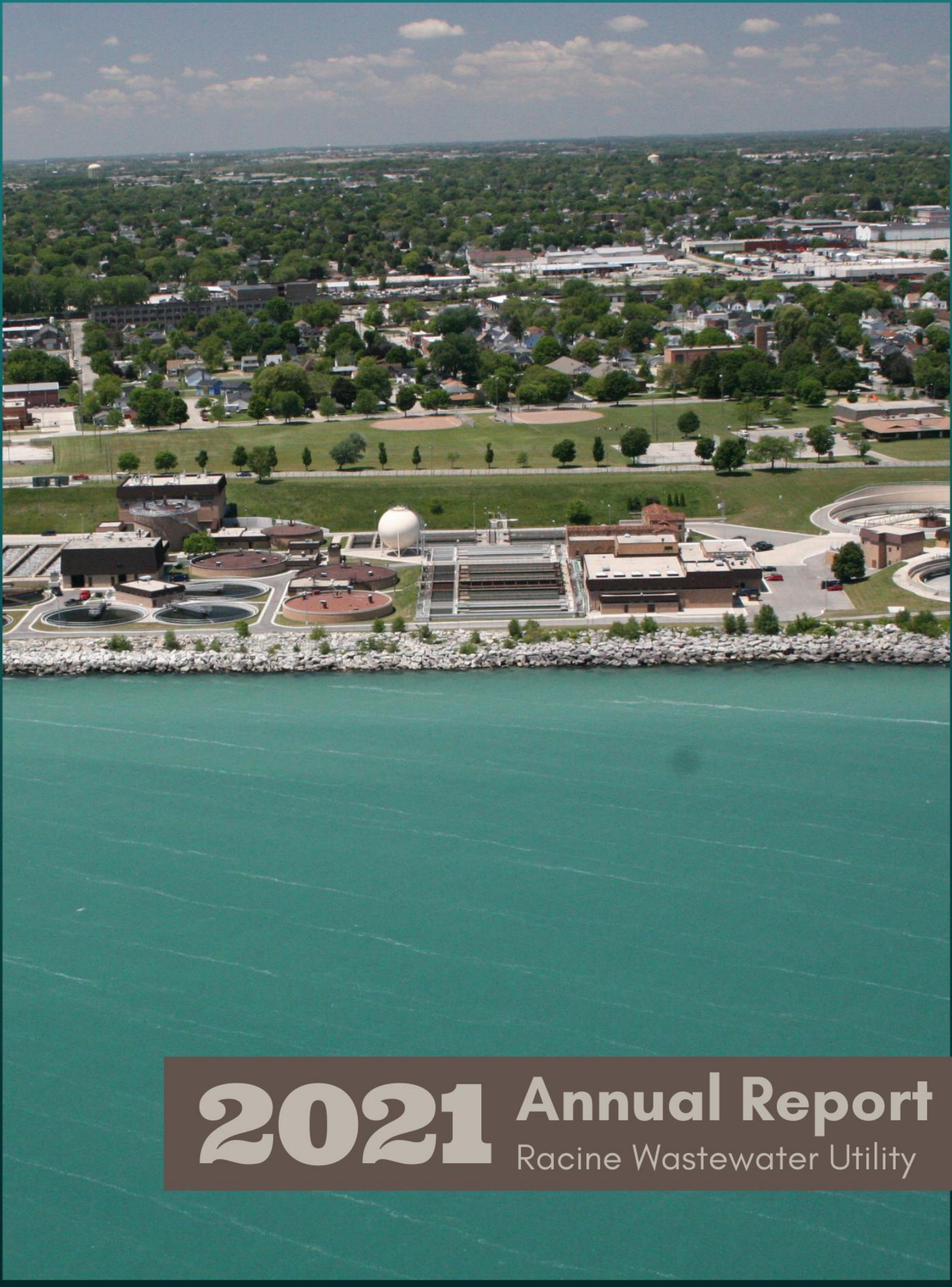


2021 Annual Report

Racine Wastewater Utility

2021 Racine Wastewater Utility Annual Report

Table of Contents

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 19, 2022

To: Michael L. Gitter, Water Director & Interim General Manager,
Racine Wastewater Utility Commissioners

We hereby submit the detailed annual report of the Wastewater Treatment Plant and System for the calendar year 2021.

Respectfully Submitted,

Kenneth M. Scolaro
Administrative Manager

Mary-Frances T. Klimek
Mary-Frances T. Klimek
Superintendent

Amanda E. Kaminski
Amanda E. Kaminski
Field Director

Andrew Dennerlein
Andrew E.W. Dennerlein
Laboratory Director

Mark A. Knuth
Maintenance Supervisor

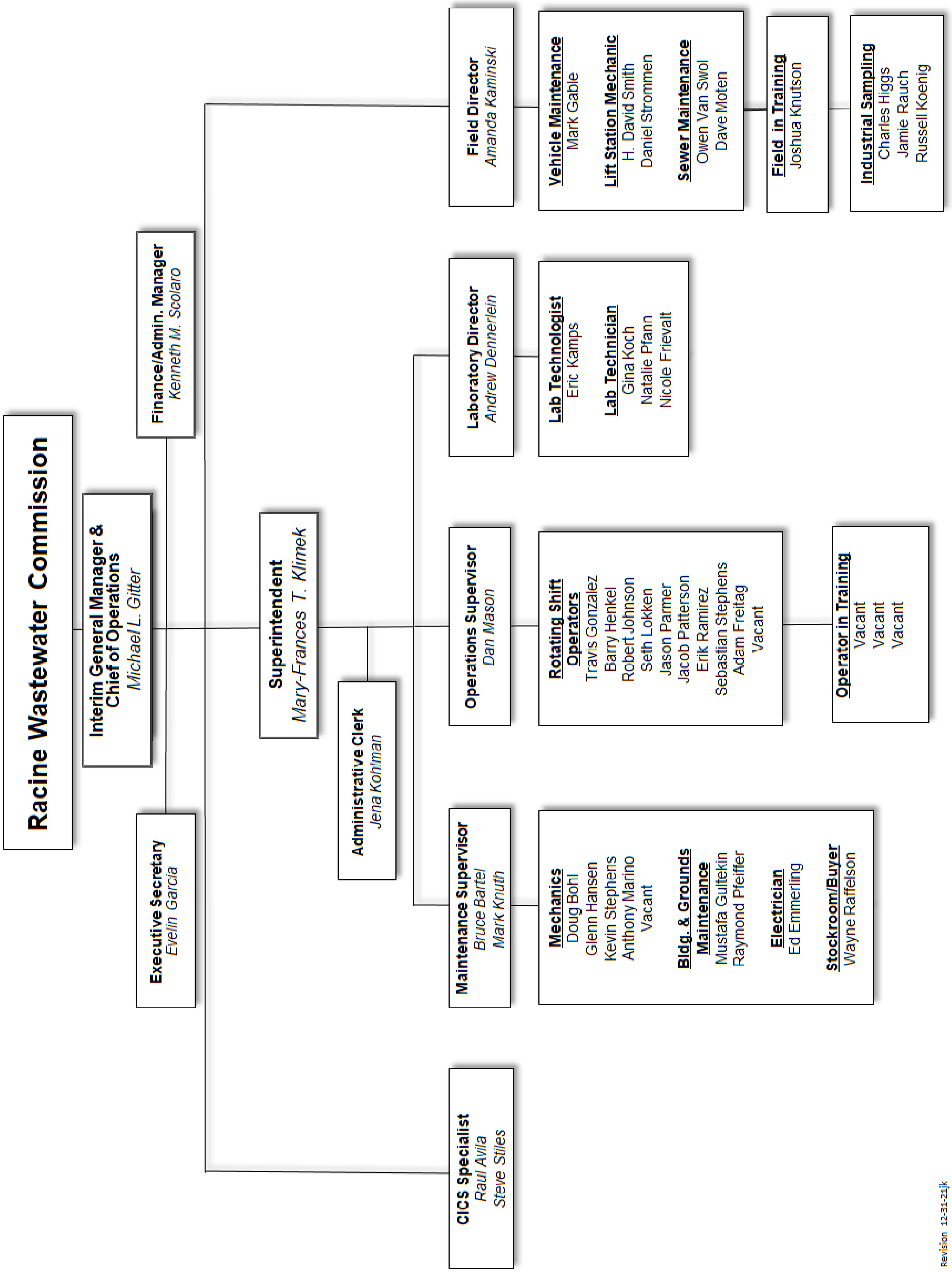
Daniel Mason
Dan R. Mason
Operations Supervisor

Steve P. Stiles
Computer, Instrumentation and Controls System Specialist

ADMINISTRATION & EMPLOYEE INFORMATION

Plant Site - View from Larson Street
September 14, 1927

ORGANIZATIONAL CHART 2021



Administration & Staff

Administration

Michael Gitter, P.E., Interim General Manager & Water Utility Director. Mr. Gitter was hired in 2007. He is responsible for the oversight of all functions of the Utilities.

Kenneth Scolaro, CPA, Administrative Manager. Mr. Scolaro 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 under the direction of the General Manager.

Evelin Garcia, Executive Secretary for the Wastewater Utility, provided administrative support to the Interim General Manager from 2019 until 2022. Jaclyn Bosanec was hired in March 2022 as the new Executive Secretary.

Racine Wastewater Treatment Plant Staff

Mary-Frances Klimek, Superintendent. Ms. Klimek 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. Mr. Dennerlein directs, supervises and ensures proper operations of all laboratory functions. He has been with the Utility since 2018.

Amanda Kaminski, Field Director. Ms. Kaminski 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. She has been employed with the Utility since 2011, and was appointed Field Director in 2020.

Mark Knuth, Maintenance Supervisor. Mr. Knuth was promoted to this position in October 2021 upon Bruce Bartel's retirement. 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. Mr. Mason 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 and 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.

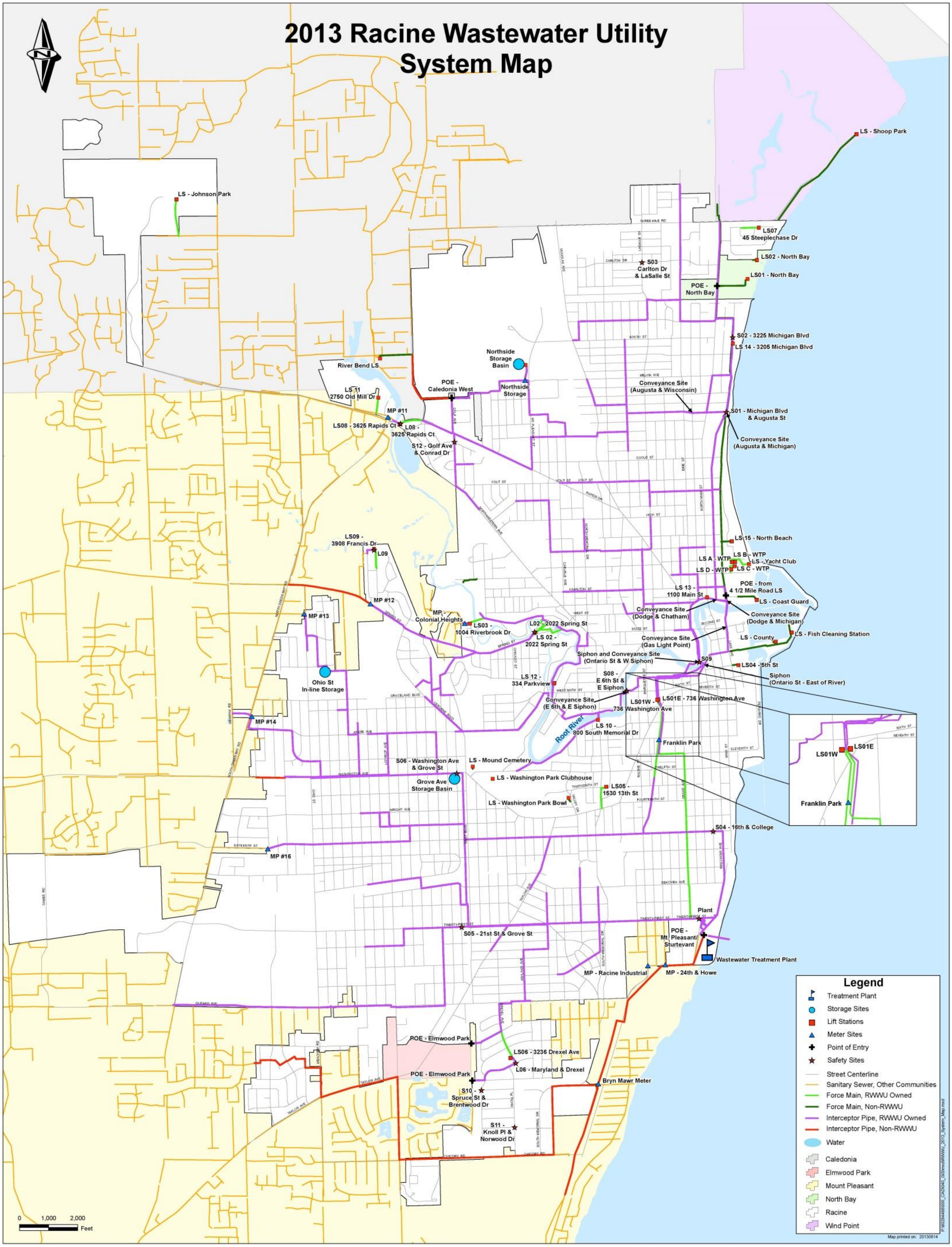
Jena Kohlman, Administrative Clerk. Ms. Kohlman performs highly responsible administrative services, including purchasing, data compilation, report preparation, dispatch and financial related duties. She has been employed with the City of Racine since 2011 and joined the Utility in 2017.

EMPLOYEES & CLASSIFICATIONS 2021

Last Name	First Name	Classification	DOH	# of Yrs Hire Date as of 12/31/21
Bartel	Bruce	Maintenance Supervisor (Retired Jan. 2022)	3/20/2006	15.8
Bohl	Douglas	Mechanic	3/17/2008	13.8
Dennerlein	Andrew	Laboratory Director	5/29/2018	3.6
Emmerling	Ed	Electrician	8/30/2011	10.4
Freitag	Adam	Operator	12/30/2020	1.0
Frievalt	Nicole	Laboratory Technician	7/26/2021	0.5
Gable	Mark	Garage Mechanic	2/25/2008	13.9
Gonzalez	Travis	Operator	8/17/2015	6.4
Gultekin	Mustafa	Bldg & Gr Maint	4/26/2021	0.1
Hansen	Glenn	Mechanic	2/25/2002	19.9
Henkel	Barry	Operator	4/15/1991	30.8
Higgs	Charles	Sample Crew	3/22/2021	0.8
Johnson	Robert	Operator	3/28/2016	5.8
Kaminski	Amanda	Field Director	2/7/2011	10.9
Kamps	Eric	Laboratory Technician	4/29/2013	8.7
Klimek	Mary-Frances	Superintendent	3/26/1990	31.8
Knuth	Mark	Mechanic / Maintenance Supervisor as of 11/29/21	4/16/2012	9.7
Knutson	Joshua	Field in Training	9/13/2021	0.3
Koch	Gina	Lab Technician	7/6/2021	0.5
Koenig	Russell	Sampling	7/12/2021	0.5
Kohlman	Jena	Administrative Clerk	12/29/2011	10.0
Lokken	Seth	Operator	7/19/2021	0.5
Marino	Anthony	Mechanic	9/20/2021	0.3
Mason	Daniel	Operation Supervisor	11/21/2011	10.1
Moten	David	Sewer Maintenance	4/8/2009	12.8
Parmer	Jason	Operator	9/20/2021	0.3
Patterson	Jacob	Operator	7/6/2021	0.5
Pfann	Natalie	Laboratory Technician	7/12/2021	0.5
Pfeiffer	Raymond	Bldg & Gr Maint	8/2/2021	0.4
Raffelson	Wayne	Mechanic	5/3/2004	17.7
Ramirez	Erik	Operator	7/26/2021	0.5
Rauch	Jamie	Pretreatment	12/9/2019	2.1
Smith	H. David	Lift Station Mechanic	4/11/2005	16.8
Stephens	Kevin	Mechanic	8/13/2012	9.4
Stephens	Sebastian	Operator	7/11/2005	16.5
Stiles	Steve	CICS Specialist	3/4/2019	2.9
Strommen	Daniel	Lift Station Mechanic	9/13/2021	0.3
Van Swol	Owen	Sewer Maintenance	11/3/2003	18.2

SERVICE AREA

Breakwater Construction
November 30, 1934


2013 Racine Wastewater Utility
System Map
LS - Shoop Park
LS - Johnson Park
LS07
45 Steeplechase Dr
LS02 - North Bay
LS01 - North Bay
S03
Carlton Dr
& LaSalle St
POE -
North Bay
S02 - 3225 Michigan Blvd
LS 14 - 3205 Michigan Blvd
River Bend LS
Northside
Storage
Basin
Northside
Storage
POE -
Caledonia West
LS 11
2750 Old Mill Dr
MP #11
LS08 - 3625 Rapids Ct
L08 -
3625 Rapids Ct
S12 - Golf Ave
& Conrad Dr
Conveyance Site
(Augusta & Wisconsin)
S01 - Michigan Blvd
& Augusta St
Conveyance Site
(Augusta & Michigan)
LS 15 - North Beach
LS09 -
3908 Francis Dr
L09
LS A - WTP
LS B - WTP
LS - Yacht Club
LS D - WTP
LS C - WTP
POE - from
4 1/2 Mile Road LS
LS 13 -
1100 Main St
LS - Coast Guard
MP #12
MP #13
Conveyance Site
(Dodge & Chatham)
Conveyance Site
(Dodge & Michigan)
MP -
Colonial Heights
LS03 -
1004 Riverbrook Dr
L02 - 2022 Spring St
LS 02 -
2022 Spring St
Conveyance Site
(Gas Light Point)
LS - County
LS - Fish Cleaning Station
Siphon and Conveyance Site
(Ontario St & W Siphon)
S09
LS04 - 5th St
Siphon
(Ontario St - East of River)
Ohio St
In-line Storage
LS 12 -
334 Parkview
S08 -
E 6th St &
E Siphon
Conveyance Site
(E 6th & E Siphon)
LS01W -
736 Washington Ave
LS01E - 736 Washington Ave
MP #14
Root River
LS 10 -
800 South Memorial Dr
Franklin Park
LS01W
LS01E
Franklin Park
S06 - Washington Ave
& Grove St
LS - Mound Cemetery
Grove Ave
Storage Basin
LS - Washington Park Clubhouse
LS05 -
1530 13th St
LS - Washington Park Bowl
S04 - 16th & College
MP #16
Plant
POE -
Mt. Pleasant/
Sturtevant
S05 - 21st St & Grove St
Wastewater Treatment Plant
MP - Racine Industrial
MP - 24th & Howe
POE - Elmwood Park
LS06 - 3236 Drexel Ave
L06 - Maryland & Drexel
POE - Elmwood Park
S10 -
Spruce St &
Brentwood Dr
Bryn Mawr Meter
S11 -
Knoll Pl &
Norwood Dr
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
0 1,000 2,000
Feet
Map printed on: 20130614

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

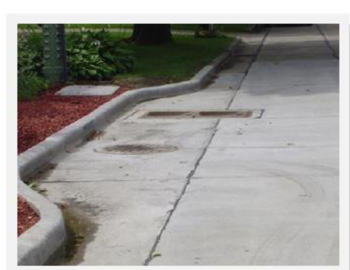
Lift Station #9
3908 Francis Drive

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



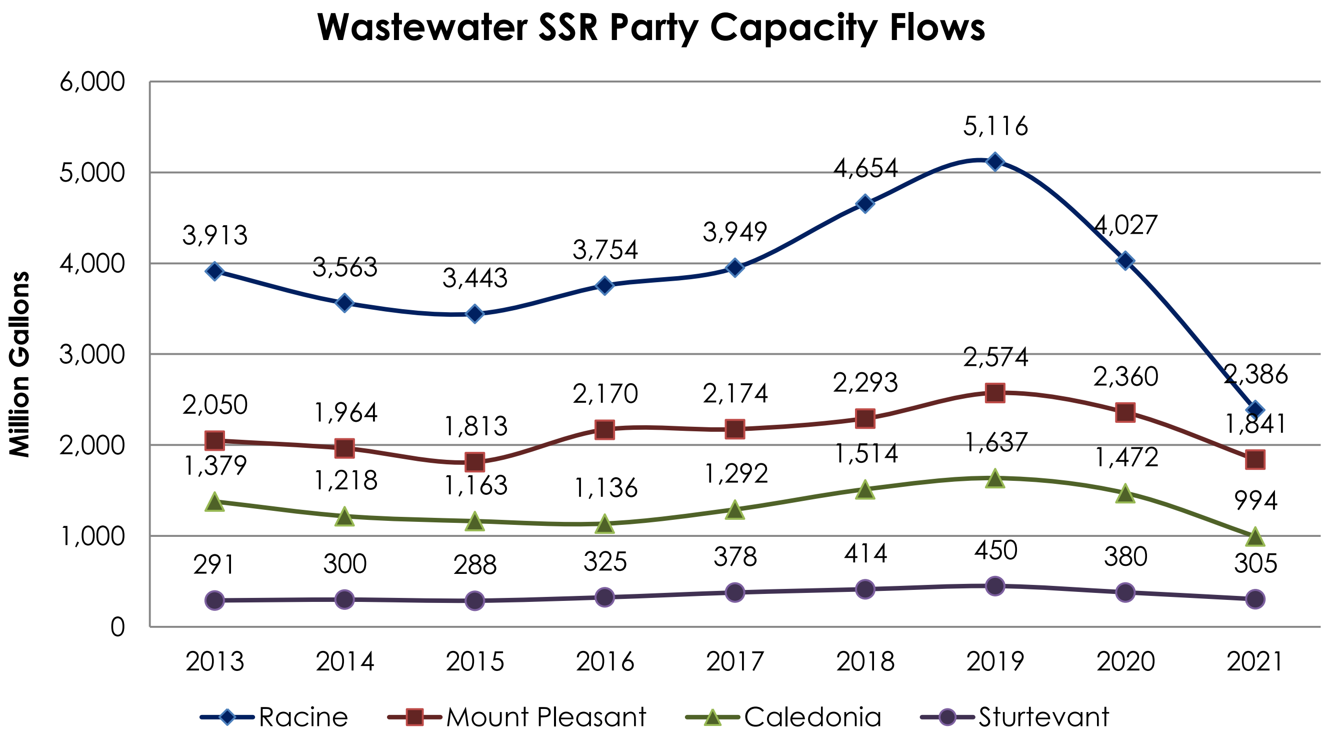
Lift Station #14
3205 Michigan Boulevard

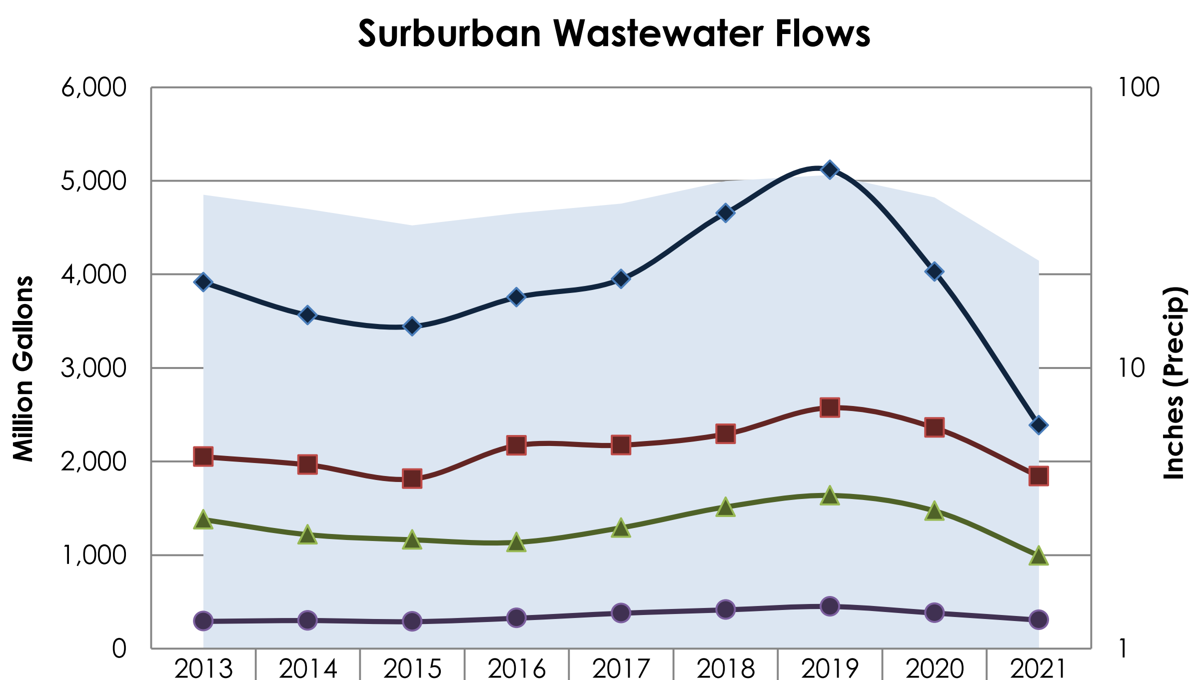
SERVICE AREA FLOW CONTRIBUTIONS

2021	MG	MGD	% Plant Flow
TREATMENT PLANT	**5,544.63**	**15.19**	**484.85**
LIFT STATION # 1	3,561.90	9.89	64.24
LIFT STATION # 2	153.89	0.42	2.78
LIFT STATION # 3	8.07	0.02	0.15
LIFT STATION # 4	1.91	0.01	0.03
LIFT STATION # 5	21.91	0.06	0.40
LIFT STATION # 6	53.84	0.15	0.97
LIFT STATION # 7	9.43	0.03	0.17
LIFT STATION # 8	108.50	0.30	1.96
LIFT STATION # 9	6.70	0.02	0.12
LIFT STATION # 10	52.57	0.14	0.95
LIFT STATION # 11	3.59	0.01	0.06
LIFT STATION # 12	2.29	0.01	0.04
LIFT STATION # 13	1.29	0.00	0.02
LIFT STATION # 14	3.35	0.01	0.06
MOUNT PLEASANT INTERCEPTOR:			
INDUSTRIAL	145.61	0.40	2.63
RESIDENTIAL	1,444.65	3.96	26.05
OTHER INTERCEPTOR FLOW:			
RACINE	189.25	0.52	3.41
STURTEVANT	187.59	0.51	3.38
CALEDONIA (HWY V)	11.88	0.03	0.21
TOTAL INTER.	1,978.97	5.42	35.69
NON-INTERCEPTOR:			
MOUNT PLEASANT	348.62	0.96	6.29
RACINE	21.75	0.06	0.39
TOTAL NON-INTER.	370.37	1.01	6.68
CALEDONIA	968.14	2.65	17.46
NORTH BAY	5.33	0.01	0.10
ELMWOOD PARK	12.24	0.03	0.22

% APPROX.

2021	1st	2nd	3rd	4th	MG TOTAL
MOUNT PLEASANT INTERCEPTOR FLOW					
INDUSTRIAL	38.018	42.530	34.816	30.242	145.607
RESIDENTIAL	455.334	354.926	294.483	339.903	1,444.646
OTHER INTERCEPTOR FLOW					
RACINE	57.392	46.494	41.750	43.617	189.253
STURTEVANT	69.680	44.040	32.650	41.220	187.590
CALEDONIA (HWY V)	3.248	2.973	2.828	2.828	11.877
NON-INTERCEPTOR FLOW					
MT. PLEASANT	112.899	86.537	70.679	78.504	348.620
RACINE	6.695	5.245	4.805	5.003	21.748
CALEDONIA	337.418	249.094	190.816	190.816	968.144
NORTH BAY	1.313	1.447	1.328	1.237	5.325
ELMWOOD PARK	3.171	2.996	2.993	3.080	12.239
TOTAL (Mgal)	**1,085.166**	**836.284**	**677.148**	**736.451**	**3,335.019**





	2013	2014	2015	2016	2017	2018	2019	2020	2021
Precipitation	41.4	36.8	32.2	35.6	38.5	46.3	48.7	40.5	24.1
Racine	3,913	3,563	3,443	3,754	3,949	4,654	5,116	4,027	2,386
Mount Pleasant	2,050	1,964	1,813	2,170	2,174	2,293	2,574	2,360	1,841
Caledonia	1,379	1,218	1,163	1,136	1,292	1,514	1,637	1,472	994
Sturtevant	291	300	288	325	378	414	450	380	305

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

1939 **1968** **1993** **2005**

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 Kinze-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 puchased 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

Top Left: Breakwater Construction June 1, 1935

Bottom Right: Breakwater Completed June 15, 1935

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, 2022 for 2021 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 2022 is for calendar year 2021.*

CMAR Section Summaries and Grades for 2021:

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 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 insure 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

Excavating Plant Site
March 10, 1937

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.

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SANITARY SEWER OVERFLOWS: The Utility did not experience any overflows in 2021.

BASEMENT BACKUPS

Number of Backups by Type (Owner or Utility responsibility)

The Utility responded to 94 calls in 2021. Four of the calls were due to sewer main plugs, none were due to possible nearby surcharged sewer mains, and 90 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.

<u>MAINTENANCE</u>- Performed by the Racine Wastewater Utility

Sanitary Sewers Cleaning Quantity

697,118.0 linear feet (51.84 % of the system)

Root Cutting Quantity

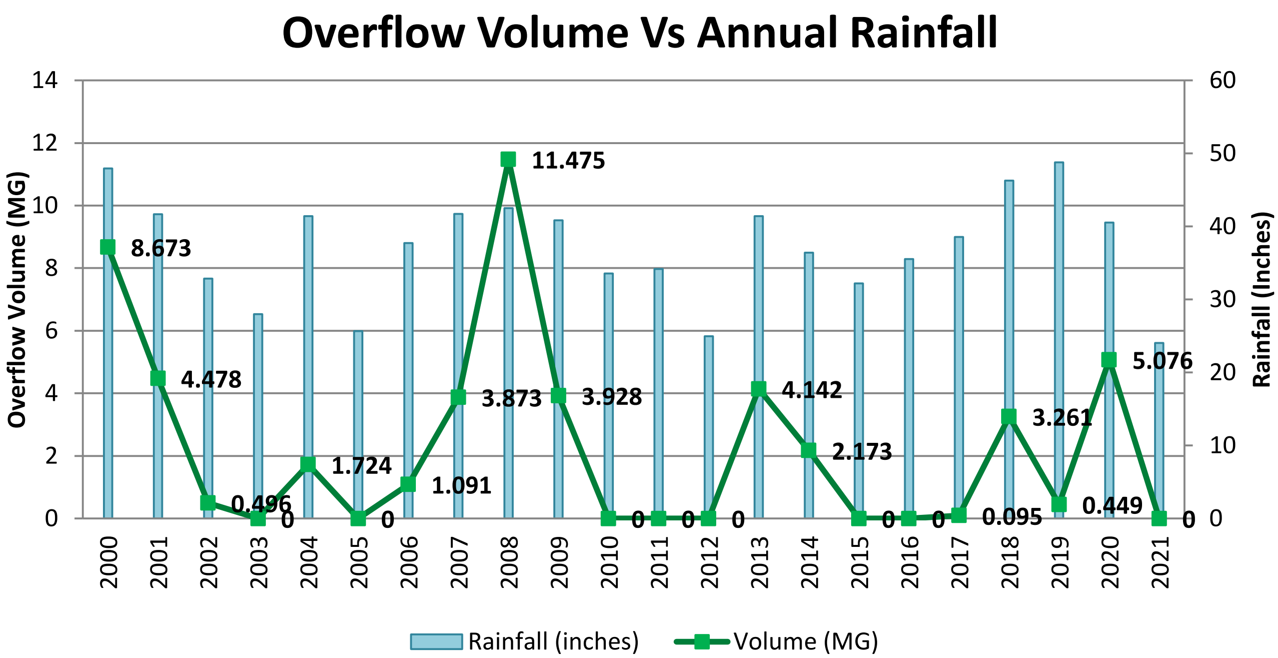
94,756.0 linear feet (7.05 % of the system)

Manhole Inspections:

1,309 (25.38% 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**



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 General Manager, Chief of Operations, 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.

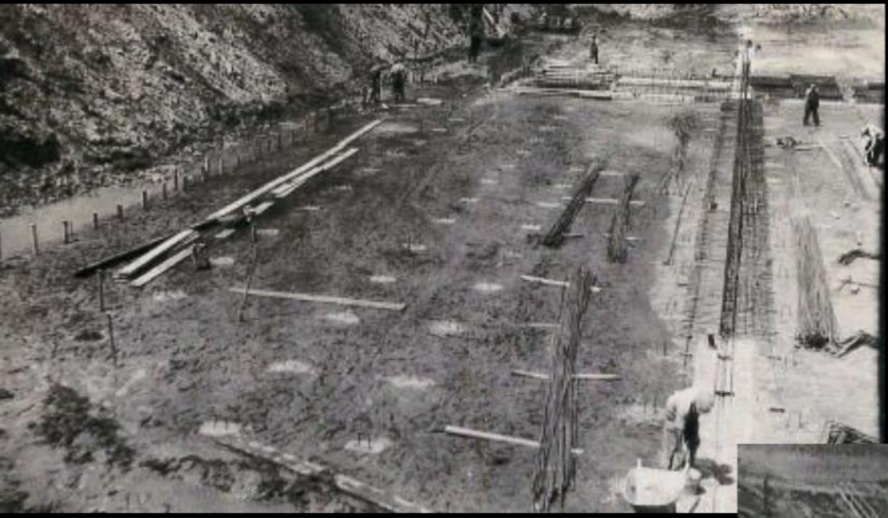
SSO REPORTING

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 Superintendent, Chief of Operations, and General Manager. 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



Clarifier Construction June 17-23, 1937

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.

<u>Flow Equalization Basins:</u> 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 pump is 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.

<u>Flow</u>: 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.

<u>Mechanically Cleaned Bar Screens and Washing Presses:</u> 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 in 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.

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

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

<u>Primary Influent Channel Blowers:</u> 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 10.5 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 10.5 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 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 dewater waste activated sludge (WAS) from the secondary activated sludge treatment process. Polymer is added to the WAS to help the dewatering 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 gmp 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.

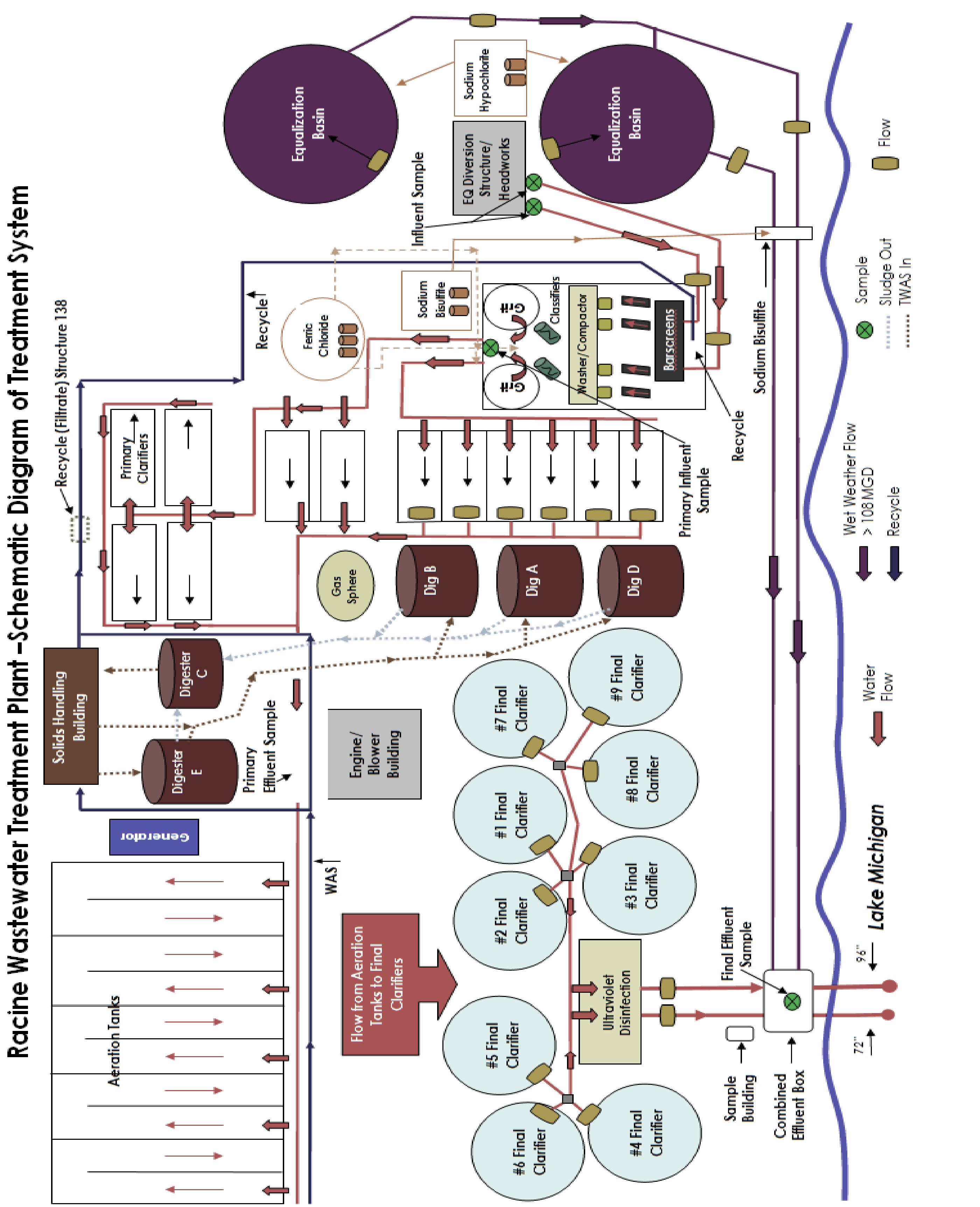
Five Tank Drainage Pumps: 700 gmp at 30 ft. TDH

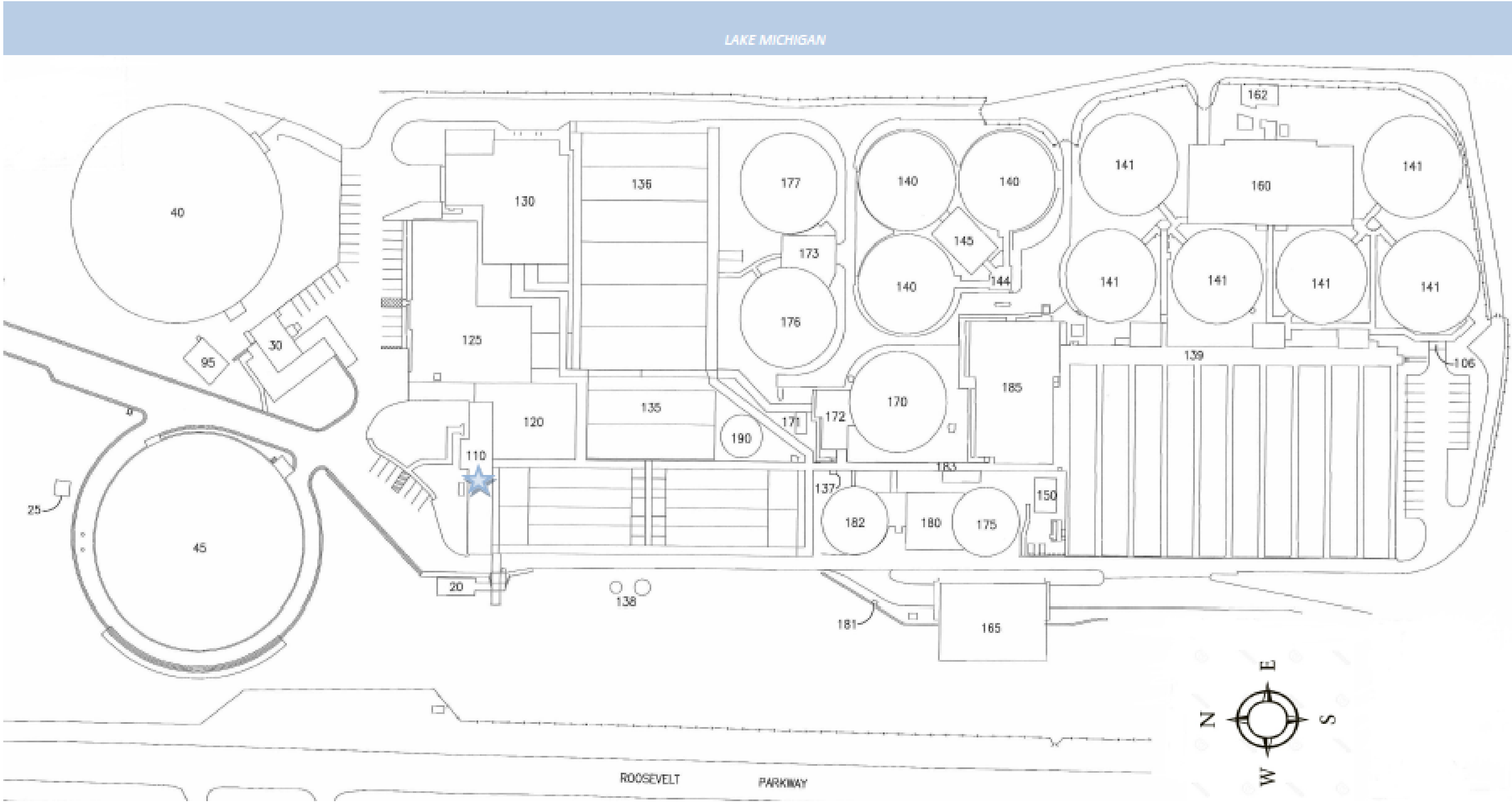
Pipe Gallery: Connection between primary plant and secondary plant. All necessary systems run through the pipe gallery.

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 unites 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"
183—TUNNELS
185—MAIN EQUIPMENT BUILDING
190—GAS STORAGE SPHERE
250—GENERATOR BUILDING (OFF SITE)

Bio Management Program

- The Utility generated over 11.1 wet Ktons of biosolids in 2021
- Solids content of the biosolids averaged 21.5%
- Biosolids land applied to 499 acres

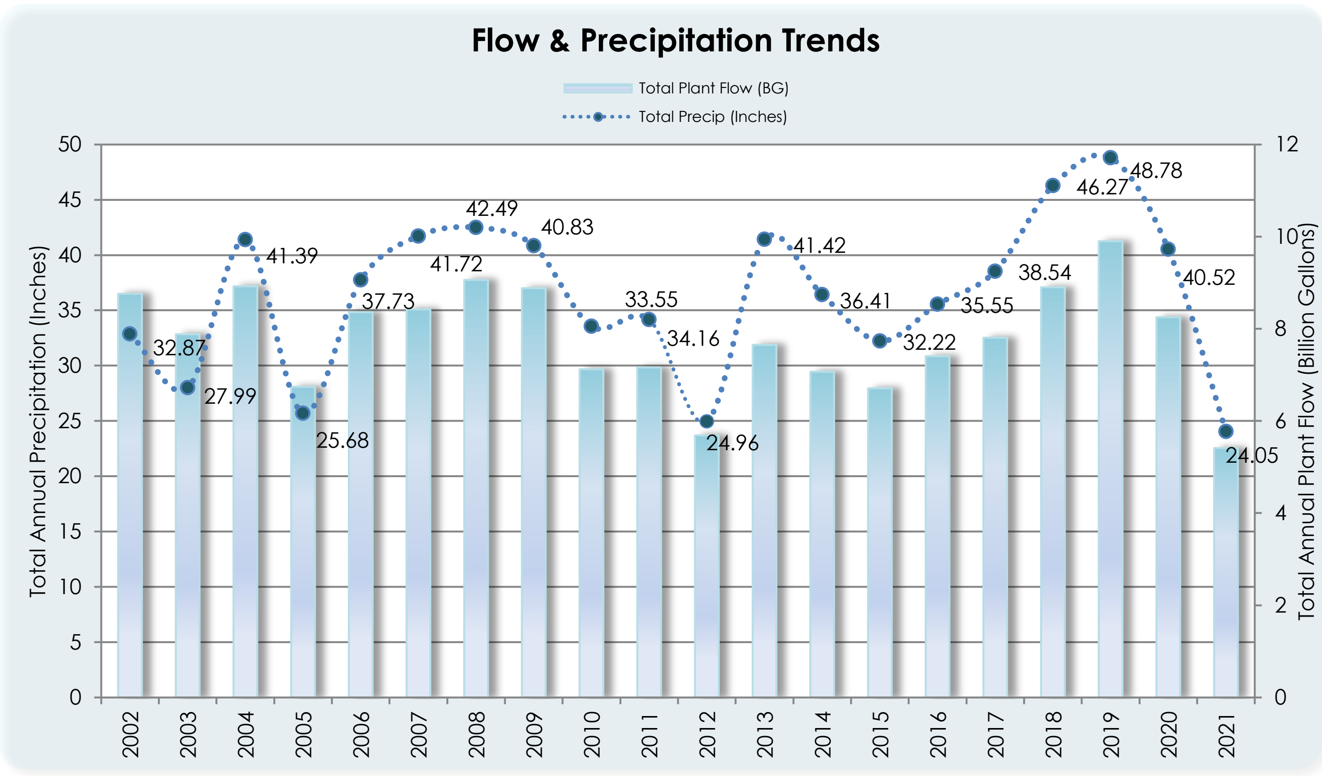
WASTEWATER OPERATIONS

Construction of Clarifier Building
September 7, 1937

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 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.

Flow & Precipitation 2021

	JANUARY			FEBRUARY			MARCH			APRIL			MAY			JUNE		
DATE	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	T	13.14	16.10	0.15	15.43	17.30	0.00	38.51	50.00	0.00	19.06	21.10	0.00	13.68	16.80	0.00	12.73	14.60
2	0.60	13.87	17.60	0.50	14.84	17.20	0.00	34.91	39.10	0.00	17.24	20.50	0.00	13.75	16.70	0.00	13.77	16.30
3	0.30	14.03	17.90	0.00	15.43	17.10	0.00	32.73	42.20	0.00	17.08	20.90	0.00	14.11	21.60	0.00	12.48	14.80
4	0.00	14.23	17.10	0.00	14.70	16.80	0.00	36.44	40.80	0.00	16.80	20.80	0.48	18.95	24.90	0.00	12.12	14.40
5	0.00	14.15	16.40	0.22	14.90	16.80	0.00	33.70	36.70	0.00	16.84	20.50	0.00	15.39	17.30	0.00	12.42	14.90
6	0.00	14.36	16.10	0.00	14.39	17.90	0.00	31.33	36.80	T	16.59	19.80	0.27	20.81	41.20	0.00	12.00	15.20
7	0.00	14.76	16.20	T	13.80	18.00	0.00	32.81	36.70	0.00	16.08	19.40	0.20	18.55	22.00	0.00	12.54	16.30
8	0.50	13.64	17.00	0.00	13.49	15.90	0.00	35.86	51.90	0.08	19.03	25.20	0.00	16.80	20.10	0.00	12.25	14.80
9	0.00	14.70	18.00	0.01	14.04	15.90	0.00	44.55	49.20	0.46	19.97	25.40	0.00	15.74	19.30	0.00	12.97	15.00
10	0.00	13.70	17.60	0.00	13.70	15.70	0.00	43.53	48.50	0.00	22.53	46.30	0.02	15.37	18.10	0.00	13.78	16.50
11	0.00	14.32	16.90	0.00	13.69	15.30	0.02	40.33	46.20	0.73	30.32	39.60	0.00	15.39	17.30	0.00	12.55	14.90
12	0.00	13.41	16.40	0.11	12.96	15.70	0.00	34.37	39.50	T	25.50	28.80	0.00	14.60	17.80	0.00	12.57	15.30
13	0.00	14.08	16.40	0.03	13.33	16.70	0.00	29.35	33.70	0.00	21.28	24.70	0.00	14.21	16.50	0.23	12.23	15.30
14	0.00	14.82	21.40	0.04	12.97	16.50	0.00	25.13	31.00	0.00	20.92	23.20	0.00	15.29	16.40	0.00	12.51	14.50
15	0.22	22.30	24.30	0.00	13.31	15.50	0.00	24.71	26.80	T	20.29	21.80	0.00	13.76	16.90	0.00	12.67	14.80
16	0.09	21.22	25.10	0.38	12.76	15.30	0.10	25.49	29.30	0.00	18.56	21.20	0.05	14.29	17.00	0.00	11.63	13.90
17	0.00	21.45	24.20	0.04	12.59	15.50	0.00	24.38	27.70	0.00	18.16	21.00	0.00	13.83	16.00	0.00	12.34	14.30
18	0.00	20.42	22.80	0.00	13.65	15.80	0.18	28.58	38.40	T	18.03	21.10	0.00	13.86	15.80	0.45	13.62	15.80
19	0.00	18.91	21.50	0.00	12.77	15.40	0.00	26.44	30.70	0.00	17.70	21.40	0.12	14.43	19.10	0.10	13.89	17.70
20	0.03	18.72	20.90	0.00	13.03	17.10	0.00	23.50	28.70	0.00	17.04	21.30	0.00	13.71	15.60	0.00	12.18	15.70
21	0.00	17.81	20.20	0.00	12.72	16.30	0.00	22.07	26.30	0.00	16.81	19.30	0.00	13.78	15.30	0.19	13.82	20.10
22	0.00	16.76	19.50	0.05	13.59	15.70	0.00	21.23	25.10	0.07	16.49	19.10	0.00	13.45	16.10	0.00	13.11	15.20
23	0.00	16.31	20.20	0.00	17.38	25.70	0.00	22.02	33.30	0.00	15.83	18.00	0.00	13.27	16.90	0.02	13.51	14.70
24	0.05	15.89	20.30	0.00	23.30	28.90	0.34	26.35	37.10	0.00	15.53	18.40	0.12	13.66	15.40	0.00	12.71	16.70
25	T	15.82	18.80	0.00	23.58	26.80	0.01	23.25	25.50	0.02	15.32	18.70	0.00	12.97	15.10	0.26	12.82	16.20
26	0.32	15.43	17.20	0.00	23.91	28.20	0.08	22.32	25.30	0.00	15.02	18.10	0.21	14.04	15.90	0.35	17.60	22.00
27	0.06	14.55	17.10	0.00	27.94	39.70	0.01	20.49	23.90	0.00	15.59	17.60	0.00	13.32	15.80	0.06	14.69	17.30
28	0.00	14.95	17.10	T	37.64	50.50	0.01	20.48	23.50	0.00	14.62	17.20	0.32	14.77	16.80	0.02	14.80	17.40
29	0.00	15.09	16.90				0.01	19.73	23.60	0.03	14.40	17.20	0.02	13.50	16.20	0.04	14.72	18.70
30	0.00	14.80	17.60				0.00	19.28	22.70	0.08	14.26	15.90	0.00	12.45	15.40	0.30	15.19	17.70
31	0.51	14.62	17.60				0.00	19.03	21.80				0.00	12.48	16.10			

FLOW & PRECIPITATION 2021 – CONTINUED

	JULY			AUGUST			SEPTEMBER			OCTOBER			NOVEMBER			DECEMBER		
DATE	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	0.12	18.78	21.40	0.00	10.49	13.30	0.00	11.45	13.50	0.00	9.42	11.10	0.00	14.79	18.00	0.04	11.38	13.10
2	0.00	14.37	16.20	0.00	10.74	12.60	0.00	11.14	13.30	0.00	9.84	13.90	0.00	14.59	17.70	T	10.65	12.80
3	0.00	13.35	16.30	0.00	10.55	12.50	0.00	10.64	12.90	0.09	10.06	13.50	0.00	13.00	15.30	0.18	11.31	12.60
4	0.00	13.40	16.80	0.00	10.43	12.80	0.03	10.53	13.70	0.14	11.77	13.70	0.00	13.49	15.30	0.00	11.17	14.20
5	0.00	13.55	15.90	0.00	10.07	12.30	0.00	10.09	12.90	0.00	11.20	12.60	0.00	12.14	14.70	0.00	11.32	15.50
6	0.00	12.91	15.40	0.25	11.87	13.70	0.06	10.54	13.80	0.00	7.77	11.40	0.00	12.83	15.80	0.15	11.63	14.10
7	0.00	14.00	16.20	0.44	14.61	22.40	0.00	11.10	13.10	0.63	14.09	20.60	0.00	12.96	16.00	0.00	10.88	13.40
8	0.21	12.76	15.30	0.22	13.22	15.70	0.12	11.73	16.60	0.57	12.67	14.60	0.00	12.64	15.20	0.00	11.40	13.00
9	0.00	12.63	14.10	0.00	19.78	42.10	0.00	10.89	13.10	0.02	11.16	13.90	0.00	12.61	14.90	0.00	10.60	15.50
10	0.00	12.03	15.30	0.94	16.64	21.00	0.00	10.16	12.50	0.00	10.96	14.20	0.00	12.21	14.00	0.00	14.71	24.80
11	0.03	11.82	14.60	0.45	20.07	24.90	0.00	10.86	13.50	0.06	12.35	21.90	T	13.42	18.70	1.40	22.94	51.80
12	0.00	12.12	13.80	0.34	19.33	24.70	0.00	9.87	13.90	0.67	17.64	22.60	0.00	12.93	15.10	0.00	17.47	21.00
13	0.40	13.36	16.90	T	15.85	18.50	0.00	11.11	12.80	0.00	13.21	15.90	0.34	12.64	15.60	0.00	16.94	19.10
14	0.21	13.07	16.50	0.00	13.42	17.60	0.09	10.43	12.70	0.06	12.13	14.50	T	12.62	16.20	0.00	14.53	17.40
15	0.39	14.63	16.80	0.00	13.74	16.10	0.00	9.61	12.10	0.00	11.65	13.10	0.03	12.44	14.80	T	14.75	16.60
16	0.07	13.35	15.30	0.00	12.89	15.90	0.00	10.36	11.30	0.00	10.32	13.40	0.00	12.20	14.20	0.00	14.23	15.80
17	0.00	12.51	15.30	0.00	14.78	16.20	0.00	9.27	11.60	0.00	12.74	15.10	0.00	11.81	13.60	0.00	13.04	15.80
18	0.00	11.95	15.20	0.00	13.01	15.20	0.00	10.10	12.60	0.00	10.00	15.80	0.00	11.87	14.10	T	13.26	16.50
19	0.00	12.57	14.40	0.00	12.55	15.90	0.00	9.25	13.50	0.00	12.00	14.90	0.00	11.22	13.50	0.00	12.92	15.30
20	0.00	12.05	14.40	0.00	12.77	17.00	0.00	10.99	14.60	0.00	11.00	13.40	0.00	11.24	14.50	0.00	12.91	16.50
21	0.00	12.30	14.40	0.00	12.26	15.30	0.28	10.33	12.80	0.00	10.68	12.40	0.00	11.52	14.20	0.00	12.53	15.00
22	0.00	10.76	13.20	0.17	11.49	14.40	0.26	11.86	12.40	0.02	10.51	11.80	0.00	11.48	13.50	0.00	12.75	14.00
23	0.00	11.69	14.60	0.00	12.49	14.50	0.00	10.23	12.30	0.00	10.36	12.40	0.00	11.73	13.10	0.00	12.25	14.30
24	0.00	10.89	13.90	0.00	13.03	20.30	0.00	9.81	11.70	0.00	11.23	21.20	0.00	10.95	14.00	0.00	11.83	15.60
25	T	10.95	13.40	0.63	15.34	18.50	0.15	9.95	18.00	1.60	27.43	40.90	0.00	11.85	15.10	0.04	11.81	14.40
26	0.00	10.74	13.10	0.00	13.11	14.80	0.00	10.06	13.10	0.04	18.65	22.70	0.00	10.77	13.40	0.00	11.43	14.70
27	T	11.20	12.70	0.00	12.56	14.70	0.00	9.96	12.00	0.00	14.80	17.80	0.00	10.73	14.30	0.43	15.85	19.50
28	0.00	10.94	12.90	0.00	12.27	15.30	0.00	9.43	11.60	0.00		16.40	0.06	11.23	13.90	0.00	16.23	23.20
29	0.49	12.89	14.30	0.01	11.99	15.40	0.00	9.81	13.70	0.35		28.70	0.00	10.81	13.30	0.27		22.30
30	0.00	10.97	12.90	0.00	12.02	14.90	0.00	9.74	12.20	0.23		30.20	0.00	10.79	13.20	0.00		18.60
31	0.00	10.47	13.90	0.00	12.07	13.90				0.00		20.50				0.00		18.60
TOTAL	1.92	389.01		3.45	415.44		0.99	311.30		4.48	335.64		0.43	365.51		2.51	372.72	

Total Plant Flow (MG) 5413.94

AVG	0.07	12.55	15.01	0.12	13.40	17.17	0.03	10.38	13.13	0.14	12.43	17.26	0.02	12.18	14.84	0.09	13.31	17.58
MAX	0.49	18.78	21.40	0.94	20.07	42.10	0.28	11.86	18.00	1.60	27.43	40.90	0.34	14.79	18.70	1.40	22.94	51.80
MIN	0.00	10.47	12.70	0.00	10.07	12.30	0.00	9.25	11.30	0.00	7.77	11.10	0.00	10.73	13.10	0.00	10.60	12.60

Daily Flow = MG (Million Gallons)
Peak Flow = MGD (Million Gallons per Day)

Precipitation = Inches
Precipitation Record = 8AM to 8AM

Total Precipitation (Inches) 24.05
Average Daily Flow (MG) 14.83

BOD – TSS - Phosphorus

	BOD					TOTAL SUSPENDED SOLIDS					PHOSPHORUS					FLOW		2020
	RAW	PRI IN	PRI EFF	FIN	% R	RAW	PRI IN	PRI EFF	FIN	% R	RAW	PRI IN	PRI EFF	FIN	% R	MGD	Total MG	MGD
January	**148**	**135**	**83**	**10**	**93%**	**136**	**146**	**44**	**6**	**96%**	**3.4**	**3.7**	**2.2**	**0.76**	**78%**	15.88	492.26	26.47
February	**152**	**146**	**82**	**11**	**93%**	**140**	**178**	**51**	**5**	**96%**	**3.4**	**3.6**	**2.2**	**0.72**	**79%**	16.28	455.84	21.75
March	**86**	**86**	**52**	**10**	**88%**	**83**	**107**	**38**	**4**	**95%**	**2.0**	**2.2**	**1.6**	**0.63**	**69%**	28.48	882.90	28.01
April	**124**	**132**	**67**	**16**	**87%**	**123**	**171**	**46**	**9**	**93%**	**2.9**	**3.4**	**2.0**	**0.74**	**74%**	18.10	542.89	26.87
May	**142**	**153**	**74**	**11**	**92%**	**135**	**190**	**57**	**9**	**93%**	**3.7**	**3.9**	**2.1**	**0.77**	**79%**	14.65	454.21	40.45
June	**154**	**141**	**84**	**12**	**92%**	**135**	**189**	**57**	**6**	**96%**	**4.0**	**4.1**	**2.1**	**0.71**	**82%**	13.21	396.22	19.00
July	**162**	**155**	**91**	**10**	**94%**	**148**	**209**	**63**	**5**	**97%**	**4.2**	**4.2**	**2.4**	**0.72**	**83%**	12.55	389.01	22.93
August	**142**	**153**	**90**	**13**	**91%**	**141**	**207**	**65**	**8**	**94%**	**4.1**	**4.3**	**2.6**	**0.75**	**82%**	13.40	415.37	21.45
September	**172**	**185**	**101**	**10**	**94%**	**159**	**235**	**63**	**11**	**93%**	**4.6**	**4.7**	**2.6**	**0.82**	**82%**	10.38	311.30	15.27
October	**147**	**191**	**87**	**10**	**93%**	**144**	**320**	**59**	**6**	**96%**	**3.8**	**4.9**	**2.4**	**0.68**	**82%**	13.24	410.37	14.96
November	**158**	**191**	**88**	**9**	**94%**	**139**	**337**	**54**	**5**	**96%**	**4.3**	**4.8**	**2.5**	**0.71**	**83%**	12.18	365.51	14.89
December	**151**	**150**	**87**	**6**	**96%**	**125**	**184**	**47**	**4**	**97%**	**4.0**	**4.4**	**2.4**	**0.74**	**82%**	13.83	428.75	18.16
AVG	**145**	**152**	**82**	**11**	**92%**	**134**	**206**	**54**	**7**	**95%**	**3.7**	**4.0**	**2.3**	**0.7**	**80%**	**15.19**	**5544.63**	**22.56**
2020	115	124	67	10	91	103	137	41	5	95	2.8	3.1	2.0	0.7	73	22.56		
2019	93	109	54	10	89	88	123	37	7	92	2.2	2.5	1.7	0.7	66	26.91		
2018	114	142	66	11	91	107	160	43	6	95	3	3	2	1	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

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

2019	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	644.32	20.78	103	17850	93	16117	2.4	416
February	979.11	34.97	78	22749	73	21290	1.7	496
March	978.64	31.57	80	21064	74	19484	1.9	500
April	751.91	25.06	93	19437	88	18392	2.2	460
May	1179.94	38.06	62	19680	66	20950	1.5	476
June	773.31	25.78	88	18920	86	18490	2.0	430
July	591.95	19.10	107	17044	105	16726	2.6	414
August	521.08	16.81	140	19627	133	18646	3.2	449
September	807.61	26.92	94	21104	88	19757	2.3	516
October	1140.29	36.78	74	22699	69	21165	1.7	521
November	758.03	25.27	83	17492	79	16649	2.1	443
December	695.09	22.42	117	21877	105	19633	2.8	524
Total	9821.28			7,280,742		6,909,205		171,651
AVG/Day	26.91		93	19,962	88	18,942	2.2	470

Summary of Sampling of POTW Influent and Effluent Waterstreams

Date of Sample	Parameters (µg/L - micrograms/liter)																							
	Arsenic (T)		Cadmium (T)		Chromium (T)		Copper (T)		Lead (T)		Molybdenum (T)		Nickel (T)		Selenium (T)		Silver (T)		Zinc (T)		Mercury (T)		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
01/13/21	< 30	< 30	< 2	< 2	7	< 2	50	< 10	<10	<10	<20	<20	10	10	< 30	< 30	< 5	<5	100	< 40	0.015	0.00071		
02/02/21	< 30	< 30	< 2	< 2	5	< 2	40	< 10	<10	<10	<20	<20	10	<10	< 30	< 30	< 5	<5	90	< 40	0.011	0.00073		
03/03/21	< 30	< 30	< 2	< 2	< 2	< 2	20	< 10	< 10	< 10	< 20	< 20	<10	<10	< 30	< 30	< 5	< 5	60	40	0.0075	0.0011		
04/06/21	< 30	< 30	< 2	< 2	4	< 2	50	< 10	< 10	< 10	20	20	<10	<10	< 30	< 30	< 5	< 5	100	< 40	0.013	0.0014		
05/05/21	<30	< 30	< 2	< 2	< 2	< 2	30	< 10	< 10	< 10	< 20	< 20	<10	<10	< 30	30	< 5	< 5	70	< 40	0.032	0.0011		
06/08/21	< 30	< 30	< 2	< 2	2	< 2	40	< 10	< 10	< 10	< 20	< 20	<10	<10	< 30	< 30	< 5	< 5	100	< 40	0.054	0.0025		
07/06/21	< 30	< 30	< 2	< 2	2	< 2	50	< 10	< 10	< 10	< 20	< 20	<10	<10	< 30	< 30	< 5	< 5	130	< 40	0.020	0.00092		
08/03/21	< 8.3	< 8.3	< 1.3	< 1.3	4.8	6.5	87.1	4.7	7.0	<5.9	8.2	6.3	25.5	18.8	<12.2	<12.2	< 3.2	< 3.2	181	14.5	0.025	0.00091		
09/08/21	< 30	< 30	< 2	< 2	3	2	50	20	< 10	< 10	< 20	< 20	10	<10	< 30	< 30	< 5	< 5	110	40	0.011	0.0077[1] 0.0012		
10/05/21	< 30	< 30	< 2	< 2	3	< 2	50	10	< 10	< 10	< 20	< 20	10	10	< 30	< 30	< 5	< 5	80	< 40	0.028	0.0010		
11/03/21	< 0.85	0.95	0.22	< 0.19	4.9	1.1	53	11	< 4.3	<4.3	13	8.4	15	6.6	1.4	< 1.0	< 0.81	< 0.81	82	15	0.032	0.0013	< 6	< 6
12/07/21	< 8.3	< 8.3	< 1.3	< 1.3	2.7	<2.5	61.9	6.0	< 5.9	<5.9	9.6	9.7	15.0	8.3	< 12.2	< 12.2	< 3.2	< 3.2	104	13.6	0.023	0.00098		
Minimum	*< 0.85*	*< 8.3*	*< 1.3*	*< 0.19*	*< 2*	*< 2*	*20*	*< 10*	*< 4.3*	*< 4.3*	*< 20*	*< 20*	*<10*	*< 10*	*< 12.2*	*< 1.0*	*< 0.81*	*< 0.81*	*60*	*< 40*	*0.0075*	*0.00071*	*< 6*	*< 6*
Maximum	*< 30*	*< 30*	*< 2*	*< 2*	*7*	*6.5*	*87.1*	*20*	*< 10*	*< 10*	*20*	*20*	*25.5*	*18.8*	*< 30*	*30*	*< 5*	*< 5*	*181*	*40*	*0.054*	*0.0077*	*< 6*	*< 6*
Average	***< 30***	***< 30***	***< 2***	***< 2***	***3.2***	***0.8***	***48.5***	***4.3***	***< 10***	***< 10***	***4.2***	***3.7***	***8.0***	***4.5***	***< 30***	***2.5***	***< 5***	***< 5***	***100.6***	***10.3***	***0.023***	***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)

March mercury samples collected 3/15/21

April mercury samples collected 4/7/21

[1]Due to rising sludge in final clarifiers, effluent mercury resampled 9/30/21

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

2021	Clarifiers 1-12 % SOL	Clarifiers 1-12 % VS	Post Digestion % SOL	Post Digestion % VS	VOL Reduction %
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 % SOL	Clarifiers 1-12 % VS	Post Digestion % SOL	Post Digestion % VS	VOL Reduction %
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**

2019	Clarifiers 1-12 % SOL	Clarifiers 1-12 % VS	Post Digestion % SOL	Post Digestion % VS	VOL Reduction %
January	4.0	81	2.1	58.8	67
February	4.0	80	2.0	59.2	64
March	4.1	79	2.1	59.7	61
April	4.5	76	2.0	55.0	61
May	4.8	75	2.1	58.9	52
June	4.5	78	2.2	59.1	59
July	4.6	77	2.1	57.2	60
August	4.7	75	2.1	58.2	54
September	4.9	73	2.2	56.6	52
October	4.5	74	2.3	54.8	57
November	4.1	78	2.2	53.9	67
December	4.0	81	2.1	59.9	65
Average	**4.4**	**77**	**2.1**	**58**	**60**

% 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	8	9	8	28	62	0.824	21	13	17	9	60
February	9	10	9	9	28	65	0.757	22	14	19	10	65
March	11	1	11	10	34	67	1.030	28	24	24	13	89
April	12	0	12	12	25	61	0.694	27	0	21	14	62
May	12	0	12	11	23	58	0.657	27	0	22	13	62
June	12	0	12	10	29	63	0.853	30	0	26	12	68
July	10	0	11	11	29	61	0.906	26	0	22	13	61
August	10	0	11	10	33	64	1.065	24	0	25	13	62
September	11	0	12	12	32	67	0.914	26	0	24	15	65
October	11	0	12	11	34	68	1.000	22	0	20	14	56
November	8	9	8	10	27	62	0.771	17	14	15	10	56
December	8	8	9	8	31	64	0.939	17	11	16	8	52
AVG	**10**	**3**	**11**	**10**	**29**	**64**	**0.868**	**24**	**6**	**21**	**12**	**63**

Belt Press Summary

Solids enter the plan, 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.

													Polymer Dose		lb/DT Based	Haul Cost		Landfill
Month	Days	Hours	MG	% SOL	Dry Tons	DT/Day	Dry Tons	Capture	% SOL	Wet Tons	$/DT	POLY $	LBS	LB/D.T.	on Feed	&/W.T.	$	Fee
January	15	429.0	2.228	2.1	195	6.3	194	99.7	21.0	923.88	40	7,781.33	4,446	22.9	22.8	29.54	27,291.42	
February	15	414.3	2.104	2.0	175	6.3	175	99.8	21.0	834.11	41	7,234.54	4,134	23.6	23.6	29.54	24,639.61	
March	20	599.5	3.046	2.2	279	9.0	254	90.9	21.9	1,160.47	44	11,100.26	6,343	25.0	22.7	29.54	34,280.28	
April	17	462.9	2.219	2.1	194	6.5	187	96.0	21.6	863.88 298.86	43	8,033.70	4,591	24.6	23.6	29.88	25,812.73	
May	16	383.9	1.864	2.3	179	5.8	166	93.0	21.3	780.93	42	7,024.23	4,014	24.1	22.5	29.88	23,334.19	
June	17	439.3	2.211	2.3	212	7.1	210	99.2	21.5	978.78	51	10,646.29	5,905	28.1	27.8	29.88	29,245.95	
July	16	417.6	2.060	2.4	206	6.7	182	88.2	21.5	846.05	41	7,485.17	4,221	23.2	20.5	29.94	25,330.74	
August	18	441.4	2.201	2.4	220	7.1	215	97.6	21.6	995.02	28	6,055.97	3,461	16.1	15.7	29.94	29,790.90	
September	17	443.2	2.206	2.3	212	7.1	212	100.0	21.8	970.76	43	8,999.01	4,999	23.6	23.6	29.94	29,064.55	
October	15	392.2	1.991	2.1	174	5.6	174	99.8	22.0	806.84	47	8,225.74	4,471	25.7	25.6	30.00	24,205.20	
November	13	380.8	1.865	2.3	179	6.0	176	98.4	21.7	810.79	44	7,695.05	4,182	23.8	23.4	30.00	24,323.70	
December	15	412.2	1.994	2.0	166	5.4	166	99.8	20.9	806.33	26	4,352.06	2,281	13.7	13.7	30.00	24,189.90	
Total	194	5,216	25.989		2,392.71	78.65	2,311.09			11,076.70		94,633.35	53,047			29.03	$321,509.17	
								Wet Tons/Day		30.35	Polymer lbs/day		145.334					
AVG	16	434.7	2.166	2.2	199.4	6.6	193	96.9	21.5	852.05	41	7,886.11	4,421	22.9	22.1	22.1	$26,792.43	
2020	198	5300	26.493	2.3	2478		2325		21.7	10725	41	95,985	54,849	24	22.3	40.55	$434,944	
2019	192	5,167	26.360	2.1	2,304		2,096		21.3	10,476	41	85,835	50,369	24	21.8	28.80	$301,751	
2018	199	5,687	26.801	2.2	2,405		2,219		20.7	10,995	35	77,218	51,454	23	20.7	29.68	$326,338	
2017	215	5,925	29.184	2.1	2,508		2,172		19.4	11,414	34	73,848	51,284	24	20.4	27.54	$314,384	
2016	204	5,702	28.733	2.1	2,486		2,115		19.6	11,017	35	74,684	51,864	24	20.9	26.02	$286,714	
2015	202	5,541	30.722	2.2	2,816		2,197		20.4	10,801	32	71,199	50,331	23	17.9	27.92	$301,610	
2014	201	5,104	31.258	2.4	3,129		2,358		22.2	10,790	31	73,791	52,708	22	16.9		$332,625	
2013	205	5,161	30.137	2.5	3,089		2,517		23.8	10,609	31	76,169	54,406	22	17.7	45.75	$486,375	
2012	201	5,090	31.529	2.4	3,111		2,592		23.8	11,009	29	75,583	53,988	21	17.4	44.75	$492,671	
2011	231	5,439	34.914	2.1	3,181		2,542		22.6	11,260	27	67,813	51,401	20	16.3	43.75	$492,621	
2010	244	5,514	36.905	2.1	3,256		2,788		23.8	11,737	23	62,617	50,495	18		42.75	$501,768	
2009	251	6,779	37.986	2.4	3,819		3,719		23.9	15,518	26	96,358	78,339	21		41.75	$647,891	
2008	244	6,789	43.595	2.3	4,190		3,684		24.5	14,920	24	86,945	71,642	20		40.75	$607,997	
2007	215	7,277	53.426	2.0	4,393		3,686		25.0	14,795	23	85,176	74,065	20		39.75	$588,112	
2006	248	7,740	55.187	2.1	4,824		3,795		24.3	15,909	24	90,184	78,421	21		38.75	$616,506	

$1.784
Polymer cost/lb

Gravity Belt Thickener Summary

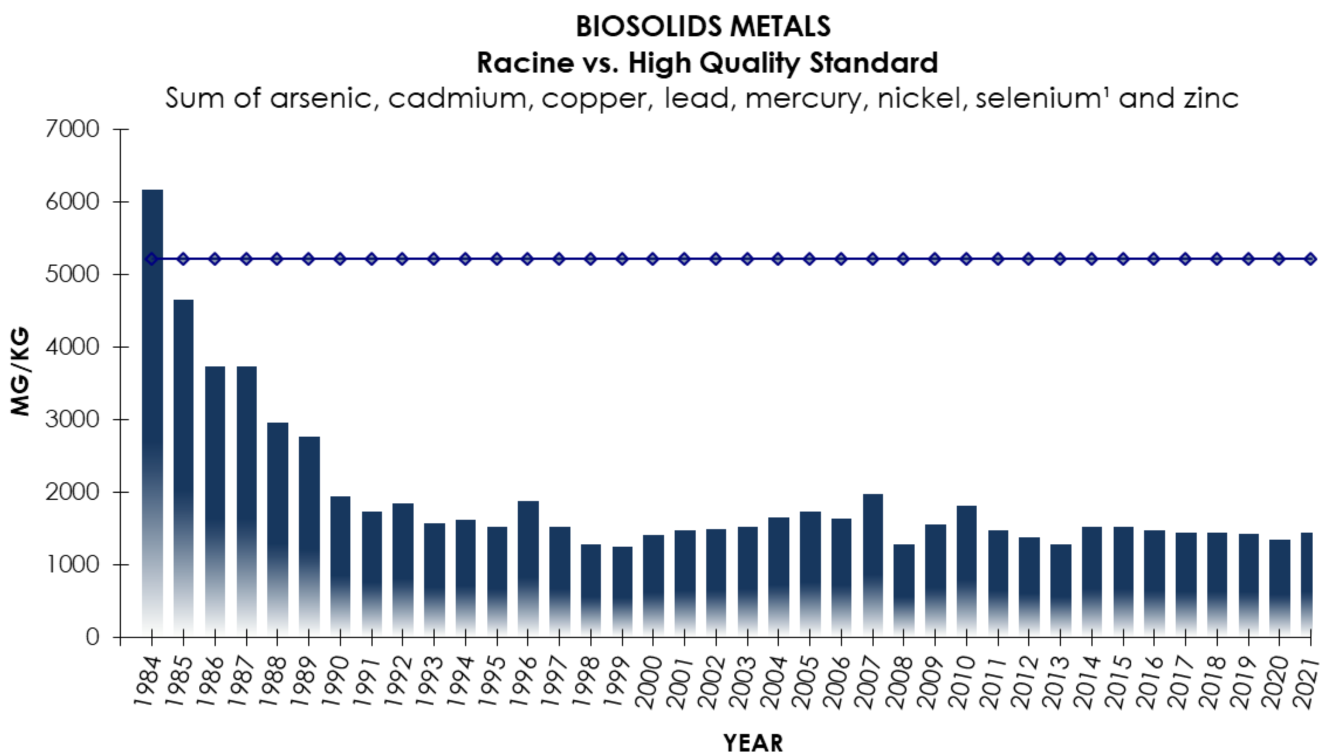
	Days	WAS Feed MG Total	GPD	TWAS MG	TWAS GPD	mg/l WAS (Lab)	Pounds In	Pounds Out	%S TWAS (Lab)	Belt Speed	WAS GPM	TWAS GPM	Total Hours	Inch	Polymer Gal	Pounds	Water Rate	Conc.	Batches	Poly Dosage lbs/tons	Polymer Cost	$ per lb Out
January	31	12.087	0.390	0.8780	0.0283	3085	10031	10157	4.30	15	282	19.67	744.0	10.57	129	1114	5	0.42	198	9	$ 1,929.85	$ 0.19
February	27	9.521	0.340	0.7600	0.0271	3439	9751	10564	4.50	15	266	19.54	600.0	11.44	140	1205	5	0.40	228	12	$ 2,240.86	$ 0.21
March	31	13.275	0.428	1.0530	0.0340	3575	12767	13315	4.70	15	313	23.56	736.0	14.4	176	1513	5	0.40	293	10	$ 2,606.23	$ 0.20
April	27	8.340	0.278	0.6830	0.0228	3190	7395	10760	5.10	15	212	17.57	604.0	7.1	87	752	5	0.40	175	11	$ 1,365.84	$ 0.13
May	30	10.480	0.338	0.6990	0.0225	2968	8368	9716	5.00	15	244	16.18	720.0	8.7	107	917	5	0.40	169	9	$ 1,660.12	$ 0.17
June	30	10.576	0.353	0.8740	0.0291	3150	9261	10448	4.30	15	271	20.24	720.0	12.61	154	1328	5	0.40	297	15	$ 2,399.36	$ 0.23
July	31	9.133	0.295	0.8940	0.0288	2878	7071	10102	4.20	15	211	20.02	744.0	9.6	118	1013	5	0.40	240	16	$ 1,741.34	$ 0.17
August	31	10.794	0.348	1.0230	0.0330	3169	9203	10734	3.90	15	266	22.91	744.0	16.5	202	1736	5	0.40	312	20	$ 2,613.73	$ 0.24
September	30	13.091	0.436	0.9550	0.0318	2528	9200	10354	3.90	15	315	22.10	720.0	22.2	271	2334	5	0.40	377	19	$ 4,206.34	$ 0.41
October	31	13.560	0.437	1.0670	0.0344	2914	10631	10908	3.80	15	313	23.90	736.0	20.9	256	2200	5	0.40	413	17	$ 4,256.37	$ 0.39
November	27	10.109	0.337	0.7400	0.0247	2994	8415	10057	4.40	15	245	19.03	599.8	20.0	160	1379	5	0.40	253	14	$ 2,745.35	$ 0.27
December	29	11.680	0.377	0.8960	0.0289	3287	10327	10822	4.20	15	273	21.45	678.5	21.9	168	1446	5	0.40	315	14	$ 3,097.25	$ 0.29
Sum		132.646		10.522									8346.3	175.9	1968	16937			3270		$ 30,862.64	
Avg		11.054	0.363	0.8768	0.0288	3098	9368	10661	4.36	15	268	20.51	695.5	14.7	164	1411		0.40	273	14		$ 0.24

BIOSOLID METAL ANALYSIS

Metals in Biosolids 2021

Sample Date	% Solids	As mg/kg dwb	Cd mg/kg dwb	Cu mg/kg dwb	Pb mg/kg dwb	Hg mg/kg dwb	Mo mg/kg dwb	Ni mg/kg dwb	Se mg/kg dwb	Zn mg/kg dwb	Cr mg/kg dwb	pH
1/5/2021	20.0	< 15	<3.0	550	31	<0.51	19	28	<15	830	83	7.3
2/2/2021						0.33						
3/3/2021	20.8	< 14.4	<2.88	507	25.3	0.33	17.4	26.4	<14.4	732	85.6	7.9
4/6/2021						0.33						
5/5/2021	20.6	< 14.6	<2.91	532	31.0	0.28	16.9	27.4	<14.6	736	80.0	7.9
6/8/2021						0.26						
7/21/2021	21.7	< 7.0	1.7	601	33.5	0.84	23.1	29.4	8.6	835	90.3	8.2
8/3/2021						0.59						
9/7/2021	21.5	< 7.0	1.6	636	49.3	<0.37	27.2	37.4	6.7	950	106	8.4
10/5/2021						<0.35						
11/3/2021	19.2	< 7.4	1.3	577	42.3	<0.34	26.1	29.7	<6.6	738	76.8	7.5
12/7/2021						0.33						
MINIMUM	19.2	< 7.0	1.3	507	25.3	0.26	16.9	26.4	< 6.6	732	76.8	7.3
MAXIMUM	21.7	< 15	1.7	636	49.3	0.84	27.2	37.4	8.6	950	106	8.4
AVERAGE	**20.6**	**< 15**	**0.8**	**567**	**35**	**0.41**	**22**	**30**	**2.6**	**804**	**87**	**7.9**
HQ Limit	NA	41	39	1500	300	17	NA	420	100	2800	NA	NA

Per DNR requirements, any "less than" (<) result reported is treated as a zero when calculating monthly averages
dwb = dry weight basis
January mercury sample collected 1/13/21



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 declinced 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.

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

Secondary Treatment Data Chart

2021	Flow MGD	AER MLSS	AER MLVSS	RAS TSS AVG	RAS VSS AVG	MLSS % VM	RAS % VM	SV 30	SVI	WAS MGD	RAS MGD	Total RAS MGD	SRT	PRI BOD	F/M Ratio	E-Coli #/100 MLS	Fecal's #/100 MLS
January	15.88	1713	1427	3085	2569	83	83	155	91	0.39	25.30	24.92	8	83	0.18	278	79
February	16.28	1804	1504	3439	2866	83	84	126	71	0.37	21.92	21.55	8	82	0.17	280	107
March	28.48	1766	1466	3548	2930	83	83	152	86	0.42	33.75	33.32	6	52	0.19	124	73
April	18.10	1731	1428	3190	2627	83	82	117	68	0.29	22.49	22.20	8	67	0.18	540	232
May	14.65	1555	1264	2968	2434	81	82	127	81	0.32	18.46	18.14	9	74	0.17	234	129
June	13.21	1706	1382	3159	2562	81	81	105	61	0.37	15.84	15.47	8	84	0.16	269	99
July	12.55	1508	1219	2878	2317	81	81	102	68	0.30	12.68	12.37	9	91	0.19	197	89
August	13.40	1803	1402	3169	2455	78	77	147	82	0.36	20.83	20.48	9	90	0.19	213	87
September	10.38	1753	1352	2528	1944	77	77	133	76	0.46	24.80	24.34	7	101	0.18	175	82
October	13.24	1822	1412	2914	2242	75	77	143	79	0.46	28.87	28.41	6	87	0.20	213	95
November	12.18	1760	1399	2994	2354	77	79	123	69	0.35	19.57	19.21	8	88	0.17	154	93
December	13.83	2003	1618	3287	2642	81	80	171	86	0.39	24.13	23.74	8	87	0.15	102	47
AVG	**15.19**	**1744**	**1406**	**3097**	**2495**	**80**	**81**	**133**	**77**	**0.37**	**22.39**	**22.01**	**8**	**82**	**0.18**	**232**	**101**
MAX	**28.48**	**2003**	**1618**	**3548**	**2930**	**83**	**84**	**171**	**91**	**0.46**	**33.75**	**33.32**	**9**	**101**	**0.2**	**540**	**232**
MIN	**10.38**	**1508**	**1219**	**2528**	**1944**	**75**	**77**	**102**	**61**	**0.29**	**12.68**	**12.37**	**6**	**52**	**0.15**	**102**	**47**
2020	22.11	1685	1325	3468	2729	79	79	137	82	0.36	25.06	24.7	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

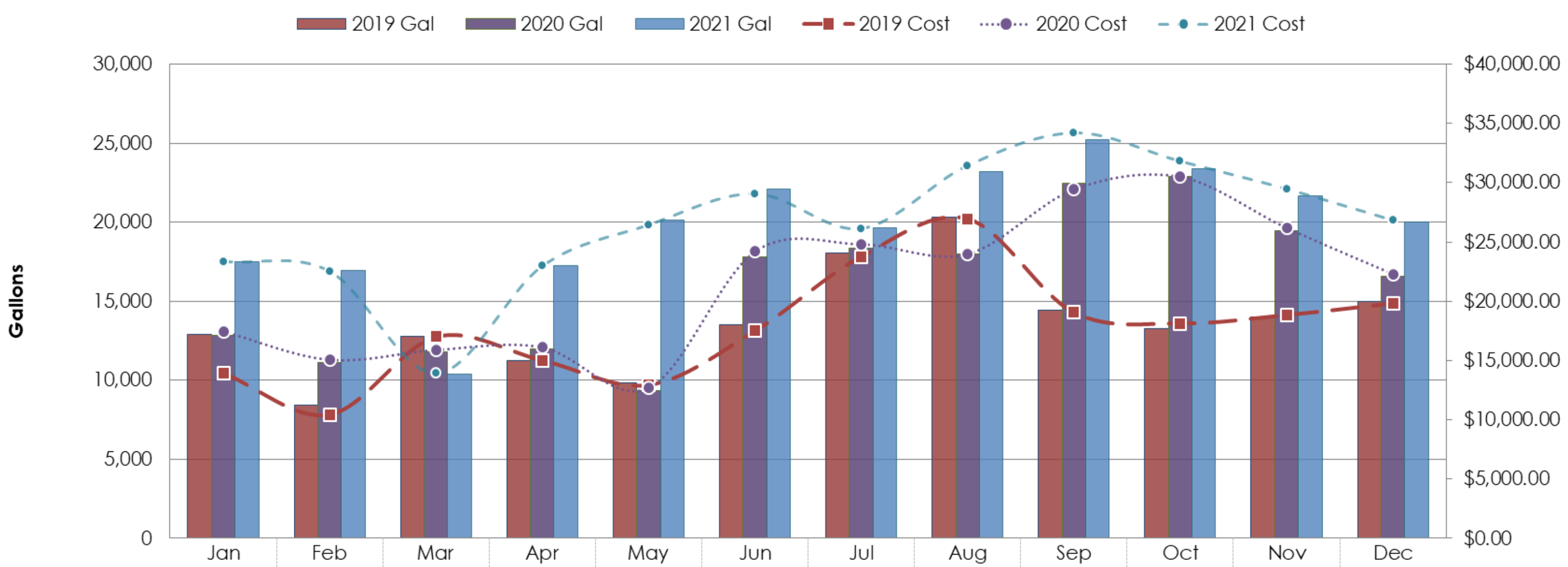
Beginning in 2007, flow numbers are effluent flow.

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

o: operations/annual reports/Copy of Secsum

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 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 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 ferric chloride dosage due to the higher concentration of phosphorus in the wastewater. Plant staff added pump, piping and metering controls for phosphorus removal in the final clarifiers.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019 Gal	12,901	8,441	12,747	11,275	9,809	13,492	18,017	20,301	14,406	13,240	13,987	14,973
2020 Gal	12,867	11,118	11,811	11,980	9,335	17,805	18,357	18,008	22,448	22,883	19,436	16,603
2021 Gal	17,472	16,975	10,365	17,266	20,142	22,116	19,625	23,217	25,230	23,360	21,690	19,991
2019 Cost	$13,930.74	$10,442.63	$16,996.63	$15,017.20	$12,942.73	$17,504.42	$23,775.88	$26,956.31	$19,057.89	$18,135.59	$18,846.67	$19,830.34
2020 Cost	$17,446.93	$15,060.85	$15,892.63	$16,120.51	$12,674.20	$24,191.02	$24,798.71	$23,978.40	$29,431.05	$30,485.29	$26,185.50	$22,294.71
2021 Cost	$23,354.61	$22,533.38	$13,917.27	$22,973.33	$26,445.21	$29,076.44	$26,137.66	$31,456.22	$34,208.68	$31,812.14	$29,476.48	$26,833.54

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 treatement 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 operatonial measures to consider wit 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.

	2019		2020		2021	
	Gallons	**Cost**	**Gallons**	**Cost**	**Gallons**	**Cost**
January	0	$0	0	$0	0	$0
February	315	$258	1,820	$1,401	1,805	$1,390
March	0	$0	3,033	$2,335	301	$232
April	0	$0	2,821	$2,172	2,408	$1,854
May	1,554	$1,274	6,376	$4,909	4,876	$3,755
June	0	$0	1,974	$1,520	0	$0
July	0	$0	630	$485	2,346	$2,634
August	1,036	$850	749	$577	2,856	$2,199
September	5,233	$4,272	665	$512	1,005	$774
October	1,491	$1,148	742	$571	1,799	$1,424
November	0	$0	2,135	$1,644	0	$0
December	0	$0	1,169	$900	0	$0
TOTAL	9,630	$7,803	22,114	$17,027	17,397	$14,261

Fed to RAS for Filament Control

- 2019: N/A
- 2020: June, September, November, December
- 2021: February, March, April, May, July, August

Fed to RAS for Filament Control Resistant Strain & EQ

- 2019: August
- 2020: N/A
- 2021: N/A

Hypo Fed to Influent

- 2019: N/A
- 2020: N/A
- 2021: September, October

EQ Event

- 2019: February, May, September, October
- 2020: March, April, May, July, August
- 2021: N/A

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	4.30	7.10	39
February	13.80	7.12	39
March	6.33	7.14	39
April	11.50	7.48	27
May	10.30	7.31	31
June	13.00	7.29	35
July	5.17	7.35	31
August	10.70	7.37	31
September	8.79	7.19	39
October	6.64	7.14	39
November	12.70	7.10	39
December	5.04	7.19	39
AVG	9.02	7.23	36
MAX	13.80	7.48	39
MIN	4.30	7.10	27

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

SODIUM BISULFITE SUMMARY

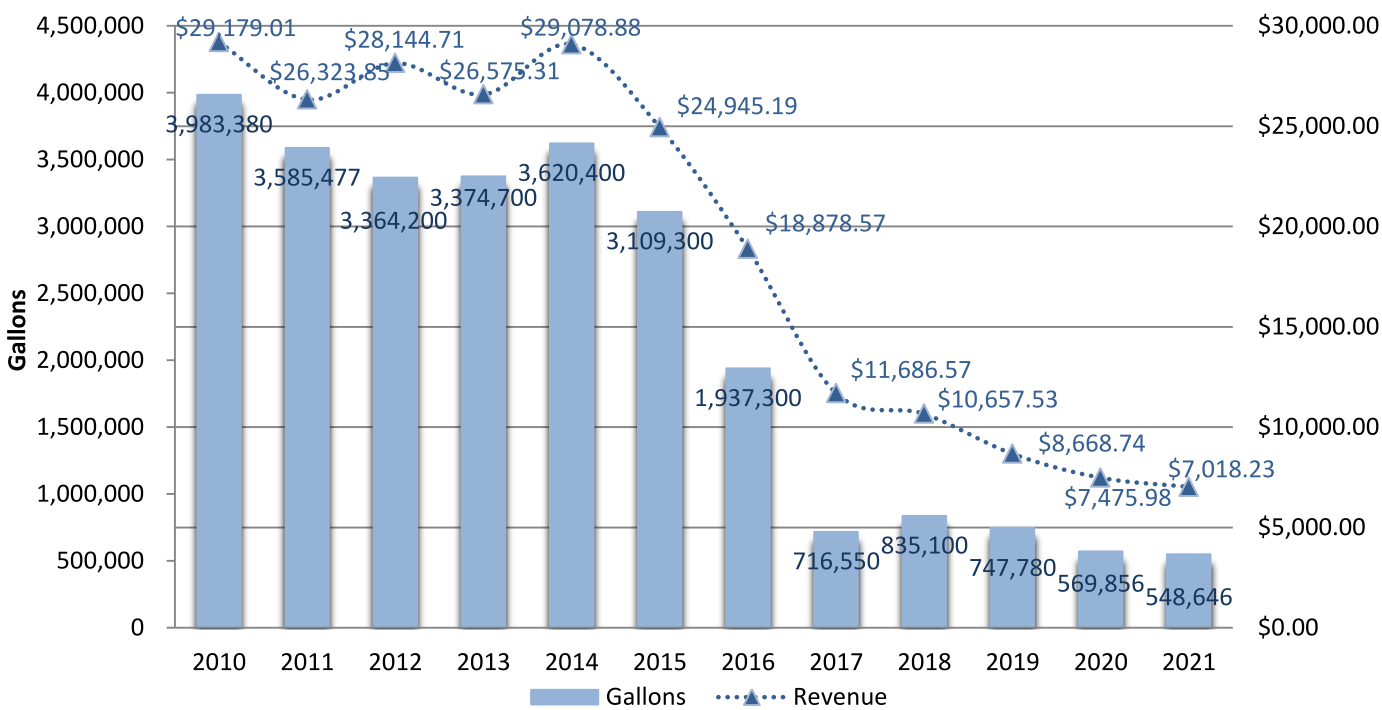
Sodium bisulfite ($NaHSO_3$) is added to the equalization basin effluent to remove chlorine that was added for pathogen control (disinfection). The plant has a maximum daily limit of <37 parts per billion (ppb) for chlorine. $NaHSO_3$ is a clear, colorless to light yellow solution with a distinctive 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 acid, 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.

	2019		2020		2021	
	Gallons	Cost	Gallons	Cost	Gallons	Cost
January	0	$ -	0	$ -	0	$ -
February	0	$ -	0	$ -	0	$ -
March	0	$ -	182	$ 389.47	0	$ -
April	0	$ -	1,806	$ 3,708.23	0	$ -
May	0	$ -	2,715	$ 3,495.16	0	$ -
June	0	$ -	0	$ -	0	$ -
July	0	$ -	658	$ 940.94	0	$ -
August	0	$ -	322	$ 460.46	0	$ -
September	0	$ -	0	$ -	0	$ -
October	209	$ 325.64	0	$ -	0	$ -
November	0	$ -	0	$ -	0	$ -
December	0	$ -	0	$ -	0	$ -
Total	**209**	**$ 325.64**	**5,683**	**$ 8,994.26**	**0**	**$ -**

LIQUID WASTE HAULERS SUMMARY

	Pat's		Stericycle		Total	
	Gallons	Charges	Gallons	Charges	Gallons	Charges
January	18,700	$181.58	34,000	$485.86	52,882	$667.44
February	9,500	$92.25	31,300	$421.92	40,892	$514.17
March	20,900	$202.94	34,700	$467.76	55,803	$670.70
April	16,100	$181.45	38,800	$523.02	55,081	$704.47
May	26,300	$296.40	34,900	$470.45	61,496	$766.85
June	24,000	$270.48	32,150	$433.38	56,420	$703.86
July	10,500	$118.34	32,800	$442.14	43,418	$560.48
August	13,500	$152.15	31,700	$427.32	45,352	$579.46
September	0	$0.00	35,100	$473.15	35,100	$473.15
October	0	$0.00	38,900	$524.37	38,900	$524.37
November	0	$0.00	29,500	$397.66	29,500	$397.66
December	0	$0.00	33,800	$455.62	33,800	$455.62
Total	**139,500**	**$1,495.57**	**407,650**	**$5,522.66**	**548,646**	**$7,018.23**
AVG	**11,625**	**$124.63**	**33,971**	**$460.22**	**45,720**	**$584.85**

Waste Hauler Rates (per 1,000)			
Pat's		Stericycle	
January-March	$9.71	January	$14.29
April-December	$11.27	February - December	$13.48



Community Inflow and Infiltration Chart

Racine	2017	2018	2019	2020	2021	Avg
WA Sales (Mgal)	2,593.12	2,526.43	2,454.34	2,369.59	2,327.00	2,454.1
Total Credit Meters (Mgal)	429.55	401.29	270.25	300.18	309.00	342.1
Total Water-Only Meters (Mgal	162.77	81.16	210.87	97.00	73.00	125.0
Summer Rate Adjust (Mgal)	120.22	117.34	112.16	133.00	139.00	124.3
WA Usage (Mgal)	1,880.57	1,926.64	1,861.06	1,839.41	1,806.00	1,862.7
WW Discharge (Mgal)	3,949.48	4,654.34	5,116.14	4,026.56	2,386.42	4,026.6
I&I (Mgal)	2,068.90	2,727.69	3,255.08	2,187.15	580.42	2,163.9
% I&I	**52.4%**	**58.6%**	**63.6%**	**54.3%**	**24.3%**	**53.7%**

Mt Pleasant (Less SCJ)	2017	2018	2019	2020	2021	Avg
WA Usage (Mgal)	1,515.00	1,420.62	1,281.48	1,434.21	1,597.71	1,449.8
SCJ Non-Sewer Water (Mgal)	763.86	620.29	557.22	648.99	724.21	662.9
WA Usage (Mgal)	751.14	800.32	724.26	785.22	873.50	786.9
WW Discharge (Mgal)	2,174.15	2,293.49	2,574.18	2,359.81	1,840.96	2,248.5
I&I (Mgal)	1,423.01	1,493.17	1,849.93	1,574.59	967.46	1,461.6
% I&I	**65.5%**	**65.1%**	**71.9%**	**66.7%**	**52.6%**	**65.0%**

Caledonia	2017	2018	2019	2020	2021	Avg
WA Usage (Mgal)	489.57	431.92	435.07	461.16	501.92	463.9
WW Discharge (Mgal)	1,291.85	1,513.71	1,636.83	1,472.22	994.35	1,381.8
I&I (Mgal)	802.29	1,081.79	1,201.75	1,011.05	492.43	917.9
% I&I	**62.1%**	**71.5%**	**73.4%**	**68.7%**	**49.5%**	**66.4%**

Sturtevant	2017	2018	2019	2020	2021	Avg
WA Sales (Mgal)	249.17	254.44	238.97	234.38	233.64	242.1
Total Credit Meters (Mgal)	1.97	2.37	1.49	0.15	1.79	1.6
WA Usage (Mgal)	247.20	252.07	237.48	234.23	231.85	240.6
WW Discharge (Mgal)	378.32	414.03	450.37	380.01	304.55	385.5
I&I (Mgal)	131.12	161.96	212.90	145.78	72.70	144.9
% I&I	**34.7%**	**39.1%**	**47.3%**	**38.4%**	**23.9%**	**37.6%**

Elmwood Park	2017	2018	2019	2020	2021	Avg
WA Usage (Mgal)	14.57	14.52	13.46	14.26	15.87	14.5
WW Discharge (Mgal)	39.31	46.20	46.68	39.31	32.53	40.8
I&I (Mgal)	24.74	31.68	33.21	25.05	16.67	26.3
% I&I	**62.9%**	**68.6%**	**71.2%**	**63.7%**	**51.2%**	**64.4%**

North Bay	2017	2018	2019	2020	2021	Avg
WA Usage (Mgal)	8.19	6.09	6.12	7.27	8.52	7.2
WW Discharge (Mgal)	26.95	32.63	40.61	31.58	20.51	30.5
I&I (Mgal)	18.76	26.54	34.48	24.31	11.99	23.2
% I&I	**69.6%**	**81.3%**	**84.9%**	**77.0%**	**58.5%**	**76.2%**

	2017	2018	2019	2020	2021	Overall
Total WW Discharge (Mgal)	7,860.06	8,954.40	9,864.80	8,309.49	5,579.33	8,113.6
Total I&I (Mgal)	4,468.81	5,522.83	6,587.36	4,967.94	2,141.68	4,737.7
Overall System % I&I	**56.9%**	**61.7%**	**66.8%**	**59.8%**	**38.4%**	**58.4%**

Precipitation (Inches)	38.54	46.27	48.74	40.52	24.05	39.62
I&I (Mgal) / Inch Precip	115.95	119.36	135.15	122.60	89.05	119.6

MAINTENANCE & ENERGY

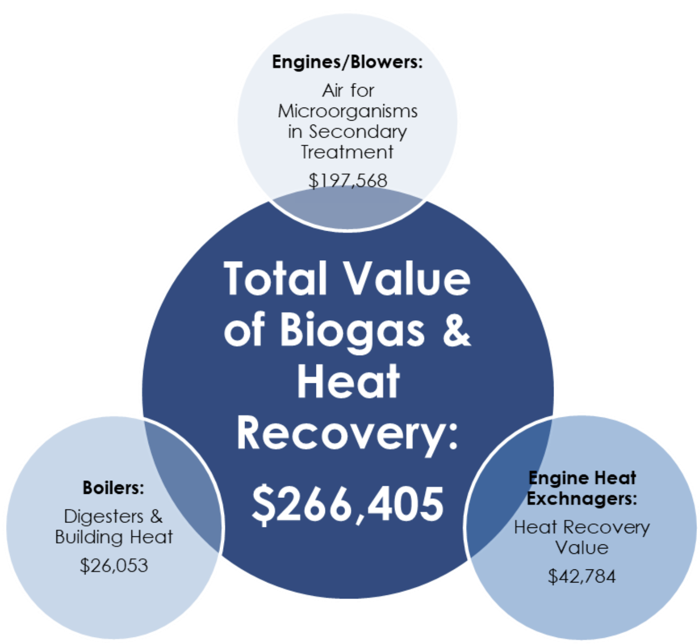
Plant Construction July 19, 1937

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/ft^3 compared to 1000 Btu/ft^3 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.

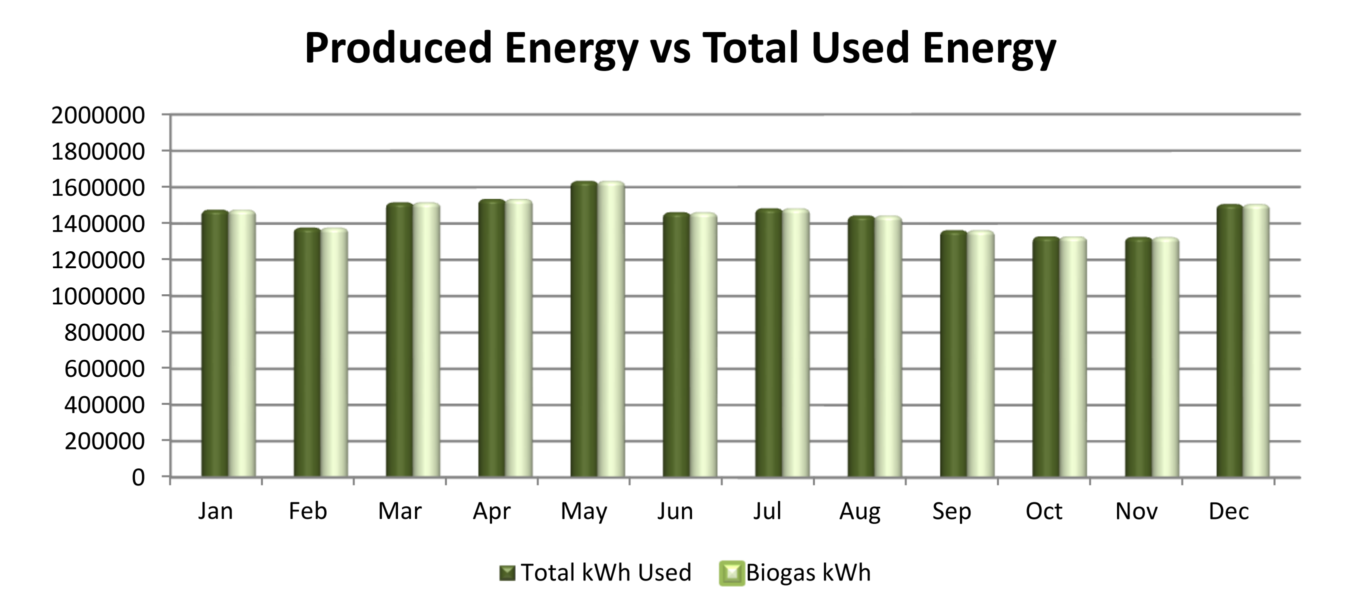
Biogas Monthly Production and Use

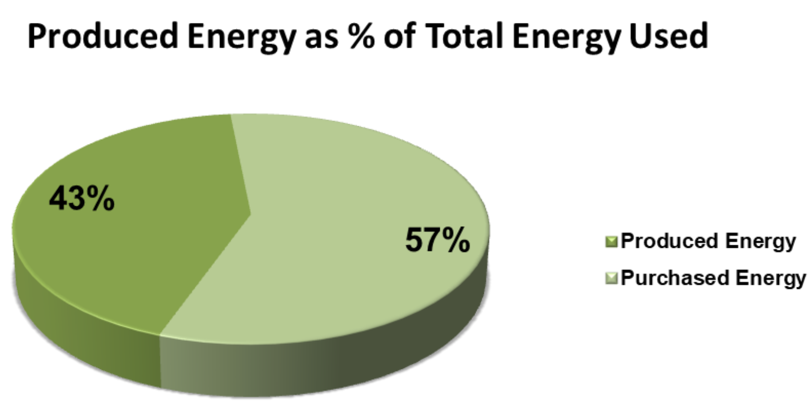
	Average Daily Values (Ft^3)				Gas to Boilers	Gas to Engines	Total Gas to Flare	Dig Gas Produced
	Dig A	**Dig B**	**Dig D**	**Dig E**				
Jan	54,323	40,586	50,681	45,374	32,983	139,204	1	169,837
Feb	56,788	41,581	58,915	47,769	14,630	165,817	121	182,841
Mar	77,729	13,913	73,709	57,309	16,785	179,537	8	206,979
Apr	82,257	0	69,959	75,477	24,463	174,443	3,116	204,572
May	77,660	0	76,175	67,520	15,227	181,101	91	199,182
Jun	74,371	0	70,863	58,998	9,124	171,322	746	184,296
Jul	67,214	0	66,963	71,637	4,714	169,967	519	179,337
Aug	55,868	0	60,271	69,985	6,631	149,931	0	158,777
Sep	55,482	0	57,934	69,661	7,333	147,616	48	157,213
Oct	60,481	0	61,876	69,073	27,165	140,600	150	169,508
Nov	43,972	25,914	45,666	48,400	42,938	106,027	0	144,746
Dec	48,910	42,567	52,066	46,454	16,857	149,004	83	169,365
AVG	**62,921**	**13,713**	**62,090**	**60,638**	**18,238**	**156,214**	**407**	**177,221**

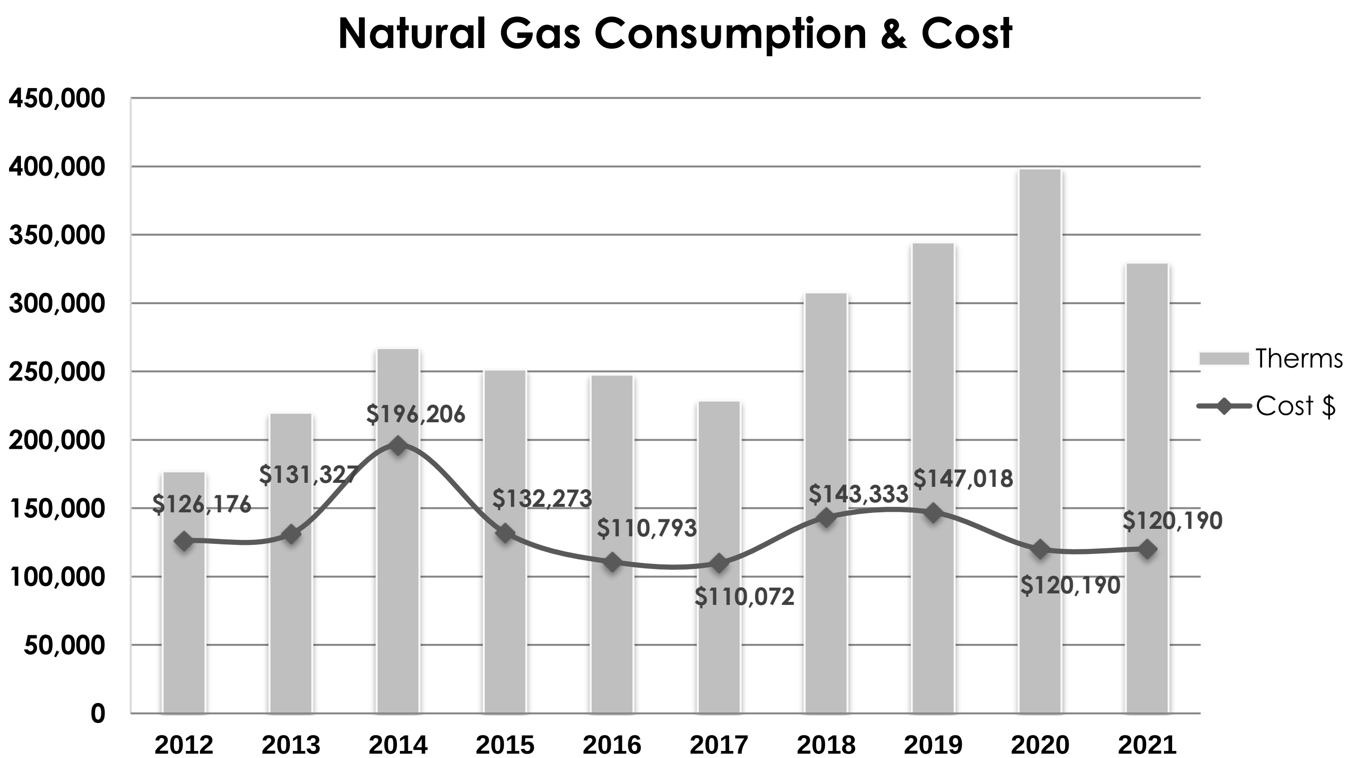


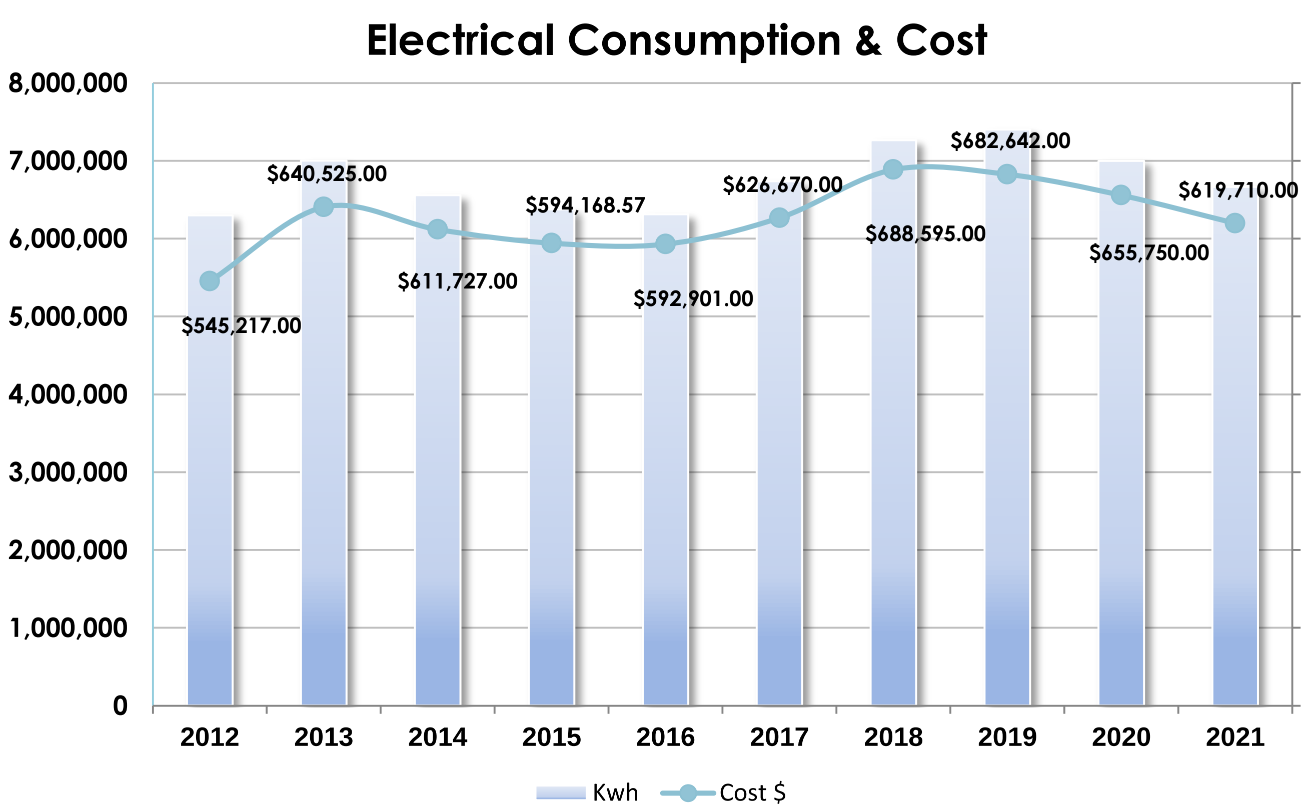
Plant Water & Energy Consumption

Month	100 CF Water	Cost $ Water	Natural Gas Therms	Cost $ Nat. Gas	Conversion Nat Gas Therms to kWh	Electric kWh	Cost $ Electricity	Biogas kWh	Total kWh Used	% Energy Produced	kW Peak Demand
Jan			52,280	$20,977	1,531,804	631,089	$53,246	1,426,738	3,589,631	40	1,109
Feb			54,690	$29,608	1,602,417	492,511	$44,500	1,331,358	3,426,286	39	973
Mar	30,511	$82,447	34,480	$13,931	1,010,264	565,317	$52,341	1,564,845	3,140,426	50	1,272
Apr			24,340	$9,438	713,162	518,978	$45,165	1,528,676	2,760,816	55	913
May			22,650	$9,135	663,645	489,686	$45,501	1,564,880	2,718,211	58	1,093
Jun	29,471	$79,737	9,350	$3,639	273,955	569,949	$51,674	1,426,450	2,270,354	63	885
Jul			9,610	$4,375	281,573	598,919	$55,747	1,441,009	2,321,501	62	977
Aug			12,870	$6,192	377,091	521,121	$53,571	1,337,327	2,235,539	60	1,082
Sep	30,462	$82,238	15,100	$7,888	442,430	593,667	$57,907	1,285,255	2,321,352	55	1,137
Oct			18,640	$11,392	546,152	490,490	$60,203	1,401,434	2,438,076	57	1,181
Nov			32,290	$18,610	946,097	533,532	$45,118	1,252,117	2,731,746	46	944
Dec	26,092	$71,868	43,530	$24,357	1,275,429	657,102	$54,736	1,390,539	3,323,070	42	1,153
TOTAL / AVG.	**116,536**	**$316,290**	**329,830**	**$159,542**	**9,664,019**	**6,662,361**	**$619,709**	**12,257,435**	**28,583,815**	**43**	**1,060**

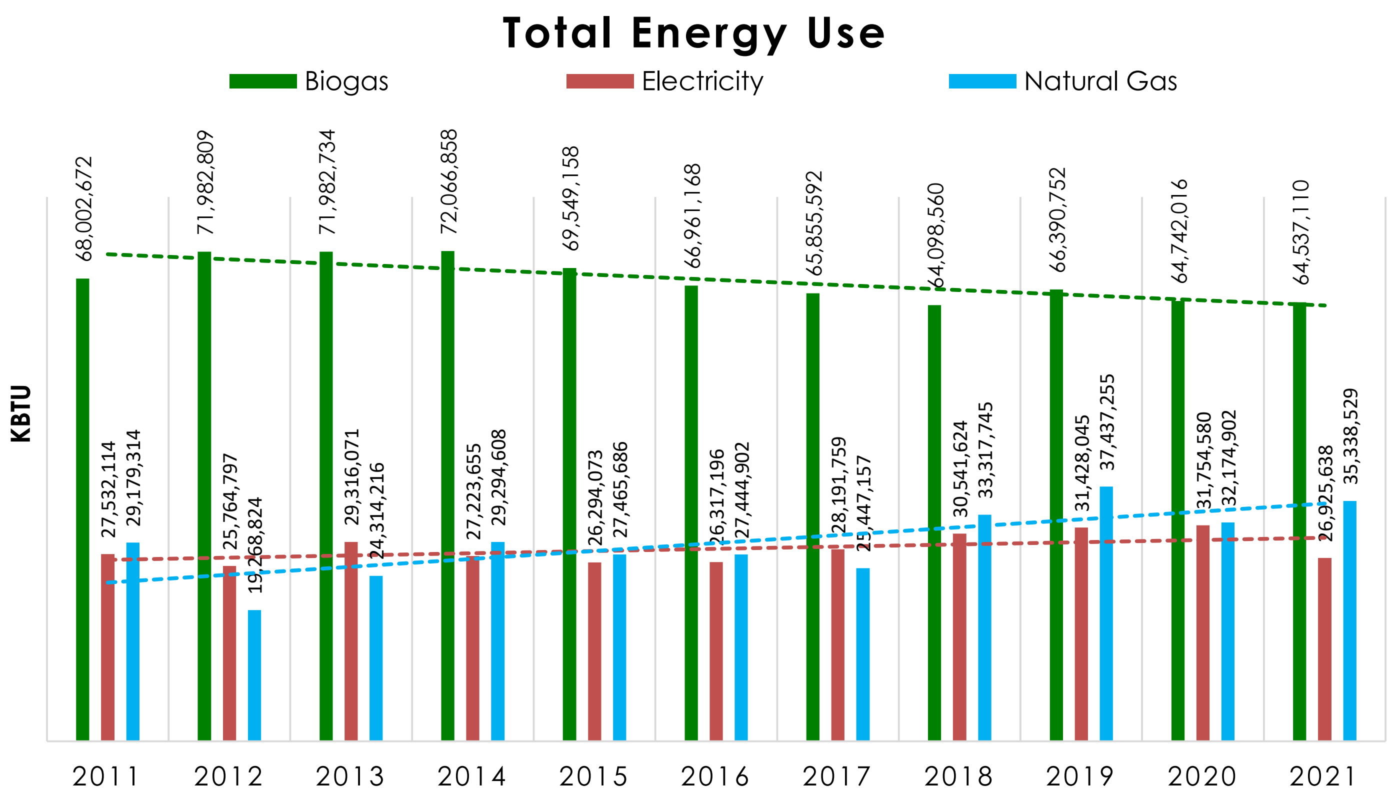


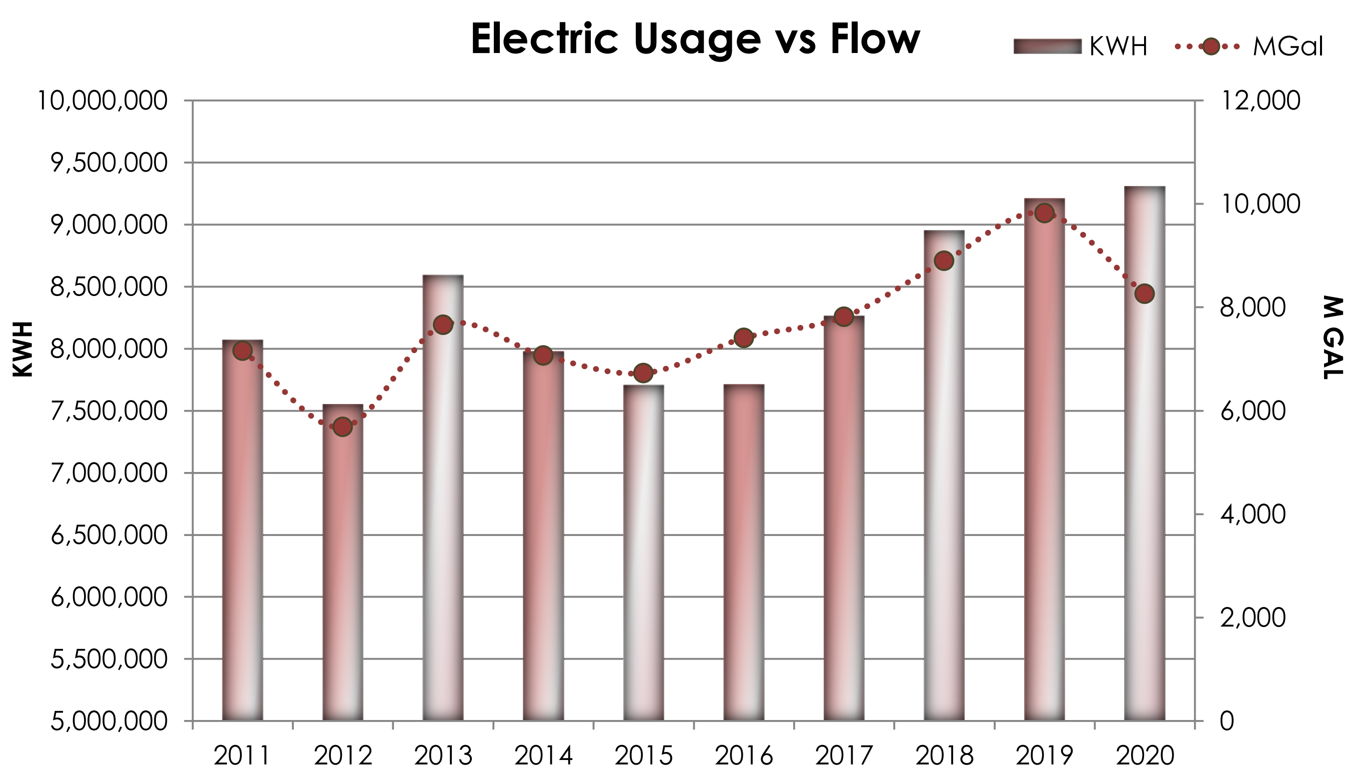


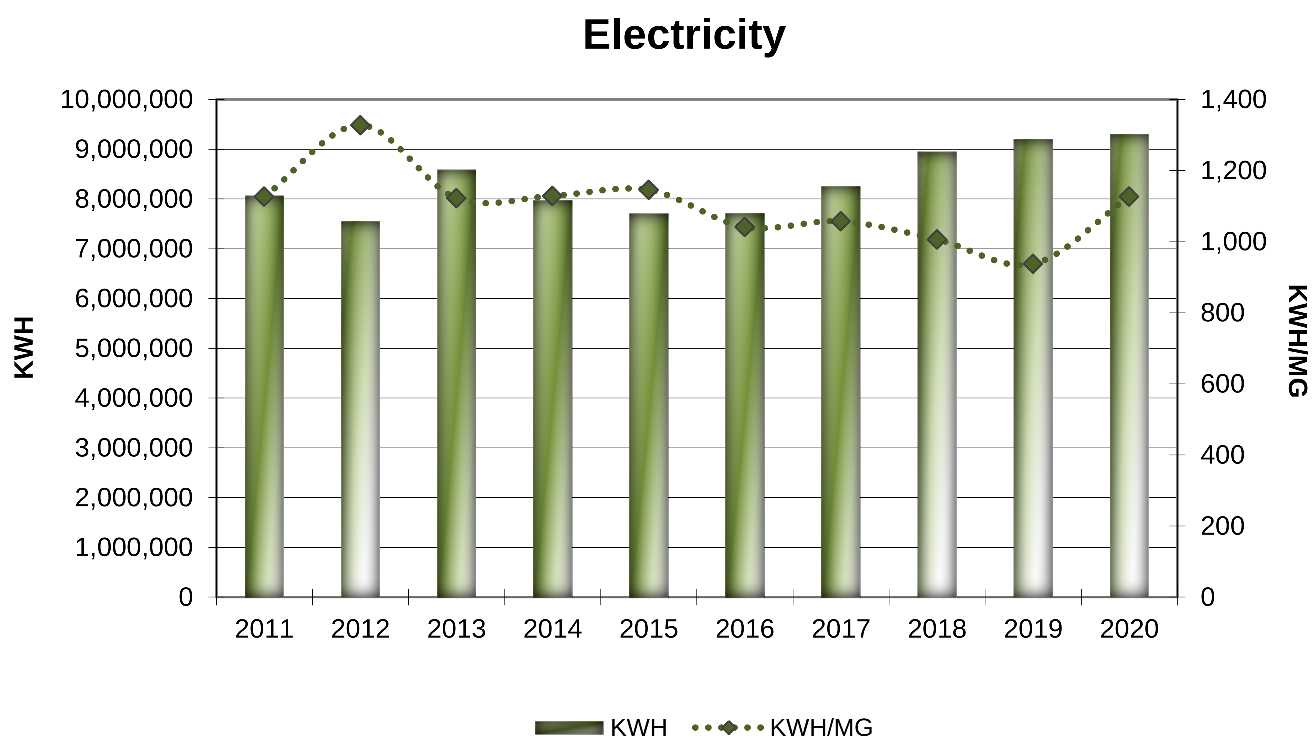

Natural Gas Consumption & Cost
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
$126,176
$131,327
$196,206
$132,273
$110,793
$110,072
$143,333
$147,018
$120,190
$120,190
Therms
Cost $


Electrical Consumption & Cost
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
$545,217.00
$640,525.00
$611,727.00
$594,168.57
$592,901.00
$626,670.00
$688,595.00
$682,642.00
$655,750.00
$619,710.00
Kwh
Cost $

Utility Total Energy Use, Electric Usage vs. Flow






Electricity
KWH
KWH/MG
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
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3,000,000
2,000,000
1,000,000
0
1,400
1,200
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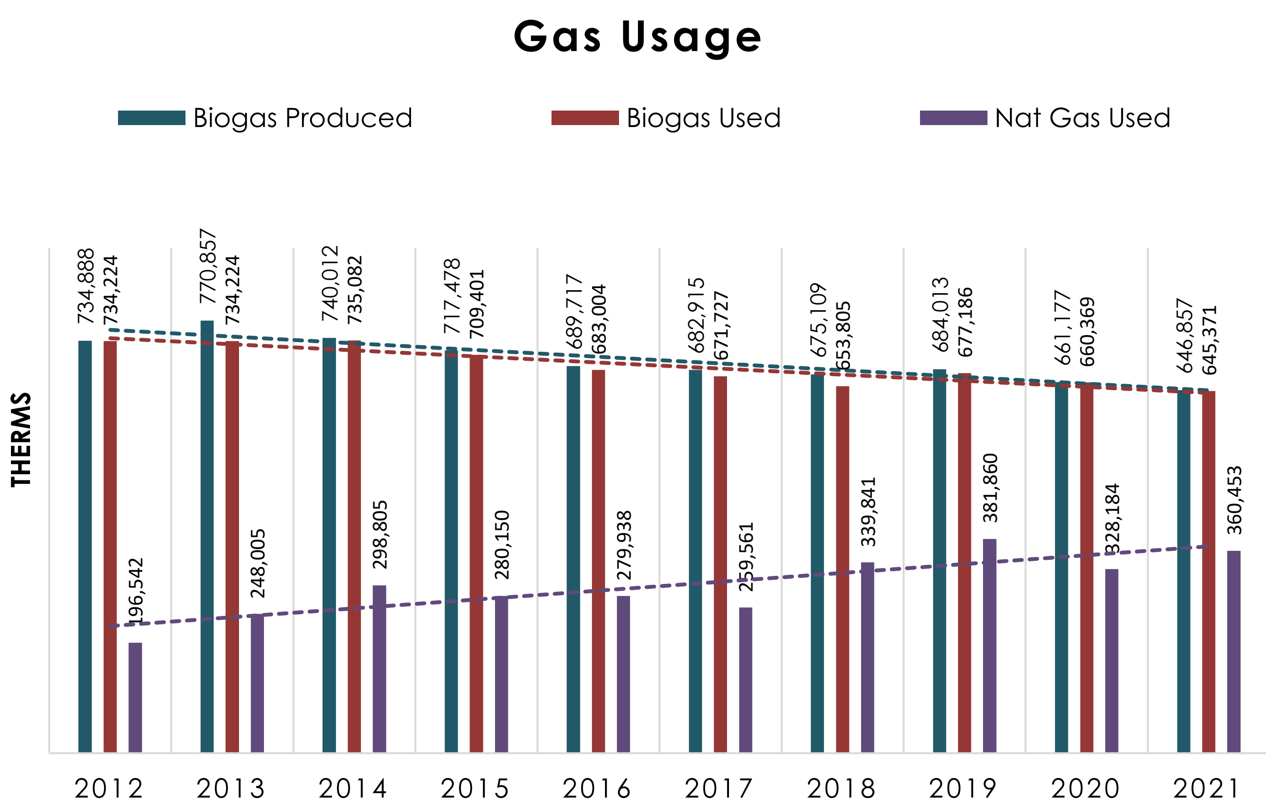
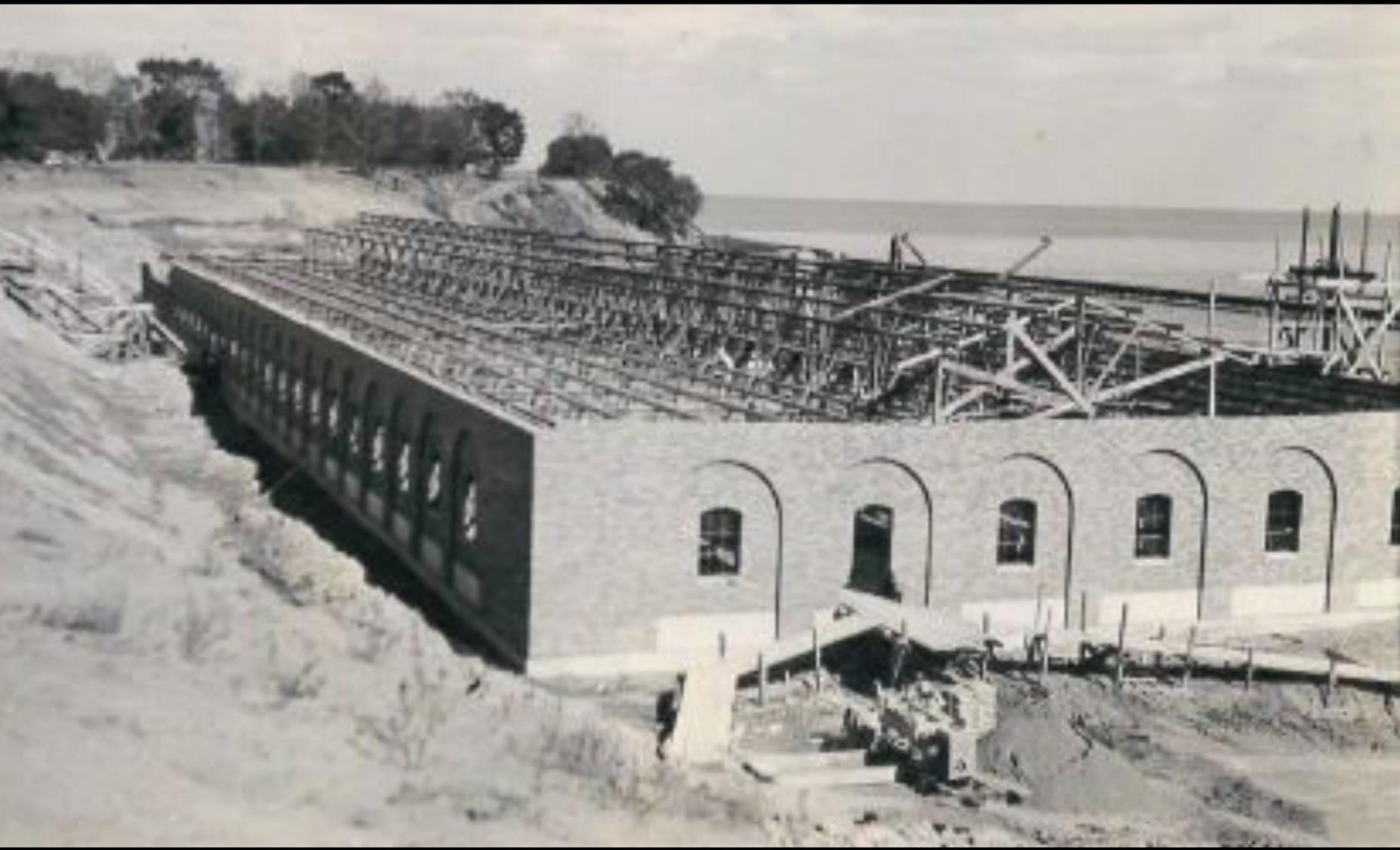
2017
2018
2019
2020
KWH
KWH/MG


Gas Usage
Biogas Produced
Biogas Used
Nat Gas Used
THERMS
734,888
734,224
196,542
770,857
734,224
248,005
740,012
735,082
298,805
717,478
709,401
280,150
689,717
683,004
279,938
682,915
671,727
259,561
675,109
653,805
339,841
684,013
677,186
381,860
661,177
660,369
328,184
646,857
645,371
360,453
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

LABORATORY



Plant Construction September 13, 1937

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 eDMRs 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 (NH_3), 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, 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 eDMR, 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




Top 2 Photos: Plant Construction November 6, 1937
Bottom 2 Photos: Plant Construction November 24, 1937

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. Six industrial permits were modified in 2021. The estimated total person hours used to implement the Industrial Pretreatment Program in 2021 was 2,817 hours. The estimated total cost of the program was $170,727.

In 2021, there were thirty-six (36) permitted industries in the Industrial Pretreatment Program. There were sixteen (16) categorical and twenty (20) non-categorical industries. Industrial categories regulated in 2021 include: Nine 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 were two no-discharge permitted industries; two minimal discharge permitted industries, and four NSCIU permitted industries.

Five industries were investigated for inclusion into the pretreatment program. None of these were found to perform categorical processes but are still being monitored for possible inclusion into the program.

There were thirteen incidents of noncompliance during the year. Parameter violations included exceedance of established limits in nickel, zinc, and total metals. Other violations included a failure to pay sampling/analysis fees, one unintentional improper sampling, one failure to monitor all pollutants as required, three late reporting and one Collection system blockage due to grease discharge. Two of these met the criteria of significant non-compliance (SNC) during 2021. 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 also continues to promote mercury recycling and reduction in the Racine area through their Mercury Pollution Prevention Plan.

PERMITTED INDUSTRIAL USERS 2021

METAL FINISHING

CHROMIUM, INC
CNH INDUSTRIAL AMERICA
CREE LIGHTING–IDEAL INDUSTRIES LIGHTING
D & D INDUSTRIAL FINISHING- PLANT #1
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

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
D & D INDUSTRIAL FINISHING PLT #2 (ND)
DIVERSEY (MD)
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

2020

Influent			Effluent				Biosolids		
Date 2020	Conc. ng/L	Test Method	Date 2020	Conc. ng/L	Test Method	% Removal	Date 2020	Conc. mg/kg	Test Method
01/08/20	5.4	245.7M, Rev 2.0	01/08/20	1.0	EPA 1631E, 2002	81.5	01/08/20	0.68	SW 846 7471B
02/04/20	7.2	245.7M, Rev 2.0	02/04/20	1.3	EPA 1631E, 2002	81.9	02/04/20	0.41	SW 846 7471B
03/04/20	8	245.7M, Rev 2.0	03/04/20	0.7	EPA 1631E, 2002	91.3	03/04/20	0.27	SW 846 7471B
04/07/20	5.6	245.7M, Rev 2.0	04/07/20	0.64	EPA 1631E, 2002	88.6	04/07/20	0.38	SW 846 7471B
05/06/20	14	245.7M, Rev 2.0	05/06/20	0.92	EPA 1631E, 2002	93.4	05/06/20	0.41	SW 846 7471B
06/09/20	21	245.7M, Rev 2.0	06/09/20	0.76	EPA 1631E, 2002	96.4	06/09/20	0.32	SW 846 7471B
07/08/20	24	245.7M, Rev 2.0	07/08/20	0.69	EPA 1631E, 2002	97.1	07/08/20	0.47	SW 846 7471B
08/04/20	27	245.7M, Rev 2.0	08/04/20	1.3	EPA 1631E, 2002	95.2	08/04/20	5.8	SW 846 7471B
09/02/20	29	245.7M, Rev 2.0	09/02/20	0.77	EPA 1631E, 2002	97.3	09/02/20	0.57	SW 846 7471B
10/06/20	20	245.7M, Rev 2.0	10/06/20	1.4	EPA 1631E, 2002	93.0	10/06/20	0.67	SW 846 7471B
11/04/20	18	245.7M, Rev 2.0	11/04/20	0.83	EPA 1631E, 2002	95.4	11/04/20	0.39	SW 846 7471B
12/01/20	32	245.7M, Rev 2.0	12/01/20	0.77	EPA 1631E, 2002	97.6	12/01/20	0.39	SW 846 7471B
Influent Average	**17.6**		**Effluent Average**	**0.9**		**Removal 92.4%**	**Biosolids Average**	**0.90**	

2021

Influent			Effluent				Biosolids		
Date 2021	Conc. ng/L	Test Method	Date 2021	Conc. ng/L	Test Method	% Removal	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	[1] 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	1.0	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**	

[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? Yes

If yes, what is it? 0.10 mg/l

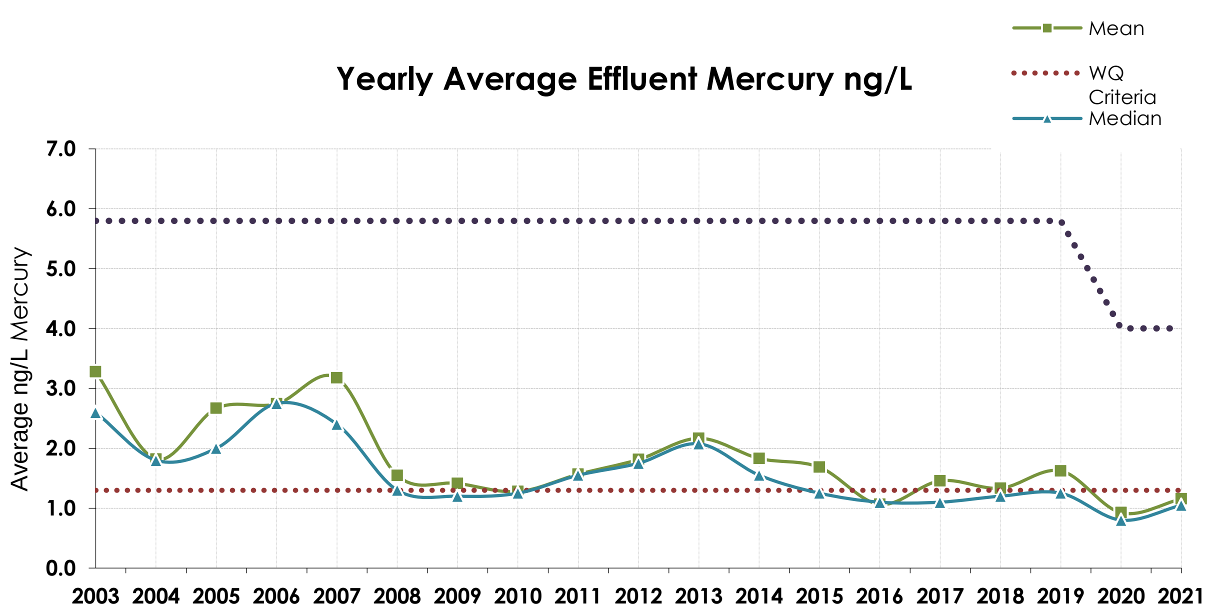
Laboratory doing the mercury analysis:
Northern Lake Service #721026

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-0025194-09-0 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 now 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 the designated container and sent in for recycling 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

Facility Name: Racine Wastewater Utility Report Date: Dec 27, 2021

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

Sector	Sector Score	X	Weighting Factor*	=	Weighted Sector Score
A: Medical (from Form 4C)	100	X	(0.15)	=	15.0
B: Dental (from Form 5C)	97	X	(0.50)	=	48.5
C: School (from Form 6C)	100	X	(0.15)	=	15.0
D: Industry (from Form 7C)	100	X	(0.20)	=	20.0
			Total Wastewater Sectors Score		98.5

*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.

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)	100	X	(0.1)	=	10
B: HVAC (from Form 8B)	0	X	(0.1)	=	0
C: Auto Switch (from Form 8C)	0	X	(0.1)	=	0
D: Fluorescent Bulb (from Form 8D)	60	X	(0.1)	=	6
			Total Other Community Sectors Score		16.0

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

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

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

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

Community Mercury PMP Score:

	Total Score
Sum of Wastewater Sectors, Other Community Sectors and Other PMP Credits	118.8

COLLECTION SYSTEM & LIFT STATIONS

Plant Construction December 1937

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.

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 2021, we continued to monitor flow in different areas within the City of Racine covering about 221,044 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. The Utility will continue to contract CCTV work in aging interceptors.

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 2021, the crew televised 6,418.1 linear feet of interceptors and 3,370.9 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 Storage Optimization Study was completed in late 2009. This study identified $193 million in improvements to the regional collection system to mitigate bypassing and backups. The improvements would be completed in stages over a period of time to accommodate 2035 peak flows anticipated during a 40 year storm event.

Racine Wastewater Field Operations was involved in two major projects during 2021. The first was the interceptor relocation project in preparation for the 6th Street Bridge replacement. A total of 681 feet of pipe was relocated at a total project cost of approximately $1,500,000 plus the cost of property acquisition and demolition. The second project was in preparation for the Festival Hall Hotel and Convention Center. 195 feet of new 18 inch pipe was added for the new building and flow from Lakeshore Towers was redirected to this pipe. Total cost of this project was approximately $855,000.

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 2021, not only did the crew complete the scheduled cleaning for 2021, they also completed the rest of the cleaning schedule from the Covid shutdown of 2020. In total for 2021, they cleaned 697,118.0 linear feet (132 miles) of the 255 miles of sewer in the collection system. The crew used our root saws on 94,756.0 linear feet of sewer mains, and responded to 94 sewer calls; all but 4 of the calls were lateral problems requiring attention from the homeowners. 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 increase 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 mechanic 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. The station 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 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.

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.

<u>LIFT STATION #14</u>

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.

<u>LIFT STATION #2 STORAGE TANK</u>

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.

<u>NORTH SIDE STORAGE BASIN</u>

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.

<u>GROVE AVENUE STORAGE BASIN</u>

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.

<u>OHIO STREET IN-LINE STORAGE</u>

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.

<u>SCADA</u>

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.

2021 Summary of Lifts #2 - #13

Time Period	Total MG	Avg MGD	Plant %	Plant Flow	KWH	WE $
January	36.415	1.175	22.16	164.35	21,127	2,999
February	36.974	1.320	23.85	155.00	19,265	2,753
March	67.409	2.174	18.29	368.60	24,255	3,353
April	40.601	1.353	7.56	537.40	19,582	2,699
May	35.264	1.138	7.50	470.38	15,854	2,205
June	28.762	0.958	7.17	400.93	15,333	2,288
July	28.175	0.909	6.76	416.62	14,729	2,185
August	30.554	0.986	7.21	423.59	13,997	2,071
September	24.029	0.801	8.02	299.45	15,962	2,344
October	36.274	1.446	8.98	404.13	13,517	2,005
November	28.894	1.255	8.04	359.49	17,254	2,526
December	30.634	1.345	7.18	426.85	15,691	2,307
2021	423.985	1.238	11.06	4,426.77	206,566	$29,734
2020	649.541	1.810	23.85	2,694.14	268,915	$35,395
2019	687.284	1.718	21.00	3,256.92	337,921	$46,584
2018	624.024	1.540	9.90	7,219.79	243,976	$34,548

Lift Station #1

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	257.319	8.301	11.394	7.003	90,467	$11,857
February	813.714	29.061	62.612	6.791	68,084	$9,884
March	449.772	14.509	32.798	9.652	106,349	$13,709
April	266.570	8.886	15.288	6.277	90,716	$12,253
May	232.343	7.495	11.396	6.010	68,211	$10,990
June	227.810	7.653	20.143	5.895	74,584	$9,639
July	216.805	6.994	11.106	6.273	69,792	$7,681
August	233.297	7.526	11.401	6.218	63,331	$8,448
September	183.165	6.105	7.088	5.388	69,769	$7,095
October	250.726	8.088	17.940	5.908	62,381	$7,403
November	200.278	6.676	8.483	5.933	75,395	$9,714
December	230.103	7.423	14.586	6.015	67,690	$7,627
2021	3,561.901	9.893	62.612	5.388	906,769	$116,300
2020	4,594.479	12.561	66.433	6.278	1,248,982	$178,267
2019	5,439.828	14.893	111.968	6.717	1,342,342	$178,085
2018	4,130.913	11.287	62.644	0.000	1,161,416	$153,644

Lift Station #2

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	12.606	0.407	0.582	0.308	4,480	$604
February	12.286	0.439	1.073	0.316	3,520	$481
March	22.318	0.720	1.279	0.425	5,440	$729
April	13.817	0.461	0.760	0.341	4,400	$596
May	12.379	0.399	0.556	0.224	4,360	$597
June	10.651	0.356	0.509	0.273	3,960	$545
July	10.496	0.339	0.394	0.285	3,800	$524
August	11.669	0.376	0.587	0.310	3,640	$502
September	9.354	0.312	0.750	0.265	3,800	$521
October	15.071	0.486	0.610	0.299	3,440	$474
November	12.151	0.405	0.610	0.297	3,880	$535
December	11.092	0.358	0.645	0.279	3,480	$482
2021	153.890	0.421	1.279	0.224	48,200	$6,590
2020	213.021	0.581	4.386	0.123	57,750	$7,676
2019	202.338	0.555	2.083	0.257	107,360	$13,999
2018	195.223	0.535	3.719	0.240	53,720	$7,186

Lift Station #3

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	0.671	0.022	0.034	0.017	1,643	$236
February	0.651	0.023	0.065	0.017	1,351	$195
March	1.782	0.057	0.139	0.031	1,474	$212
April	0.932	0.031	0.071	0.021	1,276	$186
May	0.757	0.024	0.044	0.017	1,274	$189
June	0.478	0.016	0.030	0.013	705	$113
July	0.451	0.015	0.019	0.013	734	$116
August	0.502	0.016	0.030	0.012	596	$96
September	0.351	0.012	0.013	0.011	278	$56
October	0.518	0.017	0.051	0.011	247	$50
November	0.410	0.014	0.017	0.012	422	$75
December	0.566	0.018	0.047	0.011	461	$78
2021	8.069	0.022	0.139	0.011	10,461	$1,602
2020	16.604	0.045	0.476	0.014	31,151	$2,132
2019	20.399	0.056	0.361	0.014	15,449	$2,232
2018	17.026	0.047	0.442	-0.066	10,782	$1,625

Lift Station #4

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	0.165	0.005	0.006	0.005	1,018	$149
February	0.156	0.006	0.007	0.004	1,514	$218
March	0.214	0.007	0.010	0.005	1,167	$171
April	0.143	0.005	0.007	0.003	1,174	$173
May	0.210	0.007	0.009	0.005	681	$101
June	0.249	0.008	0.012	0.006	1,188	$177
July	0.261	0.008	0.012	0.006	1,065	$160
August	0.276	0.009	0.015	0.007	995	$150
September	0.176	0.006	0.009	0.001	1,154	$171
October	0.050	0.002	0.005	0.001	1,010	$151
November	0.011	0.000	0.001	0.000	1,254	$186
December	0.004	0.000	0.001	0.000	1,291	$189
2021	1.914	0.005	0.015	0.000	13,511	$1,996
2020	3.300	0.009	0.039	0.005	14,645	$2,118
2019	3.040	0.008	0.027	0.003	15,821	$2,287
2018	2.924	0.008	0.060	0.003	13,955	$2,042

Lift Station #5

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	1.775	0.057	0.121	0.000	1,735	$248
February	1.831	0.065	0.155	0.047	1,609	$231
March	3.938	0.127	0.224	0.022	2,299	$322
April	2.520	0.084	0.134	0.060	2,037	$289
May	2.003	0.065	0.090	0.056	1,324	$192
June	1.568	0.052	0.069	0.043	1,392	$206
July	1.409	0.045	0.060	0.034	1,213	$181
August	1.551	0.050	0.078	0.034	1,090	$163
September	1.254	0.042	0.056	0.034	1,154	$173
October	1.572	0.051	0.116	0.034	1,119	$166
November	1.366	0.046	0.056	0.039	1,541	$225
December	1.120	0.036	0.095	0.000	1,495	$218
2021	21.906	0.060	0.224	0.000	18,008	$2,614
2020	37.329	0.102	0.978	0.039	24,993	$3,477
2019	43.338	0.119	0.668	0.039	36,362	$4,956
2018	40.904	0.112	0.556	0.017	24,160	$3,382

Lift Station #6

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	4.889	0.158	0.229	0.129	1,319	$192
February	4.453	0.159	0.410	0.110	1,515	$218
March	9.386	0.303	0.547	0.176	2,098	$295
April	5.378	0.179	0.338	0.130	1,574	$228
May	4.421	0.143	0.204	0.126	684	$100
June	3.572	0.119	0.151	0.107	1,388	$204
July	3.507	0.113	0.150	0.100	1,498	$219
August	3.551	0.115	0.168	0.095	1,561	$225
September	2.909	0.097	0.112	0.080	1,781	$255
October	4.273	0.138	0.334	0.088	1,401	$203
November	3.341	0.111	0.142	0.094	1,630	$236
December	4.159	0.134	0.296	0.094	1,302	$192
2021	53.840	0.147	0.547	0.080	17,751	$2,567
2020	88.318	0.241	2.175	0.105	25,518	$3,536
2019	110.271	0.303	1.700	0.115	28,809	$3,989
2018	92.966	0.255	1.959	0.094	25,455	$3,546

Lift Station #7

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	0.930	0.030	0.050	0.025	1,715	$243
February	0.811	0.029	0.061	0.021	1,682	$239
March	1.453	0.047	0.065	0.031	1,744	$247
April	0.973	0.032	0.053	0.025	1,761	$250
May	0.810	0.026	0.035	0.022	689	$107
June	0.607	0.020	0.027	0.017	637	$104
July	0.685	0.022	0.039	0.016	583	$95
August	0.657	0.021	0.028	0.017	526	$87
September	0.492	0.016	0.019	0.013	589	$97
October	0.682	0.022	0.044	0.014	572	$92
November	0.620	0.021	0.025	0.018	870	$134
December	0.708	0.023	0.038	0.016	907	$138
2021	9.429	0.026	0.065	0.013	12,275	$1,833
2020	14.837	0.040	0.260	0.017	12,732	$1,691
2019	17.353	0.048	0.204	0.021	12,859	$1,896
2018	15.224	0.042	0.243	0.017	11,755	$1,751

Lift Station #8

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	9.194	0.297	0.442	0.234	3,640	$494
February	11.317	0.404	0.886	0.293	2,880	$398
March	19.684	0.635	1.216	0.374	4,680	$574
April	10.635	0.355	0.684	0.265	4,240	$457
May	9.016	0.291	0.459	0.243	3,360	$462
June	6.763	0.225	0.374	0.187	3,240	$454
July	6.559	0.212	0.309	0.181	2,360	$334
August	7.270	0.235	0.383	0.186	2,440	$344
September	5.227	0.174	0.200	0.156	2,240	$317
October	8.669	0.280	0.698	0.161	2,280	$321
November	6.327	0.211	0.298	0.172	2,920	$408
December	7.834	0.253	0.558	0.164	2,560	$360
2021	108.495	0.297	1.216	0.156	36,840	$4,922
2020	151.090	0.412	2.820	0.173	44,200	$5,934
2019	181.884	0.499	1.920	0.193	54,200	$7,237
2018	163.476	0.448	2.643	0.174	44,560	$6,013

Lift Station #9

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	0.593	0.019	0.028	0.014	1,178	$175
February	0.602	0.021	0.069	0.013	984	$146
March	1.129	0.036	0.068	0.023	1,096	$161
April	0.644	0.021	0.041	0.016	966	$145
May	0.600	0.019	0.031	0.015	961	$147
June	0.445	0.015	0.024	0.010	749	$118
July	0.439	0.014	0.021	0.011	703	$111
August	0.455	0.015	0.024	0.011	603	$97
September	0.344	0.011	0.014	0.009	682	$109
October	0.470	0.015	0.035	0.010	668	$105
November	0.434	0.014	0.017	0.012	1,092	$164
December	0.549	0.018	0.036	0.011	1,429	$207
2021	6.703	0.018	0.069	0.009	11,111	$1,686
2020	9.804	0.027	0.392	0.011	11,751	$1,740
2019	11.512	0.032	0.144	0.012	12,796	$1,886
2018	10.156	0.028	0.297	0.007	11,207	$1,678

Lift Station #10

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	4.700	0.152	0.193	0.135	1,490	$216
February	4.087	0.146	0.264	0.121	1,518	$217
March	6.518	0.210	0.299	0.162	1,730	$246
April	4.921	0.164	0.245	0.140	1,534	$173
May	4.451	0.144	0.191	0.117	961	$140
June	3.918	0.131	0.176	0.115	1,624	$235
July	3.894	0.126	0.144	0.117	1,507	$219
August	4.132	0.133	0.185	0.115	1,393	$203
September	3.517	0.117	0.129	0.104	1,574	$227
October	4.462	0.144	0.267	0.116	1,464	$211
November	3.785	0.126	0.148	0.114	1,883	$270
December	4.190	0.135	0.206	0.112	1,282	$189
2021	52.574	0.144	0.299	0.104	17,960	$2,546
2020	101.709	0.280	15.472	0.120	24,878	$3,456
2019	83.905	0.230	1.164	0.000	24,987	$3,495
2018	75.921	0.208	1.191	0.000	24,592	$3,438

Lift Station #11

Time Period	Total MG	Avg MGD	Max MGD	Min MGD	KWH	WE $
January	0.330	0.011	0.014	0.007	1,212	$179
February	0.316	0.011	0.020	0.007	1,051	$155
March	0.418	0.013	0.017	0.010	923	$139
April	0.379	0.013	0.017	0.010	806	$123
May	0.365	0.012	0.019	0.008	304	$47
June	0.288	0.009	0.014	0.005	641	$104
July	0.240	0.008	0.014	0.005	539	$89
August	0.227	0.007	0.010	0.003	455	$77
September	0.217	0.007	0.008	0.005	536	$90
October	0.277	0.009	0.014	0.007	591	$95
November	0.271	0.009	0.025	0.005	688	$110
December	0.261	0.008	0.012	0.005	288	$56
2021	3.589	0.010	0.025	0.003	8,034	$1,263
2020	3.814	0.010	0.061	0.005	9,603	$1,459
2019	3.790	0.010	0.071	0.003	12,539	$1,851
2018	3.445	0.009	0.015	0.003	10,600	$1,599

Lift Station #12

Time Period	Total Mgal	Avg Mgal	Max Mgal	Min Mgal	KWH	WE $
January	0.229	0.007	0.011	0.006	1,600	$234
February	0.181	0.006	0.012	0.005	1,548	$228
March	0.396	0.013	0.037	0.006	1,496	$227
April	0.211	0.007	0.012	0.005	1,169	$184
May	0.192	0.006	0.008	0.004	851	$141
June	0.167	0.006	0.007	0.003	738	$129
July	0.175	0.006	0.006	0.005	690	$122
August	0.191	0.006	0.009	0.005	616	$107
September	0.137	0.005	0.006	0.004	659	$113
October	0.165	0.005	0.009	0.004	624	$106
November	0.139	0.005	0.007	0.003	962	$152
December	0.107	0.003	0.006	0.003	1,100	$169
2021	2.289	0.006	0.037	0.003	12,053	$1,912
2020	7.736	0.021	0.341	0.006	14,350	$2,226
2019	6.724	0.018	0.106	0.005	14,609	$2,275
2018	4.411	0.012	36.112	-36.095	11,318	$1,843

Lift Station #13

Time Period	Total Mgal	Avg Mgal	Max Mgal	Min Mgal	KWH	WE $
January	0.333	0.011	0.015	0.009	97	$29
February	0.284	0.010	0.021	0.007	93	$27
March	0.173	0.006	0.020	0.001	108	$30
April	0.048	0.002	0.003	0.001	103	$30
May	0.059	0.002	0.006	0.001	74	$21
June	0.056	0.002	0.004	0.001	114	$33
July	0.059	0.002	0.003	0.001	111	$32
August	0.074	0.002	0.007	0.001	106	$30
September	0.052	0.002	0.004	0.001	116	$33
October	0.064	0.002	0.005	0.001	101	$30
November	0.041	0.001	0.004	0.001	112	$32
December	0.044	0.001	0.009	0.001	96	$29
2021	1.286	0.004	0.021	0.001	1,231	$358
2020	1.980	0.005	0.085	0.001	1,666	$419
2019	2.729	0.007	0.046	0.002	2,130	$480
2018	2.347	0.006	0.085	0.001	1,872	$446

Lift Station #14

Time Period	Total Mgal	Avg Mgal	Max Mgal	Min Mgal	KWH	WE $
January	0.290	0.009	0.012	0.008	940	$142
February	0.253	0.009	0.021	0.007	840	$125
March	0.547	0.018	0.026	0.012	1,019	$151
April	0.341	0.011	0.020	0.009	961	$146
May	0.286	0.009	0.014	0.008	574	$89
June	0.231	0.008	0.013	0.007	700	$112
July	0.257	0.008	0.015	0.006	642	$103
August	0.255	0.008	0.014	0.006	540	$88
September	0.166	0.006	0.006	0.005	584	$96
October	0.268	0.009	0.019	0.005	606	$97
November	0.209	0.007	0.009	0.006	851	$131
December	0.248	0.008	0.015	0.006	881	$134
2021	3.349	0.009	0.026	0.005	9,138	$1,413
2020	6.008	0.016	0.146	0.006	15,386	$2,212
2019	6.857	0.019	0.097	0.007	11,175	$1,674
2018	6.062	0.017	0.130	0.005	9,385	$1,437

Storage Basin (adjacent to LS #2) Construction Complete

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/ 6-5th 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 ShinMaywa	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

Nearing Construction Completion June 1938

ARM-ACM-390_fillable (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: DATCPcswp@wisconsin.gov

2021 Wisconsin Clean Sweep Ag and/or HHW Collection Waste Summary

Grant Recipient: Racine Wastewater HHW

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	23646
Lead/Oil Paint	22486
Caustics/Corrosives	3639
Reactives	181
Solvents/Thinners	15950
Waste Oil	124
PCBs	132
Aerosol Cans	6395
Mercury	63
Dioxins	50
Latex Paint	0
Other	5343
Total ALL Collected Chemicals (lbs.)	78009
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

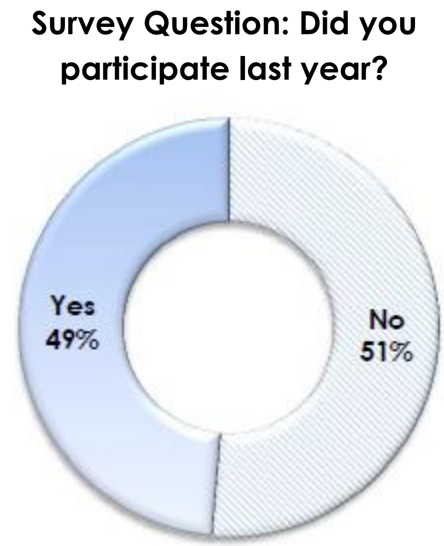
Item	Total Weight (lbs.)
VSQG Wastes Collected (Non-subsidized collected waste)	Click here to enter text.
VSQG Subsidized Waste (50% DATCP subsidized waste)	Click here to enter text.
Avg. weight per VSQG participant	Click here to enter text.

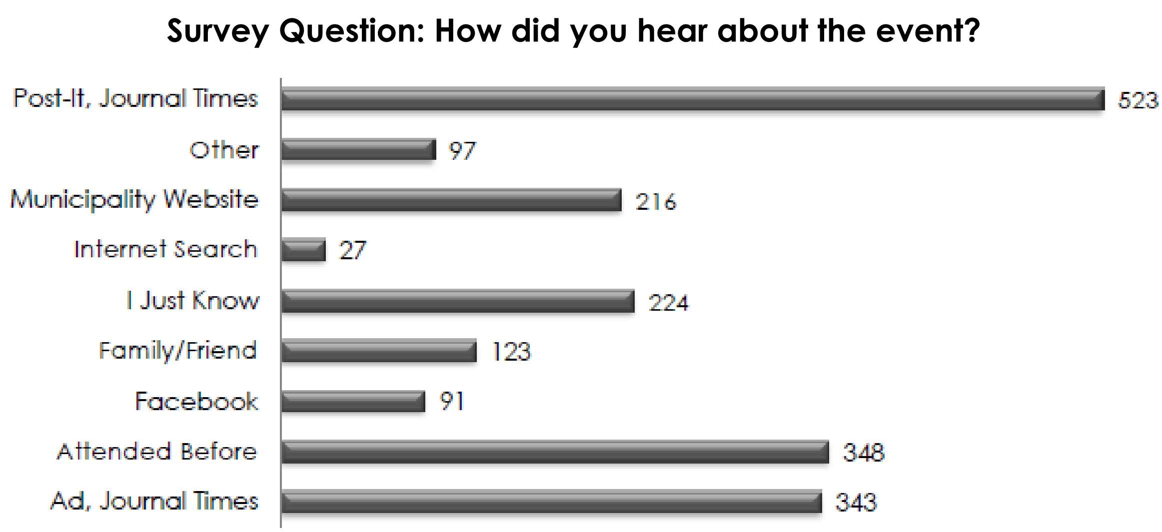
HHW Participation Data

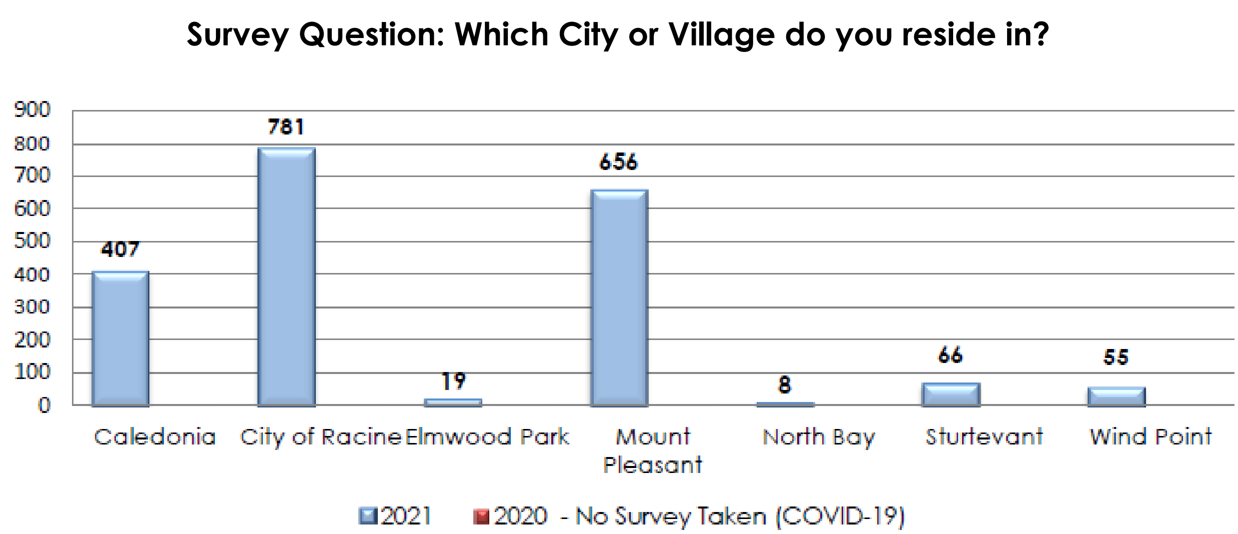
Total Participation 2021 vs 2020

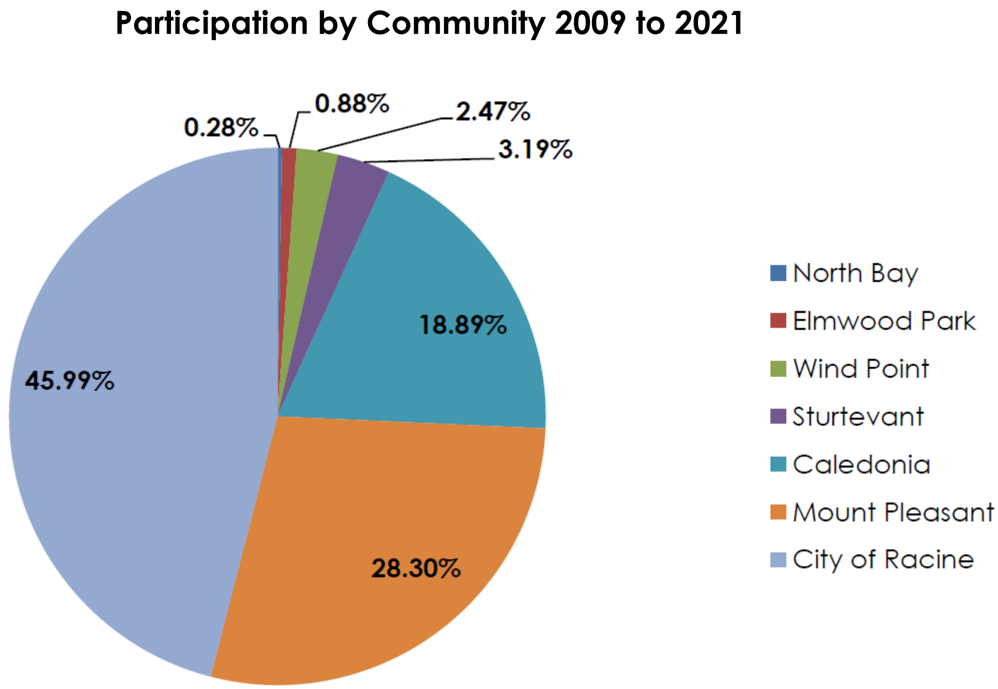
	2021	2020
April	403	0*
May	274	0*
June	249	491
July	219	342
August	232	307
September	221	418
October	394	501
Total	**1992**	**2059**

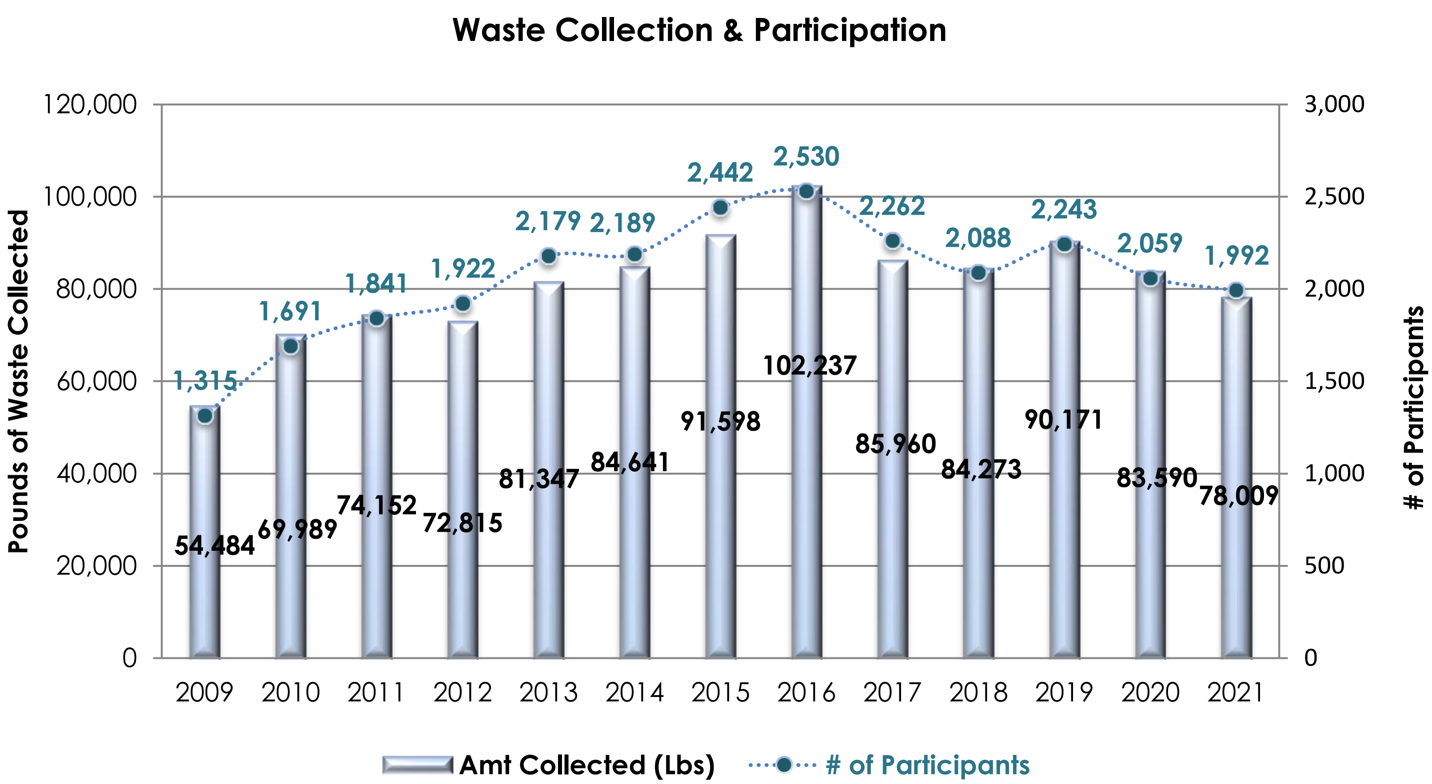
*Canceled due to COVID-19 Pandemic








Participation by Community 2009 to 2021
0.28%
0.88%
2.47%
3.19%
18.89%
45.99%
28.30%
North Bay
Elmwood Park
Wind Point
Sturtevant
Caledonia
Mount Pleasant
City of Racine


Waste Collection & Participation
Pounds of Waste Collected
# of Participants
120,000
100,000
80,000
60,000
40,000
20,000
0
3,000
2,500
2,000
1,500
1,000
500
0
2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
54,484 69,989 74,152 72,815 81,347 84,641 91,598 102,237 85,960 84,273 90,171 83,590 78,009
1,315 1,691 1,841 1,922 2,179 2,189 2,442 2,530 2,262 2,088 2,243 2,059 1,992
Amt Collected (Lbs)
# of Participants

APPENDIX A

Building Completion May 1939

Adopted Budget

	2020 ACTUAL	2021 BUDGET	2021 PROJECTED	2022 BUDGET	21 VS 22 BUDGET
Operating Revenue	$21,422,304	$22,782,123	$21,882,000	$22,782,123	0.0%
O&M Expense (includes PILOT)	$13,731,492	$14,063,000	$13,079,000	$14,202,000	1.0%
Depreciation	5,495,192	5,200,000	5,500,000	5,600,000	7.7%
Total Operating Expense	$19,226,684	$19,263,000	$18,579,000	$19,802,000	2.8%
Net Operating Income	**$2,195,620**	**$3,519,123**	**$3,303,000**	**$2,980,123**	-15.3%
Interest/Dividend Income	$83,001	$100,000	$72,000	$70,000	-30.0%
REC & Front Foot Income	$298,802	$1,217,174	$100,000	$1,097,735	-9.8%
Interest Expense	$1,563,085	$1,437,000	$1,993,000	1,698,000	18.2%
Net Income	**$1,014,338**	**$3,399,297**	**$1,482,000**	**$2,449,858**	-27.9%

Distribution of 2022 Budget Net Income	$2,449,858
Plus Depreciation	5,600,000
Total Cash Available	$8,049,858
Less Bond Principal Payments	(3,590,144)
Less Total Capital Improvement Projects	(15,828,000)
Plus Contributed Capital Improvement Projects	
Less Appropriation to City of Racine	(278,783)
Net Cash Balance	($11,647,070)
Funding - New Bond Issue and/or Reserves	

ACCOUNT	2019 Actual	2020 Budget	2020 6/30/2020	2020 Projected	Adopted 2021 Budget	20 vs 21 Budget
A. PERSONNEL SERVICES						
Salaries & Wages	$2,938,604	$3,239,000	$1,418,365	$3,230,000	$3,241,000	0.1%
B. CONTRACTUAL						
Professional Services	$230,131	$254,000	$94,425	$189,000	$277,000	9.1%
Laboratory Prof. Services	21,535	29,000	10,603	21,000	37,000	27.6%
Pre-treat. Prof Services	7,500	9,000	5,325	10,000	6,000	-33.3%
Building & Equipment Maint.	87,206	110,000	33,234	85,000	110,000	0.0%
Vehicle Maintenance	22,378	25,000	13,050	26,000	25,000	0.0%
Telephone	9,270	10,000	4,394	9,000	10,000	0.0%
Natural Gas	160,429	170,000	79,323	130,000	170,000	0.0%
Electric Service	919,761	950,000	477,250	900,000	950,000	0.0%
Water Service	249,609	265,000	63,351	253,000	300,000	13.2%
City Sewer & L.S. Maint.	9,421	18,000	129	12,000	18,000	0.0%
Interceptor & L.S. Maint.	112,349	130,000	16,232	95,000	130,000	0.0%
Sludge & Grit Disposal	645,977	687,000	436,721	775,000	688,000	0.1%
TOTAL	$2,475,565	$2,657,000	$1,234,037	$2,505,000	$2,721,000	2.4%
C. MATERIALS & SUPPLIES						
Office Supplies	$14,752	$14,000	$3,762	$12,000	$14,000	0.0%
Gasoline & Diesel Fuel	20,475	25,000	4,713	15,000	24,000	-4.0%
Lubricants	30,635	30,000	16,421	33,000	31,000	3.3%
Custodial Supplies	16,177	16,000	7,654	15,000	18,000	12.5%
Operational Chemicals	332,947	388,000	188,081	376,000	392,000	1.0%
Plant & System Supplies	52,420	56,000	24,307	49,000	56,000	0.0%
Equipment Supplies	212,355	215,000	107,902	216,000	220,000	2.3%
Sewer Maint. Supplies	6,469	7,000	-	5,000	10,000	42.9%
Pre-treat.Sampling Supplies	7,108	7,000	2,520	5,000	7,000	0.0%
Laboratory Supplies	61,186	55,000	24,930	50,000	58,000	5.5%
Pre-treat. Lab Supplies	19,465	22,000	4,394	15,000	22,000	0.0%
Computer & PLC Supplies	49,536	35,000	6,663	35,000	50,000	42.9%
TOTAL	$823,524	$870,000	$391,349	$826,000	$902,000	3.7%

D. CUSTOMER ACCOUNT						
Metering, Billing & Collection	$632,333	$620,000	$316,167	$640,000	$650,000	4.8%
E. ADMINISTRATION & GENERAL						
Dues, Publications & Travel	$30,885	$37,000	$5,279	$15,000	$35,000	-5.4%
FICA Tax	225,366	253,000	118,287	237,000	253,000	0.0%
Property & Liability Insurance	97,552	100,000	41,685	98,000	105,000	5.0%
Worker's Compensation Insur.	50,920	65,000	27,949	56,000	65,000	0.0%
Office Rent	30,510	32,000	15,702	31,000	33,000	3.1%
Wisconsin Retirement Expense	258,328	311,000	136,584	273,000	286,000	-8.0%
Medical Expenses	1,294,219	1,100,000	699,797	1,000,000	1,100,000	0.0%
Net OPEB Obligation	-	600,000	-	-	-	-100.0%
Life Insurance	27,637	15,000	6,143	12,000	15,000	0.0%
Safety Programs & Supplies	23,980	19,000	6,944	14,000	14,000	-26.3%
City Departmental Charges	83,000	85,000	41,500	83,000	85,000	0.0%
Training Programs	8,184	15,000	8,284	15,000	15,000	0.0%
Stormwater Fees	39,043	46,000	24,894	36,000	46,000	0.0%
DNR Permit Fee	132,018	137,000	136,788	137,000	142,000	3.6%
Airport Property Lease	49,824	51,000	50,846	51,000	52,000	2.0%
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TOTAL	$2,351,466	$2,866,000	$1,320,680	$2,058,000	$2,246,000	-21.6%
SUMMARY						
A. Personel Service	$2,938,604	$3,239,000	$1,418,365	$3,230,000	$3,241,000	0.1%
B. Contractual Service	2,475,565	2,657,000	1,234,037	2,505,000	2,721,000	2.4%
C. Materials & Supplies	823,524	870,000	391,349	826,000	902,000	3.7%
D. Customer Accounts	632,333	620,000	316,167	640,000	650,000	4.8%
E. Administrative & General	2,351,466	2,866,000	1,320,680	2,058,000	2,246,000	-21.6%
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TOTALS	$9,221,493	$10,252,000	$4,680,597	$9,259,000	$9,760,000	-4.8%

#		2021	2022	2023	2024	2025	Total
	GENERAL PLANT						
1	Laboratory Equipment	$28,000	$35,000	$80,000	$40,000	$60,000	$243,000
2	Roof Replacement	85,000	-	350,000	-	-	435,000
3	PLC & SCADA Equipment	50,000	50,000	50,000	50,000	50,000	250,000
4	Moisture Analyzer-Sludge	13,000	-	-	-	-	13,000
5	Clarifier Equipment Rehab	25,000	-	25,000	-	-	50,000
6	Tank Drainage Pump #3	10,000	-	-	-	-	10,000
7	LINKO Pretreatment Software	9,000	-	-	-	-	9,000
8	Crane and Hoist Replacement	10,000	10,000	-	-	-	20,000
9	**Property Development	4,500,000	-	-	-	-	4,500,000
10	**Facilities Plan Deficiency Eng	5,000,000	-	-	-	-	5,000,000
	Subtotal	$9,730,000	$95,000	$505,000	$90,000	$110,000	$10,530,000
	AUTOMOTIVE						
1	Pickup/Van/SUVs	$0	$0	$0	$53,000	$35,000	$88,000
2	Utility Trucks	-	97,000	-	-	-	97,000
3	Vactor (city)	-	-	397,000	-	-	397,000
	Subtotal	$0	$97,000	$397,000	$53,000	$35,000	$582,000
	COLLECTION SYSTEM						
1	LS Controls/Building	$0	$100,000	$0	$0	$100,000	$200,000
2	**6th St Bridge Int Relocate	2,000,000	-	-	-	-	2,000,000
3	**Festival Hall LS4 Replace (city)	1,500,000	-	-	-	-	1,500,000
4	**At North Beach Dev LS/FM (city)	-	-	1,370,000	-	-	1,370,000
5	Field Meters and Samplers	25,000	-	7,000	7,000	7,000	46,000
6	Lift Station Generator Replacement	60,000	60,000	60,000	60,000	60,000	300,000
7	Lift Station Pump Replacement	12,000	14,000	-	-	-	26,000
8	Valve Excerciser w/Accessories	13,000	-	-	-	-	13,000
9	Telemetry PLC Upgrades	-	50,000	-	-	-	50,000
10	Interceptor Improvement Projects	780,000	125,000	725,000	625,000	125,000	2,380,000
11	**North Park LS Storage (3.5 MG)	-	-	7,070,000	-	-	7,070,000
12	**Hoods Creek LS Storage (1.5 MG) Ph2	-	-	3,760,000	-	-	3,760,000
13	**Chicory Rd Storage Basin (1.0 MG)	-	-	3,090,000	-	-	3,090,000
14	**Pike River LS Storage (11.0 MG)	-	-	-	-	21,130,000	21,130,000
	Subtotal	$4,390,000	$349,000	$16,082,000	$692,000	$21,422,000	$42,935,000
	TOTAL COST	$14,120,000	$541,000	$16,984,000	$835,000	$21,567,000	$54,047,000

CLASS I & II CHARGES

CLASS I CHARGES - 2021 — 10/1/2020 Adopted

AREA		2020	2021	% CHANGE	Overall % Change
A.	City of Racine ($/ccf)	$2.67	$2.42	-9.4%	
	plus quarterly fixed charge	$20.00	$40.00	100.0%	19.4%
B.	Elmwood Park ($/ccf)	$2.65	$2.41	-9.1%	
	North Bay ($/ccf)	$2.65	$2.41	-9.1%	
	plus quarterly fixed charge	$20.00	$20.00	0.0%	-6.7%
C.	Mt. Pleasant (int) ($/MG)	$1,380.45	$1,212.55	-12.2%	-12.2%
	Caledonia ($/MG)	$1,380.45	$1,212.55	-12.2%	-12.2%
	Sturtevant ($/MG)	$1,380.45	$1,212.55	-12.2%	-12.2%
D.	Mt. Pleasant ($/MG)	$1,712.19	$1,521.57	-11.1%	-11.1%
	Caledonia ($/MG)	$1,712.19	$1,521.57	-11.1%	-11.1%

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.

CLASS 2 CHARGES - 2021 — 10/1/2020 Adopted

AREA		2020	2021	Difference	% CHANGE
A.	City of Racine ($/MG)	$2,370.59	$2,170.03	($200.56)	-8.5%
B.	Mt. Pleasant - Sturtevant ($/MG)	$779.51	$682.89	($96.63)	-12.4%
C.	Caledonia ($/MG)	$1,083.05	$967.72	($115.33)	-10.6%
D.	BOD ($/1000 LBS.)	$285.20	$271.97	($13.22)	-4.6%
F.	PHOS ($/1000 LBS.)	$2,137.82	$2,186.61	$48.79	2.3%

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
4/25/2018	**WW012**	**2018**	Escape 4 DR. 4 WD	**98882**	4540 GVWR	15.7 gal. cap LEV	1.5	$25,122.50
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. L:EV	6.2	$33,445.00
								$1,067,632.86

WWTP Plant October 1939: Post construction 1934-1939