1.33	1.51	1.23	1.34	1.14	1.15	1.00	1.21	1.03	1.08	1.21
Dissolved Oxygen	> 6 mg/l	7.96	8.24	8.35	8.39	8.45	8.66	8.73	8.77	8.73	9.26	8.46	8.20
Total Nitrogen	Monitor mg/L	9.34	10.91	10.96	11.40	8.81	10.97	7.08	7.85	9.4	6.17	8.4	9.95
Cadmium	Monitor mg/L	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015
Total Phosphorous Maximum Month	41.7 #/day	9.42	7.05	7.38	7.29	7.90	7.51	7.78	8.00	9.28	21.95	12.04	4.55
Total Phosphorus 12 Month Rolling Average	20.85#/ day	8.81	9.05	9.57	9.73	9.93	9.77	9.28	8.95	8.83	9.67	9.54	9.13

Permit Violations: March 2023: Weekly and Monthly average CBOD Violation, June 2023: failed to monitor up and down stream 3x a week.

Table 3-2

Crooked Creek Water Reclamation Facility NPDES Permit #: NC0069841 Fiscal Year: 2022-2023 Effluent Limits and Performance

Parameter	Limit	Jul '22	Aug '22	Sep '22	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23
FLOW	1.900 MGD	0.93	0.63	0.70	0.68	0.88	1.06	1.18	1.17	0.97	1.09	1.05	1.02
pH	6-9 SU	6.8-7.5	6.5-7.2	6.8-7.2	6.9-7.4	6.9-7.3	6.9-7.3	7.8-7.4	6.8-7.2	6.8-7.3	6.8-7.4	6.8-7.3	6.6-7.5
Cl ₂	17 ug/l	0	0	0	0	0	0	0	0	0	0	0	0
BOD5 Summer (Apr.1 - OCT.31)	5 mg/l	0.57	0.62	1.93	1.94	-	-	-	-	-	2.30	1.50	0.60
Winter (Nov.1 - Mar.31)	10 mg/l	-	-	-	-	1.56	2.13	5.68	4.29	1.47	-	-	-
Ammonia Nitrogen Summer	2 mg/l	0.24	0.21	0.20	0.23	-	-	-	-	-	0.10	0.07	0.19
Winter	4 mg/l	-	-	-	-	0.08	0.15	0.12	0.16	0.14	-	-	-
Total Suspended Residue	30 mg/l	1.00	0.00	0.65	0.23	0.38	3.24	16.67	7.78	2.02	1.82	0.54	1.16
Fecal Coliform	200/100 ml	2.66	2.13	2.67	1.24	1.83	1.62	4.85	4.48	3.28	1.53	1.18	1.59
Dissolved Oxygen	> 6 mg/l	8.02	8.38	8.59	9.04	9.16	10.27	9.53	9.08	9.49	9.08	8.54	8.34

Permit Violations: December 2022: Failed to monitor Ammonia 3x per week, January 2023: Failed to monitor Ammonia 3X per week

Table 3-3

Olde Sycamore Water Reclamation Facility NPDES Permit #: WQ0011928 Fiscal Year: 2022-2023 Effluent Limits and Performance

Parameter	Limit	Jul '22	Aug '22	Sep '22	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23
FLOW	0.150 MGD	0.050	0.042	0.038	0.038	0.036	0.054	0.059	0.051	0.047	0.046	0.045	0.45
pH	6-9 SU	6.9-7.4	7.1-7.5	6.8-7.5	6.7-7.3	7.0-7.5	7.0-7.5	7.0-7.7	7.2-7.9	7.2-7.5	6.8-7.6	6.3-7.3	6.6-7.3
BOD5	10 mg/l	1.7	3.0	2.3	<2	1.2	<2	<2.0	<2.0	4.9	5.0	<2	<2
Ammonia Nitrogen	4 mg/l	0.11	0.17	<0.10	<0.10	0.11	0.05	0.05	0.16	0.17	<0.10	<0.10	0.17
Total Suspended Residue	5 mg/l	<2.7	<2.7	<2.7	<2.7	<2.7	<2.6	<2.6	<2.5	2.3	<2.5	<2.5	<2.5
Fecal Coliform	14/100 ml	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Turbidity	> 10 NTU	0.2	0.2	0.3	0.3	0.4	0.5	0.7	0.6	0.8	0.4	0.2	0.3

Permit Violations: There were no violations during this period.

Table 3-4

Tallwood Estates Water Reclamation Facility
NPDES Permit #: NC0069523
Fiscal Year: 2022-2023 Effluent Limits and Performance

Parameter	Limit	Jul '22	Aug '22	Sep '22	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23
FLOW	0.050 MGD	0.016	0.014	0.014	0.017	0.018	0.030	0.049	0.047	0.022	0.028	0.016	0.015
pH	6-9 SU	7.2-7.6	7.5-7.2	7.4-7.6	7.4-7.6	7.4-7.6	7.0-7.6	6.9-7.4	7.0-7.5	6.8-7.3	6.9-7.3	6.8-7.4	7.0-7.4
BOD5 Summer (Apr.1 - OCT.31)	5 mg/l	0.55	0.00	2.45	0.00	-	-	-	-	-	2.36	1.32	0.00
Winter (Nov.1 - Mar.31)	10 mg/l	-	-	-	-	1.0	0.00	2.76	2.41	5.09	-	-	-
Ammonia Nitrogen Summer	2 mg/l	0.19	0.11	0.00	0.75	-	-	-	-	-	0.16	0.022	0.16
Winter	4 mg/l	-	-	-	-	0.04	0.05	0.50	0.02	0.13	-	-	-
Total Suspended Residue	30 mg/l	0.00	0.00	0.00	0.00	0.00	0.00	1.03	1.72	0.00	0.00	0.50	0.00
Fecal Coliform	200/100 ml	1.18	1.00	1.00	1.00	1.00	1.51	1.00	1.52	1.00	1.00	1.00	1.00
Dissolved Oxygen	> 6 mg/l	8.20	7.59	8.00	8.66	9.47	9.75	9.90	10.11	9.82	9.39	8.86	8.77

Permit Violations: March 2023: Weekly BOD violation



Table 3-5

**Grassy Branch Water Reclamation Facility
 NPDES Permit #: NC0085812
 Fiscal Year: 2022-2023 Effluent Limits and Performance**

Parameter	Interim Limit	Jul '22	Aug '22	Sep '22	Oct '22	Nov '22	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23
FLOW	0.120 MGD	0.030	0.019	0.032	0.037	0.034	0.052	0.073	0.070	0.048	0.053	0.043	0.032
pH	6-9 SU	7.2-7.7	6.9-7.3	6.8-7.5	6.8-7.4	7.3-7.6	7.0-8.7	7.1-7.4	6.9-7.3	7.0-7.6	6.9-7.9	6.6-7.5	7.0-7.6
Cl ₂	17 ug/l	0	0	0	0	0	0	0	0	0	0	0	0
BOD5 Summer (Apr. 1 - OCT.31)	30 mg/l	0.00	1.00	2.02	3.05	-	-	-	-	-	4.45	2.68	2.93
Winter (Nov.1 - Mar.31)	30 mg/l	-	-	-	-	4.41	2.76	4.47	4.68	3.27	-	-	-
Ammonia Nitrogen Summer	4 mg/l	0.18	0.15	0.22	1.23	-	-	-	-	-	0.22	0.61	0.14
Winter	12 mg/l	-	-	-	-	0.224	0.08	0.044	0.13	0.27	-	-	-
Total Suspended Residue	75 mg/l	0.79	2.81	6.04	9.37	8.89	6.94	9.51	4.42	8.07	2.45	1.78	1.22
Fecal Coliform	400/100 ml	11.32	5.45	5.09	1.18	1.68	1.00	3.10	2.76	1.00	3.75	4.64	1.70
Dissolved Oxygen	> 6 mg/l	8.80	8.57	9.01	9.77	10.45	10.61	10.85	10.62	9.92	10.60	10.36	8.81

Permit Violations: None

4.0 Biosolids Management (Fiscal Year 2022-2023)

Portions of the biosolids are managed and disposed of in accordance with Permit No. ND0089044 issued by the South Carolina Department of Health and Environmental Control. The solids are aerobically digested and then applied as “fertilizer” to permitted sites. The solids are considered stabilized and thus suitable for land application when the volatile solids content is reduced by 38%. If this 38% volatile solids reduction cannot be achieved, then alkaline stabilization, injection or incorporation is employed to ensure permit compliance. Union County Water, through its biosolids contractor, land applied approximately 1.32 million gallons of biosolids. Union County mechanically dewatered 10,713.83 tons of biosolids. These biosolids were hauled to a McGill composting facility in New Hill NC.



What Are Biosolids?

Biosolids are the nutrient-rich, organic by-product of the wastewater treatment process. When treated and managed appropriately, they can be beneficially used for a number of purposes, such as a fertilizer to improve and maintain productive soils and stimulate plant growth. Biosolids are one of the most studied materials that have ever been regulated by the U.S. Environmental Protection Agency (USEPA).

5.0 Synopsis Of Wastewater Collection System (Fiscal Year 2022-2023)

Permit No. WQCS00054. UCW currently operates and maintains over 757 linear miles of sewer mains, including force mains, and 49 wastewater pumping stations that provide service to 42,963 accounts. All pump stations are equipped with both audible and visual alarms as well as either automated telephone dialers (ATD) or telemetry which alert staff when alarm conditions are present. Inspections of all pump stations meet or exceed State requirements. Emergency auxiliary power is provided to all stations via portable or permanent mounted generators. Union County personnel are on call rotation and available 24 hours a day, 7 days a week, and 365 days a year.

Union County Water is required by State permit to clean a minimum of 10% of the collection system annually to prevent and/or reduce backups and overflows. Staff has consistently surpassed that requirement, cleaning more than the required 10%. UCW cleaned approximately 10.68% (73.08 miles of 684.5 total gravity miles) of the collection system last year. Staff also conducts inspections of the collection system with the utilization of underground closed-circuit television (CCTV) inspection equipment. These cleaning and inspection efforts allow staff to determine areas in the system that require repairs or increased maintenance to provide the proper service to our customers.

FOG (Fats, Oils, and Grease) program is aimed at reducing grease-related back-ups and overflows by educating the public of the hazards associated with the disposal of grease and grease related by-products into the wastewater system. Union County Water has also developed a comprehensive list of food service establishments (FSE) and commercial establishments. This effort has resulted in creating a successful grease trap inspection and enforcement program to ensure that restaurants and other food preparation facilities properly maintain grease traps and interceptors.

This fiscal year, 798 FSE inspections were performed, there are a total of 388 FSE’s including 34 Union County public school facilities.

	Feet	Miles	System Total (In Miles)
Sewer Lines Cleaned	385862.4	73.08	684.46
Smoke Testing	52,905.6	34.65	684.46
Mainline CCTV	172867.2	32.74	684.46



Utility easements and right-of-ways are maintained by UCW staff to ensure access for staff and equipment to conduct routine maintenance as well as respond to emergencies, such as sanitary sewer overflows. The easements require round-the-clock access and should not be impeded by structures such as pools (above or below ground), buildings, gardens, trees, shrubs, plantings, fences, etc. UCW staff inspects and conducts necessary maintenance, including mowing, to these easements and right-of-ways once a year.

An Easement Awareness, Education and Enforcement Program has been established to improve accessibility to UCW’s sanitary sewer easements. This is accomplished by educating customers on the allowable uses of the easement and describing prohibitions, as well as procedures regarding enforcement when it is required for access.

High priority lines such as aerial creek crossings, lines subject to erosion and/or problematic areas are visually inspected at a minimum semi-annually. High priority lines are inspected more frequently after periods of heavy rain and flooding.

UCW maintains emergency response equipment in a ready state at all times. This emergency equipment varies in nature from spare electrical parts and plumbing supplies, to vacuum trucks, pumps, and backhoes. Workers safety is of utmost importance. Safety equipment such as night lighting, gas monitors, trenching and shoring equipment, and reflective cones/signs are always readily available.

UCW continuously works to improve its infrastructure and service provided to its customers. This involves consistent inspections and system examinations to ensure that our system is operating properly. Additionally, Union County has Capital Improvement Projects (CIP) to identify and correct deficiencies within the wastewater system. The following pages include an overview of some of these projects:

	Inspected	System Total
Manhole Inspected	2453	18454
Pump Station Inspections	3806	N/A
CCTV Connections	1797	42,963
Point Repairs	482	N/A

Twelve Mile Creek WRF Expansion

Union County Water is in the design phase of upgrading Twelve Mile Creek WRF to 9.0MGD. The project involves various improvements to the plant, taking the treatment capacity from 7.5 million gallons per day (MGD) to 9.0 MGD. These improvements will increase the treatment capacity of the plant to meet future short-term anticipated wastewater flows. The improvements will also prepare the facility for future expansion to 12 MGD. These expansion projects will meet the projected long-term wastewater treatment needs for the southwestern portion of the County.

THE EXPANSION PROJECT INCLUDES:

- Upgrade and expand the influent pump station
- New odor control facility for the influent pump station
- New chemical feed facility
- New aeration blower
- New final clarifier
- Upgrade the solids handling odor control system
- Various electrical improvements
- Ancillary yard piping

Crooked Creek WRF Improvements

Union County Water is in the design phase of replacing the UV system, and in the bidding phase of adding mobile office and storage space as well as an emergence entrance at the Crooked Creek WRF. The projects are improvements to the plant that will improve the reliability and efficiency of the plant operations.

THE IMPROVEMENT PROJECTS INCLUDE:

- Addition of a mobile office unit
- Replacement of the existing UV system
- Ancillary yard piping

Grassy Branch WRF Expansion

Union County Water is currently working with the North Carolina Division of Water Resources (NCDWR) through a Special Order by Consent (SOC). The SOC outlines the activities and a time schedule in which improvements must be completed.

This project involves various improvements to the plant, taking the treatment capacity from 0.05MGD to 0.12MGD.

THE EXPANSION PROJECT INCLUDES:

- Upgrade of the influent pump station
- Replace the aeration basins and supporting equipment
- Replace/upgrade existing sand filters with cloth disk filters
- Replace/upgrade the UV system
- Repurpose existing treatment tanks for solids handling and flow Equalization.

Ongoing Collection System II Abatement Projects and Sanitary Sewer Evaluation Studies

Studies are being done throughout the collection system to identify problems, conduct flow monitoring, and need for rehabilitation.

Master Plan Study - Currently we have a comprehensive masterplan that is still underway. As part of that plan, we had installed 27 flow meters throughout the entire system to model flows. The data from those meters will direct SSES efforts in future years.

Poplin Road Basin – Construction is underway of a 4 MGD Flow EQ Tank located on Indian Trail-Fairview Road. This EQ will allow staff to divert flows during peak hours and rain events to avoid SSO's. Expected startup of this EQ is fall 2023.

Crooked Creek WRF Basin – During FY22/23 an in-depth flow monitor study was completed. That study comprised of 4 flow meters that monitored flow during dry and wet weather flow in the Forest Park region. A targeted SSES is being developed to abate II in this basin.

Crooked Creek WRF Basin –UC Water is currently developing a rehab project to address I&I in the Helmsville basin. Based on the SSES (Sanitary Sewer Evaluation Survey) performed in 2022, this project will repair pipes and manhole defects that are sources of I&I. Bidding for this project is set for fall 2023.

Grassy Branch WRF Basin -The Grassy Branch Basin has a CIPP (Cured in Place Pipe) project that will begin in August to rehab 784 feet of 12 inch pipe.

Six Mile Basin - During FY22/23 a SSES (Sanitary Sewer Evaluation Survey) was performed on Joe Kerr Basin. That study comprised of 474 Manholes inspected and 103,950 feet of smoke testing as a result of flow metering efforts conducted during the FY21/22 year.

Six Mile Basin – UC Water is currently developing a rehab project to address I&I in the Foggy Glenn basin. Based on the SSES (Sanitary Sewer Evaluation Survey) performed in FY 21/22, this project will repair pipes and manhole defects that are sources of II. Bidding for this project is set for fall 2023.

12 Mile Basin – During FY22/23 an in-depth flow monitor study was completed. That study comprised of 7 flow meters that monitored flow during dry and wet weather flow in the Brookhaven region. A targeted SSES is being developed to abate II in this basin.

12 Mile Basin – UC Water is currently developing a rehab project to address II in the 12 Mile basin. Based on Manhole Inspections performed in 2022, this project will repair 51 manholes that are sources of I&I and derogated by H2S gas. Bidding for this project is set for summer

Sanitary Sewer Overflow Report

Start Date	Address	Gal to Surface Waters	Gal on Ground	Total Gallons	Cause
2023-06-23	2844 Gray Fox RD	0	175	175	Line Break
2023-06-03	2844 Gray Fox RD	0		525	Line Break
2023-05-24	2844 Gray Fox RD	0	525	525	Line Break
2023-05-23	5519 Cannon Dr.	425	100	525	Line Break
2023-05-15	5520 Cannon Dr.	1100	1000	2100	Line Break
2023-04-25	2844 Gray Fox RD	425	100	525	Line Break
2023-03-14	10705 Waxhaw Manor DR	0	250	250	Air Release Valve Failure
2023-03-09	5603 Creft CIR		135	135	Grease
2023-02-23	1468 Dennis Austin Ln.	0	375	375	Debris
2023-02-22	2842 Grey Fox Rd	0	150	150	Line Break
2023-02-21	3385 Rainbow DR	1280	100	1380	Grease
2023-02-13	5502 Poplin Rd.	300	3000	3300	Other
2023-02-13	5502 Poplin Rd.	164000	1000	165000	Other
2023-02-13	Fulton Ridge Dr.	29000	500	29500	Line Break
2023-02-12	5419 Silver Creek DR	4000	170	4170	Severe Weather
2023-02-12	5419 Silver Creek DR	2500	125	2625	Severe Weather
2023-02-11	330 Hawksnest crt	0	150	150	Blockage
2023-01-31	4610 Monroe Ansonville RD	3000	600	3600	3rd Party Damage
2023-01-31	8299 Kensington DR	2000	375	2375	Debris
2023-01-31	4610 Monroe Ansonville RD	20000	3375	23375	3rd Party Damage
2023-01-30	1470 NC 205	20000	11475	31475	3rd Party Damage
2023-01-30	1111 Austin Chaney rd	20000	52000	72000	3rd Party Damage
2022-09-29	10015 Farm pond on	0	36	36	Air Release Valve Failure
2022-09-08	5304 Lee Massey RD	0	900	900	Severe Weather
2022-09-05	910 Sharon DR	450	450	900	Severe Weather
2022-08-23	Timber Mill Dr.	1660	1660	3320	Blockage
2022-08-12	3826 Monroe Ansonville Rd.	30	30	60	Other

2022-08-02	6600 Stoney Creek DR	0	100	3	Air Release Valve Failure
2022-07-21	3523 SASSAFRAS TRAIL	0	300	300	Line Break
2022-07-11	3826 Monroe Ansonville RD	0	0	30	Line Break

Total Spills: 30

Total Annual Volume: 349,784 Gallons

Miles of Pipe in System: 756.94

Reportable SSOs Per 100 Miles: 2.24

For questions concerning this Wastewater Performance Summary or additional information please contact UCW:

704.296.4210 Or write to: Union County Water 500
North Main Street, Suite 600
Monroe, NC 28112-4730



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