



ANNUAL REPORT 2022

Racine Wastewater Utility

2022 Racine Wastewater Utility Annual Report

2023 BOARD OF WASTEWATER COMMISSIONERS

NATALIA TAFT, PRESIDENT
JOHN TATE II, VICE PRESIDENT

MAYOR CORY MASON
ALDER TERRY MCCARTHY
ALDER MOLLY JONES
JASON MEEKMA
STACY SHEPPARD
CLAUDE LOIS
JOHN HEWITT
DEAN ROSENBAUM
BOB LUI

ALTERNATES:

PAUL VORNHOLT
ANTHONY BEYER
JERROLD KLINKOSH
ANTHONY BUNKELMAN

WASTEWATER DIRECTOR

NATE TILLIS

ADMINISTRATIVE MANAGER

KENNETH M. SCOLARO

SUPERINTENDENT

MARY-FRANCES T. KLIMEK

TABLE OF CONTENTS

Administration & Employee Information	1
Organizational Chart.....	2
Administration & Staff.....	3
Employees & Classifications.....	4
Service Area	5
System Area Map	6
Lift Station Photos, Addresses	7
Service Area Flow Contributions	8
Suburban Community Flows & Wastewater SSR Party Capacity Flows	9
Wastewater Treatment Capacity Allocations	10
Compliance Maintenance Annual Report - CMAR	13
Capacity, Management, Operations, and Maintenance Program Audit - CMOM	16
Plant Process & Equipment	21
Description of Plant Process & Equipment	22
Flow Monitoring & Schematic Diagram.....	26
Biosolids Management Program	28
Wastewater Operations	29
Flow & Precipitation.....	32
BOD – TSS - Phosphorus	34
Loading Characteristics	35
Summary of Sampling of POTW Influent and Effluent Waterstreams	36
Primary & Digested Biosolids	37
Digester Operations.....	38
Belt Press Summary	39
Gravity Belt Thickener Summary	40
Biosolids Metal Analysis	41
Secondary Treatment Data Chart	42
Ferric Chloride Summary	43
Sodium Hypochlorite Summary	44
Ammonia Summary	45
Sodium Bisulfite Summary.....	45
Liquid Waste Haulers Summary.....	46
Community Inflow & Infiltration Chart	47
Maintenance & Energy	48
Energy Independence with Biogas.....	49
Plant Water & Energy Consumption	50
Natural Gas and Electrical Consumption & Cost	51
Total Energy & Electric Usage vs. Flow.....	52
Gas Production & Usage and Gas Usage vs. Flow	53
Laboratory	54
Pretreatment	56
Permitted Industrial Users	59
Summary of Treatment Plant Analytical Mercury Data	60
Mercury Minimization Program.....	61
Community Mercury PMP Score.....	62
Collection System & Lift Stations	63
Lift Station Equipment & Capacity Summary.....	69
Collection System Storage & Capacity Summary	70

Household Hazardous Waste	71
HHW Annual Report Summary & Collection Summary	72
HHW Participation Data	73
Appendix A	75
Adopted Budget	76
Adopted Operation & Maintenance Budget	77
Adopted Capital Improvement Program 2020-2023	79
Class I & II Charges	81
Vehicle Listing	82

**Racine Water and
Wastewater Utilities**

Michael L. Gitter, P.E.
Interim General
Manager



Kenneth M. Scolaro, C.P.A.
Administrative Manager
Chad W. Regalia, P.E.
Chief Engineer

July 6, 2023

To: Nate Tillis, Racine Wastewater Director
Racine Wastewater Utility Commissioners

We hereby submit the detailed annual report of the Wastewater Treatment Plant and System for the calendar year 2022.

Respectfully Submitted,

Handwritten signature of Kenneth M. Scolaro in black ink, written over a horizontal line.

Kenneth M. Scolaro
Administrative Manager

Handwritten signature of Mary-Frances T. Klimek in black ink, written over a horizontal line.

Mary-Frances T. Klimek
Superintendent

Handwritten signature of Amanda E. Kaminski in black ink, written over a horizontal line.

Amanda E. Kaminski
Field Director

Handwritten signature of Andrew E.W. Dennerlein in black ink, written over a horizontal line.

Andrew E.W. Dennerlein
Laboratory Director

Handwritten signature of Mark A. Knuth in black ink, written over a horizontal line.

Mark A. Knuth
Maintenance Supervisor

Handwritten signature of Daniel R. Mason in black ink, written over a horizontal line.

Dan R. Mason
Operations Supervisor

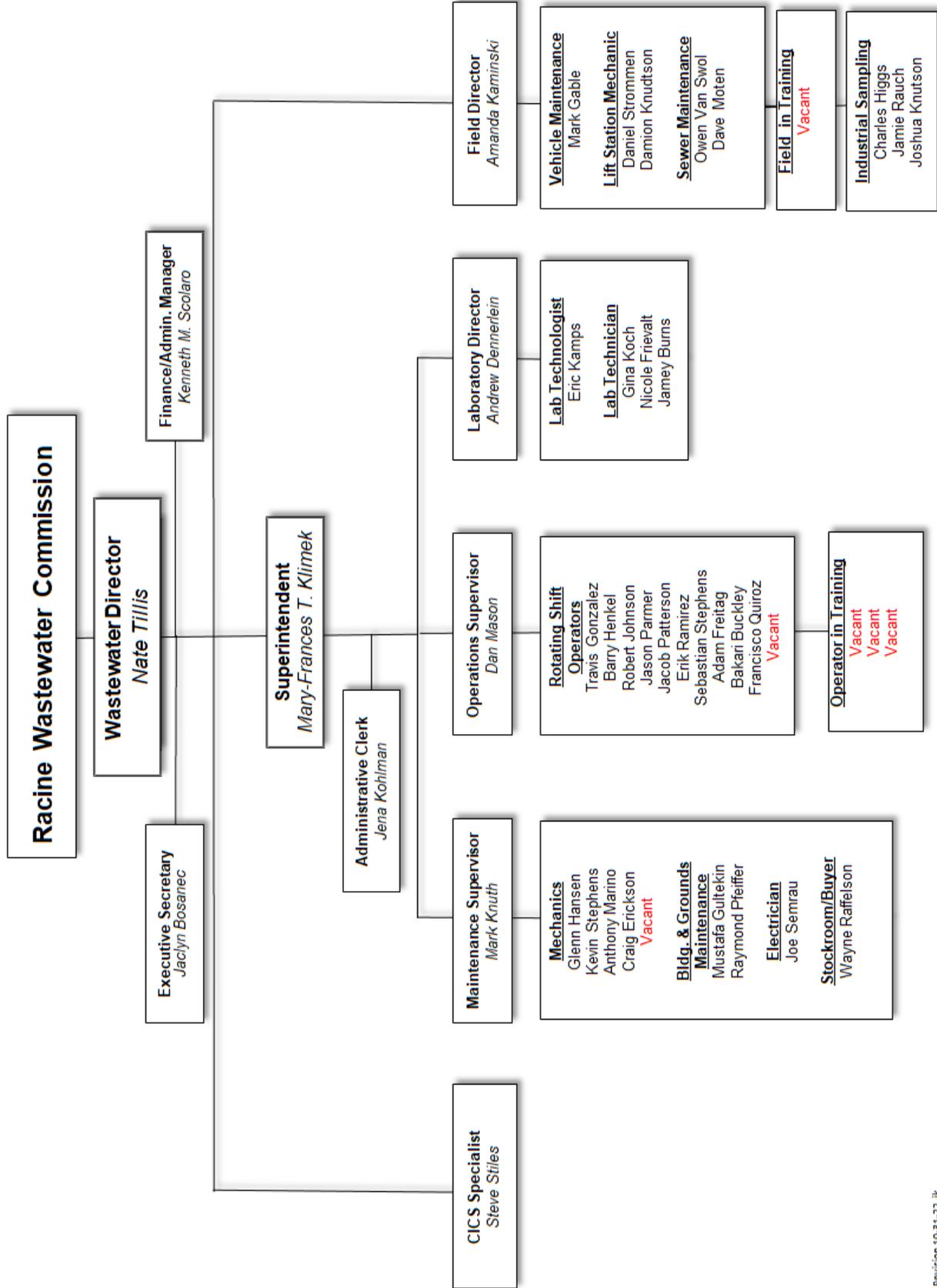
Handwritten signature of Jena K. Kohlman in black ink, written over a horizontal line.

Jena K. Kohlman
Administrative Clerk

ADMINISTRATION & EMPLOYEE INFORMATION



ORGANIZATIONAL CHART 2022



Revision 10-31-22 JK

Administration & Staff

Administration

Nate Tillis, Wastewater Director was appointed by the Racine Wastewater Commission in July 2022. He is responsible for the oversight of all functions of the Wastewater Utility.

Kenneth Scolaro, CPA, Administrative Manager joined the Utility in 1996 as the Assistant Administrative Manager, and was promoted to Administrative Manager in 1998. Mr. Scolaro is responsible for the administration of financial, clerical, and customer service functions.

Jaclyn Bosanec, Executive Secretary, provides administrative support to the Wastewater Director. She filled this position in 2022.

Racine Wastewater Treatment Plant Staff

Mary-Frances Klimek, Superintendent began her employment with the Utility in 1990. She was promoted to the Operations Supervisor in 2005 and continued in that role until she was named Superintendent in 2015. Klimek is responsible for the supervision of all functions of the treatment plant.

Andrew Dennerlein, Laboratory Director directs, supervises and ensures proper operations of all laboratory functions. He has been with the Utility since 2018.

Amanda Kaminski was promoted to Field Director in 2020, previously being named Industrial Pretreatment Coordinator in 2018. She is responsible for overseeing external field operations, administers the industrial pretreatment program, and supervises sanitary sewer collection system maintenance & repair as well as the service garage. Ms. Kaminski has been with the Utility since 2011.

Mark Knuth, Maintenance Supervisor was promoted to this position in November 2022. Mr. Knuth is responsible for all mechanical and grounds maintenance at the plant. He has been employed with the Utility since 2012.

Dan Mason, Operations Supervisor is responsible for process control and shift operations, including solids handling at the treatment plant. He was named Operations Supervisor in 2018. Mr. Mason has been employed with the Utility since 2011.

Steve Stiles, Computer Instrumentation & Controls System Specialist. Mr. Stiles is responsible for the operations and maintenance of all computers, electronic monitoring systems and equipment. He has been employed with the Utility since 2019.

Jena Kohlman, Administrative Clerk performs highly responsible administrative services, and leads the Household Hazardous Waste program. She has been employed with the City of Racine since 2011 and joined the Utility in 2017.

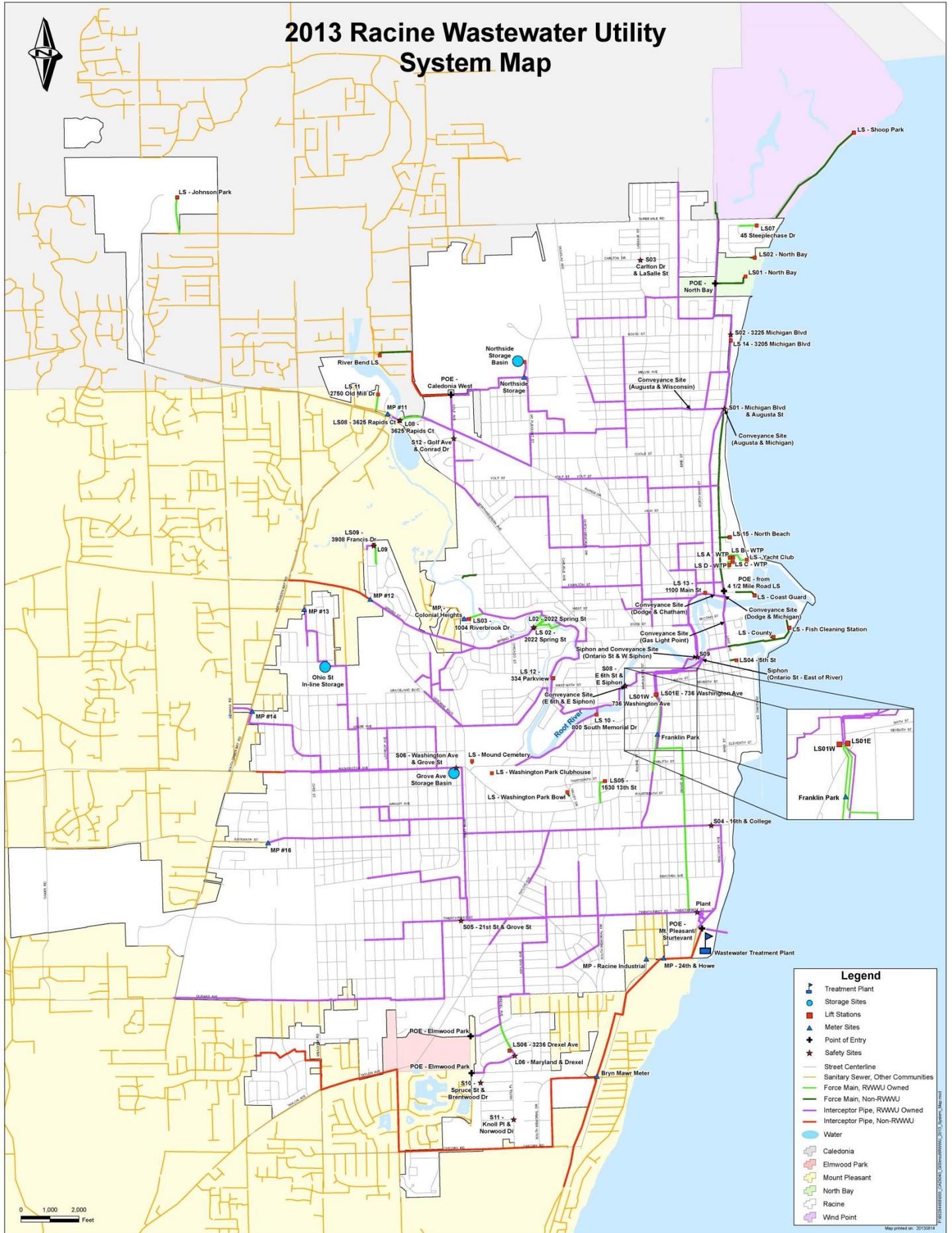
EMPLOYEES & CLASSIFICATIONS 2022

Last Name	First Name	Classification	DOH	Yrs of Svc
Buckley	Bakari	Operator	4/4/2022	0.9
Burns	Jamey	Lab Technician	11/21/2022	0.3
Dennerlein	Andrew	Laboratory Director	5/29/2018	4.8
Erickson	Craig (CJ)	Mechanic	3/21/2022	1.0
Freitag	Adam	Operator in Training	12/30/2020	2.2
Frievalt	Nicole	Laboratory Technician	7/26/2021	1.6
Gable	Mark	Garage Mechanic	2/25/2008	15.1
Gonzalez	Travis	Operator	8/17/2015	7.6
Gultekin	Mustafa	Bldg & Gr Maint	4/26/2021	1.9
Hansen	Glenn	Mechanic	2/25/2002	21.1
Henkel	Barry	Operator	4/15/1991	31.9
Higgs	Charles	Sample Crew	3/22/2021	2.0
Johnson	Robert	Operator	3/28/2016	7.0
Kaminski	Amanda	Field Director	2/7/2011	12.1
Kamps	Eric	Laboratory Technician	4/29/2013	9.9
Klimek	Mary-Frances	Superintendent	3/26/1990	33.0
Knudtson	Damion	Lift Station Mechanic	6/30/2022	0.7
Knuth	Mark	Maintenance Supervisor	4/16/2012	10.9
Knutson	Joshua	Field in Training	9/13/2021	1.5
Koch	Gina	Lab Technician	7/6/2021	1.7
Kohlman	Jena	Clerk	12/29/2011	11.2
Marino	Anthony	Mechanic	9/20/2021	1.5
Mason	Daniel	Operation Supervisor	11/21/2011	11.3
Moten	David	Sewer Maintenance	4/8/2009	13.9
Parmer	Jason	Operator	9/20/2021	1.5
Patterson	Jacob	Operator	7/6/2021	1.7
Pfann	Natalie	Laboratory Technician	7/12/2021	1.7
Pfeiffer	Raymond	Bldg & Gr Maint	8/2/2021	1.6
Quiroz	Francisco	Operator	10/31/2022	0.4
Raffelson	Wayne	Mechanic	5/3/2004	18.9
Ramirez	Erik	Operator	7/26/2021	1.6
Rauch	Jamie	Pretreatment	12/9/2019	3.3
Stephens	Kevin	Mechanic	8/13/2012	10.6
Stephens	Sebastian	Operator	7/11/2005	17.7
Stiles	Steve	CICS Specialist	3/4/2019	4.0
Strommen	Daniel	Lift Station Mechanic	9/13/2021	1.5
Van Swol	Owen	Sewer Maintenance	11/3/2003	19.4

SERVICE AREA



2013 Racine Wastewater Utility System Map



Legend

- Treatment Plant
- Storage Sites
- Lift Stations
- Meter Sites
- Point of Entry
- Safety Sites
- Street Centerline
- Sanitary Sewer, Other Communities
- Force Main, RWWU Owned
- Force Main, Non-RWWU
- Interceptor Pipe, RWWU Owned
- Interceptor Pipe, Non-RWWU
- Water
- Caledonia
- Elmwood Park
- Mount Pleasant
- North Bay
- Racine
- Wind Point

Map printed on: 2/15/2014

LIFT STATION PHOTOS, ADDRESSES



Lift Station #1
736 Washington Avenue



Lift Station #2
2022 Spring Street



Lift Station #3
1004 Riverbrook Drive



Lift Station #4
6 - 5th Street



Lift Station #5
1530 - 13th Street



Lift Station #6
3236 Drexel Avenue



Lift Station #7
45 Steeplechase Drive



Lift Station #8
3625 Rapids Court



Lift Station #9
3908 Francis Drive



Lift Station #10
800 South Memorial Drive



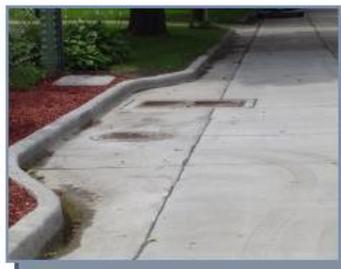
Lift Station #11
2750 Old Mill Road



Lift Station #12
334 Parkview Drive



Lift Station #13
100 N. Main Street



Lift Station #14
3205 Michigan Boulevard

SERVICE AREA FLOW CONTRIBUTIONS

2021	MG	MGD	% Plant Flow
TREATMENT PLANT	6,387.16	17.50	484.85
MOUNT PLEASANT INTERCEPTOR:			
INDUSTRIAL	123.84	0.34	1.94
RESIDENTIAL	1,759.45	4.82	27.55
OTHER INTERCEPTOR FLOW:			
RACINE	204.57	0.56	3.20
STURTEVANT	184.11	0.50	2.88
CALEDONIA (HWY V)	12.64	0.03	0.20
TOTAL INTER.	2,284.61	6.26	35.77
NON-INTERCEPTOR:			
MOUNT PLEASANT	381.26	1.04	5.97
RACINE	23.04	0.06	0.36
TOTAL NON-INTER.	404.30	1.11	6.33
CALEDONIA	1,193.05	3.27	18.68
NORTH BAY	21.39	0.06	0.33
ELMWOOD PARK	31.69	0.09	0.50

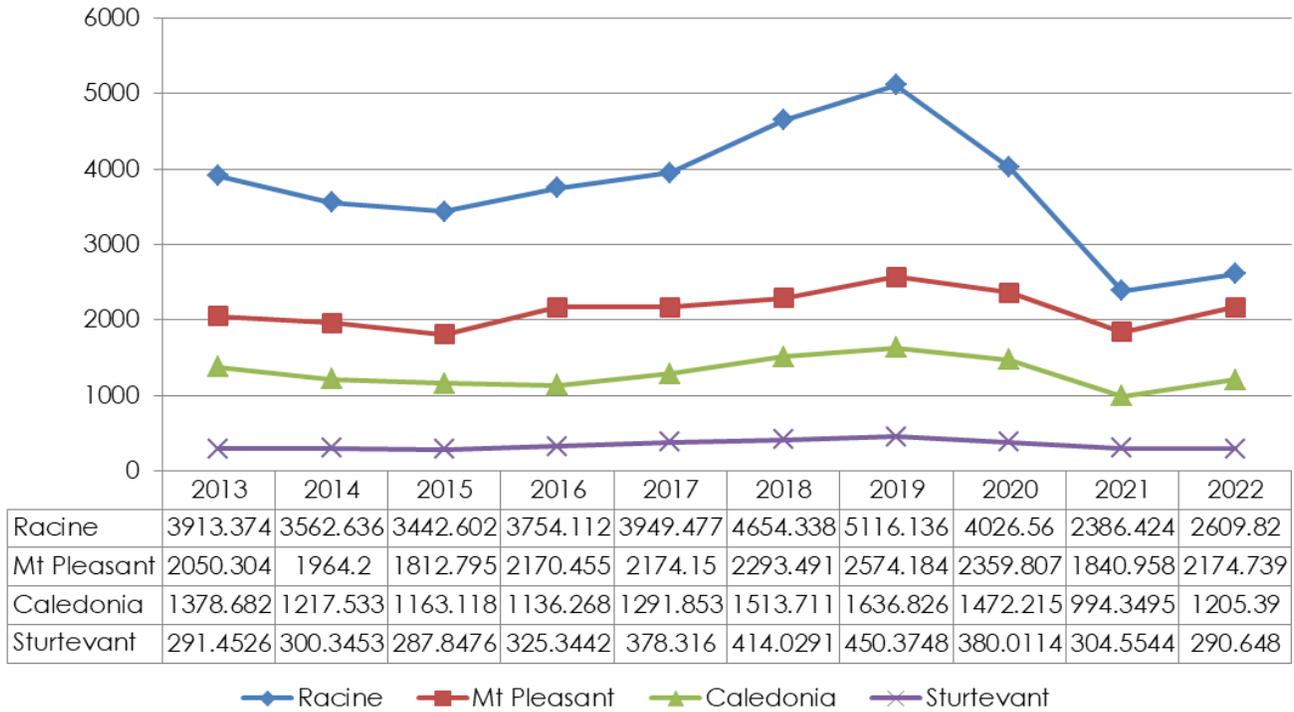
% APPROX.

2021	1st	2nd	3rd	4th	MG TOTAL
MOUNT PLEASANT INTERCEPTOR FLOW					
INDUSTRIAL	32.635	33.291	31.632	26.284	123.842
RESIDENTIAL	369.377	552.311	410.689	427.074	1,759.451
OTHER INTERCEPTOR FLOW					
RACINE	47.310	62.273	47.287	47.699	204.569
STURTEVANT	40.970	61.438	41.110	40.590	184.108
CALEDONIA (HWY V)	3.236	3.511	3.084	2.808	12.639
NON-INTERCEPTOR FLOW					
MT. PLEASANT	88.286	120.555	95.337	77.084	381.262
RACINE	5.123	7.612	5.717	4.585	23.037
CALEDONIA	236.858	426.631	259.727	269.837	1,193.053
NORTH BAY	3.116	7.861	4.243	6.167	21.386
ELMWOOD PARK	6.876	7.403	8.307	9.103	31.689
TOTAL (Mgal)	833.787	1,282.886	907.133	911.230	3,935.035

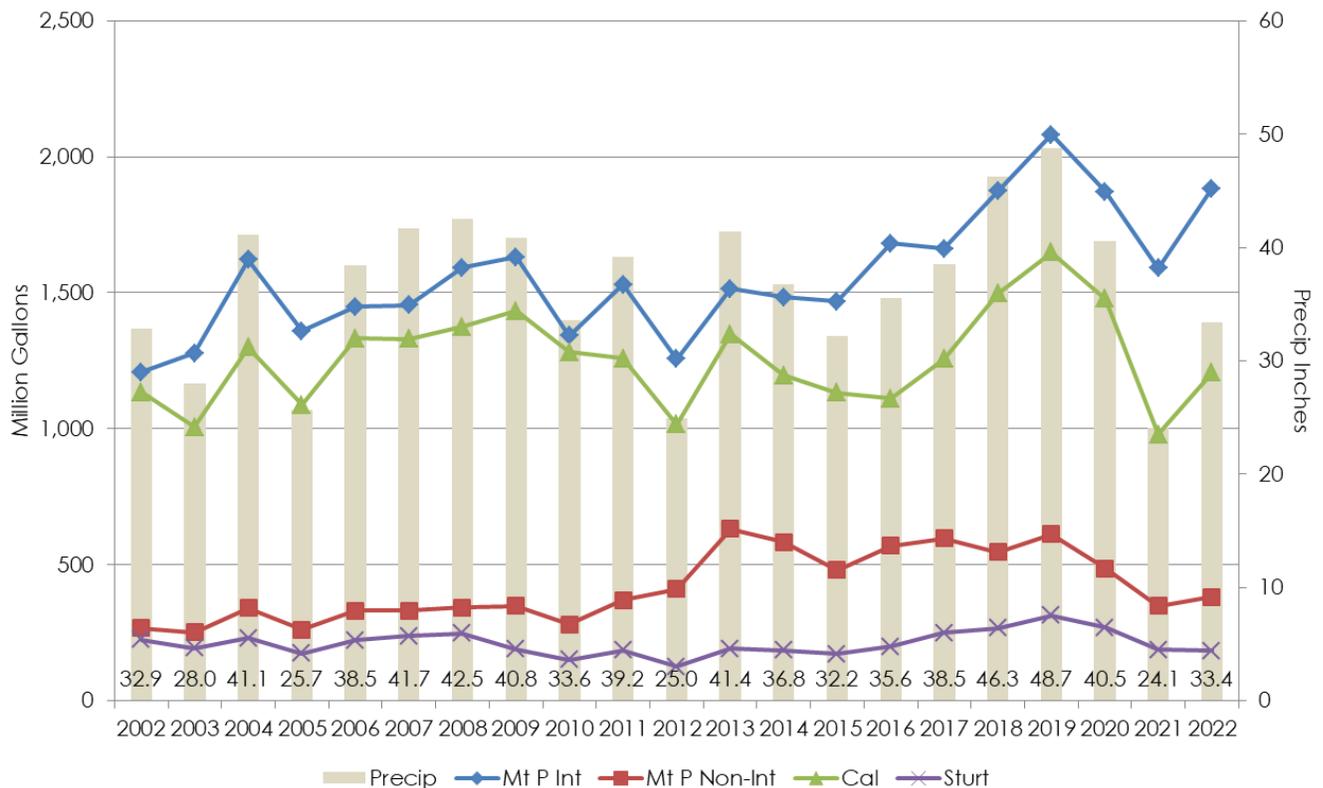


SUBURBAN COMMUNITY FLOWS & WASTEWATER SSR PARTY CAPACITY FLOWS

Wastewater SSR Party Capacity Flows (MG)



Suburban Wastewater Flows



Wastewater Treatment Capacity Allocations

Intergovernmental Sewer Agreement Exhibit E - Treatment Plant Capacity Last Revision #8 7/31/2018

	Day Flow (mgd)	Day Flow (mgd)	Hour Flow (mgd)	Monthly Flow (mgd)	Daily BOD (lbs)	Monthly BOD (lbs)	Daily TSS (lbs)	Monthly TSS (lbs)	Daily TKN (lbs)	Monthly TKN (lbs)	Daily P (lbs)	Monthly P (lbs)
Racine ⁽¹⁾	17.06	90.59	109.12	23.2	14,555	17,466	17,796	23,313	2,253	3,019	425	543
Mount Pleasant ⁽²⁾⁽⁴⁾	11.49	51.71	91.04	15.63	10,173	12,208	13,888	18,194	1,396	1,870	290	371
Yorkville	-	-	-	-	-	-	-	-	-	-	-	-
Raymond	-	-	-	-	-	-	-	-	-	-	-	-
Caledonia ⁽³⁾⁽⁴⁾	5.13	18.32	24.72	6.97	5,716	6,859	7,054	9,241	901	1,208	170	218
Sturtevant	1.78	6.04	10.18	2.42	1,606	1,927	1,981	2,596	253	340	48	61
North Park	-	-	-	-	-	-	-	-	-	-	-	-
Crestview	-	-	-	-	-	-	-	-	-	-	-	-
Total	35.46	166.66	235.06	48.22	32,050	38,460	40,719	53,344	4,803	6,437	933	1,193

1 Includes Villages of North Bay and Elmwood Park, excludes Colonial Heights.

2 Includes Colonial Heights.

3 Includes Wind Point (from North Park).

4 Includes transfer of 1.0 MGD of Average Day Flow from Caledonia to Mount Pleasant.

5 Peak Hour Flows in Exhibits F1(a) and F1 (b) will be different than in Exhibit E due to SSR Parties purchasing additional Conveyance Capacity within the conveyance system but not at the Wastewater Treatment Plant.

Aerial View of the Wastewater Treatment Plant



Exhibit F1(a) – Conveyance Capacity Allocation

Last Revision #9 12-17-19

Entry Point Location ¹	Peak Hourly Flow Allocation ² (MGD)	Flow Allocation 2020 Facilities Plan MIKE URBAN Simulated Flow ³ (MGD)
Caledonia West ^{5,9}	10.542	15.282
Caledonia East ⁹	13.074	16.265
Caledonia I-94 Area ^{5,9}	1.100	
Caledonia Total	24.716	31.547
MP 11	3.128	3.129
MP 12 ¹⁰	2.608	1.562
MP 13 ⁴	3.070	1.410
MP 14 ^{4,6}	1.730	0.729
MP 16	0.648	0.649
Colonial Heights Meter	0.290	0.290
Downstream of MP 11 (unmetered)	0.259	0.259
Downstream of MP 12 (unmetered) ¹⁰	0.059	0.030
Downstream of MP 13 (unmetered) ⁴	0.446	0.177
Downstream of MP 14 (unmetered) ^{4,6}	0.270	0.122
M04107-Z0055 (MP 15) (unmetered) ⁴	0.620	0.246
Enters at U0050 (unmetered)	0.160	0.160
M08006-M08005 (MP 17) (unmetered)	0.852	0.852
M08003 (MP 18) (unmetered)	0.061	0.061
Bryn Mawr (minus Sturtevant)	74.679	74.690
MP Allocation to Wastewater Treatment Facility ⁹	6.694	
Mount Pleasant Total	95.574	84.366
Sturtevant Total	10.180	10.182
RA Echo Lane ^{6,7,8}	2.200	
Racine Total^{4,10}	118.387	109.120

1. Locations include both metered and unmetered areas within the service area.

2. Based on 2020 Facilities Plan MIKE URBAN flows with adjustments for unmetered areas within Racine.

3. MIKE URBAN hydraulic model results.

4. Flow allocations adjusted to reflect approved Cost of Service Studies for Grove and Ohio Storage Facilities 20130614. (Flow allocation adjustments include revising MP 13 from 1.409 to 3.07 MGD, Downstream of MP 13 (unmetered) from 0.177 to 0.466 MGD, MP 14 from 0.728 to 1.989 MGD, Downstream of MP 14 (unmetered) from 0.122 to 0.309 MGD, M04107-Z005 (MP 15) (unmetered) from 0.246 to 0.620 MGD, and Racine Total from 109.120 to 111.502 MGD)

5. Village of Caledonia transfer of 1.100 MGD from the Caledonia West meter point to a new I-94 basin.

6. Flow allocations revised based upon modeled data to reflect additional conveyance capacity due to the relay of sewers in Kinzie Avenue from Ostergaard Avenue to Echo Lane and Echo Lane from Kinzie Avenue to Lindermann Avenue. Mount Pleasant allocations were negotiated with the Commission (see note 7). A Racine flow meter (RA Echo Lane) was added at the downstream end of the interceptor sewer upgrade project, near the intersection of Echo Lane and Lindermann Avenue.

7. The City of Racine purchased 1.28 MGD of remaining excess capacity in the Kinzie-Echo sewer system that the Commission was holding. The motion to purchase this capacity was approved at the 9/26/2017 Commission Meeting. See note 8 for additional details on the purchased capacity.
8. Commission modeling showed a need for 3.208 MGD of capacity in the Kinzie-Echo interceptor sewer. The Commission purchased 0.298 MGD of excess capacity through negotiations with Mount Pleasant, who did not believe they were in need of this much capacity. Additionally, the originally recommended 18-inch Kinzie-Echo sewer upgrade, which was sized to convey a flow of 3.218 MGD, was upsized during construction to a 21-inch pipe with a flow capacity of 4.2 MGD. The Commission picked up the cost of the interceptor sewer oversizing, increasing their allocated capacity by 0.982 MGD (4.2 MGD minus 3.218 MGD), for a total purchased capacity of 1.28 MGD (0.298 MGD plus 0.982 MGD).
9. Caledonia transferred 1.0 MGD average day flow to Mount Pleasant. Based on standard transfer units Caledonia's conveyance capacity is reduced and Mount Pleasant's conveyance capacity is increased 6.694 MGD. Caledonia selected the amount to reduce Caledonia East and West to equal 6.694 MGD. Mount Pleasant will convey the additional 6.694 MGD directly to the Wastewater Treatment Facility. No additional conveyance capacity is allocated in the existing conveyance system. Standard Transfer units are defined and quantified in section 1.102 of the Racine Area Intergovernmental Sanitary Sewer Service, Revenue Sharing, Cooperation and Settlement Agreement
10. Flow allocations adjusted to reflect approved Cost of Service Study for LS02 Storage Basin. (Flow allocation adjustments include revising MP 12 from 1.561 to 2.608 MGD, Downstream of MP 12 (unmetered) from 0.030 to 0.059 MGD, and Racine Total from 111.502 to 118.387 MGD)

COMPLIANCE MAINTENANCE ANNUAL REPORT



COMPLIANCE MAINTENANCE ANNUAL REPORT – CMAR

The Compliance Maintenance Annual Report (CMAR) has been an annual self-evaluation-reporting requirement for publicly owned wastewater treatment plants since 1987. The CMAR program was revised in 1992, in 2005, 2014, and in 2016. Annual submittal of an electronic CMAR form no later than June 30, 2023 for 2022 is required under Wisconsin Administrative Code NR 208 – Compliance Maintenance Annual Report.

The purpose of the CMAR is to evaluate the wastewater treatment system for problems or deficiencies. Management, operation and maintenance activities are described. Owners identify proposed actions to prevent violations of WPDES permits and water quality degradation. The CMAR program encourages actions that:

- Promote the owners' awareness and responsibility for wastewater conveyance and treatment needs.
- Maximize the useful life of wastewater treatment systems through improved operation & maintenance.
- Initiate formal planning, design and construction to prevent WPDES permit violations.

There are ten sections in the CMAR that apply to the Racine Wastewater Utility. Letter grades (A, B, C, D, F) are assigned to each section denoting compliance and performance. Section grades of C, D, and F require comments in the report. Section grades D & F require an action plan on the part of the Utility to correct deficiencies. An overall grade point average less than 3.00 requires an action response on the part of the Utility as well. **The Utility's overall grade point average was 4.0.** The report submitted in 2023 is for calendar year 2022.

CMAR Section Summaries and Grades for 2022:

Influent Flow and Loadings: *Grade A*

This section looks at plant influent loadings and design parameters to determine adequate plant capacity to treat incoming wastewater.

Effluent Quality BOD: *Grade A*

This section reviews plant performance and its ability to meet WPDES permit requirements.

Effluent Quality TSS: *Grade A*

This section reviews plant performance and its ability to meet WPDES permit requirements.

Effluent Quality Ammonia: *Grade A*

This section reviews plant performance and its ability to meet WPDES permit requirements. Ammonia is a seasonal limit based on effluent pH.

Effluent Quality Phosphorus: *Grade A*

This section reviews plant performance and its ability to meet WPDES permit requirements.

Biosolids Quality and Management: *Grade A*

This section looks at biosolids use/disposal, land application sites, biosolids pollutants, pathogen control, vector attraction reduction, and biosolids storage.

Staffing and Preventative Maintenance: *Grade A*

This section looks at adequate staffing, recordkeeping, presence of a documented and implemented preventative maintenance program, as well as a detailed operation and maintenance manual.

Operator-In-Charge Certification and Education: *Grade A*

Verification is required to ensure that the Operator-In-Charge is certified by the Department of Natural Resources (NR 114) in all subclasses required for the Racine Wastewater Treatment Plant. The Operator-In-Charge must be certified at the appropriate level to operate this plant and collection systems. It must also be stipulated that the Operator-In-Charge is maintaining certification by earning the required continuing education credits.

Financial Management: *Grade A*

Are User Charges or other revenues sufficient to cover O & M expenses? When was the User Charge System or other revenue sources last reviewed or revised? Is there a segregated Equipment Replacement Fund? What are the additions or subtractions to the fund? Future planning?

- Energy Efficiency and Use
- Electricity Consumption
- Natural Gas Consumption
- Energy Related Process and Equipment
- Energy Study
- Lift Stations
- Treatment Plant
- Biogas Generation

Sanitary Sewer Collection System: *Grade A*

Does the Utility have a Capacity, Management, Operation and Maintenance (CMOM) requirement in our WPDES permit? Is there a documented CMOM program? The report lists maintenance activities and amount maintained. These activities include:

- Sewer cleaning
- Flow monitoring
- Televising
- Lift station O & M
- Manhole Inspection and Rehabilitations
- The report also looks at performance indicators such as:
 - Number of sewer pipe failures
 - Basement backup occurrences
 - Lift station failures
 - Complaints
 - Sanitary sewer overflows
 - Peaking factor ratios

The collection system grade is highly influenced by the intensity of rainfall events. Many sewer system overflows (SSO) in the past were the result of high intensity rain events which exceeded collection system capacity.

The Utility has constructed underground storage basins at Grove Avenue, Ohio Street and Mt. Pleasant Street in the past decade. Construction of a 2.4 MG holding tank by lift station #2 was completed in 2020. Optimization of holding tanks use is key to successful operation in wet weather. The Utility will continue its efforts to eliminate safety site overflows in the collection system. Studies and investigations will continue to better document events that occur to refine the engineered solution. The Utility will continue to utilize engineering consultants to televise its collection system and perform lining and replacements. The Villages of Mt. Pleasant, Sturtevant, and Caledonia are working to identify locations of I&I and address them. The Capital Improvement Program will be prioritized to address the worst problem areas first to minimize damage due to basement backups.

Implementation Schedule:

- Finalize the Facility Plan.
- Televise Utility-Owned Interceptor Sewers.
- Clean the City Sanitary Sewer Collection System on a 3 year schedule.
- Begin project design and construction on additional storage basins.

CAPACITY, MANAGEMENT, OPERATIONS & MAINTENANCE PROGRAM AUDIT



Capacity, Management, Operations, and Maintenance Program Audit – CMOM

The USEPA and WDNR proposed CMOM regulations define CMOM Program Audits as follows:

USEPA: If a Sanitary Sewer Overflow (SSO) that discharges to Waters of the United States occurs from your collection system during the term of this permit, you must conduct an audit appropriate to the size of the system and the number of overflows. A report of the audit shall be submitted evaluating your CMOM and its compliance with this subsection, including its deficiencies and steps to respond to them.

WDNR: Annual Self-Auditing of your CMOM Program to ensure above components are being implemented, evaluated, and re-prioritized as needed.

The Racine Wastewater Utility annually prepares and tracks various programs for interceptor and collection system improvements, including system component replacement or upgrades. Goals are set for long-term and short-term projects with an assessment made at year end to determine the Utility's performance in reaching the goals that are set. The Utility's annual capital improvement plan, as well as preventive maintenance programs, is included in defining the annual goals.

SANITARY SEWER OVERFLOWS: The Utility experienced 20 overflows in 2022.

Date	Location	Volume (Gallons)	Date	Location	Volume (Gallons)
4/29/2022	Grand Ave /Water St	500	9/11/2022	SS#11	449,103
9/11/2022	SS#1	281,400	9/11/2022	SS#12	324,858
9/11/2022	SS#2	847,327	9/12/2022	LS2	103,100
9/11/2022	SS#3	128,040	9/11/2022	LS6	8,047
9/11/2022	SS#4	22,058	9/11/2022	LS8	300,000
9/11/2022	SS#5	320,599	9/11/2022	LS9	11,484
9/11/2022	SS#6	1,621,854	9/11/2022	Michigan/Dodge	135,000
9/11/2022	SS#8	844,958	9/11/2022	Michigan/Dodge	135,000
9/11/2022	SS#9	11,585	9/11/2022	Michigan/Dodge	135,000
9/11/2022	SS#10	527,938	9/13/2022	Washington/West Lawn	7,500

BASEMENT BACKUPS

Number of Backups by Type (Owner or Utility responsibility)

The Utility responded to 182 calls in 2022. Four of the calls were due to a sewer main plug, 68 were due to possible nearby surcharged sewer mains, and 110 calls were lateral problems and the homeowner's responsibility.

Utility Response

The Utility's response is to react immediately to the call, evaluate the situation, and then rectify the problem as quickly as possible.

MAINTENANCE- Performed by the Racine Wastewater Utility

Sanitary Sewers Cleaning Quantity

488,047 linear feet (36.29 % of the system)

Root Cutting Quantity

76,116 linear feet (5.66 % of the system)

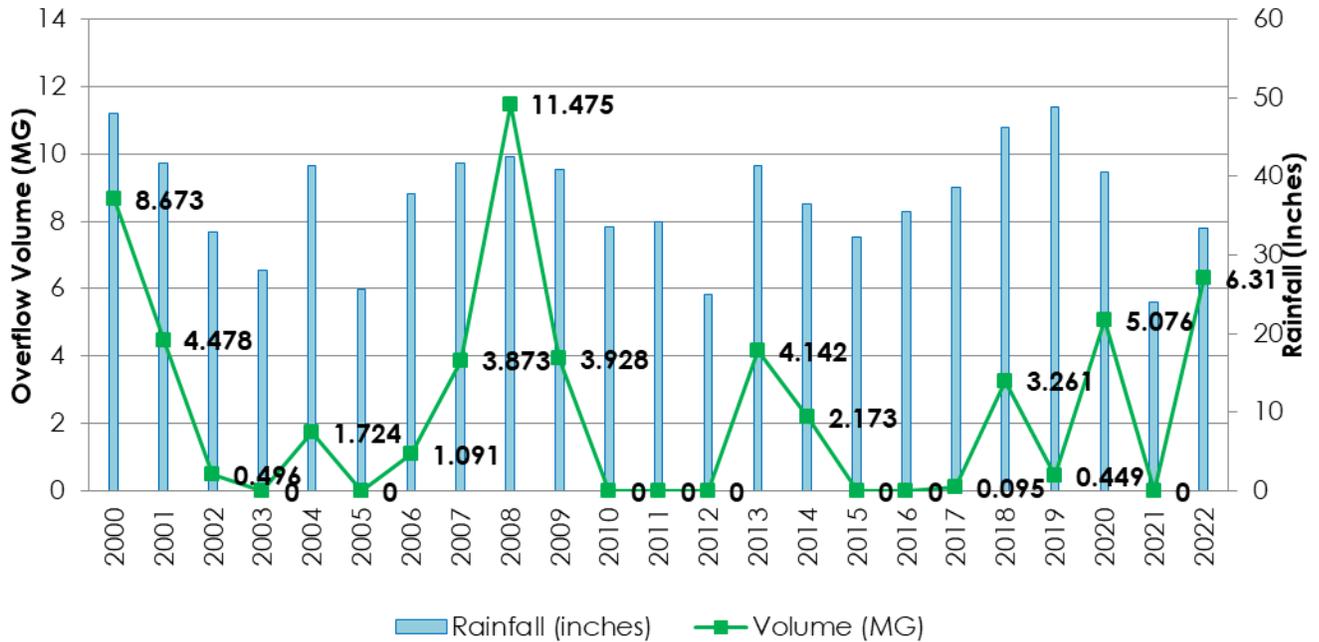
Manhole Inspections:

875 (16.27% of the system)

The Wisconsin Department of Natural Resources requires the completion of an annual CMAR as part of the Utility's WPDES permit. CMOM program elements are addressed in the CMAR reporting to the WDNR.

Year	Number of Overflows	Total Wet Weather Events	Quantity (MG)	Annual Rainfall (inches)
2000	20	6	8.673	47.95
2001	20	5	4.478	41.66
2002	1	1	0.496	32.87
2003	0	0	0	27.99
2004	9	4	1.724	41.39
2005	0	0	0	25.68
2006	8	3	1.091	37.73
2007	13	2	3.873	41.72
2008	16	3	11.475	42.49
2009	12	2	3.928	40.83
2010	0	0	0	33.55
2011	0	0	0	34.16
2012	0	0	0	24.96
2013	7	1	4.142	41.42
2014	6	1	2.173	36.41
2015	0	0	0	32.22
2016	0	0	0	35.55
2017	2	1	0.095	38.54
2018	13	2	3.261	46.27
2019	7	1	0.449	48.78
2020	20	3	5.076	40.52
2021	0	0	0	24.05
2022	20	1	6.310	33.36

Overflow Volume Vs Annual Rainfall



In the event of an overflow during the course of the year, the CMOM program audit is revised to address issues related to the overflow and activities being undertaken. All activities that are being implemented are documented in the audit and results assessed as to the elimination of the causes of overflows.

COMMUNICATIONS

The USEPA and WDNR proposed CMOM regulations define communications as follows:

USEPA: The permittee should communicate on a regular basis with interested parties on the implementation and performance of its CMOM program. The communication system should allow interested parties to provide input to the permittee as the CMOM program is developed and implemented.

WDNR: Not addressed.

The Racine Wastewater Utility provides wastewater treatment for eight satellite communities as shown below:

1. City of Racine
2. Village of Mt. Pleasant
3. Village of Caledonia
4. Village of Sturtevant
5. Village of Elmwood Park
6. Village of North Bay
7. Village of Wind Point
8. Town of Somers KR Utility District

The Racine Wastewater Utility, the City of Racine and above listed satellite communities, with the exception of the Town of Somers KR Utility District, North Bay and Elmwood Park, established the Racine Area Intergovernmental Sanitary Sewer Service, Revenue Sharing, Cooperation, and Settlement Agreement in 2002. This agreement is in affect for 50 years. The Utility communicates on a regular basis with these communities in regards to system capacity as well as infiltration and inflow reduction. In 2009, a Technical Advisory Committee made up of the contributing communities met and formulated plans to address system deficiencies.

MONTHLY COMMISSION MEETINGS

The Racine Wastewater Utility is governed by an eleven person Commission. Representatives include the Racine Mayor, six representatives appointed by the Racine Mayor and confirmed by the Racine Common Council, two representatives from Mt. Pleasant, one representative from Caledonia, and one from the outlying community with the largest amount of allocated treatment capacity other than Racine, Mt. Pleasant or Caledonia.

The Commission meets on a monthly basis to decide administrative issues related to finance, personnel, operations, SSO reduction and elimination, interceptor system improvements, and other administrative issues. In addition to the Utility Commissioners, the Wastewater Utility Director, Superintendent, and Department Supervisors typically attend the Commission meetings. The Commission meetings are open to the public and local newspapers routinely attend. Any SSO events or sewer capacity issues are presented and discussed at the Commission meeting.

SSO REPORTING

Sanitary sewer overflows that enter the storm sewer system or open water are included in a report that is transmitted to the WDNR conforming to the Racine Wastewater Utility's WPDES permit. Overflows are reported to all parties in the Utility chain of communication, WDNR, and affected stakeholders. The Field Services Director is responsible for the verbal notification of the WDNR within 24 hours of an overflow event. A detailed written response is also prepared by the Field Services Director for submittal to the WDNR within five days of the event with review by the Director and Superintendent. Affected Water Utility owners are notified of the SSOs, along with local media outlets. The SSO event is also discussed at the monthly Commission meeting.

ANNUAL CMOM PROGRAM AUDIT

CMOM program elements will also be addressed on an annual basis as part of the Utility's CMAR reporting to the WDNR. The CMAR and CMOM Program Audit are included in the Utility's Annual Report which is provided to all Commissioners, agency communities, and are available for review to the general public and interested parties.

PLANT PROCESS & EQUIPMENT



Description of Plant Process & Equipment

The Racine Wastewater Treatment Plant is a conventional activated sludge plant with chemical phosphorus precipitation, anaerobic sludge digestion, belt filter press dewatering and ultraviolet disinfection of effluent.

Flow Equalization Basins: The Racine Wastewater Treatment Plant flow equalization basins are designed to reduce flow to the treatment plant during a period of high influent flow. Flows exceeding 108 MGD (million gallons per day) will be directed to the flow equalization basins. Wastewater stored in the flow equalization basins is reintroduced into the normal wastewater stream as plant capacity is available. Influent wastewater which is directed to the basins can be chlorinated using sodium hypochlorite. This will provide odor control for stored wastewater and disinfection for any amount that overflows the basins. The effluent from the basins is dechlorinated before blending with the plant effluent.

Sodium bisulfite is used for dechlorination at the wastewater treatment facility. Liquid sodium bisulfite is stored in tanks located in the preliminary treatment building. Bisulfite is transferred to the point of application by chemical metering pumps and enters the equalization basins' effluent through diffusers. Dechlorination of equalization basin effluent is provided at the dechlorination structure located downstream from the two equalization basins. For dechlorination of equalization basin effluent, the bisulfite pumps are flow paced.

Prior to entering the equalization basins, wastewater is screened by mechanically cleaned bar screens. Wastewater in the basins is returned to the treatment flow scheme by gravity and by pumping. It can be returned to the headworks for full treatment, the aeration basins for secondary treatment, or to the digesters for sludge handling. Both equalization basins are 200 feet in diameter and have a storage capacity of 2.7 million gallons each.

Flow: The wastewater flow enters the headworks of the plant through 84" and 72" diameter lines. The design average flow is 36 MGD. From the headworks junction chamber, two 54" diameter pipes direct the flow into the preliminary treatment building.

Mechanically Cleaned Bar Screens and Washing Presses: The preliminary treatment building contains four (4) bar screens, each with a rated maximum capacity of 35.0 MGD. The spacing between the individual bars is one-half inch. Course sewage material is captured and removed from the flow to prevent plugging of pumps and unnecessary wear on downstream equipment. Each bar screen has a washing press to reduce organic content, moisture content and volume of screenings.

Vortex Grit Removal Equipment: Two vortex grit removal units rated at 70 MGD each remove coarse abrasive inorganic material continuously from the screened wastewater flow.

Grit Concentrators: Two grit concentrators remove water and organics from the material pumped to them from the vortex grit removal system.

Primary Influent Channel Blowers: Two Hoffman blowers (100 HP) with a capacity of 2500 CFM are used to keep solids in suspension until the flow reaches the primary clarifiers. This aeration also helps with odor control.



Chemical Feed and Storage for Phosphorus Removal: Phosphorus must be removed from wastewater to eliminate this major source of the primary nutrient required for the growth of algae in Lake Michigan. Three 12,000 gallon fiberglass tanks store ferric chloride which is used to form insoluble ferric phosphates with the soluble phosphates in the raw wastewater. Ferric chloride can be fed before primary clarifiers, after primary clarifiers, and prior to final clarifiers.



Primary Clarifiers: There are a total of 12 primary clarifiers. Six clarifiers are considered west bank and the other six are the east bank. Four west bank clarifiers are 137.5 feet long by 34.5 feet wide by 10.5 feet deep. The other two west bank clarifiers are 122 feet long by 28 feet wide by 7.5 feet deep. The east bank of primary clarifiers has four clarifiers that are 120 feet long by 38 feet wide by 8 feet deep. The other two east bank clarifiers are 128 feet long by 30 feet wide by 8 feet deep. Total primary clarifier capacity is 3.7 million gallons. Average detention time in the primary clarifiers, when all are in service is 3.6 hours at a flow

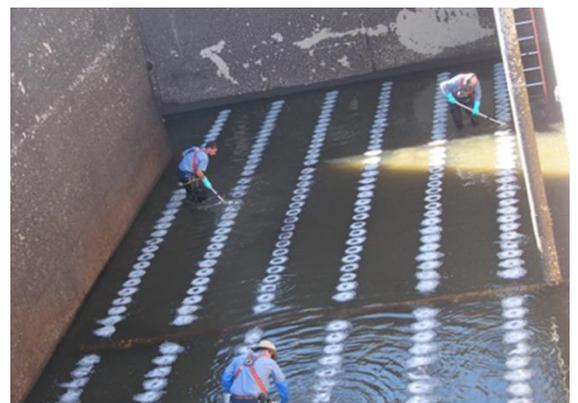
of 25 MGD. Mechanical scrapers push sludge to pits for removal by pumping to the digesters. These same scrapers also push the scum to troughs that enable the scum to be pumped to the digesters.

Anaerobic Digesters: Racine Wastewater utilizes four (4) one-million gallon capacity digesters. Sludge from the primary clarifiers and thickened waste activated sludge (TWAS) is pumped to the digesters. Mechanical mixers keep the organic material in contact with the anaerobic organisms. Heat exchangers provide heat to ensure that temperature is maintained around 95 degrees Fahrenheit with minimal temperature changes. Through anaerobic bacterial action, sludge is decomposed and converted into a more stable product. Methane gas (biogas) is produced as a by-product of this decomposition. Biogas is used as a fuel supply for large internal combustion engines and boilers. Approximately 200,000 cubic feet of biogas is produced daily.

Holding Tank for Belt Filter Press Operation: One (1) fixed cover tank with a volume of 552,000 gallons is used as part of the sludge dewatering operation. After primary digestion, sludge is transferred to the holding tank.

Gas Storage Sphere: The gas produced in the digesters as a by-product of the digestion process consists mainly of methane and carbon dioxide. It is used as fuel for the engine driven blowers and in the boilers for building and sludge heating. Since gas production and usage is not uniform in rate, a gas storage sphere is used during periods when demand is greater than production. The sphere is 40 ft. in diameter, providing storage at 50 psi for 200,000 cubic feet of digester gas. If gas production exceeds capacity, the gas is routed and burned by a safety device.

Aeration Tanks: The aeration tanks are two (2) pass tanks, each pass measuring 168 feet by 30 feet by 15 feet. The total volume of five (5) aeration tanks equals 5.65 million gallons. The aeration system can be operated in several modes. The conventional activated sludge process is used. The contents consist mainly of microbiological organisms (bugs) and organic material (wastewater). This is mixed by the introduction of air through 10,000 (9 inch diameter) membrane diffusers located along the length of each tank. The air also provides oxygen for the microorganisms which feed on the organic material contained in the wastewater. The



resulting Mixed Liquor is transferred from the aeration tanks to the final clarifier tanks where settling occurs followed by return pumping microorganisms to the aeration tanks or waste pumping of excess organisms.

Aeration Control Buildings: These buildings house the controls for the pumps and equipment involved with the aeration system.

Air Blowers:

Three (3) Engine Driven Blowers:

- #2 Engine 380 HP, Blower Capacity 9,600 CFM at 8.2 psig
- #3 Engine 675 HP, Blower Capacity 15,000 CFM at 8.5 psig
- #5 Engine 440 HP, Blower Capacity 9,600 CFM at 8.2 psig

Two (2) Motor Driven Blowers:

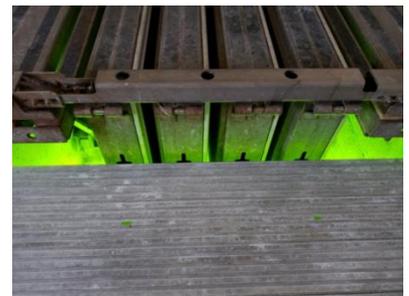
- #1 Motor HP 500, Blower Capacity 11,000 CFM at 8.5 psig
- #4 Motor HP 300, Blower Capacity 6,900 CFM at 8.5 psig



The blowers provide air for the aeration tanks. All air for the low-pressure system is filtered by a combination electrostatic and mechanical air filter. Accessory equipment includes silencers on air intake and discharge for each blower, and combination silencers and heat recovery units on the engine exhausts. Heat is recovered from engines by circulating the engine jacket water through heat exchangers in the building and sludge heating system. The engines can be operated on biogas produced by the treatment plant or natural gas.

Final Clarifiers: There are nine (9) final clarifiers. Three 85 in diameter, three 93 feet in diameter and three 90 feet in diameter. Total volume equals 5,930,000 gallons. Detention time is 5.1 hours at 25 MGD. The activated sludge produced in the aeration tanks settles in the final tanks. The settled sludge is drawn through rotating collector tubes and the connected piping system by pumps, which return the major portion to the aeration tanks. Because a balance must be maintained between the amount of microorganisms held in the secondary treatment plant and the food supply in the primary effluent, the excess waste activated sludge (WAS) is pumped to the primary tanks or gravity belt thickeners. The clarified water or secondary plant effluent is conveyed to the U.V. system for disinfection.

Ultraviolet Light (U.V.) and Hypochlorite Disinfection: Two U.V. systems are provided at the Racine facility. Ultraviolet light is used to provide disinfection of final clarifier effluent and a sodium hypochlorite system is used to provide disinfection of wastewater delivered to the flow equalization basins.



The sodium hypochlorite system is used to disinfect the flow from the equalization tanks. Chlorination is provided for odor control of wastewater temporarily stored in the equalization basins and for disinfection of wastewater which may overflow the equalization basins. Chlorination is provided at the equalization basin bar screen effluent channel and at the lift station force main discharge structure. Sodium hypochlorite application to the return activated sludge (RAS) system is also provided. Sodium hypochlorite is stored in two (2) tanks located in the liquid chlorine building. Liquid sodium hypochlorite solution is delivered to the various points of application by chemical feed pumps located in the liquid chlorine building. The hypochlorite feed pumps are flow paced.

Ninety-Six and Seventy-Two Inch Diameter Outfalls: Two outfall lines (72" and 96") extend 500 feet out into the lake. There are three 36" openings at the end of the 72" pipe and three (3) 48" openings at the end of the 96" pipe for discharge purposes.

Belt Filter Presses: Six - two meter presses. The continuous stage belt filter presses consists of two polyester cloth belt sets one above another that maneuver through a series of pressure rollers. Sludge is conditioned with a liquid polymer and is fed onto a gravity drainage section of the belts. Following gravity drainage, the sludge is distributed on the lower pressure belt. After an additional small section of gravity drainage, the concentrated sludge comes in contact with additional small section of gravity drainage; the concentrated sludge comes in contact with the upper belt. The two



(2) belts form a wedge which gradually forces removal of water. The water removed (filtrate) is collected in drainage pans and combined with gravity drainage water and recycled back to the head of the plant. Pressure is increased as the belts pass through rollers of decreasing size. The final three rollers form an S-shaped configuration which generates a shear force and creates additional water drainage. Dewatered sludge is hauled by truck to ultimate disposal. The filter belts are continuously washed with water at high pressure.

Gravity Belt Thickeners: The two gravity belt thickeners are used to thicken waste activated sludge (WAS) from the secondary activated sludge treatment process. Polymer is added to the WAS to help the thickening process.

Final Effluent Systems: Three final effluent pumps are located in the aeration pipe gallery. Final effluent is pumped to the yard hydrants and street hydrants. There are also two cooling water pumps installed in the aeration pipe gallery to pump screened final effluent to the engine jacket water cooling heat exchangers.

One F.E. Pump: 200 gpm at 243 ft. head
One Cooling Water Pump: 550 gpm at 55 ft. head
One Auxiliary Engine: Use at time of power failure
Pump: 550 gpm at 50 ft. head

Tank Drainage System: The tank drainage system consists of the drain system for all the treatment units and the bypassing arrangements for these units. Two tank drainage wells and five drainage pumps are provided.

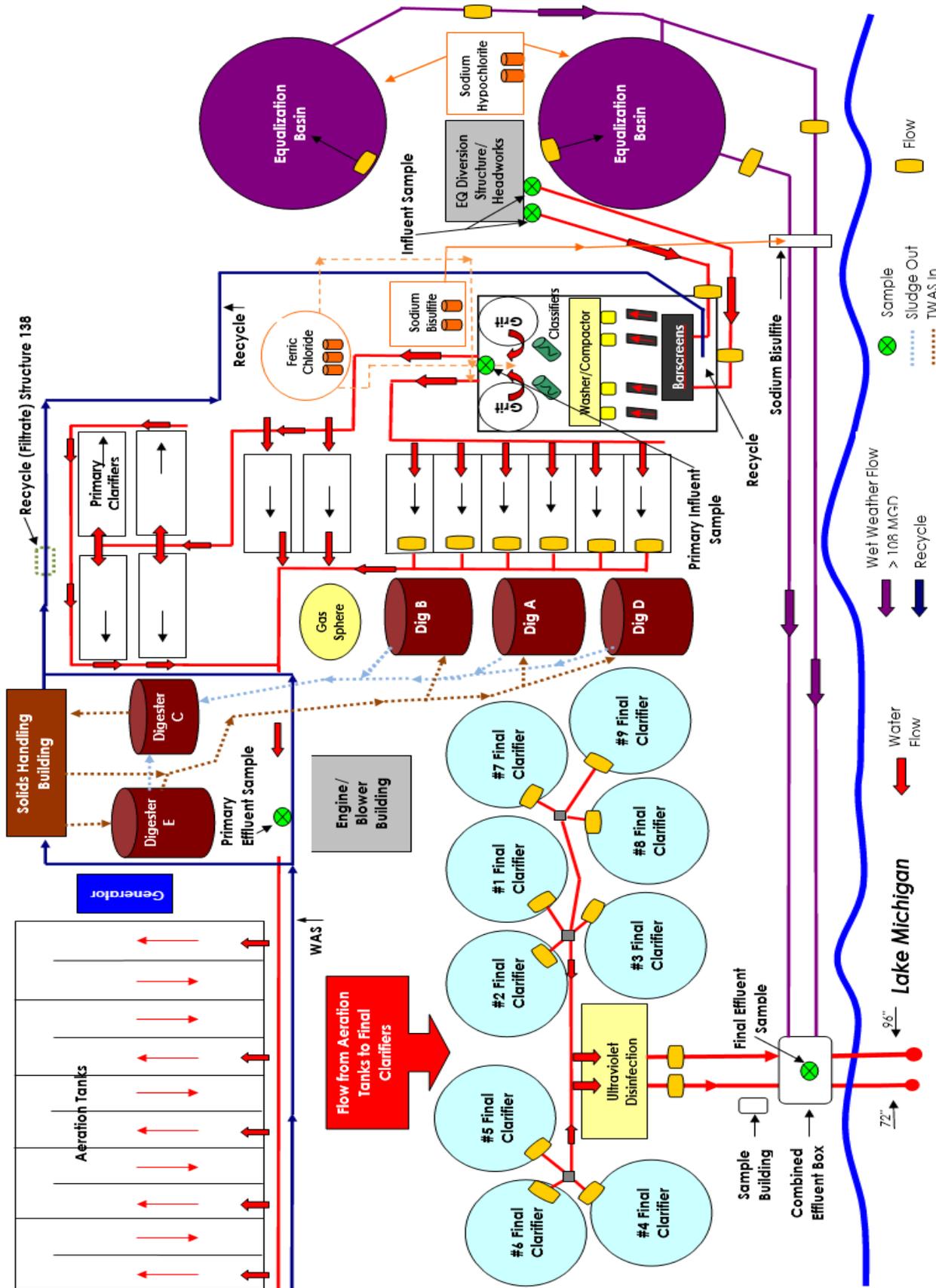
Five Tank Drainage Pumps: 700 gpm at 30 ft. TDH

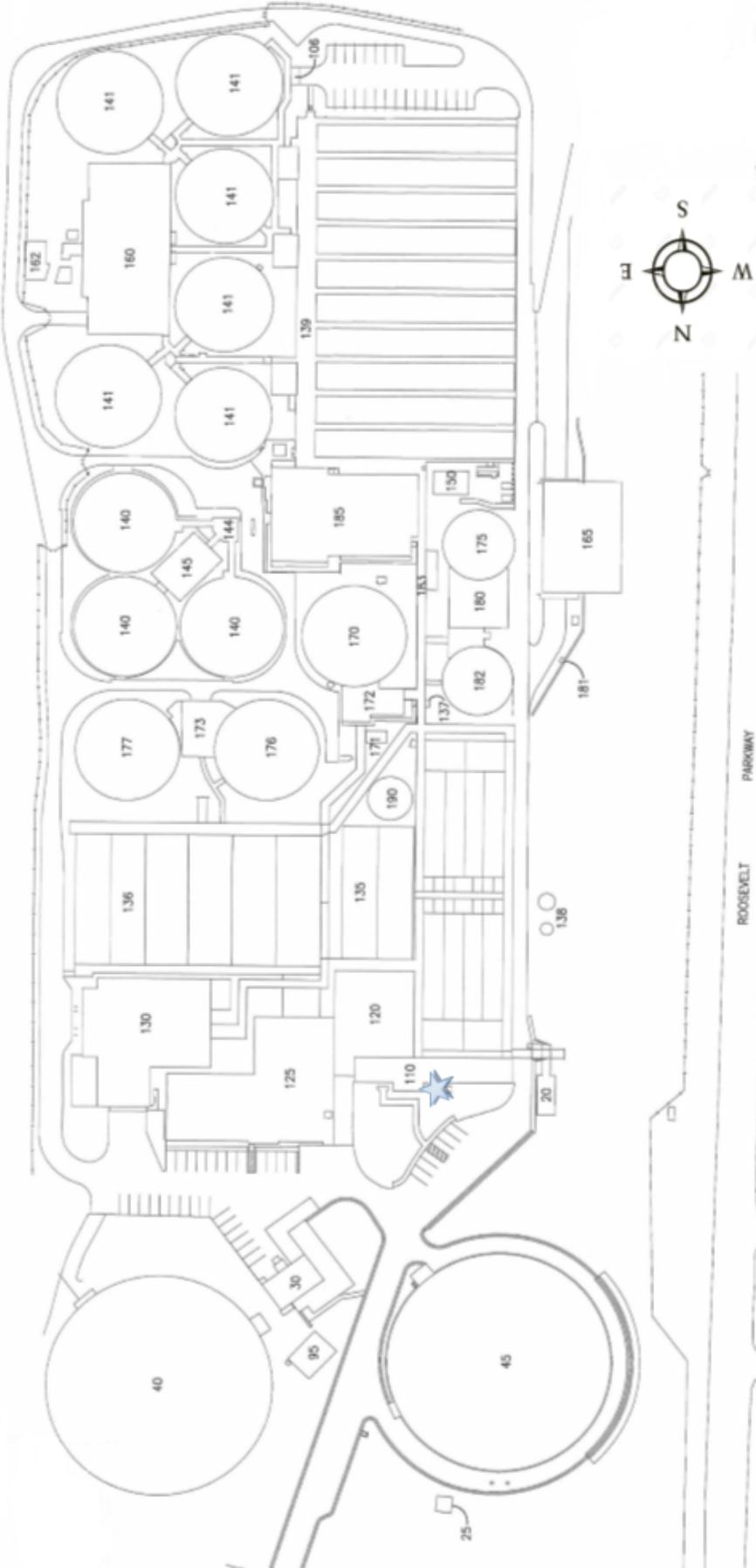
Pipe Gallery: Connection between the primary plant and secondary plant. All necessary systems run through the pipe gallery.

Plant Water Systems: This system provides a physical break between the incoming city water and the plant water distribution system.

Heating, Ventilation and Air Conditioning: Hot water for space heating is provided by one continuous loop system. The system is provided with four multiple pass, horizontal fire tube boilers with five square feet of heating surface per rated boiler horsepower. Two of the four units can be fired by biogas or natural gas. Air circulation systems have been installed for space heating and cooling, odor control and removal of dangerous gases. At critical areas or areas where air handling units are not installed, unit heaters are provided to heat the space, and exhaust fans with separate air intake louvers provide ventilation.

FLOW MONITORING AND SCHEMATIC DIAGRAM





STRUCTURE CHART

- 20—DIVERSION STRUCTURE
- 25—JUNCTION STRUCTURE
- 30—EQ. SCREENING BUILDING
- 40—EQUALIZATION BASIN NO. 1
- 45—EQUALIZATION BASIN NO. 2
- 106—VACTOR DUMP STATION
- 110—★ ADMINISTRATION BUILDING
- 120—CHEMICAL WING
- 125—PRETREATMENT BUILDING (REMOVALS)
- 125—LAB/OFFICE (NEW)
- 130—PRELIMINARY TREATMENT BUILDING
- 135—PRIMARY CLARIFIERS (WEST BANK)
- 136—PRIMARY CLARIFIERS (EAST BANK)
- 137—PRIMARY CLARIFIER TUNNEL
- 138—WEST DRAIN PUMP STATION
- 139—AERATION BASIN/GALLERY
- 140—FINAL CLARIFIERS
- 141—MODIFICATIONS TO EXISTING FINAL CLARIFIERS
- 144—DISTRIBUTION BOX
- 145—RAS PUMP STATION
- 150—PLANT GENERATOR BUILDING
- 160—UV DISINFECTION
- 162—EFFLUENT JUNCTION BOX
- 165—SOLIDS PROCESSING BUILDING
- 170—DIGESTER "B"
- 171—ACCESS VAULT
- 172—DIGESTER CONTROL BUILDING NO. 1
- 173—DIGESTER CONTROL BUILDING NO. 2
- 175—DIGESTER "E"
- 176—DIGESTER "A"
- 177—DIGESTER "D"
- 180—DIGESTER CONTROL BUILDING NO. 3
- 181—WASTE GAS BURNER NO. 2
- 182—DIGESTER "C" / SLUDGE STORAGE TANK
- 183—TUNNELS
- 185—MAIN EQUIPMENT BUILDING
- 190—GAS STORAGE SPHERE
- 250—GENERATOR BUILDING (OFF SITE)

Bio Management Program

- The Utility generated 10,286.78 wet tons of biosolids in 2022
- Solids content of the biosolids averaged 21.9%
- Biosolids land applied to 588.9 acres



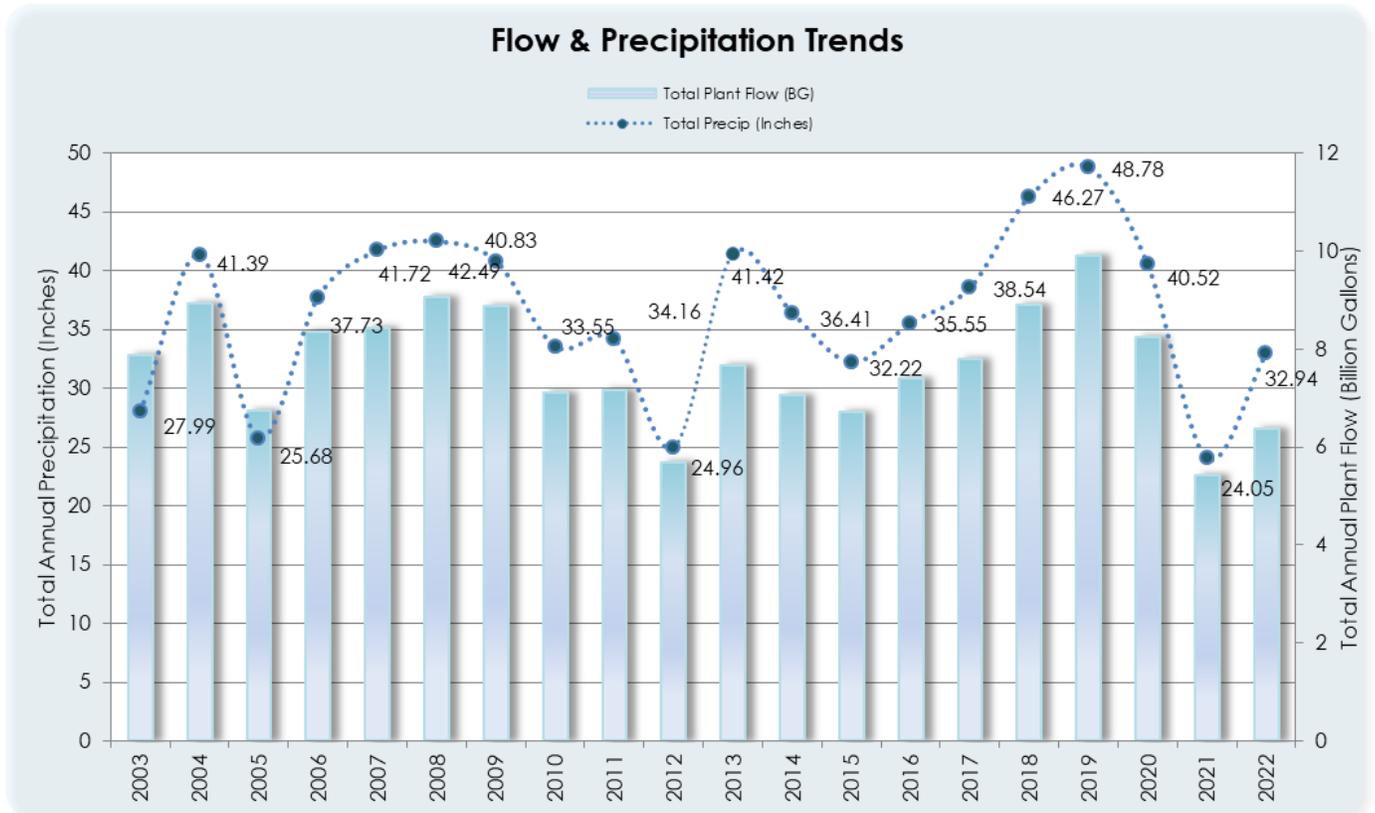
WASTEWATER OPERATIONS



FLOW & PRECIPITATION TRENDS

The graph below shows 20 years of rainfall and flow trends at the Racine Wastewater Plant. Rainfall can have an influence on peak events and increases in annual flow trends. However, economic factors and industrial water usage can also have an impact on baseline flows at the Wastewater Plant.

The decade from 2000 to 2010 is the wettest decade on record in the State of Wisconsin. It also contained unprecedented peak rain events in terms of inches per hour and inches per day. The summers of 1990 and 1993 were extremely wet in the Midwestern states. The Racine Wastewater Plant exceeded 10 BG (billion gallons) per year. These concerns, along with some peak rain events, caused the Utility to prepare a facilities plan in 1996 to ensure that the Wastewater Plant had adequate treatment capabilities to treat increased average day flow and peak day flow. Plant flow for 1997 and 1998, plant flow exceeded the peaks of 1990 and 1993, further reinforcing the need for more treatment capacity. The years of 2000 and 2001 continued to have flows over 10 BG/year. The Wastewater General Manager was forced to invoke a sewer moratorium for new construction until an agreement could be entered into with all of the local flow communities. A sewer agreement was signed in the spring of 2002 to address treatment capacity issues at the Wastewater Plant and to address known deficiencies in the collection system getting flows to the plant.



As a result of a 40 year storm that occurred in August of 2007 spreading over 6 inches of rain in a 36 hour period, the Utility was forced to study and address the concerns related to this event. Widespread surcharging occurred in the sewer system across the entire City as a result of this rainfall. Several homes experienced basement backups, even though SSO's were allowed in the collection system to relieve the greater than normal rainfall. A subset of the Wastewater Commission was formed and called the TAC, or Technical Advisory Committee, to study and evaluate issues surrounding the 40-year rain event that occurred. A draft final report of its findings

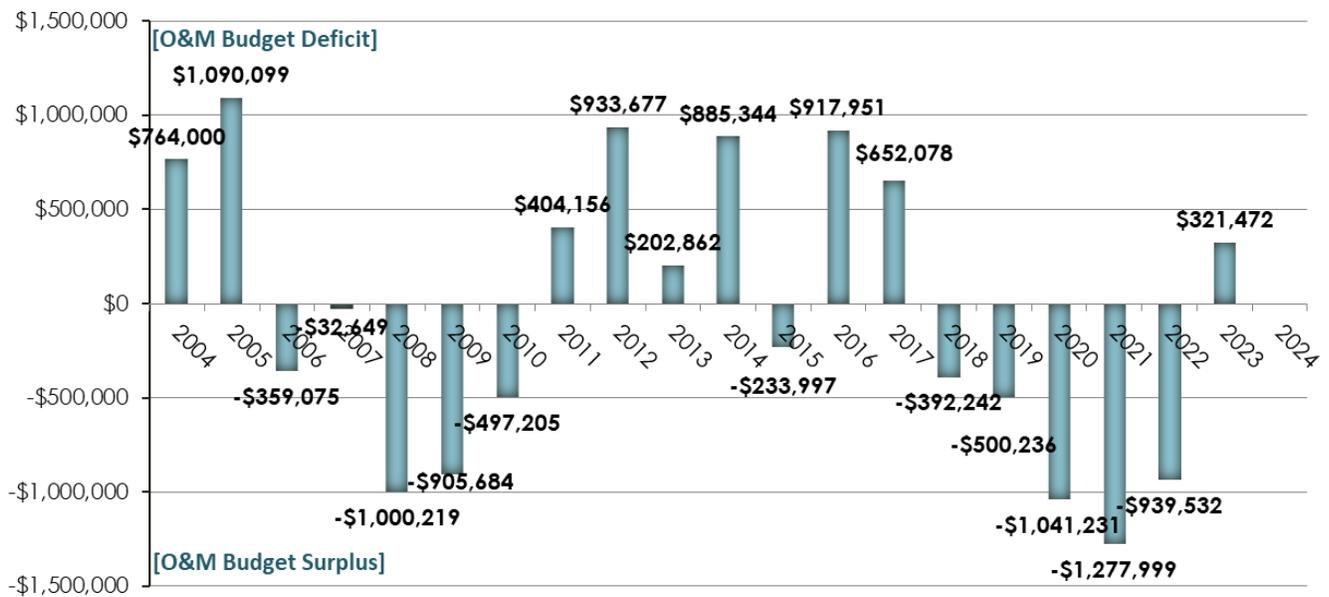
was submitted to the full Commission in October of 2010. Costs of Service Studies (COSS) were commissioned to evaluate the costs and how they would be applied to the local Sewer Service Recipient (SSR) Parties of the agreement.

Historic trends are an important element in the planning for long range projects in the wastewater industry. This discussion serves to place historical perspective on the need for a sewer agreement and plant expansion that occurred in 2002 – 2005.

Wastewater Flow Trends: Wastewater plant flow can be cyclical. The actual plant flow in 1998 thru 2001 was on average higher resulting in higher revenues than what was budgeted. This trend led to an annual budget reconciliation clause (or a concept called the “True-Up”) to be incorporated into the April 2002 Racine Area Intergovernmental Sanitary Sewer Service, Revenue Sharing, Cooperation and Settlement Agreement. The concept was that the Utility should not profit from abnormally high flows, due to wetter than normal years, and that any additional revenue should be put back into the rate formula to offset rate increases instead of building reserves within the utility. Conversely if the flows went below normal and a deficit of flow was realized, all parties to the Agreement should contribute additional money through the rates to offset the deficit. This concept was negotiated into the contract with all parties in agreement. The Utility is made whole by making sure that it can stay in business and positive returns on investments are returned to the ratepayer or customers of the Utility.

While the True-Up served to assure that the Wastewater Utility was assured to recover only the revenues it needed to cover costs, it also served to create drastic swings from budget deficit to budget surplus and vice-versa. These swings also can create much variation in wastewater service rates from one year to the next. Thus, True-Up serves as a self-correcting financial tool that over a period of time will insure that the ratepayer is treated fairly and that the Utility will not incur huge losses or gains that could impact its financial viability.

Annual True-Up Reconciliation Total



Flow & Precipitation 2022

DATE	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW
1	0.04	13.97	17.20	0.00	11.73	14.30	0.00	14.48	16.90	0.05	26.54	30.80	0.22	29.74	36.40	0.04	20.45	22.50
2	0.62	14.55	16.80	0.03	11.37	13.50	0.00	13.92	16.60	0.00	25.42	33.00	T	30.64	34.40	0.01	19.21	21.90
3	0.00	13.85	16.50	T	11.75	13.30	0.00	13.95	16.20	0.33	30.90	41.30	0.05	50.16	82.00	0.00	18.39	21.10
4	0.00	14.50	16.10	0.01	10.93	13.50	T	12.80	14.60	0.23	37.24	41.80	0.55	47.47	56.70	0.00	17.11	21.10
5	0.03	14.44	16.00	0.00	11.65	14.70	0.00	12.84	15.90	0.00	31.74	36.10	0.00	41.99	47.20	0.16	19.55	22.60
6	T	13.41	15.50	0.00	11.03	14.80	0.14	14.99	17.60	0.82	56.69	73.80	0.26	41.84	51.10	0.19	20.31	26.10
7	0.00	13.43	15.70	0.00	12.17	16.30	0.18	15.93	19.00	0.01	40.95	49.20	0.17	38.89	42.90	0.09	20.30	22.30
8	0.00	12.97	16.40	0.00	11.26	13.70	0.04	16.50	19.00	0.06	33.91	37.00	0.00	34.26	39.50	0.01	19.99	26.00
9	T	13.04	16.90	0.00	12.28	13.60	0.00	15.97	18.10	0.11	31.70	37.70	0.00	30.43	34.40	0.40	21.09	27.70
10	0.00	12.54	15.10	0.02	11.29	13.20	0.00	14.24	19.80	0.00	28.84	32.90	0.00	27.81	31.40	0.01	17.79	20.30
11	0.00	13.11	15.00	0.07	12.15	14.70	T	14.61	16.00	0.00	26.27	30.70	0.00	25.25	29.40	0.01	16.75	19.50
12	0.00	12.15	14.80	0.02	11.52	14.70	0.00	13.50	17.10	0.00	24.74	29.00	0.00	24.63	27.40	0.00	15.47	18.60
13	0.00	13.24	14.80	0.00	11.73	15.10	0.02	13.33	16.60	0.00	25.18	42.60	0.00	23.17	26.40	0.00	15.85	18.50
14	T	12.39	14.70	0.00	12.02	14.10	0.00	13.00	15.20	0.74	32.77	36.30	0.00	22.37	24.90	0.01	16.08	17.70
15	T	12.51	15.60	0.00	11.63	13.40	0.00	13.74	15.20	0.00	25.42	28.90	0.00	21.14	23.90	0.00	14.93	17.40
16	T	12.26	15.90	0.00	12.78	16.80	0.00	13.82	15.50	0.00	22.61	26.80	0.02	20.83	23.50	0.57	18.66	19.70
17	T	12.44	15.10	0.19	17.47	19.10	0.00	12.63	15.80	0.00	19.61	23.80	0.00	19.73	22.60	0.00	14.96	17.80
18	T	12.74	14.70	0.02	13.24	16.40	T	13.51	17.80	0.20	22.49	26.80	0.02	21.53	26.60	0.00	14.86	17.00
19	0.00	12.21	15.50	0.01	11.61	14.20	0.39	17.95	20.20	0.12	20.77	24.00	0.30	20.90	22.20	0.00	13.58	17.60
20	0.00	11.88	13.90	0.00	11.09	14.80	0.05	16.35	19.50	0.00	21.30	23.30	0.01	18.64	23.30	0.00	15.32	18.80
21	0.00	11.48	13.60	0.00	12.23	13.80	0.00	16.50	18.10	0.26	25.05	26.40	0.17	21.25	22.60	0.00	13.68	16.20
22	T	11.68	14.60	0.10	15.72	24.80	0.00	15.68	19.00	0.05	46.84	94.10	0.08	19.79	22.20	0.00	13.73	16.10
23	0.17	11.72	14.60	0.35	15.09	19.60	0.62	34.40	42.60	1.23	59.85	86.80	0.00	18.01	20.90	0.00	14.28	16.60
24	0.10	11.91	14.10	T	12.83	15.30	0.42	38.28	42.60	0.00	46.49	54.80	0.00	18.34	20.10	0.00	13.32	15.30
25	0.02	12.00	13.90	0.17	12.16	14.20	0.35	35.26	39.30	0.32	41.48	45.90	T	20.97	26.60	0.00	13.46	16.50
26	0.00	11.58	13.70	0.00	12.06	15.40	0.10	28.10	33.80	0.01	32.10	36.80	1.15	34.90	44.40	0.05	12.54	15.40
27	0.00	11.52	13.50	0.00	13.09	15.90	T	25.15	28.10	0.00	27.35	31.70	0.25	36.15	43.70	0.00	12.23	14.30
28	T	11.44	13.50	0.00	12.95	17.00	0.00	20.45	26.00	0.02	25.66	28.20	0.01	29.55	34.40	0.00	12.06	14.20
29	0.00	11.22	14.50				0.00	21.41	22.00	0.03	22.58	25.40	0.00	23.27	27.80	0.00	13.14	13.70
30	0.00	11.61	14.90				T	19.05	21.70	0.10	25.42	39.80	0.00	23.65	26.20	0.00	12.05	14.60
31	0.00	11.82	14.50				0.46	30.81	41.00				0.00	21.10	24.60			
TOTAL	0.98	389.61		0.99	346.83		2.77	573.15		4.69	937.91		3.26	858.40		1.55	481.14	
AVG	0.04	12.57	15.08	0.04	12.39	15.36	0.11	18.49	21.83	0.16	31.26	39.19	0.11	27.69	32.89	0.05	16.04	18.90
MAX	0.62	14.55	17.20	0.35	17.47	24.80	0.62	38.28	42.60	1.23	59.85	94.10	1.15	50.16	82.00	0.57	21.09	27.70
MIN	0.00	11.22	13.50	0.00	10.93	13.20	0.00	12.63	14.60	0.00	19.61	23.30	0.00	18.01	20.10	0.00	12.05	13.70

FLOW & PRECIPITATION 2022 – CONTINUED

DATE	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW	PREC.	DAILY FLOW	PEAK FLOW
1	0.00	11.75	13.90	0.00	11.50	14.30	0.00	13.42	16.80	0.00	15.19	17.40	0.00	10.76	12.90	0.00	10.79	12.20
2	0.00	11.86	14.00	0.00	11.87	13.80	0.00	12.72	15.30	0.00	14.36	17.30	0.00	11.37	12.80	0.00	10.86	12.80
3	0.00	10.86	13.70	0.00	12.23	13.30	0.00	12.42	15.50	0.00	14.30	17.00	0.00	10.15	11.90	0.00	10.67	13.00
4	0.00	10.64	13.20	0.04	11.52	13.40	0.00	11.44	14.80	0.00	14.42	19.90	0.00	14.55	24.10	0.00	10.99	13.40
5	0.30	12.12	14.00	0.00	11.10	12.90	0.01	12.42	15.40	0.00	13.97	16.50	0.78	18.08	21.90	0.00	10.90	12.60
6	0.51	15.52	17.70	0.01	10.78	13.80	0.00	11.36	14.00	0.00	13.68	16.00	0.06	16.53	18.10	0.00	10.92	12.40
7	0.01	13.66	15.30	0.13	11.71	14.70	0.00	12.58	13.70	0.05	13.21	14.90	0.00	14.86	18.60	0.00	10.59	12.10
8	0.00	10.96	13.90	0.36	13.65	17.60	0.00	11.65	15.60	0.00	12.82	15.00	0.00	12.35	14.40	0.00	10.84	12.00
9	0.05	12.24	14.00	0.06	12.80	14.50	0.00	10.85	13.10	0.00	11.75	14.60	0.00	12.67	14.60	0.00	11.91	13.60
10	0.00	10.72	13.50	0.00	11.96	13.80	0.00	11.53	14.00	0.02	11.96	13.80	0.00	12.00	14.60	0.00	14.50	17.60
11	0.05	13.99	15.80	0.00	11.50	14.20	0.02	61.20	88.80	0.00	12.21	15.70	0.00	11.98	13.90	0.36	13.37	16.90
12	0.30	11.19	14.20	0.00	11.32	13.20	6.75	119.13	99.30	0.28	14.54	17.70	0.00	12.20	14.70	0.00	13.48	15.60
13	0.05	13.34	16.70	0.00	10.72	13.70	0.04	52.96	57.80	0.32	13.09	16.90	0.00	11.48	14.80	0.00	12.79	14.60
14	0.00	13.92	15.40	0.02	11.54	13.90	0.00	36.75	44.90	0.01	12.38	13.60	0.00	10.73	15.80	0.17	20.84	51.40
15	T	16.61	25.10	0.00	10.86	13.90	0.00	23.37	29.10	0.01	10.96	13.90	0.03	12.50	17.60	1.63	43.22	93.50
16	0.63	15.30	20.10	0.00	12.32	14.30	0.00	22.56	27.90	0.00	11.26	13.70	0.28	15.59	17.80	T	42.48	52.00
17	0.00	14.71	17.00	0.00	11.56	13.90	0.00	21.56	23.30	T	11.01	12.90	T	13.83	15.40	0.01	28.56	36.10
18	0.00	13.60	15.60	0.00	11.30	13.20	0.38	28.48	36.80	0.00	10.54	12.40	0.06	12.11	14.80	0.00	24.62	28.50
19	0.00	13.38	15.10	0.00	10.75	12.60	0.00	25.07	31.20	0.00	10.48	12.20	0.03	12.72	16.10	0.00	23.82	27.80
20	0.00	13.69	15.60	0.43	13.22	15.40	0.00	20.55	24.60	0.00	10.33	12.70	0.03	13.05	15.70	0.00	20.76	25.00
21	0.00	12.44	15.60	0.04	11.88	15.30	0.00	19.62	22.10	0.00	9.72	11.20	0.00	12.54	14.40	0.00	20.07	21.20
22	0.00	12.52	14.70	0.00	12.14	14.20	0.00	17.92	21.10	0.00	10.05	13.30	0.00	12.45	15.10	0.00	18.30	20.50
23	0.92	17.82	25.60	0.00	11.33	13.30	0.00	17.08	18.40	0.00	10.10	12.20	0.00	12.61	15.50	0.13	17.24	19.30
24	0.20	16.81	19.40	0.00	13.02	16.50	0.07	15.51	18.60	0.02	9.44	11.70	T	12.53	16.00	0.01	16.16	19.80
25	0.00	14.77	17.30	0.43	15.32	19.20	0.42	21.38	25.20	0.03	12.53	19.00	0.00	10.48	13.40	0.00	14.60	17.40
26	0.00	14.92	17.90	T	13.67	16.80	0.18	21.01	25.60	0.89	17.72	20.50	T	10.99	13.60	0.00	14.51	18.40
27	0.00	13.69	16.20	0.00	12.60	15.30	0.00	18.11	22.70	0.00	13.11	15.20	0.00	11.47	14.40	0.00	15.28	17.80
28	0.05	13.06	15.20	0.00	13.74	32.40	0.00	17.37	19.10	0.00	12.20	13.80	0.00	11.75	13.00	0.00	14.95	17.20
29	0.00	13.04	14.50	0.97	18.21	23.20	0.00	16.90	18.40	0.00	11.91	14.90	0.00	10.53	12.90	0.00	14.95	19.40
30	0.00	11.59	15.40	0.00	14.51	17.80	0.00	15.35	17.70	0.00	11.34	14.10	0.00	11.34	12.80	0.00	15.44	17.90
31	0.00	12.13	14.80	0.00	13.14	15.60				0.06	11.60	13.20				0.00	14.53	20.00

TOTAL	3.07	412.85		2.49	383.77		7.87	712.27		1.69	382.18		1.27	376.20		2.31	532.94	
--------------	------	--------	--	------	--------	--	------	--------	--	------	--------	--	------	--------	--	------	--------	--

Total Plant Flow (MG) 6387.25

AVG	0.10	13.32	16.14	0.08	12.38	15.48	0.26	23.74	27.36	0.06	12.33	14.94	0.05	12.54	15.39	0.08	17.19	22.65
MAX	0.92	17.82	25.60	0.97	18.21	32.40	6.75	119.13	99.30	0.89	17.72	20.50	0.78	18.08	24.10	1.63	43.22	93.50
MIN	0.00	10.64	13.20	0.00	10.72	12.60	0.00	10.85	13.10	0.00	9.44	11.20	0.00	10.15	11.90	0.00	10.59	12.00

Daily Flow = MG (Million Gallons) Precipitation = Inches

Peak Flow = MGD (Million Gallons per Day) **Precipitation Record = 8AM to 8AM**

Total Precipitation (Inches)

Average Daily Flow (MG) 17.50

BOD – TSS - Phosphorus

	B O D			TOTAL SUSPENDED SOLIDS			P H O S P H O R U S			F L O W		2021 MGD						
	RAW	PRI IN	PRI EFF	FIN	% R	RAW	PRI IN	PRI EFF	FIN	% R	MGD		Total MG					
January	150	157	84	9	94%	124	178	46	6	95%	4.3	4.4	2.4	0.75	83%	12.57	389.61	15.88
February	155	172	85	8	95%	136	202	45	4	97%	4.2	4.4	2.4	0.71	83%	12.39	346.83	16.28
March	117	119	65	8	93%	113	152	42	4	96%	3.1	3.3	2.1	0.66	79%	18.49	573.06	28.48
April	67	82	40	8	88%	68	101	30	7	90%	1.8	2.2	1.5	0.71	61%	31.26	937.91	18.10
May	77	85	42	7	91%	81	115	33	7	91%	2.2	2.6	1.6	0.76	65%	27.69	858.40	14.65
June	116	180	62	7	94%	119	363	45	3	97%	3.3	5.5	2.0	0.68	79%	16.04	481.14	13.21
July	132	148	78	9	93%	129	226	53	5	96%	3.9	4.1	2.3	0.70	82%	13.32	412.85	12.55
August	140	162	80	7	95%	142	217	59	6	96%	4.3	4.6	2.4	0.66	85%	12.38	383.77	13.40
September	112	120	72	8	93%	131	159	55	13	90%	3.0	3.2	2.1	0.72	76%	23.74	712.27	10.38
October	147	157	77	11	93%	131	217	47	9	93%	3.9	4.3	2.1	0.75	81%	12.33	382.18	13.24
November	145	135	78	8	94%	125	164	44	6	95%	3.9	3.8	2.2	0.79	80%	12.54	376.20	12.18
December	126	121	75	11	91%	108	143	55	8	93%	3.2	3.2	1.9	0.68	79%	17.19	532.94	13.83
AVG	124	137	70	8	93%	117	186	46	7	94%	3.4	3.8	2.1	0.71	78%	17.50	6387.16	15.19
2021	145	152	82	11	92	134	206	54	7	95	3.7	4.0	2.3	0.73	80	15.19		
2020	115	124	67	10	91	103	137	41	5	95	2.8	3.1	2.0	0.70	73	22.56		
2019	93	109	54	10	89	88	123	37	7	92	2.2	2.5	1.7	0.70	66	26.91		
2018	114	142	66	11	91	107	160	43	6	95	3	3	2	0.8	68	24.37		
2017	126	141	67	10	92	115	166	41	5	96	2.8	3.2	1.9	0.8	69	21.41		
2016	124	132	67	9	93	120	157	41	5	96	2.9	3.1	1.9	0.8	72	20.29		
2015	137	156	72	11	92	129	193	43	5	96	3.2	3.6	1.9	0.8	74	18.43		
2014	130	142	71	13	90	122	168	43	7	94	3.1	3.7	2.0	0.8	74	19.36		
2013	137	139	70	13	90	128	158	41	6	95	3.2	3.7	2.0	0.8	75	20.98		
2012	159	156	75	15	91	143	195	43	7	95	3.9	4.7	2.1	0.8	80	15.54		
2011	151	159	71	13	91	139	222	43	7	95	3.4	4.7	1.9	0.7	78	19.62		
2010	144	158	68	12	92	137	223	38	6	96	3.5	4.7	1.9	0.7	78	19.50		
2009	119	138	68	11	90	121	196	48	7	94	3.1	5.2	2.0	0.7	76	24.32		
2008	122	147	68	12	90	126	188	49	7	94	3.2	4.2	2.1	0.7	78	24.76		
2007	122	150	66	14	89	139	199	48	7	95	3.2	4.3	2.1	0.7	78	23.07		
2006	125	158	60	15	87	137	240	44	7	95	3.1	4.3	1.9	0.7	77	19.71		

Beginning in 2007, flow numbers are effluent flow.

LOADING CHARACTERISTICS CHART

2022	MG Flow	AVG Daily Flow MGD	INF BOD	LBS BOD/Day	INF T.S.S.	LBS T.S.S./DAY	INF P	LBS/P Day
January	389.61	12.57	150	15725	124	12999	4.3	451
February	346.83	12.39	155	16017	136	14053	4.2	434
March	573.06	18.49	117	18042	113	17425	3.1	478
April	937.91	31.26	67	17467	68	17728	1.8	469
May	858.40	27.69	77	17782	81	18706	2.2	508
June	481.14	16.04	116	15518	119	15919	3.3	441
July	412.85	13.32	132	14664	129	14330	3.9	433
August	383.77	12.38	140	14455	142	14661	4.3	444
September	712.27	23.74	112	22175	131	25937	3.0	594
October	382.18	12.33	147	15116	131	13471	3.9	401
November	376.20	12.54	145	15165	125	13073	3.9	408
December	532.94	17.19	126	18064	108	15483	3.2	459
Total	6387.16			6,087,160		5,892,283		167,911
AVG/Day	17.50		124	16,682	117	16,149	3.4	460

2021	MG Flow	AVG Daily Flow MGD	INF BOD	LBS BOD/Day	INF T.S.S.	LBS T.S.S./DAY	INF P	LBS/P Day
January	492.26	15.88	148	19601	136	18012	3.4	450
February	455.84	16.28	152	20638	140	19009	3.4	462
March	882.90	28.48	86	20427	83	19714	2.0	475
April	542.89	18.10	124	18718	123	18567	2.9	438
May	454.21	14.65	142	17350	135	16494	3.7	452
June	396.22	13.21	154	16966	135	14873	4.0	441
July	389.01	12.55	162	16956	148	15491	4.2	440
August	415.37	13.40	142	15869	141	15758	4.1	458
September	311.30	10.38	172	14890	159	13765	4.6	398
October	410.37	13.24	147	16232	144	15901	3.8	420
November	365.51	12.18	158	16050	139	14120	4.3	437
December	428.75	13.83	151	17417	125	14418	4.0	461
Total	5544.63			6,415,692		5,961,094		162,164
AVG/Day	15.19		145	17,593	134	16,343	3.7	444

2020	MG Flow	AVG Daily Flow MGD	INF BOD	LBS BOD/Day	INF T.S.S.	LBS T.S.S./DAY	INF P	LBS/P Day
January	820.68	26.47	82	18102	72	15895	2.0	442
February	630.67	21.75	105	19046	84	15237	2.4	435
March	868.35	28.01	94	21959	79	18455	2.1	491
April	806.22	26.87	103	23082	101	22634	2.3	515
May	1254.05	40.45	75	25301	64	21591	1.6	540
June	570.07	19.00	121	19174	113	17906	3.0	475
July	710.75	22.93	109	20845	95	18167	2.8	535
August	665.05	21.45	107	19142	112	20036	2.9	519
September	458.24	15.27	139	17702	132	16810	3.5	446
October	463.78	14.96	149	18590	122	15222	3.7	462
November	446.71	14.89	155	19248	140	17386	3.7	459
December	563.11	18.16	138	20901	116	17569	3.2	485
Total	8257.68			7,419,212		6,619,509		177,165
AVG/Day	22.56		115	20,258	103	18,076	2.8	484

Summary of Sampling of POTW Influent and Effluent Waterstreams

Date of Sample	Parameters (µg/L - micrograms/liter)																							
	Arsenic		Cadmium		Chromium		Copper		Lead		Molybdenum		Nickel		Selenium		Silver		Zinc		Mercury		Cyanide	
	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff	Inf	Eff
01/05/22	<8.3	<8.3	<1.3	<1.3	2.7	<2.5	55.2	13.6	<5.9	<5.9	7.7	7.6	4.0	4.9	<12.2	<12.2	<3.2	<3.2	79.0	15.1	0.031	0.0013		
02/01/22	<8.3	<8.3	<1.3	<1.3	6.5	<2.5	78.3	5.6	<5.9	<5.9	11.1	9.9	12.6	7.1	<12.2	<12.2	<3.2	<3.2	139	21.0	0.0409	0.000440		
03/03/22	<8.3	<8.3	<1.3	<1.3	2.6	<2.5	45.9	14.5	<5.9	<5.9	8.5	8.6	4.1	7.0	<12.2	<12.2	<3.2	<3.2	77.6	20.6	0.0199	0.000800		
04/05/22	<8.3	<8.3	<1.3	<1.3	<2.5	<2.5	26.0	5.8	<5.9	<5.9	9.4	9.0	<2.6	4.8	<12.2	<12.2	<3.2	<3.2	47.4	17.0	0.0161	0.00103		
05/10/22	<8.3	<8.3	<1.3	<1.3	4.0	<2.5	39.3	14.1	<5.9	<5.9	6.4	7.9	8.1	5.3	<12.2	<12.2	<3.2	<3.2	52.4	16.4	0.0136	0.001110	<6	<6
06/08/22	<30	<30	<2	<2	2	<2	40	<10	<10	<10	<20	<20	<10	<10	<30	<30	<5	<5	100	<40	0.0363	0.00074		
07/05/22	<30	<30	<2	<2	2	<2	50	<10	<10	<10	<20	<20	<10	<10	<30	<30	<5	<5	120	<40	0.0342	0.00076		
08/03/22	<30	<30	<2	<2	2	<2	50	<10	<10	<10	<20	<20	<10	<10	<30	<30	<5	<5	120	<40	0.0314	0.00058		
09/14/22	<30	<30	<2	<2	3	<2	30	<10	<10	<10	<20	<20	<10	<10	<30	<30	<5	<5	60	<40	0.0123	0.00162		
10/04/22	<30	<30	<1	<1	5	2	40	<10	<10	<10	<10	<10	<10	<10	<30	<30	<5	<5	100	<40	0.0201*	0.000972*		
11/02/22	<30	<30	<1	<1	11	3	40	20	<10	<10	<10	<10	<10	<10	<30	<30	<5	<5	130	50	0.0257	0.00195		
12/06/22	<30	<30	<1	<1	5	<2	40	<10	<10	<10	<10	<10	<10	<10	<30	<30	<5	<5	90	<40	0.0301	0.00083		
Minimum	<8.5	<8.5	<1	<1	2	<2	26.0	<10	<5.9	<5.9	6.4	7.9	<2.6	4.8	<12.2	<12.2	<3.2	<3.2	47.4	15.1	0.0123	0.000440	<6	<6
Maximum	<30	<30	<2	<2	11	3	78.3	20	<10	<10	<20	<20	12.6	<10	<30	<30	<5	<5	139	50	0.0409	0.00195	<6	<6
Average	<30	<30	<2	<2	3.8	0.4	44.6	6.1	<10	<10	3.6	4.4	2.4	2.4	<30	<30	<5	<5	93.0	11.7	0.026	0.0017	<6	<6

Per DNR guidance, any "less than" (<) result reported is treated as a zero when calculating monthly averages

The following WI certified laboratories contributed to data in table above: NLS (cert# 721026460) & Pace (cert# 405132750)

February influent mercury collected 2/22/22

September mercury samples collected 9/15/22

*Mercury resampled 10/27/22 due to failed field blank - 10/4/22 influent and effluent results are 0.0795 & 0.00148 ug/L, respectively.

The Racine WWTP does not currently have discharge limits for metals with the exception of mercury. The mercury limit is 0.0040 µg/L (4.0 ng/L). Influent and effluent samples are analyzed monthly and reported to the WDNR as required in the Racine WPDES permit. Mercury is subcontracted to a WDNR certified laboratory. All other metals are analyzed by the Racine WWTP Laboratory, WDNR certification #252003400, or subcontracted as needed.

PRIMARY & DIGESTED BIOSOLIDS

2022	Clarifiers 1-12		Post Digestion		VOL Reduction
	% SOL	% VS	% SOL	% VS	%
January	4.0	81	2.0	62.8	60
February	3.5	81	1.9	62.8	60
March	4.3	81	2.1	61.3	63
April	5.0	77	2.1	66.7	40
May	4.8	78	2.2	58.8	60
June	4.7	77	2.2	66.3	41
July	4.6	78	2.2	57.0	63
August	3.8	77	2.0	58.0	59
September	4.3	72	2.0	59.3	43
October	4.4	76	1.9	62.7	47
November	4.1	78	2.3	58.0	61
December	4.4	80	2.2	61.8	60
Average	4.3	78	2.1	61	55

2021	Clarifiers 1-12		Post Digestion		VOL Reduction
	% SOL	% VS	% SOL	% VS	%
January	4.0	81	2.3	59.6	65
February	3.5	82	2.1	61.1	66
March	3.0	78	2.0	60.0	58
April	4.1	78	2.1	59.4	59
May	4.3	80	2.3	58.9	64
June	4.5	78	2.1	60.8	56
July	4.5	78	2.2	62.5	53
August	4.3	77	2.2	58.7	58
September	4.1	77	2.2	58.7	58
October	4.3	77	2.1	59.8	56
November	3.9	77	2.1	63.5	48
December	4.3	80	2.0	64.5	55
Average	4.1	79	2.1	61	58

2020	Clarifiers 1-12		Post Digestion		VOL Reduction
	% SOL	% VS	% SOL	% VS	%
January	4.3	82	2.1	61.6	65
February	4.1	82	2.1	60.9	66
March	4.3	80	2.2	63.0	57
April	4.5	74	2.3	59.4	49
May	4.1	76	2.2	57.5	57
June	4.1	76	2.4	55.6	60
July	4.8	74	2.3	56.6	54
August	4.9	73	2.4	55.8	53
September	4.2	75	2.4	55.8	58
October	4.2	76	2.4	57.8	57
November	4.0	78	2.2	54.8	66
December	4.2	81	2.1	58.5	67
Average	4.3	77	2.3	58	59

% Sol = % Solids

% VS = % Volatile Solids

DIGESTER OPERATIONS

	Raw Sludge AVG /Day (1000 Gallon)							Transfer Sludge AVG/Day (1000 Gallon)				
	A	B	D	E	GBT	Total In	TWAS/PS	A	B	D	E	Total Out
January	9	9	9	8	31	66	0.886	21	12	16	8	57
February	9	10	10	10	41	80	1.051	21	13	19	9	62
March	5	11	10	10	31	67	0.861	22	18	20	12	72
April	0	9	11	9	30	59	1.034	10	18	25	15	68
May	0	11	10	9	22	52	0.733	0	19	18	16	53
June	0	11	11	11	29	62	0.879	0	22	24	18	64
July	1	12	12	10	30	65	0.857	1	21	26	14	62
August	9	8	9	8	34	68	1.000	24	15	18	12	69
September	10	7	10	8	38	73	1.086	23	15	20	14	72
October	9	9	9	9	24	60	0.667	19	13	18	12	62
November	9	9	9	9	33	69	0.917	21	15	14	14	64
December	9	9	9	9	26	62	0.722	20	15	17	13	65
AVG	6	10	10	9	31	65	0.891	15	16	20	13	64

BELT PRESS SUMMARY

Solids enter the plant, are digested and dewatered. Biological solids are produced, thickened, treated and also digested with solids that entered the plant. After digestion, this mixture is dewatered by belt filter presses and hauled from the plant to storage and ultimately land application. Due to WPDES permit changes regarding effluent ammonia limits in 2011, process control changes were implemented in 2010 that reduced biological solids (thus reducing total tons entering the digesters and ultimately leaving the plant).

Month	Days	Hours	MG	% SOL	Dry Tons	DT/Day	Dry Tons	Capture	% SOL	Wet Tons	\$/DT	POLY \$	Polymer Dose LBS LB/D.T.	lb/DT Based on Feed	Haul Cost & W.T.	Haul Cost \$	Landfill Fee
January	17	512.1	2,591	2.1	227	7.3	217	95.7	21.8	996.30	42	9,127.28	5.216	23.0	29.46	29,351.00	
February	14	333.8	1,626	2.1	142	5.1	142	99.8	20.5	693.40	47	6,680.00	3.817	26.8	56.84	39,416.31	216.00
March	16	432.8	2,162	2.2	198	6.4	195	98.5	19.5	1,001.94	49	9,616.71	5.495	27.7	101.71	101,907.32	810.00
April	17	449.7	2,038	2.2	187	6.2	182	97.3	20.1	904.82	44	7,953.75	4,545	24.3	62.96	\$56,963.65	\$324.00
May	16	445.2	2,346	2.3	225	7.3	198	87.9	21.6	915.58	39	7,776.74	4,444	19.8	29.16	\$26,698.31	
June	17	427.1	2,133	2.3	205	6.8	183	89.5	21.6	847.57	42	7,697.20	4,398	21.5	29.16	\$24,715.14	
July	18	492.5	2,409	2.3	231	7.5	211	91.1	21.6	974.89	43	9,143.03	5,225	22.6	29.07	\$28,340.05	
August	17	447.4	2,239	2.4	224	7.2	206	91.7	22.8	901.40	37	7,613.13	4,350	19.4	29.07	\$26,203.70	
September	18	480.1	2,400	2.4	240	8.0	211	87.8	22.7	929.40	40	8,451.14	4,829	20.1	29.07	\$27,017.66	
October	16	401.0	2,095	2.5	218	7.0	188	86.3	22.9	822.70	37	6,940.87	3,966	18.2	29.04	\$23,891.21	
November	15	404.1	2,016	2.2	185	6.2	177	95.6	22.5	786.17	41	7,318.66	4,182	22.6	29.04	\$22,830.38	
December	17	474.0	2,438	2.2	224	7.2	215	96.1	22.6	950.74	36	7,666.58	4,381	19.6	29.04	\$27,609.49	
Total	198	5,300	26,493		2,506.50	82.23	2,324.65			10,724.91		95,985.09	54,849		40.55	\$434,944.22	
AVG	17	441.7	2,208	2.3	208.9	6.9	194	93.1	21.7	893.74	41	7,998.76	4,571	22.1	22.1	\$36,245.35	
2019	192	5,167	26,360	2.1	2,304	6.9	2,096	93.1	21.3	10,476	41	85,835	50,369	21.8	28.80	\$301,751	
2018	199	5,687	26,801	2.2	2,405	6.9	2,219	93.1	20.7	10,995	35	77,218	51,454	21.8	29.68	\$326,338	
2017	215	5,925	29,184	2.1	2,508	6.9	2,172	93.1	19.4	11,414	34	73,848	51,284	20.7	27.54	\$314,384	
2016	204	5,702	28,733	2.1	2,486	6.9	2,115	93.1	19.6	11,017	35	74,684	51,864	20.4	26.02	\$286,714	
2015	202	5,541	30,722	2.2	2,816	6.9	2,197	93.1	20.4	10,801	32	71,199	50,331	17.9	27.92	\$301,610	
2014	201	5,104	31,258	2.4	3,129	6.9	2,358	93.1	22.2	10,790	31	73,791	52,708	16.9	45.75	\$332,625	
2013	205	5,161	30,137	2.5	3,089	6.9	2,517	93.1	23.8	10,609	31	76,169	54,406	17.7	44.75	\$486,375	
2012	201	5,090	31,529	2.4	3,111	6.9	2,592	93.1	23.8	11,009	29	75,583	53,988	17.4	44.75	\$492,671	
2011	231	5,439	34,914	2.1	3,181	6.9	2,542	93.1	22.6	11,260	27	67,813	51,401	16.3	43.75	\$492,621	
2010	244	5,514	36,905	2.1	3,256	6.9	2,788	93.1	23.8	11,737	23	62,617	50,495	18	42.75	\$501,768	
2009	251	6,779	37,986	2.4	3,819	6.9	3,719	93.1	23.9	15,518	26	96,358	78,339	21	41.75	\$647,891	
2008	244	6,789	43,595	2.3	4,190	6.9	3,684	93.1	24.5	14,920	24	86,945	71,642	20	40.75	\$607,997	
2007	215	7,277	53,426	2.0	4,393	6.9	3,686	93.1	25.0	14,795	23	85,176	74,065	20	39.75	\$588,112	
2006	248	7,740	55,187	2.1	4,824	6.9	3,795	93.1	24.3	15,909	24	90,184	78,421	21	38.75	\$616,506	
\$1,750																	
Polymer cost/lb																	

GRAVITY BELT THICKENER SUMMARY

Days	WAS Feed		TWAS		mg/l WAS		%S		Belt Speed	WAS GPM	TWAS GPM	Total Hours	Inch	Polymer Gal	Pounds	Water Rate	Conc. Batches	Poly Dosage lbs/tons	Polymer Cost	\$ per lb Out			
	MG Total	GPD	MG	GPD	(Lab)	GPD	Pounds In	Pounds Out													(Lab)	TWAS (Lab)	Belt Speed
January	31	13.298	0.429	0.9500	0.0306	3030	10840	10734	4.20	15	310	21.28	744.0	12.41	152	1307	5	0.40	261	11	\$ 2,647.63	\$ 0.25	
February	28	10.891	0.389	1.1480	0.0410	3203	10390	14020	4.10	15	286	28.48	672.0	11.41	140	1202	5	0.40	218	10	\$ 2,475.08	\$ 0.18	
March	31	11.678	0.377	0.9460	0.0305	3086	9695	11453	4.50	15	279	21.19	720.6	11.0	134	1154	5	0.40	211	10	\$ 2,512.47	\$ 0.22	
April	29	11.005	0.367	0.8610	0.0287	3246	9931	13123	5.30	15	260	20.61	670.5	12.0	147	1260	5	0.40	253	12	\$ 2,826.94	\$ 0.22	
May	27	8.816	0.284	0.6770	0.0218	3320	7874	11083	5.30	15	217	17.40	589.2	9.3	113	976	5	0.40	222	12	\$ 2,320.58	\$ 0.21	
June	29	12.435	0.415	0.8510	0.0284	3242	11207	10524	4.30	15	294	20.37	691.7	13.74	168	1448	5	0.40	252	10	\$ 3,275.58	\$ 0.31	
July	29	10.781	0.348	0.9700	0.0313	3479	10091	10600	3.80	15	274	22.46	687.0	15.0	183	1577	5	0.40	273	14	\$ 3,469.84	\$ 0.33	
August	30	12.737	0.411	1.0090	0.0325	2874	9848	10379	3.70	15	303	23.37	712.0	17.5	215	1848	5	0.40	364	16	\$ 4,826.81	\$ 0.47	
September	29	12.502	0.417	1.0890	0.0363	3332	11580	14093	4.50	15	323	26.09	688.0	18.9	232	1991	5	0.40	420	17	\$ 5,452.41	\$ 0.39	
October	31	11.240	0.363	0.7590	0.0245	2885	8723	8780	4.30	15	266	17.00	744.0	12.3	150	1292	5	0.40	281	15	\$ 3,637.29	\$ 0.41	
November	30	11.916	0.397	0.9760	0.0325	2572	8521	12210	4.50	15	300	22.58	672.0	16.5	202	1739	5	0.40	346	19	\$ 4,553.98	\$ 0.37	
December	31	10.343	0.334	0.7920	0.0255	2639	7343	10014	4.70	15	253	17.75	736.0	13.0	160	1374	5	0.40	274	17	\$ 3,695.79	\$ 0.37	
Sum		137.642		11.028			83270	1630		15	280	21.55	693.9	13.6	1996	17168			3375		\$ 41,694.40		
Avg		11.470	0.377	0.9190	0.0303	3076	9670	11418	4.43	15	280	21.55	693.9	13.6	166	1431			0.40	281	14	\$ 0.31	

BIOSOLIDS METAL ANALYSIS

Metals in Biosolids 2022

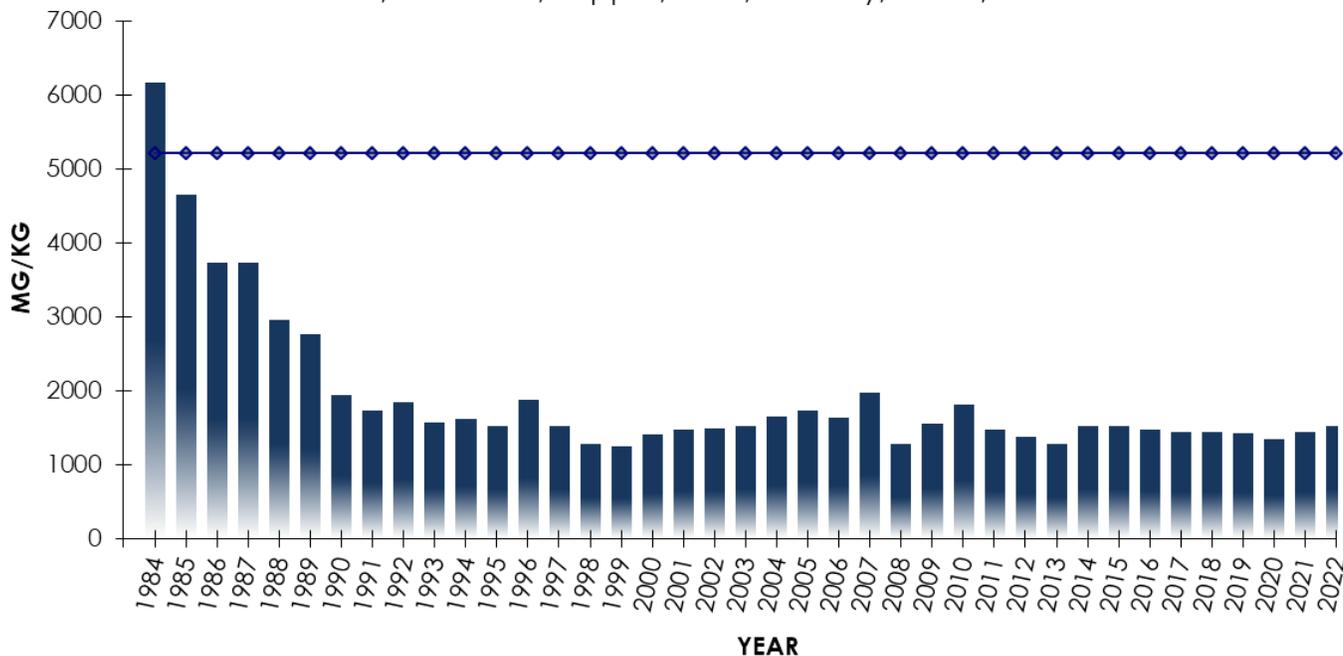
Sample Date	% Solids	As mg/kg	Cd mg/kg	Cr mg/kg	Cu mg/kg	Pb mg/kg	Mo mg/kg	Ni mg/kg	Se mg/kg	Zn mg/kg	Hg mg/kg	pH
1/5/2022	19.4	< 7.8	1.5	89.3	652	37.4	28.3	37.1	7.0	880	< 0.35	7.7
2/1/2022											0.43	
3/2/2022	20.4	< 7.2	2.2	93.8	624	28.5	24.5	35.5	< 6.4	864	0.32	8.0
4/5/2022											0.46	
5/3/2022	20.0	7.2	1.2	74.9	580	34.8	20.8	32.0	11.5	846	0.35	8.0
6/8/2022											0.43	
7/5/2022	20.2	< 14.8	< 2.96	75.4	550	28.1	19.0	34.7	< 14.8	820	0.41	8.2
8/3/2022											1.5	
9/15/2022	22.2	< 13.4	< 2.68	83.0	559	33.1	25.6	37.9	< 13.4	899	1.0	8.0
10/4/2022											0.42	
11/2/2022	22.1	< 18.1	0.980	77.4	516	33.7	25.7	34.2	< 18.1	878	0.66	8.2
12/7/2022											0.39	
MINIMUM	19.4	7.2	0.98	74.9	516	28.1	19	32	< 6.4	820	0.32	7.7
MAXIMUM	22.2	< 18.1	< 2.96	93.8	652	37.4	28.3	37.9	< 18.1	899	1.50	8.2
AVERAGE	20.7	0.60	0.49	82	580	33	24	35	1.54	865	0.53	8.0
HQ Limit	NA	41	39	NA	1500	300	NA	420	100	2800	17	NA

Per DNR requirements, any "less than" (<) result reported is treated as a zero when calculating monthly averages

Results above reported on a dry weight basis (dwb)

BIOSOLIDS METALS Racine vs. High Quality Standard

Sum of arsenic, cadmium, copper, lead, mercury, nickel, selenium¹ and zinc



High Quality Sludge is defined by the monthly average pollutant concentration limits published by the WDNR in NR 204 (Domestic Sewage Sludge Management). Sludge that meets all of the pollutant concentration limits listed is exempt from cumulative loading limits for metals where sludge is land applied. Racine biosolid metal concentrations dramatically declined after the Industrial Pretreatment Program went into effect in 1984. Since 1985 Racine biosolids have been considered High Quality Sludge and principally been applied to agricultural land.

¹Selenium listed among pollutants with a High Quality limit in the permit effective 01/07/1996.

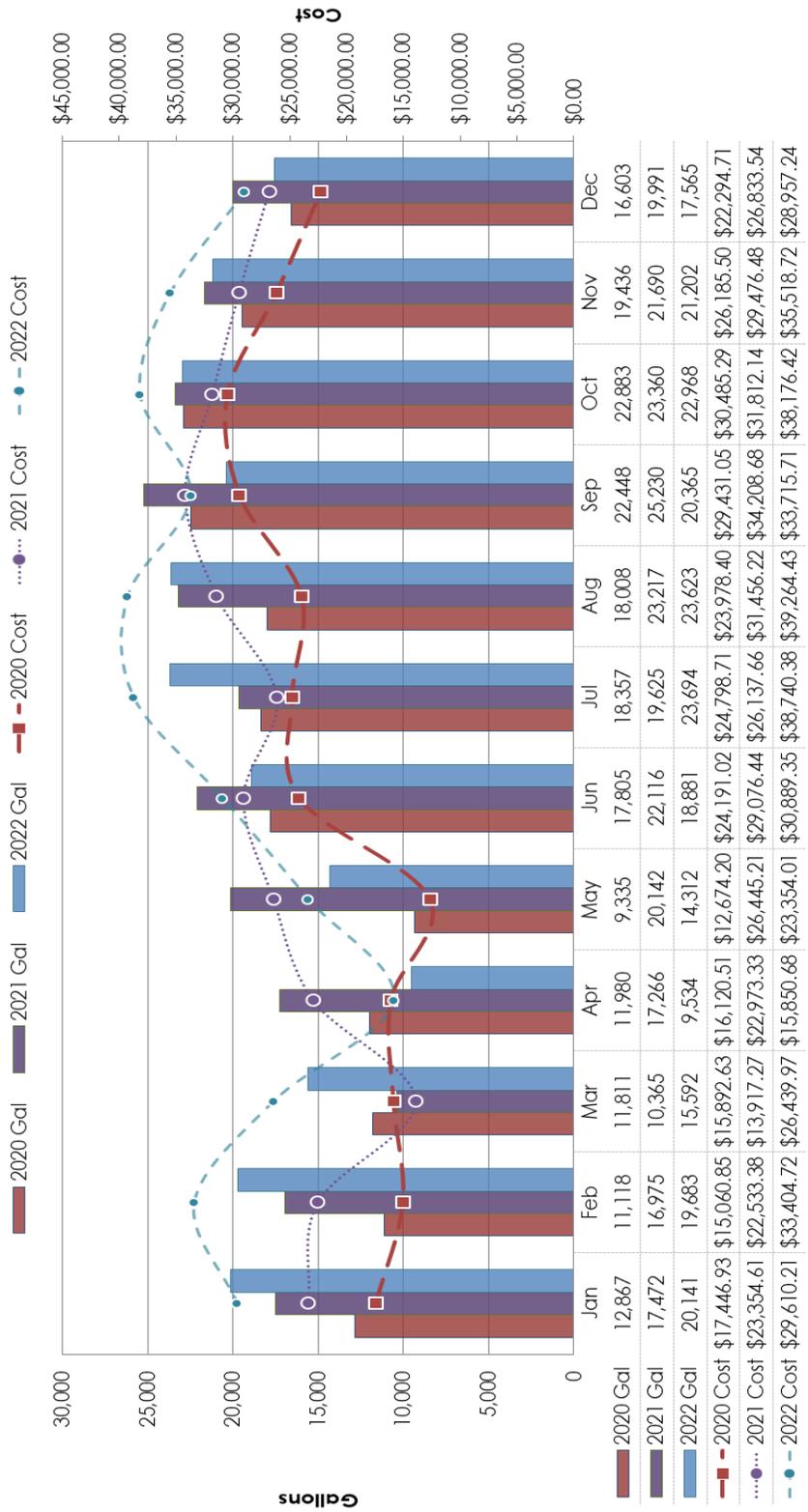
SECONDARY TREATMENT DATA CHART

2022	Flow		AER		RAS		MLSS		RAS		SVI		WAS		RAS		Total RAS		PRI		F/M		E-Coli		Fecal's	
	MGD	MGD	MLVSS	MLVSS	TSS AVG	VSS AVG	RAS	% VM	MLSS	% VM	SV-30	SVI	MGD	MGD	MGD	MGD	MGD	MGD	BOD	BOD	Ratio	Ratio	#/100 MLS	#/100 MLS	#/100 MLS	#/100 MLS
January	12.57	1836	1505	3030	2478	79	82	168	92	0.45	24.24	23.79	7	84	0.14	306	101									
February	12.39	1815	1527	3203	2711	84	85	163	90	0.42	20.79	20.37	8	85	0.14	321	107									
March	18.49	1852	1524	3086	2560	82	83	161	87	0.39	29.40	29.01	8	65	0.15	167	68									
April	31.26	1797	1459	3246	2601	79	80	136	76	0.36	43.04	42.68	9	40	0.18	165	91									
May	27.69	1798	1464	3320	2690	81	81	107	60	1.11	33.70	32.59	10	42	0.15	184	97									
June	16.04	1797	1428	3232	2596	79	80	141	79	0.43	23.57	23.14	7	62	0.14	149	61									
July	13.32	1789	1433	3479	2806	80	81	125	70	0.41	19.62	19.21	8	78	0.14	371	231									
August	12.38	1752	1375	2874	2288	78	80	166	96	0.41	22.64	22.23	7	80	0.15	134	92									
September	21.97	1962	1479	3332	2516	76	76	147	76	0.45	33.10	32.65	7	72	0.22	89	66									
October	12.33	1633	1266	2885	2216	78	77	110	68	0.37	23.25	22.88	8	77	0.15	149	104									
November	12.54	1686	1359	2572	2048	81	80	119	71	0.41	27.73	27.32	10	78	0.13	89	56									
December	17.19	1703	1375	2639	2142	81	81	117	69	0.39	30.69	30.29	10	75	0.18	170	87									
AVG	17.35	1785	1433	3075	2471	80	81	138	78	0.47	27.65	27.18	8	70	0.16	191	97									
MAX	31.26	1962	1527	3479	2806	84	85	168	96	1.11	43.04	42.68	10	85	0.22	371	231									
MIN	12.33	1633	1266	2572	2048	76	76	107	60	0.36	19.62	19.21	7	40	0.13	89	56									
2021	15.18	1744	1406	3097	2495	80	81	133	76	0.37	22.39	22.01	8	82	0.18	232	101									
2020	22.11	1685	1325	3468	2729	79	79	137	82	0.36	25.06	24.70	7	67	0.21	120	124									
2019	26.90	1816	1432	3814	3009	79	79	127	71	0.32	28.55	28.23	10	54	0.20	143	134									
2018	24.27	1788	1414	3611	2846	79	79	136	76	0.35	25.54	25.26	9	66	0.21	122	110									
2017	21.32	1785	1425	3459	2768	80	80	154	87	0.32	23.94	23.62	9	67	0.19	107	96									
2016	20.24	1771	1418	3391	2725	80	80	142	81	0.320	23.51	23.19	8	67	0.19	133	112									
2015	18.43	1809	1438	3867	3073	80	80	147	80	0.260	18.69	18.43	9	72	0.19	114	102									
2014	19.32	1882	1485	4361	3429	79	79	128	69	0.235	15.45	15.22	9	71	0.19	207	137									
2013	20.81	1692	1294	3876	2974	76	77	139	82	0.310	16.45	16.17	8	70	0.22	188	183									
2012	15.52	1901	1494	5092	4018	79	79	141	74	0.210	12.93	12.72	9	75	0.19	221	139									
2011	19.62	1861	1455	5160	4041	78	78	131	72	0.210	12.93	12.72	8	71	0.20	134	77									
2010	19.45	1509	1184	3932	3077	79	79	137	93	0.260	13.56	13.30	8	68	0.23	87	68									
2009	23.79	1763	1392	4543	3590	79	79	157	92	0.320	17.83	17.52	7	68	0.23	85	69									
2008	24.17	1950	1532	5353	4194	79	79	179	91	0.270	15.46	15.19	7	68	0.22	85	82									
2007	23.07	1677	1329	4143	3473	80	84	146	89	0.310	14.58	14.25	5	65	0.20	177	242									

Beginning in 2007, flow numbers are effluent flow.
Beginning in 2008, the flow data is for the flow through the plant. It does not include the EQ flows.

FERRIC CHLORIDE SUMMARY

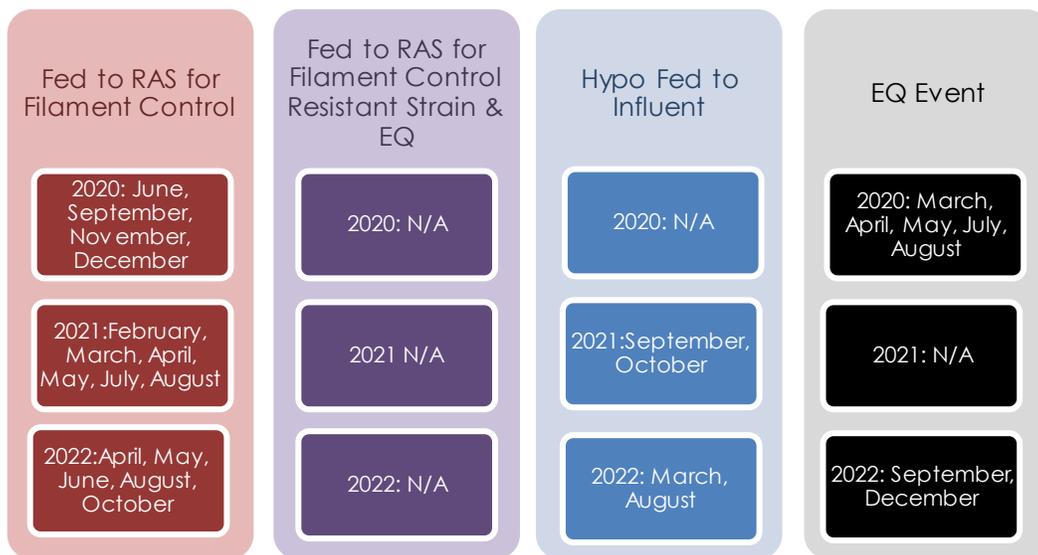
Ferric chloride is used for phosphorus removal. The iron ion binds with the phosphorus and settles out the phosphorus in the primary clarifiers. Ferric chloride is an iron salt that is an industrial scale commodity. The ferric chloride used at the treatment plant is a purified byproduct of the steel industry. Because of this, when the steel industry experiences an economic downturn, the price of ferric chloride increases due to a shortage of supply. A secondary cause of price fluctuation is the amount of ferric chloride exported to China for the use in their fertilizers. As the amount of phosphorus in the influent to the plant increases, the amount of ferric chloride added also increases. The result is an increase in the amount of sludge processed at the plant. Low flows at the wastewater plant result in increases of ferric chloride dosage due to the higher concentration of phosphorus in the wastewater. Plant staff added pumps, piping and metering controls for phosphorus removal in the final clarifiers.



SODIUM HYPOCHLORITE SUMMARY

Sodium hypochlorite (NaOCl) is added to the equalization basins for pathogen destruction (disinfection). NaOCl is also used to kill filamentous bacteria (that hinder settling) in the secondary treatment system. Sodium hypochlorite can be considered a solution of dissolved chlorine gas in sodium hydroxide. Its character is that of common household bleach or swimming pool chlorine; however, sodium hypochlorite for wastewater treatment usually is found in 12.5% concentration. Chlorine is easily released from the sodium hypochlorite due to the breaking of weak ionic bonds with its base molecule, sodium hydroxide. Piping material, valve selection, seal materials, pressure relief and stagnation control are a few design, safety and operational measures to consider with the use of NaOCl systems. Off-gassing occurs with sodium hypochlorite due to common decomposition of the chemical, resulting in diminished potency and requiring the chemical be replenished for effective disinfection.

	2020		2021		2022	
	Gallons	Cost	Gallons	Cost	Gallons	Cost
January	0	\$0	0	\$0	0	\$0
February	1,820	\$1,401	1,805	\$1,390	0	\$0
March	3,033	\$2,335	301	\$232	2,761	\$2,982
April	2,821	\$2,172	2,408	\$1,854	518	\$559
May	6,376	\$4,909	4,876	\$3,755	469	\$507
June	1,974	\$1,520	0	\$0	1,617	\$1,746
July	630	\$485	2,346	\$2,634	0	\$0
August	749	\$577	2,856	\$2,199	5,555	\$6,249
September	665	\$512	1,005	\$774	2,986	\$1,167
October	742	\$571	1,799	\$1,424	182	\$442
November	2,135	\$1,644	0	\$0	0	\$0
December	1,169	\$900	0	\$0	1,869	\$4,608
TOTAL	22,114	\$17,027	17,397	\$14,261	15,957	\$18,260



AMMONIA SUMMARY

It is necessary to remove or reduce the amount of ammonia in the final effluent in order to protect the receiving water. In the un-ionized form, ammonia is toxic to the aquatic life in Lake Michigan. In the aeration system at the Wastewater Treatment Plant, the nitrifying bacteria reduce the ammonia to nitrite and nitrate. The pH of the final effluent is monitored closely and pH is reported as a time weighted average (TWA) of all of the daily pH data. The ammonia limit varies based on the daily TWA pH because at higher pH, ammonia is more toxic to the biotic make-up of the ecosystem. The treatment plant received a limit for seasonal ammonia in its 2015 WPDES Permit. The limit covers a six month seasonal period from November through April.

	Ammonia Final Effluent	TWA EFF pH	Limit Nov - Apr at TWA pH
January	7.62	7.13	39
February	6.98	7.11	39
March	6.97	7.21	35
April	3.56	7.32	31
May	3.24	7.41	27
June	7.23	7.24	39
July	9.62	7.21	35
August	3.09	7.21	35
September	3.58	7.33	31
October	2.11	7.14	39
November	3.56	7.46	27
December	5.70	7.16	39
AVG	5.27	7.24	35
MAX	9.62	7.46	39
MIN	2.11	7.11	27

Beginning in 2015, data on this sheet is monthly max. We are regulated based on a seasonal daily limit.

SODIUM BISULFITE SUMMARY

Sodium bisulfite (NaHSO_3) is added to the equalization basin effluent to remove chlorine that was added for pathogen control (disinfection). The plant has a maximum daily limit of <37 parts per billion (ppb) for chlorine. NaHSO_3 is a clear, colorless to light yellow solution with a distinctive odor. Sodium bisulfite is essentially very fine crystallized sodium granules that are dissolved in a bisulfite solution. Sodium bisulfite acts as a reducing agent for purifying and destroying residual chlorine. NaHSO_3 used for wastewater treatment usually is purchased at about 37% concentration. The solution is acidic reactive, and bisulfite is very reactive with sodium hypochlorite, caution must be taken when using the two chemicals together and when accepting and receiving deliveries of the two chemicals.

	2020		2021		2022	
	Gallons	Cost	Gallons	Cost	Gallons	Cost
January	0	\$ -	0	\$ -	0	\$ -
February	0	\$ -	0	\$ -	0	\$ -
March	182	\$ 389.47	0	\$ -	0	\$ -
April	1,806	\$ 3,708.23	0	\$ -	0	\$ -
May	2,715	\$ 3,495.16	0	\$ -	0	\$ -
June	0	\$ -	0	\$ -	0	\$ -
July	658	\$ 940.94	0	\$ -	0	\$ -
August	322	\$ 460.46	0	\$ -	0	\$ -
September	0	\$ -	0	\$ -	1,680	\$ 2,402.40
October	0	\$ -	0	\$ -	0	\$ -
November	0	\$ -	0	\$ -	0	\$ -
December	0	\$ -	0	\$ -	0	\$ -
Total	5,683	\$ 8,994.26	0	\$ -	1,680	\$ 2,402.40

LIQUID WASTE HAULERS SUMMARY

	Pat's		Stericycle		Total	
	Gallons	Charges	Gallons	Charges	Gallons	Charges
January	3,500	\$39.45	36,100	\$486.63	39,639	\$526.07
February	3,000	\$33.81	31,100	\$419.23	34,134	\$453.04
March	3,000	\$33.81	30,500	\$411.14	33,534	\$444.95
April	0	\$0.00	51,000	\$702.78	51,000	\$702.78
May	0	\$0.00	38,800	\$534.66	38,800	\$534.66
June	0	\$0.00	43,700	\$602.19	43,700	\$602.19
July	0	\$0.00	44,200	\$609.08	44,200	\$609.08
August	0	\$0.00	52,300	\$720.69	52,300	\$720.69
September	0	\$0.00	46,900	\$646.28	46,900	\$646.28
October	0	\$0.00	46,400	\$639.39	46,400	\$639.39
November	0	\$0.00	47,100	\$649.04	47,100	\$649.04
December	0	\$0.00	46,800	\$644.90	46,800	\$644.90
Total	9,500	\$107.07	514,900	\$7,066.01	524,507	\$7,173.08
AVG	792	\$8.92	42,908	\$588.83	43,709	\$597.76

Waste Hauler Rates (per 1,000)			
Pat's		Stericycle	
January-March	\$11.27	January-March	\$13.48
April-December	\$13.71	April-December	\$13.78



COMMUNITY INFLOW AND INFILTRATION CHART

	2018	2019	2020	2021	2022	5 Yr Avg
Racine						
WA Sales (Mgal)	2,526.43	2,454.34	2,369.59	2,327.00	2,296.00	2,394.7
Total Credit Meters (Mgal)	401.29	270.25	300.18	309.00	152.00	286.5
Total Water-Only Meters (Mgal)	81.16	210.87	97.00	73.00	178.00	128.0
Summer Rate Adjust (Mgal)	117.34	112.16	133.00	139.00	133.00	126.9
WA Usage (Mgal)	1,926.64	1,861.06	1,839.41	1,806.00	1,833.00	1,853.2
WW Discharge (Mgal)	4,654.34	5,116.14	4,026.56	2,386.42	2,609.82	3,758.7
I&I (Mgal)	2,727.69	3,255.08	2,187.15	580.42	776.82	1,905.4
% I&I	58.6%	63.6%	54.3%	24.3%	29.8%	50.7%
Mt Pleasant (Less SCJ)						
WA Usage (Mgal)	1,420.62	1,281.48	1,434.21	1,597.71	1,444.42	1,435.7
SCJ Non-Sewer Water (Mgal)	620.29	557.22	648.99	724.21	693.71	648.9
WA Usage (Mgal)	800.32	724.26	785.22	873.50	750.71	786.8
WW Discharge (Mgal)	2,293.49	2,574.18	2,359.81	1,840.96	2,174.74	2,248.6
I&I (Mgal)	1,493.17	1,849.93	1,574.59	967.46	1,424.03	1,461.8
% I&I	65.1%	71.9%	66.7%	52.6%	65.5%	65.0%
Caledonia						
WA Usage (Mgal)	431.92	435.07	461.16	501.92	409.71	448.0
WW Discharge (Mgal)	1,513.71	1,636.83	1,472.22	994.35	1,205.02	1,364.4
I&I (Mgal)	1,081.79	1,201.75	1,011.05	492.43	795.31	916.5
% I&I	71.5%	73.4%	68.7%	49.5%	66.0%	67.2%
Sturtevant						
WA Sales (Mgal)	254.44	238.97	234.38	233.64	230.09	238.3
Total Credit Meters (Mgal)	2.37	1.49	0.15	1.79	1.32	1.4
WA Usage (Mgal)	252.07	237.48	234.23	231.85	228.77	236.9
WW Discharge (Mgal)	414.03	450.37	380.01	304.55	290.65	367.9
I&I (Mgal)	161.96	212.90	145.78	72.70	61.88	131.0
% I&I	39.1%	47.3%	38.4%	23.9%	21.3%	35.6%
Elmwood Park						
WA Usage (Mgal)	14.52	13.46	14.26	15.87	13.77	14.4
WW Discharge (Mgal)	46.20	46.68	39.31	32.53	32.75	39.5
I&I (Mgal)	31.68	33.21	25.05	16.67	18.98	25.1
% I&I	68.6%	71.2%	63.7%	51.2%	57.9%	63.6%
North Bay						
WA Usage (Mgal)	6.09	6.12	7.27	8.52	4.53	6.5
WW Discharge (Mgal)	32.63	40.61	31.58	20.51	21.39	29.3
I&I (Mgal)	26.54	34.48	24.31	11.99	16.86	22.8
% I&I	81.3%	84.9%	77.0%	58.5%	78.8%	77.8%
	2018	2019	2020	2021	2022	Overall
Total WW Discharge (Mgal)	8,954.40	9,864.80	8,309.49	5,579.33	6,334.36	7,808.5
Total I&I (Mgal)	5,522.83	6,587.36	4,967.94	2,141.68	3,093.87	4,462.7
Overall System % I&I	61.7%	66.8%	59.8%	38.4%	48.8%	57.2%
Precipitation (Inches)	46.27	48.74	40.52	24.05	33.36	38.59
I&I (Mgal) / Inch Precip	119.36	135.15	122.60	89.05	92.74	115.7

MAINTENANCE & ENERGY

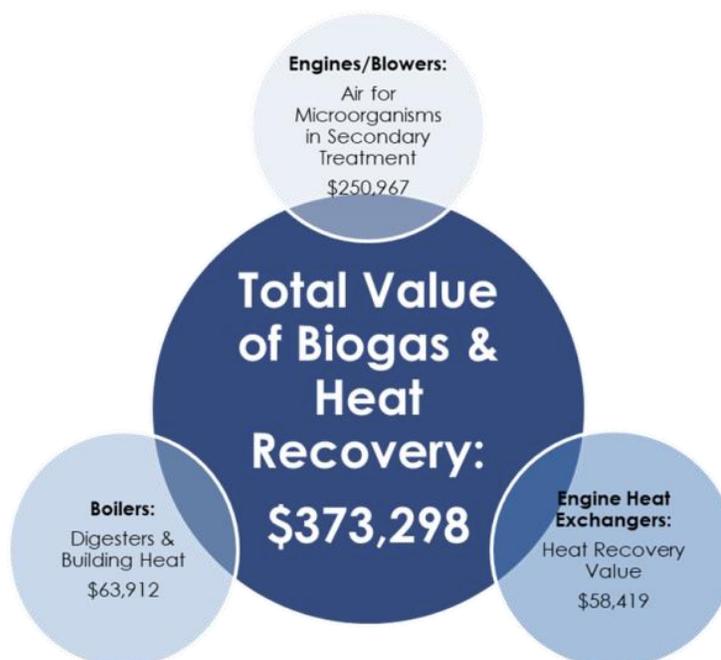


ENERGY INDEPENDENCE WITH BIOGAS

The Racine Wastewater Utility has been using biogas in its operations for over 50 years. Biogas is a bi-product of decomposition from organic material in the digester operations. Biogas makeup is approximately 63% methane and has a Btu value of 630 Btu/ft³ compared to 1000 Btu/ft³ for natural gas. The Utility strives to make use of the biogas in the most cost efficient manner to reduce overall energy needs. The biogas can be used in engines for aeration or boilers for digester and building heat. Digester operation requires temperature maintained at 95° Fahrenheit. Heat exchangers were installed to recover heat from the engines to preheat boiler water to reduce energy used to heat digesters and buildings. Future goals are to reclaim more energy from wastewater operations and to work towards the goal of energy independence sometime in the future.

Biogas Monthly Production and Use

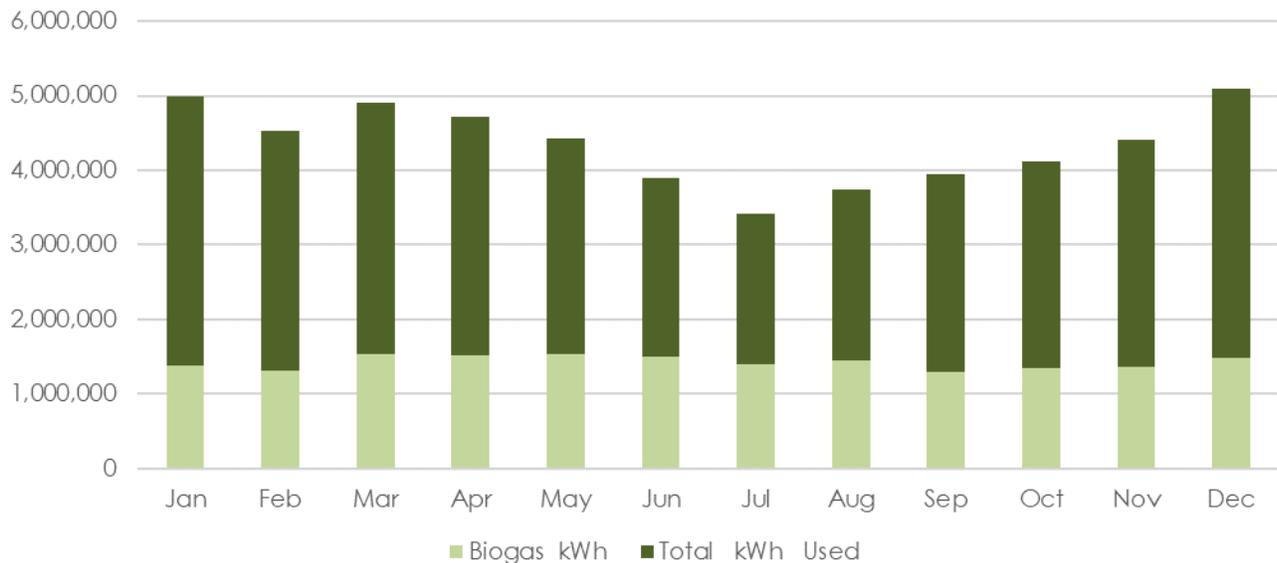
	Average Daily Values (Ft ³)				Total			
	Dig A	Dig B	Dig D	Dig E	Gas to Boilers	Gas to Engines	Gas to Flare	Dig Gas Produced
Jan	54,393	46,049	45,731	40,877	25,553	140,084	246	187,050
Feb	57,516	51,249	53,020	45,474	33,299	145,023	194	207,259
Mar	31,242	64,743	68,972	53,601	33,084	157,494	52	218,558
Apr	0	74,705	87,577	63,746	23,875	172,685	182	226,028
May	0	75,715	71,479	68,581	5,672	186,161	113	215,775
Jun	0	68,025	76,297	70,932	12,934	180,277	326	215,254
Jul	373	63,699	73,215	56,924	25,275	141,376	9,632	194,211
Aug	48,463	40,147	50,341	54,993	8,330	167,746	365	193,944
Sep	47,555	34,702	44,146	51,849	8,019	150,684	205	178,252
Oct	46,675	37,893	41,120	52,915	21,603	137,263	0	178,603
Nov	49,118	40,081	39,728	54,047	27,048	142,568	13	182,974
Dec	55,030	45,008	51,976	52,100	36,378	146,372	449	204,114
AVG	32,530	53,501	58,634	55,503	21,756	155,644	981	200,169



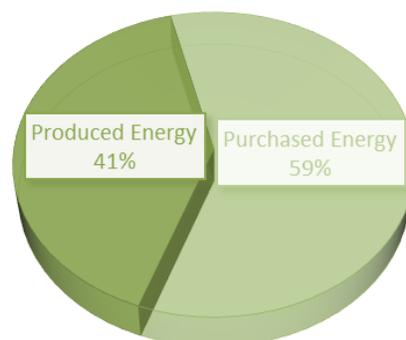
PLANT WATER & ENERGY CONSUMPTION

Month	100 CF Water	Cost \$ Water	Natural Gas Therms	Cost \$ Nat. Gas	Conversion Nat Gas Therms to kWh	Electric kWh	Electricity Cost	Biogas kWh	Total kWh Used	% Energy Produced	kW Peak Demand
Jan			57,541	\$37,122	1,685,951	527,788	\$49,238	1,389,257	3,602,996	39	944
Feb			46,785	\$30,603	1,370,801	517,397	\$49,049	1,320,375	3,208,573	41	1058
Mar	32,207	\$89,506	42,520	\$21,248	1,245,836	604,375	\$57,944	1,531,976	3,382,187	45	1,359
Apr			33,751	\$16,622	988,904	701,671	\$67,881	1,515,684	3,206,260	47	1664
May			26,073	\$20,804	763,939	579,411	\$61,201	1,539,158	2,882,508	53	1,713
Jun	29,360	\$822,583	13,556	\$12,867	397,191	502,914	\$56,953	1,497,139	2,397,243	62	1049
Jul			8,836	\$6,365	258,895	366,108	\$47,244	1,395,059	2,020,062	69	1070
Aug			9,395	\$8,835	275,274	564,603	\$59,971	1,448,992	2,288,868	63	1,088
Sep	31,195	\$87,158	18,630	\$18,237	545,859	791,153	\$87,870	1,306,044	2,643,056	49	1,918
Oct			26,398	\$16,338	773,461	649,182	\$59,814	1,350,511	2,773,155	49	1,146
Nov			36,329	\$23,849	1,064,440	610,891	\$56,331	1,366,477	3,041,807	45	1137
Dec	26,281	\$74,079	49,523	\$39,075	1,451,024	673,717	\$69,551	1,487,182	3,611,923	41	1,930
TOTAL / AVG.	119,043	\$1,073,326	369,337	\$251,965	10,821,574	7,089,210	\$723,046	12,257,435	30,168,219	41	1,340

Produced Energy vs Total Used Energy

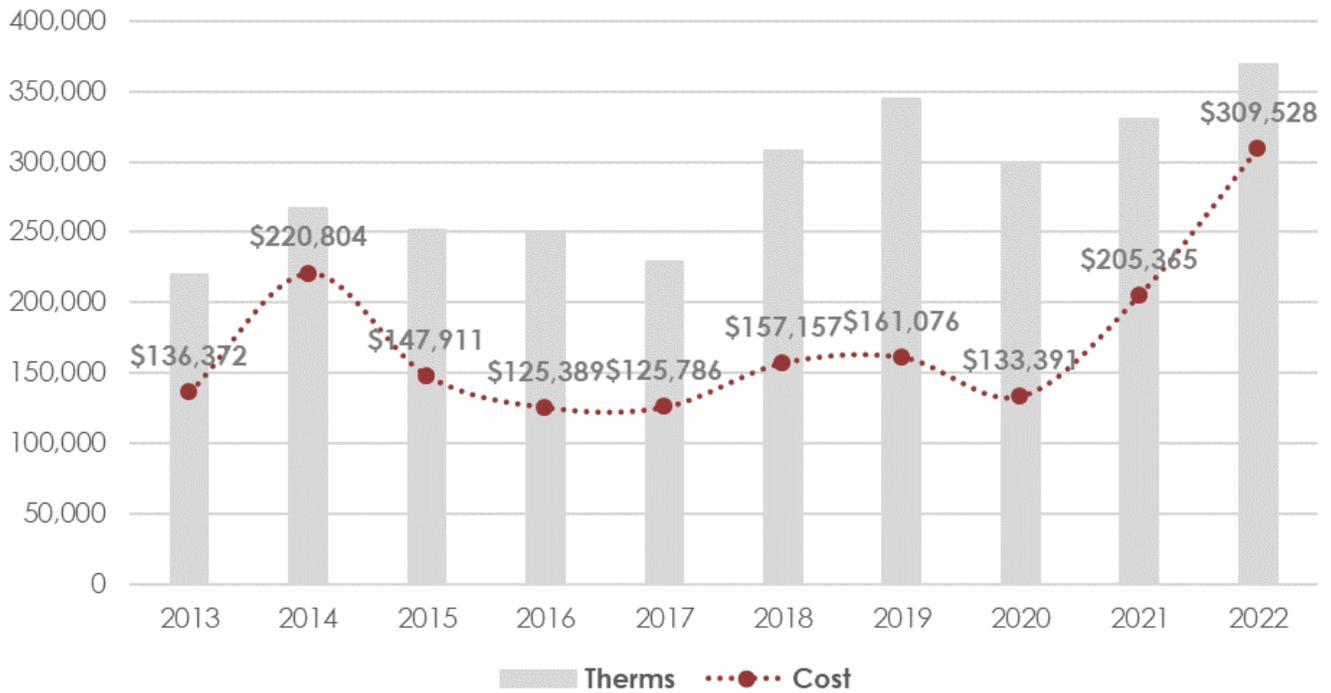


PRODUCED ENERGY AS % OF TOTAL ENERGY USED

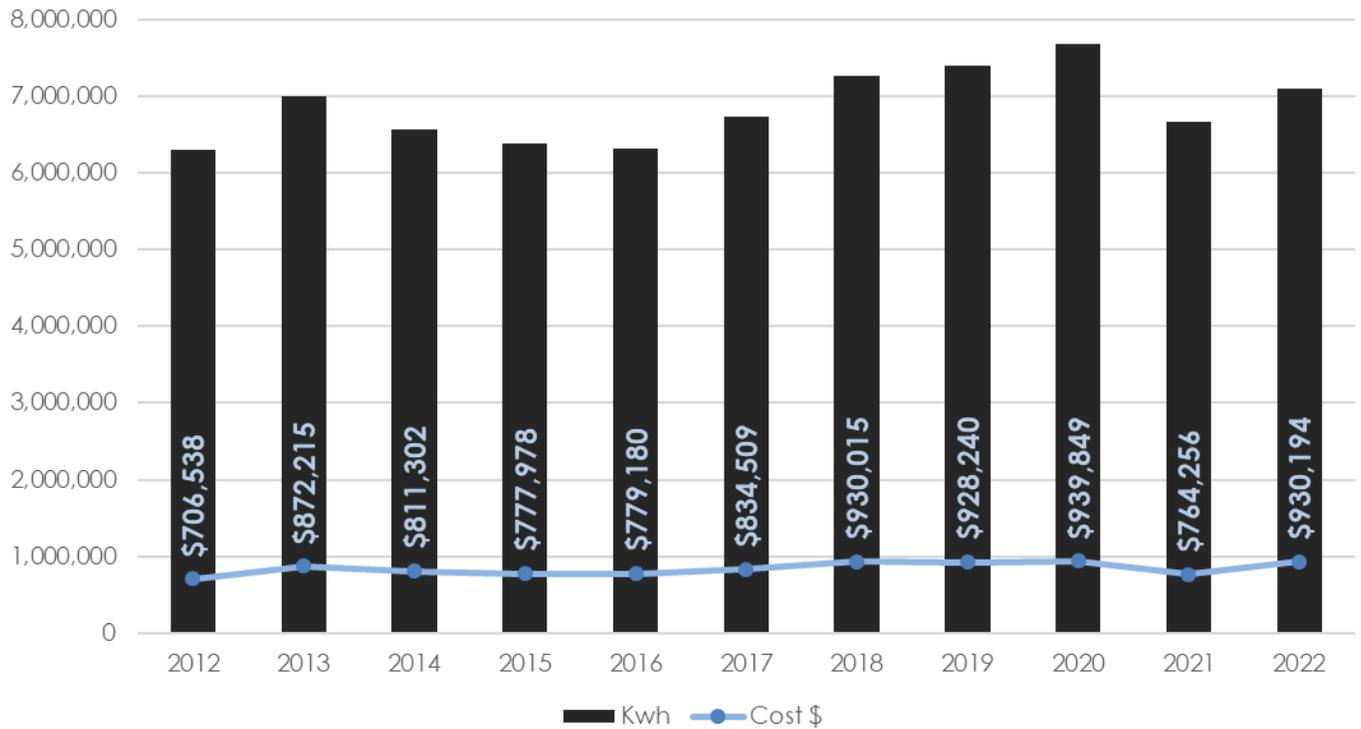


PLANT NATURAL GAS AND ELECTRICAL CONSUMPTION & COST

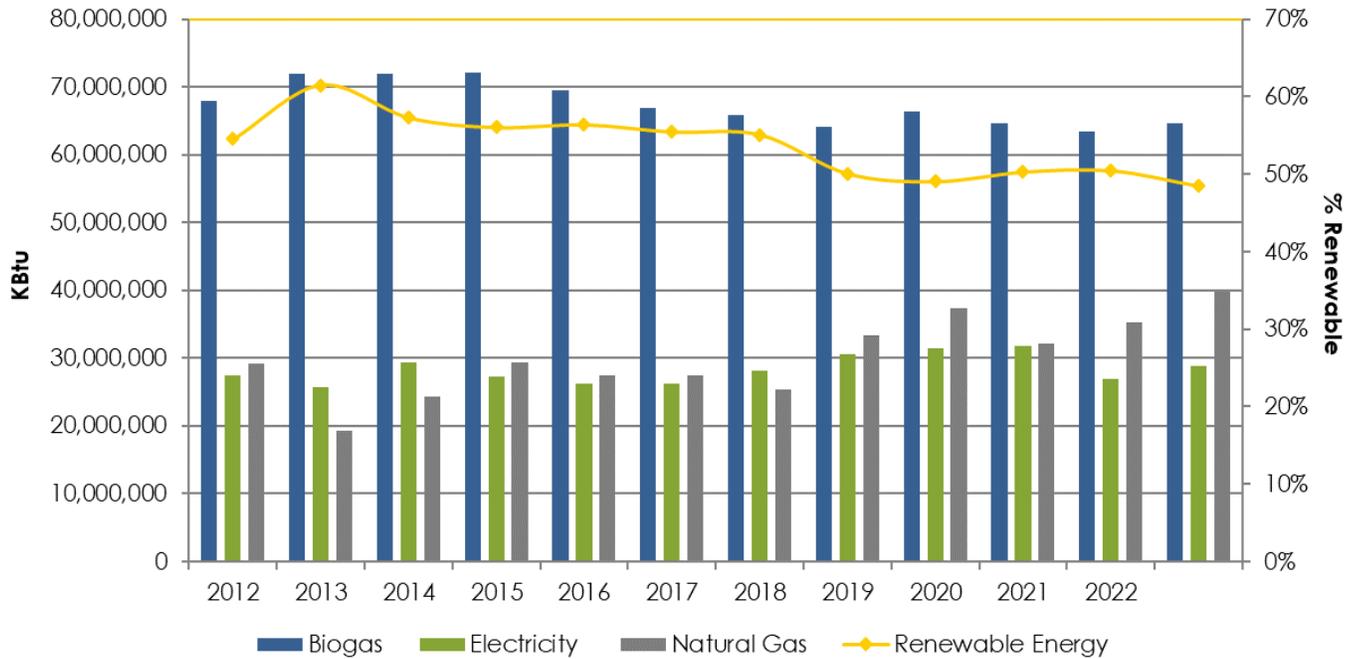
Natural Gas Consumption & Cost



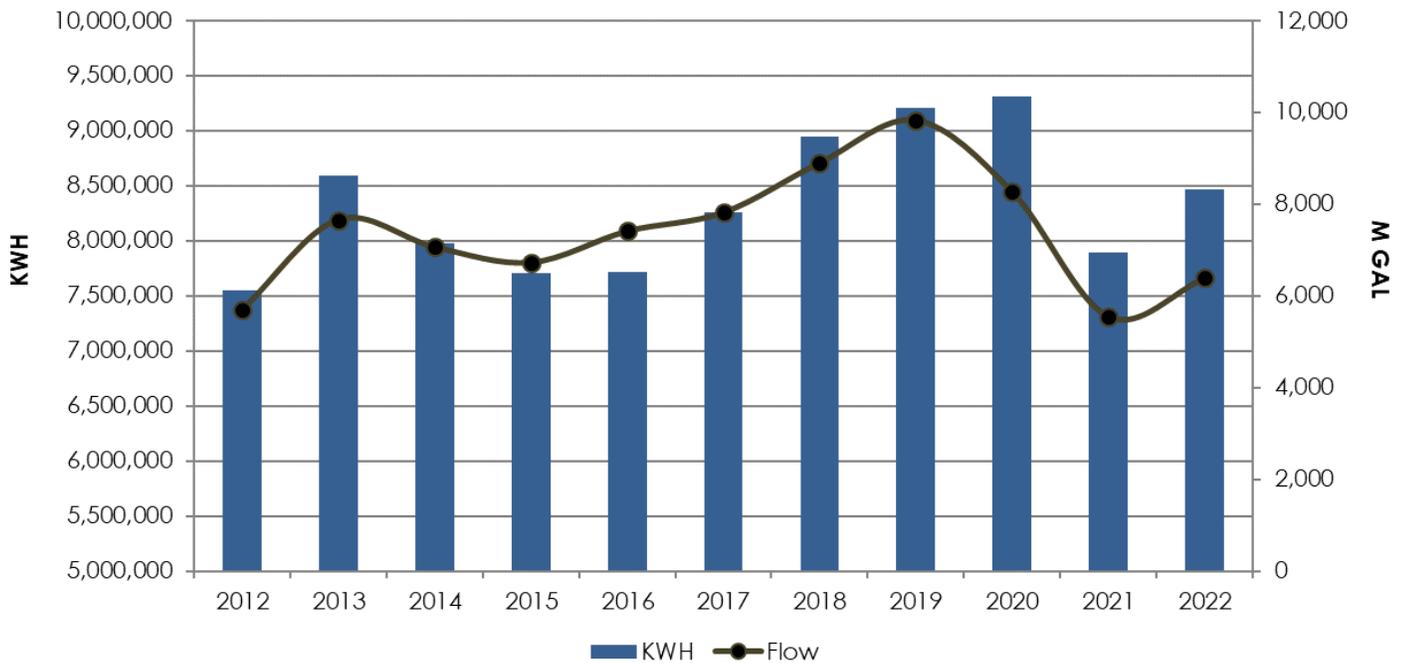
Electrical Consumption & Cost



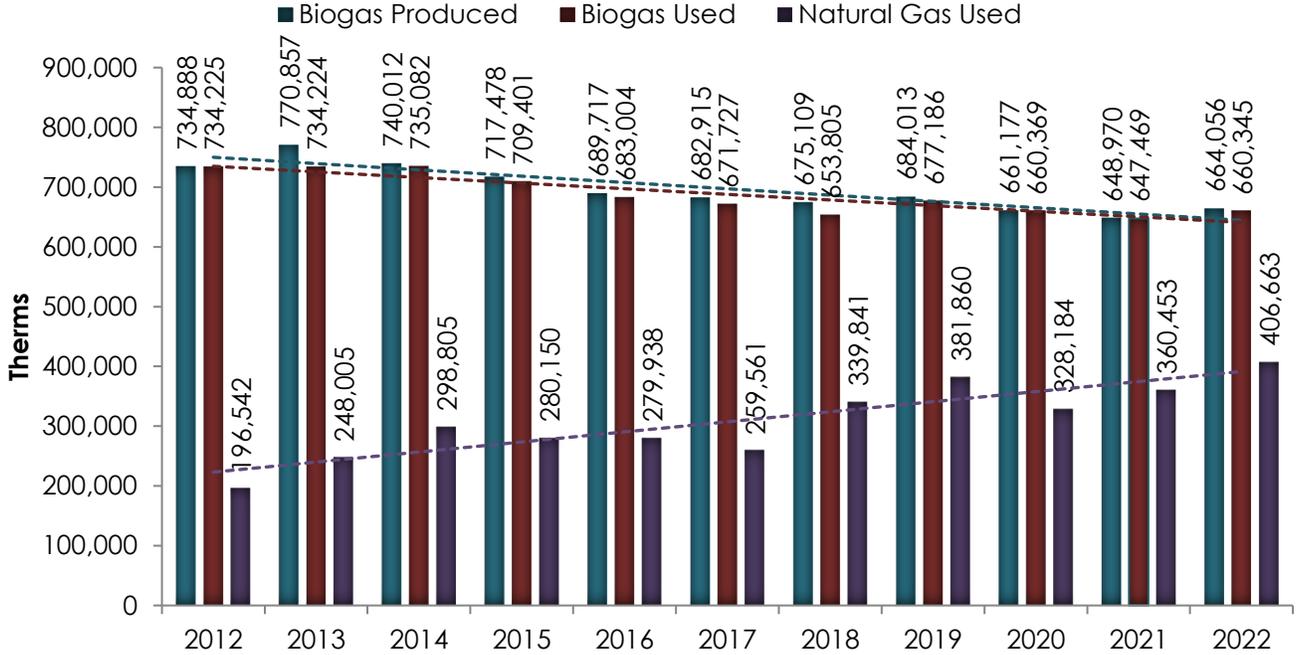
Utility Total Energy Use



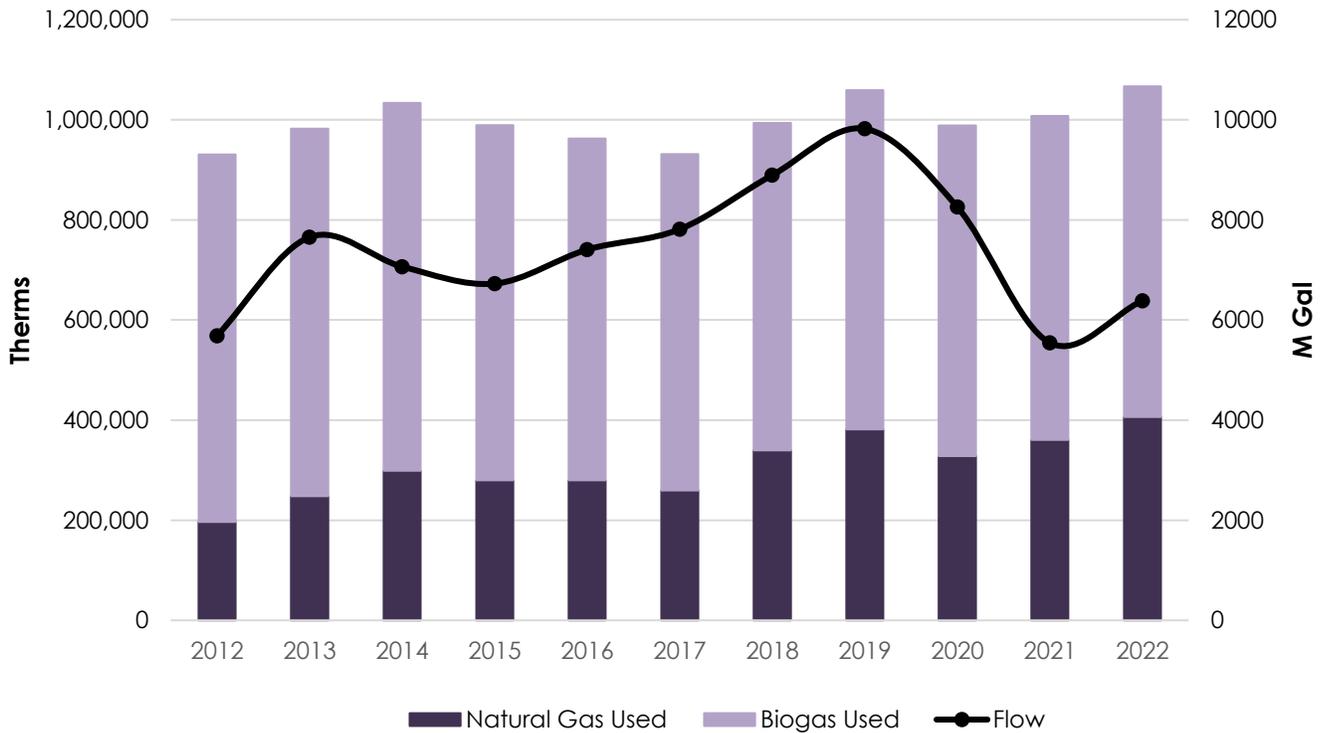
Wastewater Utility Electric Usage vs Flow



Utility Gas Production & Usage



Utility Gas Usage vs. Flow



LABORATORY



LABORATORY SERVICES

The Racine Wastewater Treatment Plant laboratory is a WDNR certified laboratory, providing analytical support for regulatory compliance, plant process control, the Industrial Pretreatment Program and Hauled Waste monitoring. Certification is maintained with annual proficiency testing and an on-site audit every 3 years.

The laboratory comprises the Laboratory Director and 4 staff of varying classification – chemist, technologist, technician. All personnel hold a bachelor's degree in biology, chemistry or environmental science and are WDNR certified operators in the laboratory subcategory. The Laboratory Director is responsible for oversight of all laboratory functions, standard operating procedures (SOPs), submission of monthly DMRs and assisting in preparation of the annual biosolids management report. The Director also serves as quality assurance, chemical hygiene officer and LIMS administrator. Laboratory staff responsibilities include wet chemistry, microbial and metals analyses, instrument preventative maintenance, data management & interpretation and database traceability. The staff undergoes regular training to enhance their analytical skills and wastewater related knowledge.

The Racine Wastewater Laboratory scope of accreditation includes biochemical oxygen demand (BOD), total suspended solids (TSS), total phosphorus (TP), ammonia (NH₃), total kjeldahl nitrogen (TKN), cyanide (CN), hardness, metals and mercury. Accreditation extends to solid matrices (e.g. biosolids – cake sludge) on a shorter list of parameters. Additional routine testing performed in-house includes pH, conductivity, chlorine, nitrate, volatile acids, alkalinity, water extractable phosphorus (WEP), volatile solids (VS), fecal coliforms and E. coli. Methodology including oxygen demand assays, gravimetry, titrimetry, colorimetry, optical emission spectroscopy and cold vapor atomic absorption are used to quantify unknowns.

Typical samples include those collected throughout the plant and collection system. Plant samples are mandated in the Utility's WPDES permit; others serve process control purposes. Collection system samples are largely industrial users and outlying communities; data serves to calculate fees, local limits and evaluate compliance with the industrial pretreatment program. Samples of hauled waste are monitored to calculate fees and evaluate suitability of treatment. Periodically the laboratory volunteers to participate in or initiate studies in preparation for future regulation, demand, etc.

Several permit related parameters are beyond the scope of current capabilities. Influent and effluent mercury is monitored monthly in accordance to the Mercury Pollutant Minimization Program (PMP). These samples are subcontracted to a Wisconsin certified commercial laboratory with lower detection limits. Also recorded on the DMR, but no limit enforced, is a quarterly sample from Lake Michigan for arsenic. Similarly, samples are subcontracted for the lowest possible detection limit. Once annually, samples of final effluent are subcontracted to a certified laboratory for whole effluent toxicity (WET) testing. A sample of cake sludge is analyzed for polychlorinated biphenyls (PCBs) once per permit cycle.

In support of the Utility's greater mission, it is the laboratory's objective to produce data of the highest quality, uphold a standard of excellence with integrity, and responsibly manage the investment by those we serve.



PRETREATMENT



PRETREATMENT REVIEW

The Pretreatment Department is part of Field Operations and is responsible for a variety of tasks including dye testing, flow monitoring within the collection system, televising sewer mains, conducting FOG visits, conducting dental inspections and administering the Mercury Pollution Prevention Program, groundwater permitting, responding to sewer calls, and administering the Industrial Pretreatment Program. In relation to the Industrial Pretreatment Program, the Pretreatment Department is also responsible for conducting industrial inspections, annual and semi-annual DNR reporting, collecting wastewater samples from all regulated industries, industries of interest, and outlying communities, watching for changes in conditions of industrial discharge, maintaining contact with industries, data handling, compliance evaluations, and enforcement actions. Each industry in the program is inspected at least once per year. The inspection process includes a walk-through of industrial processes and discharges, inspection of the sample site, notation of changed conditions, and review of spill/slug plans, toxic organic management plans (if required) and hauled waste records. Other site-specific inspections are scheduled if necessary. Industries that have the potential to be included in the Pretreatment Program, as well as other industries that are under permitting consideration are also inspected as needed.

The Industrial Pretreatment Program is a federally mandated, self-funded program which regulates industrial wastewater discharges in Racine and surrounding communities. In 1984, the Utility became the delegated control authority to regulate industrial discharges to the Racine Wastewater Utility. The Utility regulates industries that fall under several federally mandated categorical discharge limits. There are also permitted industries which are categorical but discharge less than 100 GPD of process waste; these are regulated as Non-Significant Categorical Industrial Users (NSCIUs).

Also included in the Pretreatment Program are industries serviced by the Racine Wastewater Utility which do not fall into the Federal list of categorical industries. These industries are non-categorical and are therefore regulated by the City of Racine local wastewater discharge ordinance. The local industries included in the Industrial Pretreatment Program are those industries that have the potential to impact the wastewater treatment plant processes or by-products. There are permitted industries which do not discharge any process waste and are not categorical, but have the potential to exceed local limits if discharge were to occur. These industries must provide the Utility with a "No Discharge Statement" every six months to maintain their status. There are also industries designated as *Minimal Discharge*. These industries seldom discharge or the discharge volume is minimal. These industries self-sample and the Utility inspects them annually. A listing of the industries divided by discharge category follows this summary.

A sampling schedule is created based upon industrial discharge status and compliance. To fund the program, regulated industries are charged annually for a discharge permit and semi-annually for all sampling and analysis that the Utility undertakes. The Industrial Pretreatment Program was audited by the Wisconsin DNR in early 2020. Each industry is issued a permit which has a term of less than five years and is modified as needed. Modifications may include changing sample locations, addition or deletion of discharge processes, changing from categorical to local (or the reverse), change in discharge volume, or change in ownership. Four industrial permits were

modified in 2022. The estimated total person hours used to implement the Industrial Pretreatment Program in 2022 was 3,097 hours. The estimated total cost of the program was \$175,910.

In 2022, there were thirty-six (36) permitted industries in the Industrial Pretreatment Program. There were seventeen (17) categorical and nineteen (19) non-categorical industries. Industrial categories regulated in 2022 include: ten Metal Finishing, two Electroplating/Metal Finishing, three Metal Molding and Casting, one *Soap and Detergent Manufacturing/Pesticide Formulating, Packaging, and Repackaging* (PFPR) and one PFPR. These categorical industries have specific numerical limits set by the Federal Government for pollutants characteristically found in their process wastewater discharge. The parameters regulated include oil & grease, organic chemicals, cyanide and various metals. There was one no-discharge permitted industry; one minimal discharge permitted industry, and six NSCIU permitted industries.

Seven industries were investigated for inclusion into the pretreatment program. None of these have been permitted at this time. One of them continues to be monitored for possible inclusion into the program.

There were twenty-five incidents of noncompliance during the year. Parameter violations included exceedance of established limits in pH, oil/grease, copper, nickel, zinc, and total metals. Other violations included failure to pay fees, failure to monitor all pollutants as required, and late reporting. Two of these met the criteria of significant non-compliance (SNC) during 2022. There were no treatment plant upsets and the plant did not exceed any discharge limits as a result of industrial noncompliance. All industries that are in noncompliance are required to investigate the cause of the noncompliance, provide the Utility a written response explaining the cause and how the noncompliance will be resolved, and take additional samples to show that their discharge is back into compliance. Continuing noncompliance results in increased enforcement.

The Racine Wastewater Utility continues to encourage pollution prevention by distributing information, attending training seminars, and reminding industries about the importance of reduce/reuse/recycle. The Utility has started notifying industries of possible future PFAS regulations and also continues to promote mercury recycling and reduction in the Racine area through their Mercury Pollution Prevention Plan.



PERMITTED INDUSTRIAL USERS 2022

METAL FINISHING

CHROMIUM, INC (NSCIU)
CNH INDUSTRIAL AMERICA
CREE LIGHTING–IDEAL INDUSTRIES LIGHTING
D & D INDUSTRIAL FINISHING- PLANT #1
D & D INDUSTRIAL FINISHING PLT #2 (NSCIU)

KOLAR ARMS
POWDER FINISHERS
SHURPAC, INC
SUPERIOR INDUSTRIAL CORPORATION
THERMAL TRANSFER PRODUCTS

ELECTROPLATING – JOB SHOPS

WISCONSIN PLATING WORKS-CARROLL ST WISCONSIN PLATING WORKS – STANNARD ST

METAL MOLDING & CASTING

PREMIER ALUMINUM (NSCIU) QUICK CABLE CORPORATION (NSCIU)
WOODLAND/ALLOY CASTING (NSCIU)

PESTICIDE FORMULATING, PACKAGING AND REPACKAGING (PFPR)

SC JOHNSON & SON – WAXDALE FACILITY

SOAP AND DETERGENT MANUFACTURING / (PFPR)

DW DAVIES (NSCIU)

NON-CATEGORICAL

A & E MANUFACTURING
ANDIS COMPANY
BRP USA
BUTTER BUDS FOOD INGREDIENTS
CSL USA
FEDERAL HEATH
GREAT NORTHERN CORPORATION
GREEN BAY PACKAGING-MIDLAND DIV
IN-SINK-ERATOR (H)

KHP LANDFILL (REPUBLIC SERVICES)
MODINE MANUFACTURING
PUTZMEISTER AMERICA
RACINE WATER UTILITY
SC JOHNSON – HOWE STREET FACILITY
STERICYCLE (HW)
(E.C.) STYBERG ENGINEERING
TWIN DISC – RACINE STREET (ND)
TWIN DISC – 21st STREET (H)
WISCONSIN SCREEN PROCESS (MD)

ND = No Discharge

MD = Minimal Discharge

NSCIU = Non-Significant Categorical Industrial User

H = Process Waste Hauled Off Site

HW = Hauled Waste to Plant

SUMMARY OF TREATMENT PLANT ANALYTICAL MERCURY DATA

2021

Influent			Effluent			% Removal	Biosolids		
Date 2021	Conc. ng/L	Test Method	Date 2021	Conc. ng/L	Test Method		Date 2021	Conc. mg/kg	Test Method
01/13/21	15	245.7M, Rev 2.0	01/13/21	0.7	EPA 1631E, 2002	95.3	01/13/21	<0.51	SW 846 7471B
02/02/21	11	245.7M, Rev 2.0	02/02/21	0.7	EPA 1631E, 2002	93.4	02/02/21	0.33	SW 846 7471B
03/15/21	7.5	245.7M, Rev 2.0	03/15/21	1.1	EPA 1631E, 2002	85.3	03/03/21	0.33	SW 846 7471B
04/07/21	13	245.7M, Rev 2.0	04/07/21	1.40	EPA 1631E, 2002	89.2	04/06/21	0.33	SW 846 7471B
05/05/21	32	245.7M, Rev 2.0	05/05/21	1.1	EPA 1631E, 2002	96.6	05/05/21	0.28	SW 846 7471B
06/08/21	54	245.7M, Rev 2.0	06/08/21	2.5	EPA 1631E, 2002	95.4	06/08/21	0.26	SW 846 7471B
07/06/21	20	245.7M, Rev 2.0	07/06/21	0.92	EPA 1631E, 2002	95.4	07/21/21	0.84	SW 846 7471B
08/03/21	25	245.7M, Rev 2.0	08/03/21	0.91	EPA 1631E, 2002	96.4	08/03/21	0.59	SW 846 7471B
09/08/21	11	245.7M, Rev 2.0	09/30/21	1.2	EPA 1631E, 2002	89.1	09/07/21	<0.37	SW 846 7471B
10/05/21	28	245.7M, Rev 2.0	10/05/21	1	EPA 1631E, 2002	96.4	10/05/21	<0.35	SW 846 7471B
11/03/21	32	245.7M, Rev 2.0	11/03/21	1.3	EPA 1631E, 2002	95.9	11/03/21	<0.34	SW 846 7471B
12/07/21	23	245.7M, Rev 2.0	12/07/21	0.98	EPA 1631E, 2002	95.7	12/07/21	0.33	SW 846 7471B
Influent Average	22.6		Effluent Average	1.2		Removal 93.7%	Biosolids Average	0.41	

2022

Influent			Effluent			% Removal	Biosolids		
Date 2022	Conc. ng/L	Test Method	Date 2022	Conc. ng/L	Test Method		Date 2022	Conc. mg/kg	Test Method
01/05/22	31	EPA 245.7, Rev 2.0	01/05/22	1.3	EPA 1631E, 2002	95.8	01/05/22	<0.35	SW 846 7471B
2/22/22 ¹	40.9	EPA 1631E	02/01/22	0.4	EPA 1631E	98.9	02/01/22	0.43	EPA 7471B
03/03/22	19.9	EPA 1631E	03/03/22	0.8	EPA 1631E	96.0	03/02/22	0.32	EPA 7471B
04/05/22	16.1	EPA 1631E	04/05/22	1.03	EPA 1631E	93.6	04/05/22	0.46	EPA 7471B
05/10/22	13.6	EPA 1631E	05/10/22	1.1	EPA 1631E	91.9	05/03/22	0.35	EPA 7471B
06/08/22	36.3	EPA 1631E	06/08/22	0.737	EPA 1631E	98.0	06/08/22	0.43	EPA 7471B
07/05/22	34.2	EPA 1631E	07/05/22	0.76	EPA 1631E	97.8	07/05/22	0.41	EPA 7471B
08/03/22	31.4	EPA 1631E	08/03/22	0.576	EPA 1631E	98.2	08/03/22	1.5	EPA 7471B
09/14/22	12.3	EPA 1631E	09/15/22	1.62	EPA 1631E	86.8	09/15/22	1	EPA 7471B
10/04/22	79.5	EPA 1631E	10/04/22	1.5	EPA 1631E	98.1	10/04/22	0.42	EPA 7471B
11/02/22	25.7	EPA 1631E	11/02/22	1.95	EPA 1631E	92.4	11/02/22	0.66	EPA 7471B
12/06/22	30.1	EPA 1631E	12/06/22	0.832	EPA 1631E	97.2	12/07/22	0.39	EPA 7471B
Influent Average	30.9		Effluent Average	1.1		Removal 95.4%	Biosolids Average	0.58	

¹ 9/8/21 result = 7.7 ng/L due to rising sludge in final clarifiers

Is there a mercury limit in local sewer use ordinance?
 If yes, what is it? 0.10 mg/l

Yes

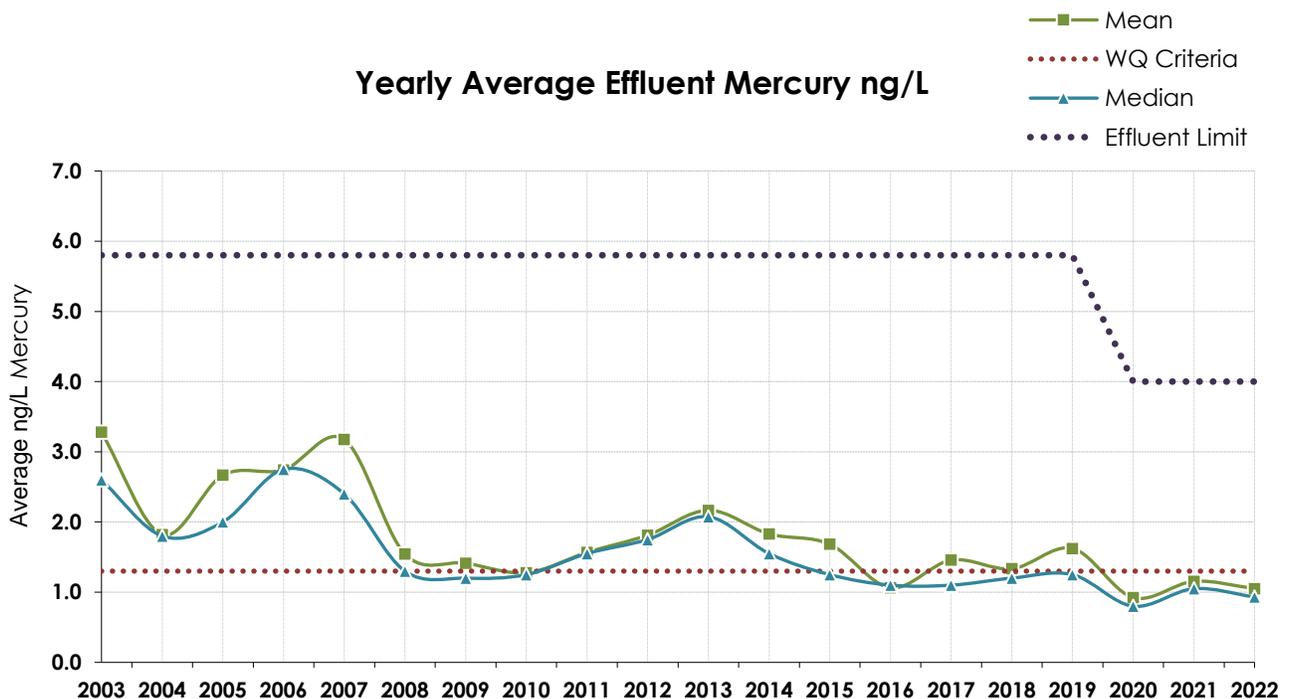
Laboratory performing wastewater analysis:
 NLS (cert #721026460) through January; Pace (cert #405132750) after
 Laboratory performing solids analysis:
 NLS (cert #721026460) through January; Pace (cert #405132750) after

MERCURY MINIMIZATION PROGRAM

The Racine Wastewater Utility WDNR permit number WI-0025194-07-1 required that the Utility submit annual status reports on the progress of the mercury pollutant minimization program. The current Racine WPDES permit number WI-0025194-09-1 has an effluent mercury limit of 4.0 ng/L. The goal remains to reduce mercury coming into the plant. The annual status report is due to the WDNR by December 31 of each year. Each report covers the period from January 1 to December 31 of the current year. The initial plan was submitted in March 2006, following two years of wastewater monitoring.

The Utility continues to survey different sectors thought to contribute mercury to the waste stream. Sectors surveyed include schools, medical facilities, industries, general public and dental facilities. Initial contact was made with each of these sectors by mail, email and/or phone and facility contacts are updated as needed. Best Management Practices (BMPs) are used by the various mercury source sectors to reduce or eliminate mercury contributions to the wastewater. All Racine area dental facilities were required to submit the one time compliance report by October 2020 as required by the EPA Dental Rule. Also, dentists that place or remove amalgam dental fillings are required to have amalgam separators and to implement Best Management Practices for Dental Facilities as outlined by the American Dental Association and the EPA Dental Rule. Health centers and schools are committed to being mercury-free. School and medical facility status is updated as needed. The Utility accepts mercury thermostats at no charge by partnering with the Thermostat Recycling Corporation (TRC). Thermostats are collected from the public at all scheduled household hazardous waste events and at the wastewater plant from area contractors. Accumulated thermostats are stored in a designated container and sent in for recycling at least annually.

The Utility will continue to monitor the wastewater effluent to assess progress towards the Water Quality Limitation. Annual reporting of the Mercury PMP to the WDNR will evaluate progress. Influent and Effluent levels have decreased since 2003.



Community Mercury PMP Score Form 10

FORM 10: Community Mercury PMP Score

Facility Name: Racine Wastewater Utility

Report Date: Dec 27, 2022

I. **Wastewater Sectors:** (Should be included in Mercury PMP Plan)

Sector	Sector Score	X	Weighting Factor*	=	Weighted Sector Score
A: Medical (from Form 4C)	<u>100</u>	X	(0.15)	=	<u>15.0</u>
B: Dental (from Form 5C)	<u>100</u>	X	(0.50)	=	<u>50.0</u>
C: School (from Form 6C)	<u>100</u>	X	(0.15)	=	<u>15.0</u>
D: Industry (from Form 7C)	<u>100</u>	X	(0.20)	=	<u>20.0</u>
Total Wastewater Sectors Score					100.0

*Weighting factor is the relative fraction of mercury to POTW that is attributable to each sector. If you know what fraction comes from each sector you can adjust accordingly. The weighting factors must add up to 1. Use default values in parenthesis above if unknown.

II. **Other Community Sectors:** (May be included in Mercury PMP Plan)

Sector	Sector Score	X	Weighting Factor**	=	Weighted Sector Score
A: General Public (from Form 8A)	<u>100</u>	X	(0.1)	=	<u>10</u>
B: HVAC (from Form 8B)	<u>4</u>	X	(0.1)	=	<u>0.4</u>
C: Auto Switch (from Form 8C)	<u>0</u>	X	(0.1)	=	<u>0</u>
D: Fluorescent Bulb (from Form 8D)	<u>60</u>	X	(0.1)	=	<u>6</u>
Total Other Community Sectors Score					16.4

**Weighting factor is between 0.0 and 0.1. Wisconsin's weighting factor is 0.1.

III. **Other Credits:** (May be included in Mercury PMP Plan)

Other	Score	X	Weighting Factor**	=	Weighted Score
A: Historical (from Form 9A)	<u>23</u>	X	(0.1)	=	<u>2.3</u>
B: Extra-Jurisdictional (from Form 9B)	<u>20</u>	X	(0.1)	=	<u>2.0</u>
Total Other Credits Score					4.3

**Weighting factor is between 0.0 and 0.1. Wisconsin's weighting factor is 0.1.

IV. **Community Mercury PMP Score:**

	Total Score
Sum of Wastewater Sectors, Other Community Sectors and Other PMP Credits	120.7

COLLECTION SYSTEM & LIFT STATIONS



COLLECTION SYSTEMS AND LIFT STATIONS

The Utility continues to focus on the Capacity, Management, Operations and Maintenance Program (CMOM). The CMOM Program has been developed by the United States Environmental Protection Agency and the Wisconsin Department of Natural Resources. In accordance with the WDNR, as of August 1, 2016 anyone owning a collection system in the State of Wisconsin must have a CMOM. The goal of the program is to develop guidelines for the operation and maintenance of wastewater collection systems. The Utility developed their first CMOM in 2005; it was updated in 2016 to meet the current requirements of the WDNR and is reviewed annually.

In February of 2010, the Utility became a member of Diggers Hotline. The Field Operations staff spent many hours establishing areas of concern and relaying them to Diggers Hotline. The Utility then contracted with USIC Locating Services in order to establish the most cost effective manner of locating and marking our underground infrastructure.

The Utility continues to implement flow studies within the collection system, in an attempt to pinpoint infiltration and inflow. In 2022, we continued to monitor flow in different areas within the City of Racine covering about 1,075,121 linear feet of sewer main.

The Utility implemented an interceptor closed circuit televising (CCTV) program in 2010. By 2017, all 252,084 linear feet of Utility owned interceptor sewers ranging in size from 6 inch to 84 inch were televised. When minor defects or obstructions were discovered, they were dealt with immediately. Larger defects were assessed and scheduled for repair in a timely manner. In 2022, the Utility began to re-contract CCTV work in the aging interceptors televising 7,816 linear feet.

In 2014, the Utility purchased a CCTV system and installed it in our Industrial Sampling truck at a cost of \$102,550. The system is used to assess emergency situations in the sewer cleaning operation as well as televising trouble spots within the collection system. In 2022, the crew televised 11,995 linear feet of interceptors and 3,106 linear feet of collector sewer mains within the collection system.

In 2008, the Utility formed a Technical Advisory Committee. The Committee members represent the Wastewater Utility and outlying communities. They were selected for their expertise and understanding of the Racine Wastewater Utility system. The Committee continues to work on immediate and long term issues in the system, cost-sharing between municipalities, understanding the sewer agreement, and development of strategies for streamlining future projects. The 2020 Facilities Plan is a 20 year plan and lists the proposed projects through year 2040. These regional collection system projects will help to mitigate bypassing and backups. The improvements will be completed in stages over a period of time to accommodate peak flows anticipated during a 5 year storm event.

The sewer maintenance crew continues to do an outstanding job of maintaining the City of Racine's 203 miles of sewer mains that make up the collection system, as well as the Utility owned 52 miles of interceptors and force mains. In 2022, the crew cleaned 488,047 linear feet (92 miles) of the 255 miles of sewer in the collection system. The crew used our root saws on 76,116 linear feet of sewer mains, and responded to 182 sewer calls; most of the calls were lateral problems requiring attention from the homeowners or surcharged mains due to the intense rain event from September 2022. They also responded to 7 requests for assistance from other City departments.

The Lift Station Crew does an exceptional job maintaining the Utility's lift stations and storage basins. The crew also maintains the lift stations owned by the City of Racine's Parks Department.

It should be noted that the Racine Wastewater Utility operates and maintains the regional sanitary sewer infrastructure in the area of Racine. Local municipalities, including the City of Racine, have the responsibility of maintaining their own collection systems that feed into the Utility system.

LIFT STATION #1

736 Washington Ave.

The lift station was originally constructed in 1931. It is the largest station in the collection system, providing half of the treatment plant's flow. The East side of lift station #1 was constructed in 1989, doubling the capacity of the original station. In 2004, the West side was completely updated with new pumps, controls, and a stainless steel crawler barscreen. In 2005, the East pumps were reconditioned and the variable frequency drives were replaced. In 2005, the Utility also added a 2000kW, 480V diesel powered generator and building. In 2006, the aging bar screen on the East side was replaced with a stainless steel crawler bar screen. In 2018, the level control pump system was replaced by a state of the art programmable control system designed and installed by Utility staff.

LIFT STATION #2

2022 Spring St.

Originally constructed in 1931, the station was modified in 1965. A third pump was added in 1970. Area growth required an additional upgrade. In 1994 the station was redesigned, increasing the capacity to 9.072 MGD. An additional force main and dedicated stand-by generator was added at that time. In 2004, the Utility completed construction of an emergency bypass pumping station. The 2-Flygt pumps have the ability to pump 2.880 MGD directly to the storm water system, thereby preventing basement backups in the area. In 2009, the 12 inch force main from the station was replaced. In 2010, the Utility completed the upgrade of the standby generator. The generator output was increased from 100kW to 250kW, 480V. As part of the project, we improved the flood protection of the station. In 2017 the Utility re-laid the interceptor upstream of the lift station; 1200 linear feet of 24-inch pipe was increased to 42 inch in preparation for a storage tank to be built in Brose Park which is adjacent to the lift station. The aging pump controls (1990) were upgraded in 2017. The electro mechanical controls were replaced with state-of-the-art programmable logic controllers. In June of 2018, construction of the storage basin adjacent to the lift station started; the basin project was completed in 2020.

LIFT STATION #3

1004 Riverbrook Dr.

The station was originally constructed in 1984. Upgrade of this station's pumps occurred in 1996. The 1.6 hp submersible pumps were converted to 2.4 hp. In 2010, the station received a complete upgrade. A walk in control structure with an arc flash safe control panel was installed. The panel uses VFD motor starters in order to convert 1-phase to 3-phase power. The 3 hp pumps have greater capacity, as well as improved efficiency and reliability. This upgrade increased the station capacity from 0.430 MGD to 0.648 MGD. In 2021, the Katolight generator (originally installed in 2002) was replaced with a new 25kW Cummins generator.

LIFT STATION #4

6 - 5th St.

The original lift station was constructed in 1967 as a pneumatic ejector station. This station was moved and upgraded in 1987 in conjunction with the Festival Site development project. A "package can" station, Lift Station #4 contains two 7.5 hp pumps with a capacity of 1.82 MGD. In 2014, the Utility replaced the control panel which was located underground in the "can," with a

new walk in structure. This new structure is located in the adjacent parking ramp, and has an arc flash safe control panel. With the piping rerouted in 2021, this station now serves the Festival site and Pershing Park.

LIFT STATION #5

1530 - 13th St.

The lift station was originally constructed in the summer of 1955 as a pneumatic ejector station. In 1971 it was converted to a wet well and submersible pumps were installed. In 1989 a \$165,000 lift station upgrade and force main reconstruction project replaced the existing station. The two new 24 hp submersible pumps and redirected force main solved wet weather overload problems at lift stations #5 and #10. The project was completed in January of 1990. In 2007, the Utility replaced one of the original pumps; the old pump will remain in service as a spare. In 2015, the Utility replaced the control panel which was located on the parkway adjacent to the station. The new walk in structure is located next to the standby generator and has an arc flash safe control panel. This station serves a 10-block area in the vicinity of the station, and its new capacity is 2.06 MGD.

LIFT STATION #6

3236 Drexel Ave.

The original design in 1955 was a pneumatic system that called for two-150 gallon ejectors. In 1970, two more ejectors were added to handle the growth of the area. This station had a major renovation in 1996; the ejectors were eliminated and replaced with centrifugal pumps. The pumps are driven by 15 hp motors. This upgrade increased the capacity of the station from 2.08 MGD to 3.02 MGD. Additional capacity can easily be obtained by simply increasing the size of the impeller. The automatic transfer switch for the stand-by generator was replaced in 2005. In 2006, the Utility replaced an aging stand-by generator with an 85kW natural gas powered generator. On April 9, 2011 the utility discovered the 12 inch force main was leaking under the building. An emergency repair was implemented, and we replaced the first 85 feet of force main from the building to the street. In July of 2018 the rest of the aging 12 inch ductile iron force main was replaced with a 14 inch C900 PVC force main.

LIFT STATION #7

45 Steeplechase Dr.

This station was originally constructed in April of 1958 as a pneumatic ejector station. The station was converted to a wet well with submersible pumps in April of 1999. As part of this upgrade, a stand-by generator was added for operation during power emergency situations. In 2016 the control panel and fiberglass structure was replaced with a walk in structure and an arc flash safe control panel. The lift station has two 7.5 hp pumps with a capacity of 1.22 MGD. The aging 650 linear foot 8 inch original force main was replaced in 2019 using a new C-900 PVC pipe and increased in size to 10 inch in order to better service the Greater North Bay area.

LIFT STATION #8

3625 Rapids Ct.

A 1986 construction project combined two existing stations into one new one. One station was located on the west side of the Root River, the other on the east side dating back to 1958. The new "package can" station contains three 40 hp centrifugal pumps with total capacity of 5.25 MGD. This lift station serves several blocks on either side of Northwestern Avenue from Golf Avenue to Highway 31. Construction included the installation of a stand-by generator for emergency power. The pump control system was updated in 2006, replacing the soft starts and adding bypass circuitry that will allow the pumps to run in the event of a soft start failure. In 2012,

the Utility completed an upgrade on the standby generator. The generator output was increased from 100kW to 150 kW, 480V.

LIFT STATION #9

3908 Francis Dr.

This station was originally constructed in April of 1955. The station was equipped with pneumatic ejectors and had a capacity of 0.07MGD. In the spring of 1995, the station was converted to a wet well with submersible pumps, increasing the capacity to 0.173 MGD. This lift station serves the area north of Vista Drive between Harrington Drive and Spring Valley Drive. In 2009, the 5 hp pumps were replaced with 7.5 hp pumps to increase the station's capacity during high flow situations. The 5 hp pumps will be used for spares. In 2017 the Utility replaced an aging fiberglass control building located in the parkway adjacent to the lift station wet well with a pre-fabricated building with arc flash safe control panel.

LIFT STATION #10

800 S. Memorial Dr.

The station was originally constructed in 1962. In order to increase capacity, a third pump was added to the station in 1986. In 2000, the aging pumps and control system were replaced with two higher capacity pumps. In 2005, the Utility replaced an aging stand-by generator with a 44 kV.A/240V natural gas powered generator and new automatic transfer switch. In 2008, the Utility replaced an aging KSB pump with a Fairbanks Morse Model 5442. In 2009, the Utility installed a second Fairbanks Morse pump; the existing KSB pump will remain in service as a spare or to be used in high flow situations when extra capacity is required. In 2010, the 6 inch force main and flow meter were replaced with a 10 inch force main and meter. This increased the capacity from 2.44 MGD to 3.67 MGD.

LIFT STATION #11

2750 Old Mill Dr.

The Utility took ownership of this station in November of 1993 after requested improvements were made by the previous owner. The station provides service for the residents of Old Mill Road. It is equipped with two submersible pumps and has a capacity of 0.792 MGD. In 2002, the Utility installed a dedicated stand-by generator and automatic transfer switch. This generator was replaced in 2021 with a new 25 kW Cummins generator. In November of 2008, the Utility completed an upgrade of the station including valves, pumps, telemetry, and controls.

LIFT STATION #12

334 Parkview Dr.

Lift Station #12 went on-line in December 1999. This station handles the flow along the Root River on Parkview Drive. It has two 3.4 hp submersible pumps with a flow capacity of 0.346 MGD. In 2018, the aging control panel and fiberglass structure located in the parkway adjacent to the station were replaced. The new walk-in structure has an arc flash safe control panel. The pumps are now controlled by a level reading transducer and they have a backup "Fog Rod" system for additional reliability. In 2022, the Katolight generator (originally installed in 2002) was replaced with a new 25kW Cummins generator.

LIFT STATION #13

1100 N. Main St.

This station came on line in March of 2002 and handles the flow from Hamilton to Dodge Street on Main Street. The station is equipped with two 1.5 hp submersible pumps rated at 0.128 MGD.

LIFT STATION #14

3205 Michigan Blvd.

The Utility added a new lift station to the collection system in 2009. This lift station went on line September 11, 2009. The purpose of the station is to isolate homes in the area from a 36 inch interceptor that can become surcharged during high flow conditions. The station is equipped with two 5 hp pumps, each capable of pumping 500 gallons per minute. In order to protect the esthetics of the neighborhood, the station is located underground with the control panel and standby generator located at remote sites in the area.

LIFT STATION #2 STORAGE TANK

2022 Spring Street

The 2.4 million gallon Lift Station #2 Storage Tank was available for use on July 23, 2019 with final project completion in 2020. The tank is used in high flow situations to relieve excess flow to the Root River Interceptor.

NORTH SIDE STORAGE BASIN

3026 Mt. Pleasant St.

The construction of a North side 8.4 MG storage basin was completed in 2004. This in-ground storage basin serves the Caledonia area during high flow situations. The storage basin is placed in operation during periods of high flow and emptied when flows return to normal levels.

GROVE AVENUE STORAGE BASIN

1218 Grove Ave.

The Utility completed construction of the Grove Avenue Storage basin in March of 2008. The storage basin reduces the potential for sanitary overflow into the storm water system by providing storage of 650,000 gallons of peak sanitary flow. The stored wastewater is pumped back into the collection system when the flow returns to normal. The tank was utilized three times in 2008.

OHIO STREET IN-LINE STORAGE

The Utility completed the construction of the Ohio Street interceptor sewer. It was available for service in March of 2009. The sewer is located under Ohio Street between Ridgeway Avenue and the northern boundary of Lockwood Park; it continues east in the park from Ohio Street to Illinois Street. The sewer protects properties on Virginia Street, which are connected to a 21 inch interceptor, from basement backups by providing 160,000 gallons of in-line overflow storage.

SCADA

The SCADA system is always being tuned and refined as more is being learned about the functionality of the system. The Utility is becoming more efficient through the operation of this tool. The Utility started investigating the use of the SCADA system as a security and monitoring tool in 2001 due to the environment in which we have lived since September 11, 2001. In 2010, the Utility began upgrading the software that controls the SCADA system and in 2019 the lift station telemetry radios were upgraded from analog to digital. In 2022, the Utility looked into upgrading the radios to cellular.

LIFT STATION EQUIPMENT & CAPACITY SUMMARY

No.	Location	Pumps	GPM at TDH	Manufacturer	Total** Capacity	Firm*** Capacity
#1	736 Washington Ave.	3-300 hp 3-300 hp	15,500 at 65' 14,799 at 65'	ITT A-C Pump- West Fairbanks/Morse- East	112 MGD	90 MGD
#2	2022 Spring Street & Luedtke Ct.	3-40 hp	2100 at 38'	Fairbanks/Morse	9.07 MGD	6.05 MGD
#3	1004 Riverbrook Dr.	2-3 hp	225 at 15'	Flygt	0.648 MGD	0.324 MGD
#4	Festival Site/ 6-5 th St.	2-7.5 hp	630 at 26'	Fairbanks/Morse	1.82 MGD	0.910 MGD
#5	1530-13th St. & Lockwood Ave.	2-24 hp	718 at 76'	Peabody/Barnes	2.06 MGD	1.030 MGD
#6	3236 Drexel Ave.	3-15 hp	1,000 at 15'	ITT	4.32 MGD	2.880 MGD
#7	45 Steeplechase Dr.	2-7.5 hp	425 at 27.5'	ShinMaywa	1.224 MGD	0.612 MGD
#8	3625 Rapids Ct. at Root River	3-40 hp	1220 at 44'	Fairbanks/Morse	5.27 MGD	3.510 MGD
#9	3908 Frances Dr. and Harrington Dr.	2-7.5 hp	120 at 48'	KSB	0.344 MGD	0.172 MGD
#10	800 S. Memorial Dr. & Root River	3-10 hp	850 at 19'	1-KSB 2-Fairbanks/Morse	3.67 MGD	2.440 MGD
#11	2750 Old Mill Rd.	2-2.8 hp	275 at 15'	Peabody/Barnes	0.792 MGD	0.396 MGD
#12	334 Parkview Dr.	2-3 hp	120 at 30'	ShinMaywa	0.346 MGD	0.173 MGD
#13	1100 N. Main St.	2-1.5 hp	70 at 25'	KSB	0.128 MGD	0.064 MGD
#14	3205 Michigan Blvd.	2-5 hp	500 at 20.7'	Hydromatic	1.44 MGD	0.720 MGD

** Total Capacity is the estimated capacity with all pumps in service.

*** Firm Capacity is the estimated capacity with the single largest pump out of service.

COLLECTION SYSTEM STORAGE & CAPACITY SUMMARY

Storage Name and Location Source		Pumps	GPM at TDH	Manufacturer	Total Pump Capacity	Total Storage Capacity	Flow
North Side Storage 3026 Mt. Pleasant St.	(3) 60 hp – sewage (2) 5 hp – dewatering	18,000 GPM at 30' 150 GPM at 35'	ITT Flygt Pump ITT Flygt Pump	3 pumps = 26 MGD 0.216 MGD	8.40 Million Gallons	Caledonia-Riverbend Lift Station	
Grove Ave. Storage 1218 Grove Ave.	(2) 10 hp sewage	507 GPM at 41'	KSB	0.730 MGD	0.65 Million Gallons	City and Mt. Pleasant	
Ohio St. in-line Storage North side of Lockwood Park	N/A	N/A	N/A	N/A	0.16 Million Gallons	City and Mt. Pleasant	
Lift Station #2 Storage Tank 2022 Spring St.	(2) 5 hp sewage	234 GPM at 28.2'	ShinMaywa	2 pumps = 0.674 GPD	2.4 Million Gallons	City and Mt. Pleasant	

North Side Storage



Grove Avenue Storage



Ohio Street Storage



Lift Station #2 Storage



HOUSEHOLD HAZARDOUS WASTE



HHW FINAL REPORT – SUMMARY SHEET

ARM-ACM-390_51a16 (Rev. 4/19)



Wisconsin Department of Agriculture, Trade and Consumer Protection
 Division of Agricultural Resource Management
 Bureau of Agrichemical Management
 PO Box 8911 • Madison WI 53708-8911
 Phone: (608) 224-4545 • Email: DATCPeswp@wisconsin.gov

**2022 Wisconsin Clean Sweep Ag and/or HHW Collection
 Waste Summary**

Grant Recipient: City of Racine

Grant Type: Temporary Continuous Permanent

HHW: Estimated households in collection area [Click here to enter text.](#)

Number of HHW Participants [Click here to enter text.](#) Percent HHW Participation [Click here to enter text.](#)

AG: Estimated Farms in collection area [Click here to enter text.](#) Number of Ag Participants [Click here to enter text.](#)

Percent Ag Participation [Click here to enter text.](#)

VSQG: Total number VSQG participants [Click here to enter text.](#) Total receiving 50% ag subsidy [Click here to enter text.](#)

Note: If this is a multi-municipal/tribal collection, consolidate all collections on this sheet.

HHW Waste Data

Item	Total Weight (lbs.)
Pesticides/Poisons	23476
Lead/Oil Paint	12544
Caustics/Corrosives	3145
Reactives	124
Solvents/Thinners	20950
Waste Oil	0
PCBs	77
Aerosol Cans	5643
Mercury	68
Dioxins	56
Latex Paint	0
Other	4938
Total ALL Collected Chemicals (lbs.)	71021
Average Weight Collected Per Participant (lbs.)	Click here to enter text.

Ag Waste Data

Item	Total Weight (lbs.)
Agricultural waste collected	Click here to enter text.
Average weight per participant (lbs.)	Click here to enter text.

VSQG Wastes

Item	Total Weight (lbs.)
VSQG Wastes Collected (Non-subsidized collected waste)	Click here to enter text.
VSQG Subsidized Waste (50% DATCP subsidized waste)	Click here to enter text.
Avg. weight per VSQG participant	Click here to enter text.

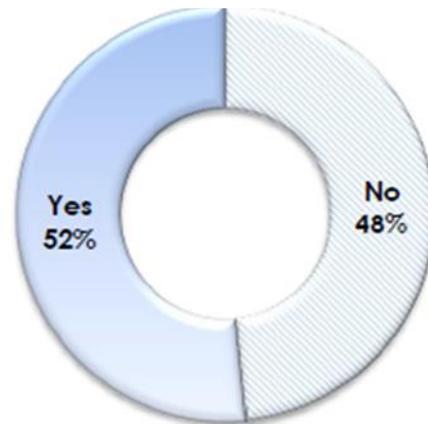
HHW PARTICIPATION DATA

Total Participation

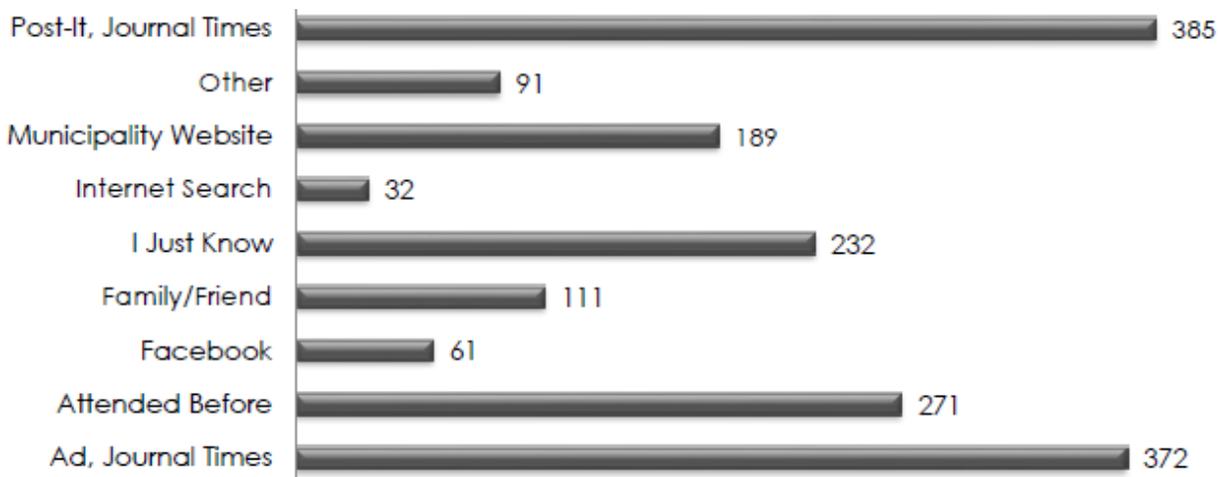
Current Year vs Prior Year

	2022	2021
April	214	403
May	231	274
June	231	249
July	235	219
August	253	232
September	252	221
October	328	394
Total	1744	1992

Survey Question: Did you participate last year?

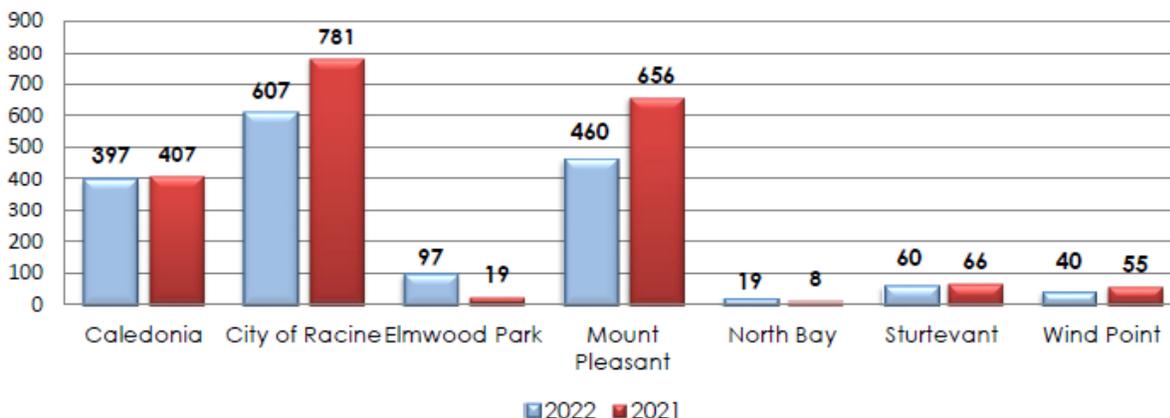


Survey Question: How did you hear about the event?

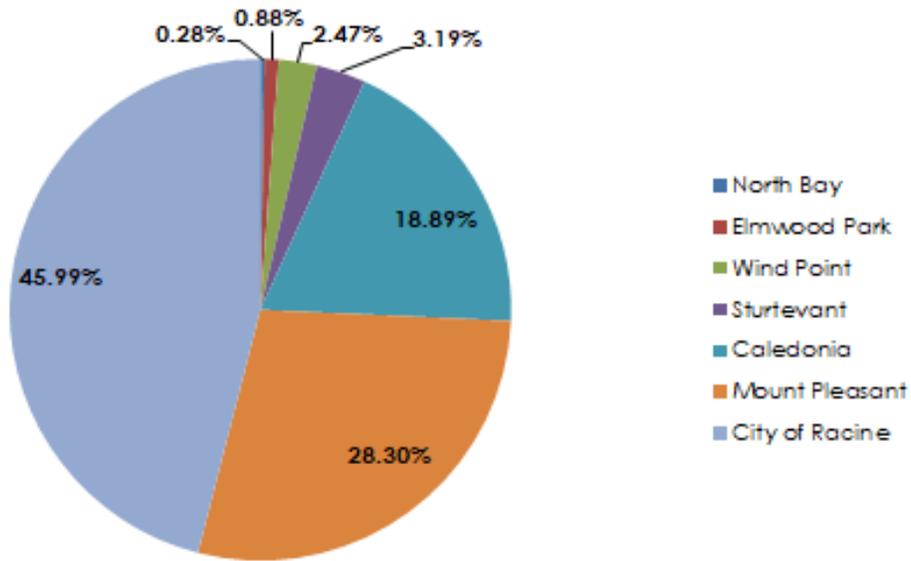


Survey Question: Which City or Village do you reside in?

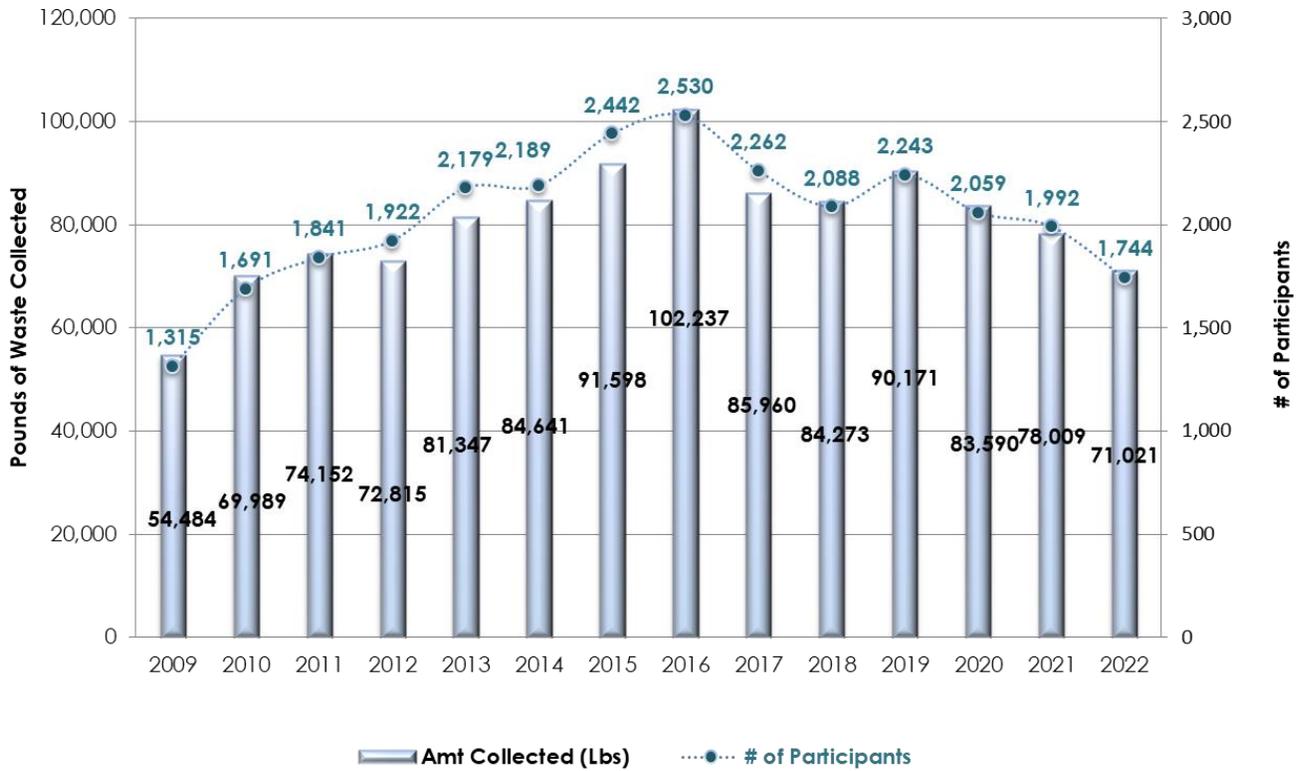
Total Community Participation



Participation by Community 2009 to 2022



Waste Collection & Participation



APPENDIX



ADOPTED BUDGET

	2020 ACTUAL	2021 BUDGET	2021 PROJECTED	2022 BUDGET	21 VS 22 BUDGET
Operating Revenue	\$12,867,152	\$13,450,496	\$11,857,000	\$13,915,440	3.5%
True Up		(\$1,277,999)		(\$939,532)	
Total Operating Revenue	\$12,867,152	\$12,172,497	\$11,857,000	\$12,975,908	6.6%
O&M Expenses	\$8,903,387	\$9,760,000	\$9,529,000	\$10,144,000	3.9%
Depreciation*	2,246,123	2,246,964	2,250,000	2,264,911	0.8%
Total Operating Expense	\$11,149,510	\$12,006,964	\$11,779,000	\$12,408,911	3.3%
Net Operating Income	\$1,717,642	\$165,533	\$78,000	\$566,997	242.5%
Other Income					
Plant Capacity Income (COSS)	\$2,237,444	\$1,918,352	\$1,927,750	\$1,816,820	-5.3%
Household Hazard Waste	167,727	160,000	165,000	165,000	3.1%
Interest/Dividend Income	68,982	105,000	39,000	45,000	-57.1%
Other Expense					
Household Hazard Waste	\$176,941	\$195,000	\$190,000	\$195,000	0.0%
Interest Expense	\$668,325	\$489,000	\$489,000	333,000	-31.9%
Net Income	\$3,346,529	\$1,664,885	\$1,530,750	\$2,065,817	24.1%
Distribution of 2022 Budget Net Income				\$2,065,817	
Plus Depreciation				2,264,911	
Plus principal collected from SSR parties not included above				2,479,089	
Total Cash Available				\$6,809,817	
Less Bond Principal Payments				(6,521,601)	
Less Total Capital Improvement Projects				(10,416,000)	
Plus Contributed Capital Improvement Projects				8,080,000	
Net Cash Balance				(\$2,047,784)	
Funding - From State Loans and/or Reserves/Rates					

* Depreciation Depreciation shown only represents amount used in rate calculation per the agreement. Depreciation used for GAAP shown in the audit will be much higher.

Note: Following the 2002 Intergovernmental Sanitary Sewer Agreement, in 2022 \$516,361 from Utility reserves will be transferred to the City of Racine. (Zoo, Library, & Museum)

Debt Service Coverage Ratio	Actual	Actual	Budget	Budget
State Requirement = 1.10	2019	2020	2021	2022
	1.30	1.28	0.97	1.06

ADOPTED OPERATION & MAINTENANCE BUDGET

ACCOUNT	2020 Actual	2021 Budget	2021 6/30/2021	2021 Projected	2022 Budget Adopted	21 vs 22 Budget
A. PERSONNEL SERVICES						
Salaries & Wages	\$3,118,045	\$3,241,000	\$1,211,426	\$2,800,000	\$3,424,000	5.6%
B. CONTRACTUAL						
Professional Services	\$501,162	\$277,000	\$186,900	\$374,000	\$277,000	0.0%
Laboratory Prof. Services	22,038	37,000	17,349	35,000	43,000	16.2%
Pre-treat. Prof Services	7,422	6,000	4,515	6,000	6,000	0.0%
Building & Equipment Maint.	80,992	110,000	22,463	45,000	110,000	0.0%
Vehicle Maintenance	15,715	25,000	8,752	18,000	25,000	0.0%
Telephone	8,552	10,000	3,989	8,000	10,000	0.0%
Natural Gas	110,655	170,000	141,373	180,000	170,000	0.0%
Electric Service	930,848	950,000	387,740	775,000	950,000	0.0%
Water Service	260,454	300,000	82,962	320,000	320,000	6.7%
City Sewer & L.S. Maint.	352	18,000	1,615	3,000	18,000	0.0%
Interceptor & L.S. Maint.	89,792	130,000	33,134	66,000	110,000	-15.4%
Sludge & Grit Disposal	665,674	688,000	444,075	700,000	704,000	2.3%
TOTAL	\$2,693,657	\$2,721,000	\$1,334,866	\$2,530,000	\$2,743,000	0.8%
C. MATERIALS & SUPPLIES						
Office Supplies	\$11,505	\$14,000	\$4,626	\$9,000	\$14,000	0.0%
Gasoline & Diesel Fuel	11,225	24,000	10,427	21,000	23,000	-4.2%
Lubricants	29,342	31,000	17,989	36,000	32,000	3.2%
Custodial Supplies	15,160	18,000	5,384	11,000	18,000	0.0%
Operational Chemicals	416,170	392,000	214,604	429,000	476,000	21.4%
Plant & System Supplies	73,796	56,000	44,072	88,000	56,000	0.0%
Equipment Supplies	301,809	220,000	36,347	73,000	220,000	0.0%
Sewer Maint. Supplies	6,226	10,000	5,754	12,000	10,000	0.0%
Pre-treat. Sampling Supplies	6,894	7,000	1,948	4,000	7,000	0.0%
Laboratory Supplies	53,731	58,000	25,071	50,000	62,000	6.9%
Pre-treat. Lab Supplies	18,836	22,000	11,226	22,000	25,000	13.6%
Computer & PLC Supplies	46,125	50,000	10,017	20,000	50,000	0.0%
TOTAL	\$990,818	\$992,000	\$387,463	\$775,000	\$993,000	10.1%
D. CUSTOMER ACCOUNT						
Metering, Billing & Collection	\$641,006	\$650,000	\$320,504	\$648,000	\$654,000	0.6%

ADOPTED OPERATION & MAINTENANCE BUDGET - CONTINUED

E. ADMINISTRATION & GENERAL									
Dues, Publications & Travel	\$15,968	\$35,000	\$2,580	\$20,000	\$35,000	0.0%			
FICA Tax	243,378	253,000	103,512	207,000	267,000	5.5%			
Property & Liability Insurance	105,897	105,000	43,682	133,000	135,000	28.6%			
Worker's Compensation Insur.	52,257	65,000	38,710	65,000	75,000	15.4%			
Office Rent	31,401	33,000	16,083	32,000	33,000	0.0%			
Wisconsin Retirement Expense	282,217	286,000	87,888	176,000	298,000	4.2%			
Medical Expenses	859,662	1,100,000	1,166,757	1,720,000	1,100,000	0.0%			
Life Insurance	12,020	15,000	5,091	10,000	14,000	-6.7%			
Safety Programs & Supplies	18,834	14,000	14,419	29,000	26,400	88.6%			
City Departmental Charges	83,000	85,000	43,000	86,000	88,000	3.5%			
Training Programs	11,749	15,000	5,490	11,000	19,000	26.7%			
Stormwater Fees	42,517	46,000	25,436	44,000	46,000	0.0%			
DNR Permit Fee	136,788	142,000	139,541	140,000	143,500	1.1%			
Airport Property Lease	50,846	52,000	51,491	103,000	53,000	1.9%			
TOTAL	\$1,946,534	\$2,246,000	\$1,743,680	\$2,776,000	\$2,332,900	3.9%			
SUMMARY									
A. Personnel Service	\$3,118,045	\$3,241,000	\$1,211,426	\$2,800,000	\$3,424,000	5.6%			
B. Contractual Service	2,693,657	2,721,000	1,334,866	2,530,000	2,743,000	0.8%			
C. Materials & Supplies	990,818	902,000	387,463	775,000	993,000	10.1%			
D. Customer Accounts	641,006	650,000	320,504	648,000	654,000	0.6%			
E. Administrative & General	1,946,534	2,246,000	1,743,680	2,776,000	2,332,900	3.9%			
TOTALS	\$9,390,060	\$9,760,000	\$4,997,938	\$9,529,000	\$10,146,900	4.0%			

CAPITAL IMPROVEMENT PROGRAM 2021-2025 - ADOPTED

	2022	2023	2024	2025	2026	Total
<u>GENERAL PLANT</u>						
1 Laboratory Equipment	\$85,000	\$80,000	\$40,000	\$60,000	\$0	\$265,000
2 Roof Replacement	350,000	350,000	-	-	-	700,000
3 PLC & SCADA Equipment	50,000	50,000	50,000	50,000	50,000	250,000
4 Fire Alarm Panels	10,000	-	-	-	-	10,000
5 Clarifier Equipment Rehab	50,000	50,000	50,000	50,000	50,000	250,000
6 Tank Drainage Pump #3	-	-	25,000	-	-	25,000
7 LINKO Pretreatment Software	10,000	-	-	-	-	10,000
8 Crane and Hoist Replacement	10,000	-	-	-	-	10,000
9 Microbiology ID Microscope-Laptop	6,000	-	-	-	-	6,000
10 Grit Removal Baffle System	-	65,000	65,000	-	-	130,000
11 Electric Maint Equip Transport Cart	10,000	-	-	-	-	10,000
12 Final Clarifier Launder Covers	300,000	300,000	300,000	-	-	900,000
13 **Property Development	2,000,000	-	-	-	-	2,000,000
14 **Facilities Plan Plant Upgrade	4,000,000	14,000,000	6,100,000	-	-	24,100,000
Subtotal	\$6,881,000	\$14,895,000	\$6,630,000	\$160,000	\$100,000	\$28,666,000
<u>AUTOMOTIVE</u>						
1 Pickup/Van/SUVs	\$0	\$0	\$0	\$35,000	\$30,000	\$65,000
2 Utility Trucks	116,000	-	-	-	-	116,000
3 Vactor	-	397,000	-	-	-	397,000
4 Sample Van	-	-	53,000	-	-	53,000
Subtotal	\$116,000	\$397,000	\$0	\$35,000	\$30,000	\$578,000

CAPITAL IMPROVEMENT PROGRAM 2021-2025 – ADOPTED – CONTINUED

COLLECTION SYSTEM											
1	LS Controls/Building	\$0	\$100,000	\$0	\$100,000	\$0	\$0	\$200,000			
2	LS #1 VFD upgrade pumps 5 & 6	24,000	-	-	-	-	-	24,000			
3	SCADA Upgrade Licensing	72,000	-	-	-	-	-	72,000			
4	**Johnson Park LS Upgrade (city)	80,000	-	-	-	-	-	80,000			
5	**At North Beach Dev LS (city)	500,000	-	-	-	-	-	500,000			
6	Field Meters and Samplers	36,000	7,000	7,000	7,000	7,000	7,000	64,000			
7	Lift Station Generator Replacement	60,000	60,000	60,000	60,000	-	-	240,000			
8	LS #9 Pump Replacement	15,000	-	-	-	-	-	15,000			
9	Safety Site 10 Meter/Sensor	7,000	-	-	-	-	-	7,000			
10	Interceptor Improvement Projects	625,000	705,000	725,000	125,000	625,000	-	2,805,000			
11	**Chicory Rd Interceptor-Storage	1,000,000	14,000,000	-	-	-	-	15,000,000			
12	**Goold-Main Storage-Sewer Improvements	1,000,000	14,000,000	5,000,000	-	-	-	20,000,000			
	Subtotal	\$3,419,000	\$28,872,000	\$5,792,000	\$292,000	\$632,000	\$632,000	\$39,007,000			

TOTAL COST	\$10,416,000	\$44,164,000	\$12,422,000	\$487,000	\$762,000	\$68,251,000
**Total Contributed Capital Projects	8,080,000	41,897,000	10,600,000	-	-	60,577,000

Note: ** Denotes that the project cost is to be split on a Cost of Service share (COSS) basis among SSR parties per the Sewer Agreement

CLASS I & II CHARGES

<u>AREA</u>	CLASS I CHARGES - 2022			9/21/2021 Adopted
	<u>2021</u>	<u>2022</u>	<u>% CHANGE</u>	
A. City of Racine (\$/ccf)	\$2.42	\$2.50	3.1%	
B. Elmwood Park (\$/ccf)	\$2.41	\$2.50	3.8%	
North Bay (\$/ccf)	\$2.41	\$2.50	3.8%	
C. Mt. Pleasant (int) (\$/MG)	\$1,212.55	\$1,246.47	2.8%	
Caledonia (\$/MG)	\$1,212.55	\$1,246.47	2.8%	
Sturtevant (\$/MG)	\$1,212.55	\$1,246.47	2.8%	
D. Mt. Pleasant (\$/MG)	\$1,521.57	\$1,564.25	2.8%	
Caledonia (\$/MG)	\$1,521.57	\$1,564.25	2.8%	

The percentage change is shown as a comparison to the previous years rates. The actual rate increase imposed by individual sewer utilities will vary depending on how they deal with existing surpluses and future projects within their respective Utilities.

<u>AREA</u>	CLASS 2 CHARGES - 2022			9/21/2021 Adopted
	<u>2021</u>	<u>2022</u>	<u>Difference</u>	<u>% CHANGE</u>
A. City of Racine (\$/MG)	\$2,170.03	\$2,219.44	\$49.41	2.3%
B. Mt. Pleasant - Sturtevant (\$/MG)	\$682.89	\$699.96	\$17.08	2.5%
C. Caledonia (\$/MG)	\$967.72	\$992.73	\$25.01	2.6%
D. BOD (\$/1000 LBS.)	\$271.97	\$279.65	\$7.68	2.8%
E. SS (\$/1000 LBS.)	\$335.11	\$352.03	\$16.91	5.0%
F. PHOS (\$/1000 LBS.)	\$2,186.61	\$2,374.32	\$187.71	8.6%

LIST OF VEHICLES

ISSUED	VEHICLE #	YEAR	MODEL	LIC #	GVW	FUEL	ENGINE SIZE (LITERS)	AMOUNT \$
3/1/2016	WW001	2016	Fusion Hybrid	92310	4680 GVWR	N.L.-13.5 gal. LEV	2	\$26,038.00
3/14/2019	WW003	2019	Escape SE	C11408	GVWR	N.L.-15.7 gal. LEV	1.5	\$25,122.50
3/14/2017	WW004	2017	F-150 4x4	95563	6500 GVWR	N.L. 23 gal.	2.7	\$35,290.00
6/8/2018	WW005	2018	F350 4x4 Dump Truck	99185	14,000 GVWR	NL 40 gal. LEV	6.2	\$52,494.82
7/24/2018	WW006	2018	Transit Cargo Van	99587	5270 GVWR	NL-15.8 gal. LEV	2.5	\$27,555.23
3/14/2019	WW008	2019	Escape SE	C11409	GVWR	N.L.-15.7 gal. LEV	1.5	\$25,122.50
1/29/2019	WW010	2019	SD F250 4 X 4 Supercab	C11129	10,000 GVWR	NL 34 gal LEV	6.2	\$41,999.50
4/3/2015	WW011	2015	Explorer	89981	5900 GVWR	N.L.-18.6 gal. LEV	2.0	\$29,682.50
11/7/2022	WW012	2023	Bolt EUV	98882	GVWR	Electric	N/A	\$32,048.00
2/14/2019	WW014	2019	F150 Reg Cab 4 x 4	C11265	6950 GVWR	N.L.-26 gal. LEV	2.7T	\$36,937.50
3/30/2020	WW015	2020	F150 4 WD Reg. Cab	C14640	6950 GVWR	N.L.-23 gal. LEV	2.7	\$31,412.50
5/19/2011	WW016	2011	F550 4X4 Reg Cab	81797	18000 GVWR	Diesel 40 gal.	6.7	\$77,227.60
9/5/2013	WW018	2013	Sprinter	86887	8550 GVWR	Diesel 26 gal. LEV	3.0	\$138,510.21
4/19/2016	WW020	2017	Vactor	92682	66,000 GVWR	Diesel 100 gal.	13.0	\$425,006.00
2/4/2020	WW031	2020	SD F-250 Super Cab 4WD	C14114	10,000 GVWR	N.L.-34 gal. LEV	6.2	\$36,666.50
4/29/2017	WW032	2017	F-250 Super Cab 4 WD	95926	10,000 GVWR	N.L.-34 gal. LEV	6.2	\$33,445.00
								\$1,074,558.36