



PUBLIC UTILITIES COMMISSION AGENDA

City of Brainerd, Minnesota
City Hall, 501 Laurel Street, Council Chambers
Tuesday, February 25, 2025 @ 9:00 AM

The public is invited to attend these meetings in person

1. **Call To Order**

2. **Roll Call**

___ M. Higgins ___ D. Matten ___ M. O'Day ___ P. Wussow ___ M. Angland

3. **Pledge of Allegiance**

4. **Approval Of Agenda - Voice Vote**

5. **Consent Calendar**

NOTICE TO PUBLIC - all matters listed are considered routine by the Commission and will all be enacted by one (1) motion. There will be no separate discussion of these items unless good cause is shown prior to the time the Commission votes on the motion to be ADOPTED BY ROLL CALL

A. **Approval of Minutes**

B. **Approval of Bills**

6. **Public Forum**

Time allocated for citizens to bring matters not on the agenda to the attention of the Commission -
Time limits may be imposed

7. **Commission Committee Reports**

A. **Personnel Committee**

B. **Finance/Operations Committee**

1. Discuss ClimaVision Lease
2. Discuss AEP Updates and Approve sale of Excess Capacity
3. Approve Baxter Wholesale Rate
4. Schedule Public Hearing: Project Priority List Request - Main Lift Station Improvements
5. Discuss Twilio Outage Notification Roll Out & Enrollment

8. **Unfinished Business**

(See attached separate memo regarding updates on unfinished business)

- A. **Accept Bolton & Menk Inc. proposal related to 20-year Wastewater Assessment**

9. **New Business**

- A. **Authorize Change in Bank Signers**
- B. **Consider Customer Credit Request**

10. **Staff Reports**

(Verbal: Any Updates since Packet)

- A. **City Administrator Report**
- B. **Council Liaison Report**
- C. **HR Director Report**
- D. **Public Utilities Director Report**
- E. **Finance Manager Report**
- F. **Operations Manager Report**
- G. **Water/Wastewater Manager Report**

11. **Commission Member Reports**

12. **Adjourn**

Visit Brainerd Public Utilities website at www.bpu.org

MISSION

"The mission of Brainerd Public Utilities is to provide safe, reliable, environmentally friendly electric, water and sewer services to our customers at the lowest reasonable cost."



BRAINERD PUBLIC UTILITIES

8027 Highland Scenic Rd • P.O. Box 373 • Brainerd, Minnesota 56401

Business Office: 218.829.8726 ■ **Repair Service:** 218.829.2193

www.bpu.org

The regular meeting of the Brainerd Public Utilities Commission was held at 9:00 AM on January 28, 2025.

Commission President Matten called the meeting to order at 9:00 AM.

Commission Roll Call

Mike Angland – Present

Mark O'Day – Present

Patrick Wussow – Present (Phone Conference)

Mike Higgins - Present

Dolly Matten – Present

Utility Staff Present

Public Utilities Director

Christopher Evans

Finance Manager

Danny Loch

Operation Manager

Trent Hawkinson

Water/Wastewater Manager

Charlie Gammon

Electric Distribution Supervisor

Mitch Lachelt

Business Office Supervisor

Jana Pernula

Recording Secretary

Mandy Selisker

Recording Secretary

Becky Ridlon

Others in Attendance

City Administrator

Nick Broyles

HR Director

Kris Schubert

Public Works Director

Mike Habighorst

Community Development Director

James Kramvik

Technology Director

Shawn Strong

City Council Liaison

Jeff Czczok

Bolton & Menk

Morgan Salo, PE

Widseth

Bill Westerberg, PE

Brainerd Fire Chief

Tim Holmes

ClimaVision

Emily Pawsat

City of Baxter

Trevor Walters

Citizen

Brian Timmers

Citizen

Tony Wolff

Citizen

Carter Kuehn

Commissioner Matten opened the meeting with the Pledge of Allegiance.

Election of Officers – 2025

Commissioner Matten called for nominations for President.

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

Motion by Commissioner O'Day and seconded by Commissioner Higgins to nominate Commissioner Angland as the 2025 Commission President. There was a unanimous roll call vote in favor of the motion. Motion carried.

Commissioner Angland called for nominations for Vice President.

Motion by Commissioner Matten and seconded by Commissioner Higgins to nominate Commissioner O'Day as the 2025 Commission Vice President. There was a unanimous roll call vote in favor of the motion. Motion carried.

Approval of Agenda Items

Motion by Commissioner Matten and seconded by Commissioner O'Day to approve the agenda. There was a unanimous roll call vote in favor of the motion. Motion carried.

Commission Committee Appointments

Personnel Committee

Commissioner Matten volunteered and Commissioner Wussow was appointed by President Angland.

Finance Committee

Commissioners O'Day and Higgins were appointed by President Angland.

Operations Policy Committee

Commissioners O'Day and Higgins volunteered and were appointed by President Angland.

Approval of Consent Items

Motion by Commissioner O'Day and seconded by Commissioner Matten to approve the minutes from December 31st, 2024, regular monthly meeting and current month's bills. There was a unanimous roll call vote in favor of the motion. Motion carried.

Public Forum

None

Commission Committee Reports

Personnel

None

Finance

None

Operations Policy Committee

None

Unfinished Business - See board packet for staff memo.

South Brainerd Alley Project

City Council Liaison Czezczok inquired about who is taking the lead on this project that includes a proposed water line replacement. Discussion included:

- Operations Manager Hawkinson commented that the City Engineering Department is taking the lead role on the project at this time.

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

- Public Works Director Habighorst noted that the property owner will have the ability to apply for grants. There are also bi-weekly coordination meetings occurring between BPU staff and City staff regarding ongoing street projects.
- Commissioner Angland stressed the importance of clear communication in 2025 for projects and related financial impacts.
- Commissioner Higgins asked about roles and responsibilities related to street projects.
 - Habighorst noted that it is ½ city and ½ BPU responsibility. BPU's responsibility is the water lines up to the property lines. City Council touches each street project five times throughout the course of the project.
- City Administrator Broyles reviewed the importance of three pillars of project management are cost, schedule, and performance. When projects fall partially on both sides (BPU/City), lines can get blurred. Broyles noted he would have an action item of working towards increased communication and coordination while being smart and cost effective.
- Habighorst noted his goal of increased public engagement and addressing public concerns at the upcoming city council retreat. Habighorst said he would provide the scope of the project to Czezok.

Authorize staff to negotiate updated AEP Contract Amendment

Public Utilities Director Chris Evans presented. Discussion included:

- Commission had authorized staff at the December meeting to proceed with the contract extension at \$48.05 per MWh. Due to real-time market rates, price per MWh had already increased above that at the time staff followed up with AEP. As of January 28th, the current market rate is \$49.50 per MWh. Staff recommended approving an extension with AEP for market pricing not to exceed \$49.70 per MWh.
- Commissioner Higgins questioned the reason for extending. Evans explained using this as a mechanism for price hedging which provides cost stabilization and consistency of rates.
- Commissioner O'Day reviewed history with AEP and consistent contract with extensions with the goal of maintaining the lowest rates possible.
- Commissioner Higgins stated that he was not in favor of a contract extension for several reasons including there is no incentive being offered other than a rate guarantee, not addressing the growing power need and eliminating the opportunity for negotiation for potential providers.

Motion by Commissioner O'Day and seconded by Commissioner Matten to authorize Director Evans to negotiate with AEP for market pricing not to exceed \$49.70 per MWh. There was a roll call vote with Matten, O'Day, Angland, and Wussow voting in favor and Higgins opposed. Motion carried.

Commissioner O'Day requested the purchase of the Roberts property be added to completed on the unfinished business memo. City Administrator Broyles confirmed the property closed approximately a month ago.

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

New Business

Discuss ClimaVision site findings and potential lease- See board packet for site evaluation and sample lease agreement.

Emily Pawsat, ClimaVision, presented. Discussion included:

- Site identified was the water tower at State Avenue/ Highway 18.
- No cost project to community or BPU. All data collected would be available to BPU officials and other authorized users identified.
- Structure analysis and Blockage analysis passed.
- Next steps would include a lease agreement and then engineering.
- Commissioner O'Day asked about the installation timeline. Pawsat noted typically between July and October, depending on seasonality and other leases received.
- Commissioner Matten verified that terms can be modified and negotiated from the lease template. Matten asked about ownership of property and road access. Hawkinson confirmed there is an easement in place.
- Commissioner Wussow wants to see a payment to BPU on a monthly or annual rate as well as reimbursement of any attorney fees.
- City Council Liaison Czezok inquired about how Climavision makes revenue to operate. Pawsat noted that the data generated is monetized and then provided to operations such as the National Weather Service, Department of Transportation and TV stations.
- Commissioner Higgins would also like to see additional data on Climavision's revenue streams and funding.
- Commissioner Matten would like to know the dollar value of the service provided back to BPU (at no cost). Matten also verified the language could be modified on relocating the radar should damage due to a "act of God."

Motion by Commissioner O'Day and seconded by Commissioner Matten to authorize staff to move forward with negotiating the contract and bringing back a draft to the Commission for final approval. There was a unanimous roll call vote in favor of the motion. Motion carried.

Consider City of Baxter Request for wholesale water rate – See board packet for formal request.

Public Utilities Director Evans and Trevor Walters, City of Baxter, presented the request. Highlights included:

- Walters explained request is to obtain a wholesale water rate for the summer of 2025 similar to what was done in 2021 when their filter system failed, and they relied 100% on the Brainerd water system. The city of Baxter's goal is to drill two new wells and increase capacity to 4 million gallons per day. As a supplement to their system, they are looking to obtain additional water through the metered interconnect.
- Commissioner O'Day asked if the 2021 study could be updated for this request. Evans Explained that he used 2023 data to reflect Baxter as 1 customer with an estimated need of 89 million gallons (17% increase) and adjusting for a wholesale rate vs. a retail rate. This equated to the purposed wholesale rate of \$3.32/1,000 gallons vs. the current retail rate of \$4.92 per/1,000 gallons.
- Commissioner Higgins inquired about if Brainerd had the additional water capacity to fulfill the request. Water/Wastewater Manager Gammon explained he doesn't foresee any issues,

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

however, if something were to arise it would be communicated. Walters noted that the additional water needed would be consistent from May to October at the rate of approximately 300-400 gallons per minute for that timeframe.

- Commissioner Matten noted that in 2021 there was no chlorine added and that has since changed as well as increased water rates for the utility. Walters explained that with the water now chlorinated, orthophosphate being added and the increase in costs, the proposed rate didn't surprise him.
- Czezok questioned the potential of Brainerd residents being affected. Evans explained that there would be coordination between the two systems. Walters noted the need is for approximately a 15% supplementation and if Brainerd would have an emergency, they would be ok in the short term to kick in a fourth well.
- Commissioner Wussow explained the recent water rate increase of 20% and was not in favor of the proposed rate. Wussow would like to see it closer to the retail rate. Higgins agreed.
- Commissioner Matten asked if there was any additional room for negotiation on Baxter's side. Matten recognized the value of maintaining a good working relationship with the city of Baxter but also wanted to be fair to current rate payers.
- Evans explained the details behind his calculation, using past data, current rates, and miles of distribution from the plant to the interconnect, all being factors of the proposed rate.
- Higgins asked about the cost to produce water. Evans responded with \$2.87/1,000.

Motion by Commissioner Wussow and seconded by Commissioner Matten a 10% reduction from the \$4.92 retail rate to a flat \$4.50 wholesale rate for the City of Baxter. No vote called.

- Commissioner Matten asked about other options for rates. Walters explained the City of Baxter's retail rate for 2025 is \$3.86/1,000 with a cost of approximately \$2.25/1,000 before depreciation. Walters discussed that if rate is not realistic other alternatives may need to be looked at including restricting lawn irrigation. Higgins noted he needed more time to decide. Walters explained he has time but would need to have a plan in place by May 1st. Wussow noted that BPU has had a loss in the water department for the last 3 years and is expecting another water rate increase within the next year. Czezok echoed Wussow.
- Commissioner Angland also expressed appreciation for the City of Baxter's relationship during previous boil orders.

Motion by Commissioner Wussow and seconded by Commissioner Matten to bring back this discussion at February meeting following the finance committee meeting with the City of Baxter. There was a roll call vote in favor of the motion. Motion carried.

Consider changing sprinkling credit months -See board packet for request.

Commissioner O'Day spoke about numerous calls received and is in favor of extending through the month of October. Commissioner Matten clarified this would be from May through end of October.

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

Motion by Commissioner O'Day and seconded by Commissioner Higgins to extend the sprinkling credit through October as well as using all months outside of the credit period to determine a customer's average usage. There was a unanimous roll call vote in favor of the motion. Motion carried.

Approve scope of work for the PPL Application services for water improvements -See board packet for proposal.

Discussion included: Commissioners Wussow and Matten appreciated the statement that the fee would not be increased without prior authorization, however, would like to clarify that it would be approval by the department head versus the city.

Motion by Commissioner Matten and seconded by Commissioner Wussow to approve the Bolton & Menk scope of work for PPL application services. There was a unanimous roll call vote in favor of the motion. Motion carried.

Review Central Business District Incentive Policy -See board packet for policy.

Community Development Director Kramvik presented. Discussion included:

- Ordinance 1578 was approved by city council as well as the Central Business District Incentive Policy, which waves SAC/WAC in certain areas of Brainerd. City Council wanted to get comments and recommendations from the Public Utilities Commission.
- Commissioner Angland reviewed the 2019 rivers to rail district incentive, noting the \$150,000 threshold for waving SAC/WAC and the flexibility for negotiations above that amount. Angland stressed the importance of having a review from the commission and being a part of project conversations. Angland pointed out that the other option of generating revenue would be raising rates to offset costs. Kramvik agreed that having a review from the commission as part of the process would be a realistic recommendation.
- Commissioner Higgins emphasized the importance of the commission being informed especially when it comes from forgiveness of fees and effects BPU's budget.
- Commissioner O'Day also emphasized that rate payers will absorb cost for aging infrastructure. O'Day discussed potential special housing taxes done in other cities. Kramvik noted that the city could look into special taxes as well as a recommendation from the Commission for projects that exceed a certain dollar amount.
- City Council Liaison Czczok recommended the Commission put together a memo on SAC/WAC fees that outlines how they are collected and how they can be applied.
- Commissioner Matten pointed out that BPU didn't have a voice in the original city code even though it directly affects our infrastructure. Matten noted that she would be in favor of a reduced fee versus complete waiving.
- Kramvik reviewed that SAC/WAC fees are listed in the city's fee schedule but then transferred for use at BPU.

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

Sending to operations policy and finance committee to review and discuss and bring back to the Commission in February with recommendations. Czczok reiterated a memo would be ideal. Angland suggested a meeting with City Council to discuss further.

Discuss Brainerd Industrial Centers Request for a Purchase Power Agreement (PPA)

Commissioner Higgins abstained due to conflict of interest.

Commissioner Angland presented. Discussion included:

- Brainerd Industrial Center (BIC) requested from staff consideration a 30 MW PPA.
- Hawkinson discussed the previous load study and current crypto loads versus new loads that would not be subject to load shedding; current transmission lines, goal of creating redundancy and limiting exposure to mother nature. BPU's current transmission line could be curtailed by Minnesota Power (MP) depending on circumstances. Future goals for reinvesting in infrastructure, 20-year plan for electric projects, and handling large industrial requests are all needed. Currently a request for 30 MW that is not curtailable is not feasible.
- Angland discussed the importance of public education on capacity.
- Evans discussed BPU's relationship with MP and summarized the process of a transmission study. Key factors to consider are philosophy, procedure, policy, and direction. Additional considerations would be the percentage of cost for both BPU and the applicant, as well as if these would be refundable.
- Angland encouraged communication to both EDA and City Council on this significant capacity concern. Angland requested the finance committee to discuss a potential MISO study as well as provide a formal response to the applicant. Hawkinson noted that in 2022, a MISO study was estimated at \$20,000. Matten inquired if future permitting costs could be used to recoup the cost of a study.

Staff Reports

City Administrator Report

City Administrator Broyles reported on the following:

- The City Council introduced Shawn Strong as the new Technology Director, as part of the IT integration.
- The Finance department provided a briefing on potential Integration. A future meeting will occur with the integration work group.

City Council Liaison Report

Czczok thanked the Commission for the in-depth discussions.

HR Director's Report – see board packet for report.

Schubert provided an update on IT integration.

- Technology Director Strong met with BPU staff several times to assess department needs.
- A revised department organizational chart and job descriptions will be recommended to the City Council next week. Wages will be negotiated with the IBEW Admin Support union.
- Emphasized BPU staff now have access to an additional two staff members for IT needs.

BRAINERD PUBLIC UTILITIES COMMISSION MEETING

January 28, 2025

Public Utilities Director's Report – see board packet for report

- Energy from Hydro projects are able to be considered renewable.
- Conversation with MP to build report and continue discussions on redundancy and improvements to our system.

Managers Reports

Finance Manager's Report – see board packet for report.

Operations Manager Report

Hawkinson reported ongoing maintenance for electric crews. Water crews have been addressing frozen water lines on the resident's side. Currently there has been no freezing in the distribution system.

- Higgins complimented BPU staff on minimal outages.

Water/Wastewater Report – see board packet for report.

A joint meeting with City of Baxter to occur soon once the 20-year study is completed.

Commission Members – Reports

Commissioner Higgins reported on the following:

- Expressed concern with the City of Brainerd not having enough power to foster growth with current capacity and crypto loads. The current power limitation would eliminate the possibility of a large manufacturing company to be able to open. Higgins noted that he will continue to have this conversation.

Commissioner Matten reported on the following:

- March 7th meeting with high school students about being in local government work.
- Encouraged future community outreach opportunity with the City of Baxter to provide public education.

Commissioner Wussow reported on the following:

- Hydro generation report.
- Explained AEP contract rates for our two solar sites.

Adjournment

Motion by Commissioner O'Day and seconded by Commissioner Matten to adjourn the meeting and note that the meeting location going forward is City Hall Chambers. There was a unanimous roll call vote in favor of the motion. Motion carried at 11:31 AM.

Mike Angland, Commission President

Danny Loch, Finance Manager/Secretary



Brainerd Public Utilities, MN

Board Packet Check Report

By Check Number

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
Bank Code: AP2-BREMER BANK						
06208	MN PUBLIC FACILITIES AUTHORITY	02/18/2025	EFT	0.00	111,053.55	226
MPFA-08-0038-R...	Invoice	02/14/2025	PFA LOAN: MPFA-08-0038-R-FY09	0.00	111,053.55	
00140	AEP ENERGY PARTNERS, INC.	02/19/2025	EFT	0.00	1,556,297.26	227
175-21540867	Invoice	02/18/2025	Invoice Period: 01/01/2025-01/31/2025	0.00	1,556,297.26	
07343	Gridiron Generation HoldCo, LLC	02/19/2025	EFT	0.00	37,745.02	228
INV-0380	Invoice	02/18/2025	Invoice Period: 01/01/2025 - 01/31/2025	0.00	37,745.02	
00796	Certification Services LLC	01/28/2025	Regular	0.00	825.00	83234
INV992 - Reissue	Invoice	01/28/2025	Calibration / Testing	0.00	825.00	
00755	BJERGA'S FEED STORE	01/31/2025	Regular	0.00	272.35	83239
1436952	Invoice	12/31/2024	Tordon RTU	0.00	272.35	
02002	CITY OF BAXTER	01/31/2025	Regular	0.00	1,091.23	83240
007335-000-01/1...	Invoice	12/31/2024	STORMWATER - ACCT# 007335-000	0.00	1,091.23	
00075	A W RESEARCH	02/11/2025	Regular	0.00	4,246.24	83241
68108	Invoice	02/11/2025	PUR JAN AW INVOICES	0.00	756.00	
68110	Invoice	02/11/2025	PUR JAN AW INVOICES	0.00	3,490.24	
00105	ACE HARDWARE-BRAINERD	02/11/2025	Regular	0.00	64.41	83242
329967	Invoice	02/11/2025	JAN ACE INVOICES	0.00	16.34	
330038	Invoice	02/11/2025	JAN ACE INVOICES	0.00	28.85	
330116	Invoice	02/11/2025	JAN ACE INVOICES	0.00	19.22	
00250	AMARIL UNIFORM COMPANY	02/11/2025	Regular	0.00	2,912.11	83243
IV272672	Invoice	02/11/2025	PUR AMARIL INVOICE	0.00	2,912.11	
00337	AMERICAN WELDING & GAS INC	02/11/2025	Regular	0.00	240.35	83244
0010615750	Invoice	02/11/2025	PUR AWG INVOICES	0.00	177.67	
0010638972	Invoice	02/11/2025	PUR AWG INVOICES	0.00	62.68	
00730	BERT'S TRUCK EQUIPMENT OF MOORHEAD	02/11/2025	Regular	0.00	263.91	83245
S102648	Invoice	02/11/2025	PUR BERT INVOICE	0.00	263.91	
00735	Best Oil, LLC	02/11/2025	Regular	0.00	4,988.30	83246
39053	Invoice	02/11/2025	PUR BEST OIL INVOICES	0.00	547.50	
39054	Invoice	02/11/2025	PUR BEST OIL INVOICES	0.00	532.00	
39152	Invoice	02/11/2025	PUR BEST OIL INVOICES	0.00	478.75	
39153	Invoice	02/11/2025	PUR BEST OIL INVOICES	0.00	772.50	
39219	Invoice	02/11/2025	PUR FEB BEST OIL INVOICES 01	0.00	470.00	
39220	Invoice	02/11/2025	PUR FEB BEST OIL INVOICES 01	0.00	448.05	
39317	Invoice	02/11/2025	PUR FEB BEST OIL INVOICES 01	0.00	658.00	
39318	Invoice	02/11/2025	PUR FEB BEST OIL INVOICES 01	0.00	1,081.50	
00825	BORDER STATES ELECTRIC	02/11/2025	Regular	0.00	1,333.14	83247
929745555	Invoice	02/11/2025	PUR 30MM REPLACEMENT COLOR CAPS	0.00	83.58	
929782750	Invoice	02/11/2025	PUR 30MM REPLACEMENT CAPS	0.00	13.93	
929782763	Invoice	02/11/2025	INV ELEC HARDWARE	0.00	380.00	
929782775	Invoice	02/11/2025	PUR HEADLAMPS	0.00	749.55	
929798390	Invoice	02/11/2025	PUR 30MM REPLACEMENT COLOR CAPS	0.00	83.58	
929798400	Invoice	02/11/2025	PUR HARDHAT	0.00	22.50	
02785	DACOTAH PAPER CO	02/11/2025	Regular	0.00	308.36	83248

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
96322	Invoice	02/11/2025	PUR SOAP AND DISPENSORS	0.00	308.36	
02955	DONDELINGER INCORPORATED	02/11/2025	Regular	0.00	258.11	83249
47923	Invoice	02/11/2025	PUR DONDELINGER INVOICE	0.00	258.11	
03282	FERGUSON WATERWORKS #2518	02/11/2025	Regular	0.00	1,488.91	83250
0541163	Invoice	02/11/2025	INV WC BRASS CONNECTORS	0.00	531.07	
0542137	Invoice	02/11/2025	PUR FERGUSON HYDRANT PARTS	0.00	957.84	
03687	GOODIN COMPANY	02/11/2025	Regular	0.00	44.79	83251
6675249-00	Invoice	02/11/2025	PUR GOODIN INVOICE	0.00	44.79	
03699	GRAINGER	02/11/2025	Regular	0.00	26.28	83252
953118020	Invoice	02/11/2025	Steel Nozzle Kit	0.00	26.28	
04050	HAWKINS INC.	02/11/2025	Regular	0.00	12,460.79	83253
6970372	Invoice	02/11/2025	JAN HAWKINS INVOICE	0.00	12,460.79	
05168	KURITA AMERICA INC.	02/11/2025	Regular	0.00	21,159.60	83254
INV873904	Invoice	02/11/2025	PUR KURIFLOC 3874 (275)	0.00	21,159.60	
05335	LAKES AREA MAT SERVICE II, INC	02/11/2025	Regular	0.00	108.75	83255
20250106	Invoice	02/11/2025	PUR LAKES AREA MATS INVOICES	0.00	53.91	
20250120	Invoice	02/11/2025	PUR LAKES AREA MATS INVOICES	0.00	54.84	
05625	LOCATORS & SUPPLIES, INC.	02/11/2025	Regular	0.00	705.73	83256
0318860-IN	Invoice	02/11/2025	PUR LOCATORS AND SUPPLIES INVOICE	0.00	705.73	
05976	MIDWEST MACHINERY CO.	02/11/2025	Regular	0.00	13.47	83257
10346437	Invoice	02/11/2025	PUR JAN MIDWEST MACHINE INVOICE	0.00	13.47	
05975	Midwest Motor Supply Co. Inc.	02/11/2025	Regular	0.00	62.03	83258
102973567	Invoice	02/11/2025	PUR HARDWARE	0.00	62.03	
06065	MILLS AUTOMOTIVE GROUP	02/11/2025	Regular	0.00	215.46	83259
605797	Invoice	02/11/2025	PUR MILLS INVOICE	0.00	215.46	
06190	MINNESOTA MUNICIPAL UTILITIES ASSOCIATION	02/11/2025	Regular	0.00	3,237.50	83260
65534	Invoice	02/11/2025	Apprentice Training Program & Supplies	0.00	3,237.50	
06205	MINNESOTA POWER	02/11/2025	Regular	0.00	4,800.00	83261
257000473662	Invoice	02/11/2025	METERING MAINT. AGREEMENT:2025 - Ac...	0.00	4,800.00	
06266	MINNESOTA VALLEY TESTING LABS	02/11/2025	Regular	0.00	1,801.00	83262
1289465	Invoice	02/11/2025	PUR JAN MVTL INVOICES	0.00	113.00	
1289658	Invoice	02/11/2025	PUR JAN MVTL INVOICES	0.00	486.00	
1290002	Invoice	02/11/2025	PUR JAN MVTL INVOICES	0.00	358.00	
1290223	Invoice	02/11/2025	PUR JAN MVTL INVOICES	0.00	358.00	
1290356	Invoice	02/11/2025	PUR JAN MVTL INVOICES	0.00	486.00	
06155	MN DEPARTMENT OF PUBLIC SAFETY	02/11/2025	Regular	0.00	125.00	83263
1801500852024...	Invoice	02/11/2025	SECTION 302/SECTION 312 - FACILITY ID: ...	0.00	25.00	
1801500872024...	Invoice	02/11/2025	SECTION 302/SECTION 312 - FACILITY ID: ...	0.00	100.00	
06790	NAPA AUTO PARTS BAXTER	02/11/2025	Regular	0.00	338.00	83264
772327	Invoice	02/11/2025	PUR NAPA INVOICES	0.00	186.30	
772495	Credit Memo	02/11/2025	Credit: Original Inv - 772340 / Battery	0.00	-186.30	
773847	Invoice	02/11/2025	PUR NAPA INVOICES	0.00	109.00	
775649	Invoice	02/11/2025	PUR NAPA INVOICES	0.00	229.00	
07615	PIKE PLUMBING & HEATING OF BRD, INC	02/11/2025	Regular	0.00	4,531.59	83265
89489	Invoice	02/11/2025	PUR PIKE PLUMBING INVOICE	0.00	4,531.59	
10225	POMP'S TIRE SERVICE INC.	02/11/2025	Regular	0.00	3,905.61	83266
2300008481	Invoice	02/11/2025	PUR JAN POMP'S INVOICES	0.00	3,326.07	

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
2300008553	Invoice	02/11/2025	PUR JAN POMP'S INVOICES	0.00	579.54	
08072	REFRIGERATION-HEATING, INC.	02/11/2025	Regular	0.00	140.82	83267
1443769	Invoice	02/11/2025	PUR RH SUPPLY INVOICE	0.00	140.82	
08058	RESCO	02/11/2025	Regular	0.00	1,111.82	83268
3060659	Invoice	02/11/2025	PUR SEL-C519 RECLOSER CABLE 3-PIN F/TI...	0.00	1,061.70	
3060709	Invoice	02/11/2025	INV ELEC SERVICE SPLICE	0.00	50.12	
06268	Ryan Churchill	02/11/2025	Regular	0.00	640.00	83269
6685415	Invoice	02/11/2025	WEBSITE SUPPORT / TRAINING: 01/2025	0.00	640.00	
08880	Sterling Plastics, Inc.	02/11/2025	Regular	0.00	1,864.72	83270
00195763	Invoice	02/11/2025	PUR HYDRO BEARING	0.00	1,864.72	
08895	STUART C. IRBY CO	02/11/2025	Regular	0.00	35,561.94	83271
S014104171.001	Invoice	02/11/2025	INV AMPACT ORDER	0.00	517.50	
S014145812.001	Invoice	02/11/2025	PUR 9LR METER COVERS	0.00	56.00	
S014162987.001	Invoice	02/11/2025	INV EB1510 CLAMPS	0.00	299.00	
S014169968.001	Invoice	02/11/2025	INV 15KV 1/0 OKONITE	0.00	34,689.44	
10040	TEST-RIGHT, LLC	02/11/2025	Regular	0.00	311.00	83272
975	Invoice	02/11/2025	PUR NEW GLOVE AND SLEEVE TESTING	0.00	311.00	
00340	Vestis Group, Inc.	02/11/2025	Regular	0.00	101.43	83273
2530361206	Invoice	02/11/2025	WORK UNIFORMS	0.00	33.81	
2530363652	Invoice	02/11/2025	WORK UNIFORMS	0.00	33.81	
2530366147	Invoice	02/11/2025	PUR JAN VESTIS INVOICE	0.00	33.81	
09663	VIKING ELECTRIC SUPPLY, INC	02/11/2025	Regular	0.00	1,466.21	83274
S008803704.002	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	13.09	
S008821313.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	361.81	
S008822861.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	80.08	
S008822861.002	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	72.36	
S008823580.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	334.85	
S008826974.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	128.36	
S008827972.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	50.16	
S008832931.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	166.96	
S008832931.002	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	152.88	
S008832931.003	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	41.08	
S00883704.001	Invoice	02/11/2025	PUR VIKING ELECTRIC INVOICES	0.00	64.58	
09899	WESCO RECEIVABLES CORP	02/11/2025	Regular	0.00	1,087.75	83275
506303	Invoice	02/11/2025	PUR MPS CEL10 EXTENSION LINK	0.00	1,087.75	
09997	Zoro	02/11/2025	Regular	0.00	72.06	83276
INV15680879	Invoice	02/11/2025	PUR ZORO INVOICE	0.00	72.06	
00133	AGC NETWORKS, LLC	02/14/2025	Regular	0.00	3,420.03	83288
9500168467	Invoice	02/14/2025	J159 IP Phones	0.00	3,420.03	
00670	BARR ENGINEERING CO	02/14/2025	Regular	0.00	39,080.99	83289
23181016.06-35	Invoice	02/14/2025	Support for Brainerd Hydroelectric Project	0.00	21,139.49	
23181016.08-9	Invoice	02/14/2025	Design of BPU Powerhouse Units 4 & 6 Up...	0.00	17,941.50	
02210	CLIFTONLARSONALLEN, LLP	02/14/2025	Regular	0.00	1,365.00	83290
L251024265	Invoice	02/14/2025	Progress Billing #1 for 2024 Audit Services	0.00	1,365.00	
03090	JASON L. ENGHOLM	02/14/2025	Regular	0.00	146.25	83291
02/11/2025 - Re...	Invoice	02/14/2025	Reimbursement: Meal for Water Main Br...	0.00	146.25	
06200	MPCA	02/14/2025	Regular	0.00	585.00	83292
05/20/2025 - B. ...	Invoice	02/14/2025	Type IV Refresher Registration: Brad Knapp	0.00	195.00	
05/20/2025 - D. ...	Invoice	02/14/2025	Type IV Refresher Registration: Darrin Smi...	0.00	195.00	

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
05/20/2025 - K. K...	Invoice	02/14/2025	Type IV Refresher Registration: Kevin Kieh...	0.00	195.00	
06200	MPCA	02/18/2025	Regular	0.00	585.00	83294
05/20/2025 - C. ...	Invoice	02/18/2025	Type IV Refresher Registration: Charlie G...	0.00	195.00	
05/20/2025 - E. K...	Invoice	02/18/2025	Type IV Refresher Registration: Eric Klein	0.00	195.00	
05/20/2025 - J. G...	Invoice	02/18/2025	Type IV Refresher Registration: Jason Gage	0.00	195.00	
07335	OFFICE SHOP	02/18/2025	Regular	0.00	1,003.75	83295
1150826-0	Invoice	02/18/2025	OFFICE SUPPLIES	0.00	25.87	
1151081-0	Invoice	02/18/2025	OFFICE SUPPLIES: Labeling Cartridges	0.00	74.50	
1151081-1	Invoice	02/18/2025	OFFICE SUPPLIES: Toner	0.00	214.66	
334883-0	Invoice	02/18/2025	COPIER/PRINTER MAINTENANCE: Business..	0.00	144.23	
335007-0	Invoice	02/18/2025	COPIER/PRINTER MAINTENANCE: Repair/...	0.00	544.49	
00785	TROY J BLOCK	02/18/2025	Regular	0.00	31.70	83296
02/13/2025 Rei...	Invoice	02/18/2025	Reimbursement for 02/13/2025 - Meal	0.00	31.70	
00105	ACE HARDWARE-BRAINERD	02/21/2025	Regular	0.00	297.82	83317
330209	Invoice	02/20/2025	PUR FEB ACE INVOICES	0.00	19.23	
330250	Invoice	02/20/2025	PUR FEB ACE INVOICES	0.00	9.61	
330266	Invoice	02/20/2025	PUR FEB ACE INVOICES	0.00	93.92	
330460	Invoice	02/20/2025	PUR FEB ACE INVOICES	0.00	25.96	
330477	Invoice	02/20/2025	PUR FEB ACE INVOICES	0.00	83.65	
330492	Invoice	02/20/2025	PUR FEB ACE INVOICES	0.00	65.45	
10188	ALPENGLOW TECHNOLOGIES, LLC	02/21/2025	Regular	0.00	400.00	83318
11264	Invoice	02/21/2025	Monthly IT Billing: 02/2025	0.00	400.00	
00337	AMERICAN WELDING & GAS INC	02/21/2025	Regular	0.00	76.18	83319
0010646533	Invoice	02/20/2025	PUR FEB AWG INVOICES	0.00	76.18	
00497	AUTO VALUE	02/21/2025	Regular	0.00	0.55	83320
01/25/2025 Stat...	Invoice	02/21/2025	Finance Charge on 01/25/2025 Statement	0.00	0.55	
00820	BOLTON & MENK, INC.	02/21/2025	Regular	0.00	10,550.00	83321
0355126	Invoice	02/21/2025	Wastewater Use & Needs: Site Visit and R...	0.00	10,550.00	
00825	BORDER STATES ELECTRIC	02/21/2025	Regular	0.00	2,014.09	83322
929820392	Invoice	02/20/2025	PUR 30MM REPLACEMENT CAPS	0.00	41.79	
929848903	Invoice	02/20/2025	INV ELEC HARDWARE	0.00	992.30	
929871159	Invoice	02/20/2025	INV ELEC HARDWARE	0.00	980.00	
05077	BRADLEY KNAPP	02/21/2025	Regular	0.00	194.95	83323
02/17/2025 - Saf...	Invoice	02/21/2025	Reimburse Safety Boots @ 50% (2 pairs)	0.00	194.95	
10140	Brainerd Lakes Regional Airport	02/21/2025	Regular	0.00	824.56	83324
01/31/2025 CIP ...	Invoice	02/21/2025	CIP Rebate: LED lighting @ 16384 Airport ...	0.00	824.56	
03330	Calibrations and Controls, Inc.	02/21/2025	Regular	0.00	895.00	83325
INV-21392	Invoice	02/21/2025	Calibration Service Adv. Instrument: 01/21...	0.00	895.00	
01805	CENTERPOINT ENERGY	02/21/2025	Regular	0.00	3,743.31	83326
8000014432-1-01...	Invoice	02/21/2025	MONTHLY GAS BILL - WTR PROD/WTR DIS...	0.00	3,743.31	
01837	CENTURYLINK	02/21/2025	Regular	0.00	482.70	83327
333931378-02/0...	Invoice	02/21/2025	MONTHLY PHONE BILL: 02/2025	0.00	482.70	
01890	CHARTER COMMUNICATIONS	02/21/2025	Regular	0.00	1,288.43	83328
175590201020125	Invoice	02/21/2025	TV SERVICE: 02/2025	0.00	39.43	
237487601020125	Invoice	02/21/2025	237487601: FIBER INTERNET	0.00	1,249.00	
02025	CITY OF BRAINERD	02/21/2025	Regular	0.00	1,239,563.97	83329
01/2025-Mill Rate	Invoice	02/21/2025	MONTHLY TRANSFER: 01/2025	0.00	67,420.86	
01/31/2025-SAN...	Invoice	02/21/2025	SANITARY & STORM SWR BILLING/COLLEC...	0.00	117,266.46	
25-0005441	Invoice	02/21/2025	RRM:11/2024 / MRO / Integrity Benefits: ...	0.00	5,833.90	

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
25-0005543	Invoice	02/21/2025	MN GO Bonds: 2015A/2023A/2018A/202...	0.00	1,022,378.75	
25-0005606	Invoice	02/21/2025	HR/City Admin Services Fee - Q1 2025	0.00	26,664.00	
02025	CITY OF BRAINERD	02/21/2025	Regular	0.00	1,705.13	83330
02/06/2025 CIP...	Invoice	02/21/2025	CIP Rebate:LED Lighting/Exhaust Fans-Poli...	0.00	1,705.13	
10301	Danny Loch	02/21/2025	Regular	0.00	708.65	83332
02/05-02/07 Rei...	Invoice	02/21/2025	Reimburse Expenses for: 02/05-02/07 Con...	0.00	708.65	
03038	ELECTRIC PUMP, INC	02/21/2025	Regular	0.00	39,194.99	83333
029443	Invoice	02/20/2025	PUR JWC PARTS	0.00	39,194.99	
03118	ESSENTIA HEALTH	02/21/2025	Regular	0.00	455.00	83334
890000327-01/1...	Invoice	02/21/2025	OCC Testing / Pre-Employment	0.00	455.00	
03180	EVOLVING SOLUTIONS, INC.	02/21/2025	Regular	0.00	103,300.00	83335
204854	Invoice	02/21/2025	Servers Infrastructure	0.00	102,384.00	
204952	Invoice	02/21/2025	Copper Splitter	0.00	916.00	
03275	FASTENAL COMPANY	02/21/2025	Regular	0.00	1,219.11	83336
MNBAX272099	Invoice	02/20/2025	PUR FEB FASTENAL INVOICES	0.00	64.56	
MNBAX272120	Invoice	02/20/2025	PUR FEB FASTENAL INVOICES	0.00	1,154.55	
03282	FERGUSON WATERWORKS #2518	02/21/2025	Regular	0.00	562.51	83337
0541008-3	Invoice	02/20/2025	INV MISC WTR CONNECTORS	0.00	258.71	
0541643	Invoice	02/20/2025	PUR GLEITMO SIL 862	0.00	303.80	
03321	FIRST IMPRESSION PRINTING	02/21/2025	Regular	0.00	550.00	83338
93214	Invoice	02/21/2025	PRINTING/PUBLISHING FORMS: Letterhead	0.00	275.00	
93276	Invoice	02/21/2025	PRINTING/PUBLISHING FORMS: Letterhead	0.00	275.00	
03542	Forum Communications	02/21/2025	Regular	0.00	40.00	83339
MP3168200125	Invoice	02/21/2025	Business Traditions Ad	0.00	40.00	
03557	FRONTIER ENERGY, INC.	02/21/2025	Regular	0.00	8,251.96	83340
196666	Invoice	02/21/2025	CIP SERVICES - 01/2025	0.00	8,251.96	
03695	GOPHER STATE ONE-CALL	02/21/2025	Regular	0.00	71.60	83341
5010111	Invoice	02/21/2025	GSOC TICKETS/ Annual Operator Fee	0.00	71.60	
03915	HACH COMPANY	02/21/2025	Regular	0.00	8,709.15	83342
14256812	Invoice	02/21/2025	Freight Charges: Order # 321153860	0.00	10.75	
14349886	Invoice	02/20/2025	PUR PH TESTER FOR CENTRAL	0.00	2,224.10	
14357735	Invoice	02/20/2025	PUR HACH CHEMICALS CENTRAL	0.00	6,474.30	
04050	HAWKINS INC.	02/21/2025	Regular	0.00	1,629.44	83343
6984960	Invoice	02/20/2025	PUR HAWKINS INVOICES	0.00	1,619.44	
6985308	Invoice	02/20/2025	PUR HAWKINS INVOICES	0.00	10.00	
04613	JACO ANALYTICAL, INC.	02/21/2025	Regular	0.00	32.75	83344
S-20250131-026	Invoice	02/20/2025	PUR JACO INVOICES	0.00	32.75	
05335	LAKES AREA MAT SERVICE II, INC	02/21/2025	Regular	0.00	214.53	83346
20250203	Invoice	02/20/2025	PUR FEB LAKES AREA MAT INVOICES	0.00	106.50	
20250217	Invoice	02/20/2025	PUR FEB LAKES AREA MAT INVOICES	0.00	108.03	
05415	LANDIS-GYR TECHNOLOGY, INC/FKA CELLNET	02/21/2025	Regular	0.00	1,508.66	83347
90405884	Invoice	02/21/2025	MONTHLY ENDPOINT FEE: 02/2025	0.00	1,508.66	
06177	MEI TOTAL ELEVATOR SOLUTIONS	02/21/2025	Regular	0.00	940.50	83348
1113033	Invoice	02/21/2025	YEARLY SERVICE - CONTRACT: 1422	0.00	940.50	
06190	MINNESOTA MUNICIPAL UTILITIES ASSOCIATION	02/21/2025	Regular	0.00	555.00	83350
65639	Invoice	02/21/2025	Elec Skills Training for W/WWT: Jason Ga...	0.00	555.00	
06266	MINNESOTA VALLEY TESTING LABS	02/21/2025	Regular	0.00	1,547.00	83351

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
1291202	Invoice	02/20/2025	PUR FEB MVTL INVOICES	0.00	113.00	
1292547	Invoice	02/20/2025	PUR FEB MVTL INVOICES	0.00	117.00	
1292957	Invoice	02/20/2025	PUR FEB MVTL INVOICES	0.00	1,200.00	
1293623	Invoice	02/20/2025	PUR FEB MVTL INVOICES	0.00	117.00	
06431	MOMENTUM TRUCK GROUP	02/21/2025	Regular	0.00	2,085.65	83352
X500016765-01	Invoice	02/20/2025	PUR MOMENTUM INVOICE	0.00	2,354.09	
X500016765-01 C...	Credit Memo	02/21/2025	Actuator - Credit	0.00	-268.44	
06556	MPOWER TECHNOLOGIES, INC.	02/21/2025	Regular	0.00	10,640.00	83353
6066	Invoice	02/21/2025	Annual Maint: Integrator-OM-Editor/MMS...	0.00	8,140.00	
6070	Invoice	02/21/2025	Work Mgmt Software - Annual Maintenanc...	0.00	2,500.00	
06790	NAPA AUTO PARTS BAXTER	02/21/2025	Regular	0.00	54.67	83354
01/21/2025 Credit	Credit Memo	02/21/2025	Credit from 01/21/2025 - Ref 1212025	0.00	-0.65	
778985	Invoice	02/20/2025	PUR FEB NAPA INVOICES	0.00	25.18	
781921	Invoice	02/20/2025	PUR FEB NAPA INVOICES	0.00	30.14	
06982	NORTH COUNTRY CHEVROLET	02/21/2025	Regular	0.00	49,983.99	83355
4006291	Invoice	02/20/2025	PUR WW TRUCK NORTH COUNTRY GM	0.00	49,983.99	
07335	OFFICE SHOP	02/21/2025	Regular	0.00	276.66	83356
AR1877807	Invoice	02/21/2025	Copier Lease: 20079 / C130479-001	0.00	276.66	
07339	ONLINE INFORMATION SERVICES, INC.	02/21/2025	Regular	0.00	293.04	83357
1307079	Invoice	02/21/2025	ONLINE UTILITY EXCHANGE REPORT: 01/2...	0.00	293.04	
07665	PITNEY BOWES GLOBAL FINANCIAL SERV. LLC	02/21/2025	Regular	0.00	1,557.06	83358
3107081923	Invoice	02/21/2025	CONTRACT: 0040216585 -POSTAGE MACH...	0.00	1,557.06	
06268	Ryan Churchill	02/21/2025	Regular	0.00	640.00	83360
6685435	Invoice	02/21/2025	WEBSITE SUPPORT / TRAINING: 02/2025	0.00	640.00	
08410	SCR-NORTHERN	02/21/2025	Regular	0.00	15,028.32	83361
W53276	Invoice	02/21/2025	Heat Valve Repair @ Service Center	0.00	1,141.90	
W53278	Invoice	02/21/2025	New Seal Kit @ WWT Digester	0.00	1,130.35	
W53346	Invoice	02/21/2025	Tech Maint. / CO & Nox Sensors	0.00	2,491.91	
W53366	Invoice	02/21/2025	New Valve/Actuator @ WWT Digester	0.00	4,462.22	
W53382	Invoice	02/21/2025	New Valve Troubleshooting @ WWT Diges...	0.00	151.00	
W53493	Invoice	02/21/2025	Service on Fire Eye @ BPU Service Center	0.00	209.00	
W53522	Invoice	02/21/2025	Water Pump Replacement @ WWT Digest...	0.00	2,989.20	
W53553	Invoice	02/21/2025	Replace Flow Switches @ BPU Service Cen...	0.00	2,452.74	
08430	SHORT ELLIOT HENDRICKSON, INC	02/21/2025	Regular	0.00	2,141.40	83362
482983	Invoice	02/21/2025	Wtr Model Update/Wtr Operations Model...	0.00	2,141.40	
08895	STUART C. IRBY CO	02/21/2025	Regular	0.00	198.00	83363
S014171942.002	Invoice	02/20/2025	INV BAYONET FUSES	0.00	198.00	
08515	The Sherwin-Williams Company	02/21/2025	Regular	0.00	323.30	83364
0E0208450Q703...	Invoice	02/21/2025	Paint	0.00	323.30	
00340	Vestis Group, Inc.	02/21/2025	Regular	0.00	67.62	83365
2530368609	Invoice	02/20/2025	PUR FEB VESTIS INVOICES	0.00	33.81	
2530371842	Invoice	02/20/2025	PUR FEB VESTIS INVOICES	0.00	33.81	
09663	VIKING ELECTRIC SUPPLY, INC	02/21/2025	Regular	0.00	1,340.56	83366
S008831389.001	Invoice	02/20/2025	PUR JAN VIKING INVOICES	0.00	253.43	
S008849713.001	Invoice	02/20/2025	PUR JAN VIKING INVOICES	0.00	66.81	
S008857130.001	Invoice	02/20/2025	PUR FEB VIKING INVOICES	0.00	504.04	
S008861133.001	Invoice	02/20/2025	PUR FEB VIKING INVOICES	0.00	78.71	
S008866590.001	Invoice	02/20/2025	PUR FEB VIKING INVOICES	0.00	116.78	
S008871572.001	Invoice	02/20/2025	PUR FEB VIKING INVOICES	0.00	76.45	
S008875847.001	Invoice	02/20/2025	PUR FEB VIKING INVOICES	0.00	210.01	

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
S008883848.001	Invoice	02/20/2025	PUR FEB VIKING INVOICES	0.00	34.33	
09728	WASTE PARTNERS	02/21/2025	02/21/2025 Regular	0.00	1,534.40	83367
51X01198	Invoice	02/21/2025	TRASH/RECYCLING SERVICE: ACCT#242053	0.00	1,534.40	
09832	W-E INSURANCE	02/21/2025	02/21/2025 Regular	0.00	43,469.00	83368
01/08/2025-Subs...	Invoice	02/21/2025	SUBSTATION EQUIPMENT RENEWAL: 03/0...	0.00	4,121.00	
02/19/2025-Hydro	Invoice	02/21/2025	HYDRO EQUIPMENT RENEWAL:03/01/25-...	0.00	39,348.00	
09899	WESCO RECEIVABLES CORP	02/21/2025	02/21/2025 Regular	0.00	1,711.20	83369
514814	Invoice	02/20/2025	INV MISC ELEC	0.00	1,711.20	
09948	WIDSETH SMITH NOLTING & ASSOC., INC	02/21/2025	02/21/2025 Regular	0.00	3,884.00	83370
236075	Invoice	02/21/2025	Directional Drilling Forcemain River Crossi...	0.00	400.00	
236076	Invoice	02/21/2025	Design Report/Facility Plan/Enviro Report	0.00	3,484.00	
09561	United Parcel Service, Inc	01/31/2025	01/31/2025 Bank Draft	0.00	79.79	DFT0001478
0000E4015K035	Invoice	01/31/2025	UPS - SHIPPING	0.00	79.79	
07640	PITNEY BOWES, INC.	01/31/2025	01/31/2025 Bank Draft	0.00	3,500.00	DFT0001479
01/30/2025-Post...	Invoice	01/31/2025	POSTAGE REFILL	0.00	3,500.00	
07715	U.S. POSTAL SERVICE	01/31/2025	01/31/2025 Bank Draft	0.00	12.29	DFT0001480
648540735	Invoice	01/31/2025	Additional Postage Due - Bulk Mail	0.00	12.29	
07715	U.S. POSTAL SERVICE	01/31/2025	01/31/2025 Bank Draft	0.00	4.92	DFT0001481
547743244	Invoice	01/31/2025	Additional Postage Due - Bulk Mail	0.00	4.92	
01191	BREMER BANK - CC	01/31/2025	01/31/2025 Bank Draft	0.00	5,986.69	DFT0001482
12/31/2024 CC S...	Invoice	01/31/2025	CC Statement: 12/31/2024	0.00	5,986.69	
00472	AT&T MOBILITY	02/20/2025	02/20/2025 Bank Draft	0.00	2,379.98	DFT0001484
287302792515X...	Invoice	02/21/2025	AT & T MONTHLY BILL: 12/26-01/25	0.00	2,379.98	
00472	AT&T MOBILITY	02/20/2025	02/20/2025 Bank Draft	0.00	650.62	DFT0001485
287260682523X...	Invoice	02/21/2025	AT & T MONTHLY BILL: 02/05-03/04	0.00	650.62	
01805	CENTERPOINT ENERGY	02/20/2025	02/20/2025 Bank Draft	0.00	18.15	DFT0001486
11582840-2-01/1...	Invoice	02/21/2025	1602 E RIVER RD	0.00	18.15	
01805	CENTERPOINT ENERGY	02/20/2025	02/20/2025 Bank Draft	0.00	350.71	DFT0001487
11595232-7-01/1...	Invoice	02/21/2025	50 JENNY STREET	0.00	350.71	
03682	Global Payments Direct, Inc.	02/20/2025	02/20/2025 Bank Draft	0.00	70,444.49	DFT0001489
01/2025 CC Fees	Invoice	02/21/2025	CREDIT CARD FEES: 01/2025	0.00	70,444.49	
06171	MN DEPT OF REVENUE	02/20/2025	02/20/2025 Bank Draft	0.00	162,663.00	DFT0001491
01/2025 Sales Tax	Invoice	02/21/2025	SALES TAX DRAFT: 01/2025	0.00	162,663.00	
07640	PITNEY BOWES, INC.	02/20/2025	02/20/2025 Bank Draft	0.00	3,500.00	DFT0001493
02/14/2025 - Pos...	Invoice	02/21/2025	POSTAGE REFILL	0.00	3,500.00	
07715	U.S. POSTAL SERVICE	02/20/2025	02/20/2025 Bank Draft	0.00	9.10	DFT0001494
648996851	Invoice	02/21/2025	Additional Postage Due - Bulk Mail	0.00	9.10	
07715	U.S. POSTAL SERVICE	02/20/2025	02/20/2025 Bank Draft	0.00	5.10	DFT0001495
650616097	Invoice	02/21/2025	Additional Postage Due - Bulk Mail	0.00	5.10	
07715	U.S. POSTAL SERVICE	02/20/2025	02/20/2025 Bank Draft	0.00	4.44	DFT0001496
650131691	Invoice	02/21/2025	Additional Postage Due - Bulk Mail	0.00	4.44	
02455	CTC	02/20/2025	02/20/2025 Bank Draft	0.00	1,844.66	DFT0001497
21524670	Invoice	02/21/2025	MONTHLY BILL	0.00	1,844.66	
09561	United Parcel Service, Inc	02/21/2025	02/21/2025 Bank Draft	0.00	122.40	DFT0001498
0000E4015K0555	Invoice	02/20/2025	PUR FEB UPS INVOICES	0.00	77.37	

Board Packet Check Report

Date Range: 01/24/2025 - 02/21/2025

Vendor Number	Vendor Name	Payment Date	Payment Type	Discount Amount	Payment Amount	Number
Payable #	Payable Type	Post Date	Payable Description	Discount Amount	Payable Amount	
0000E4015K065	Invoice	02/20/2025	PUR FEB UPS INVOICES	0.00	45.03	

Bank Code AP2 Summary

Payment Type	Payable Count	Payment Count	Discount	Payment
Regular Checks	193	97	0.00	1,727,159.90
Manual Checks	0	0	0.00	0.00
Voided Checks	0	0	0.00	0.00
Bank Drafts	18	17	0.00	251,576.34
EFT's	3	3	0.00	1,705,095.83
	214	117	0.00	3,683,832.07

All Bank Codes Check Summary

Payment Type	Payable Count	Payment Count	Discount	Payment
Regular Checks	193	97	0.00	1,727,159.90
Manual Checks	0	0	0.00	0.00
Voided Checks	0	0	0.00	0.00
Bank Drafts	18	17	0.00	251,576.34
EFT's	3	3	0.00	1,705,095.83
	214	117	0.00	3,683,832.07

Fund Summary

Fund	Name	Period	Amount
9	POOLED CASH CONTROL	1/2025	11,772.27
9	POOLED CASH CONTROL	2/2025	3,672,059.80
			3,683,832.07



Public Utilities Commission

Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Discuss ClimaVision Lease

ACTION REQUESTED: Discussion Item

ESTIMATED TIME (MIN): 2

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Mike Higgins, Commission Member,
Chris Evans, Public Utilities Director, Danny Loch,
Finance Manager

SUMMARY OF ISSUE: At the last Commission meeting, ClimaVision presented their findings on site feasibility related to the weather radar attachment to the State Hospital water tower. The site was deemed feasible and the next step in the process is to negotiate a lease document between the Commission and ClimaVision. The Commission referred the discussion at the January 28th meeting to committee. The items that were discussed in the meeting to be addressed at Committee: potential lease terms and length, out-of-pocket costs, lease fee/monthly attachment charge, State of MN implications.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION: Staff recommendation coming out of committee is to move forward with negotiating a lease between the Commission and ClimaVision for the installation and attachment of a weather radar at the State Hospital site.

FINANCIAL IMPACT:



Public Utilities Commission

Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Discuss AEP Updates and Approve sale of Excess Capacity

ACTION REQUESTED: Discussion Item

ESTIMATED TIME (MIN): 6

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Chris Evans, Public Utilities Director,
Danny Loch, Finance Manager, Mike Higgins,
Commission Member

SUMMARY OF ISSUE:

At the January 2025 Commission meeting, the Commission approved an extension of the purchased power agreement with AEP. AEP successfully secured a rate of \$49.35/MWh, which is below the previously approved rate of \$49.70/MWh.

On February 5, 2025, staff met with AEP to review updates to the energy portfolio, including potential opportunities for selling excess capacity. Selling this additional capacity from May 2025 to May 2026 could generate approximately \$163,200 in revenue. For reference, the Commission previously sold excess capacity for the May 2024 – May 2025 period, yielding an estimated \$203,300.

The Commission now has the option to sell additional capacity ahead of the upcoming auction at a rate of \$82.19 MW-Day or wait and adjust based on market conditions. AEP has identified a buyer willing to purchase at this price, ensuring the transaction at the current rate if executed promptly.

Additionally, with the increase occurring under the 17th amendment to the contracted price, the Commission may consider implementing a rate increase or power cost adjustment effective June 1, 2025, when the new rate takes effect.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

The Commission may determine whether to proceed with the capacity sale now or reassess based on market conditions, as well as evaluate the need for a power cost adjustment in response to the upcoming rate change.

RECOMMENDED ACTION/MOTION: Staff recommendation coming out of committee is selling the excess capacity prior to it reaching the open market and coordinating the sale with AEP to secure the guaranteed price. Additionally, staff recommend that a power cost adjustment be calculated and

presented for Commission approval at a future meeting, ensuring alignment with the new contracted rate effective June 1, 2025.

FINANCIAL IMPACT: Est. \$163,200



Public Utilities Commission

Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Approve Baxter Wholesale Rate

ACTION REQUESTED: Approve/Deny Motion

ESTIMATED TIME (MIN): 8

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Mike Higgins, Commission Member,
Danny Loch, Finance Manager, Chris Evans, Public
Utilities Director

SUMMARY OF ISSUE:

At the January commission meeting, Baxter requested a wholesale water rate comparable to the rate they received in 2021. The request was referred to the committee for further review. The City of Baxter estimates that the need is for 300-400 gallons per minute or 89 million gallons during the peak months of 2025.

Following discussions at the last meeting, the committee considered two primary rate options:

- \$3.32 per 1,000 gallons
- \$4.50 per 1,000 gallons
- \$4.92 per 1,000 gallons

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION: Staff recommendation coming out of committee to maintain simplicity for billing and achieve the committee's desire is to bill Baxter's use at \$4.92/1,000 gallons and credit any usage through October 1st up to 89 million gallons at \$1.60/1,000 (equating to a \$3.32/1,000 wholesale rate). This credit payment would be paid out by December 31, 2025. If Baxter did not use 89 million gallons, the rate would remain at \$4.92.

FINANCIAL IMPACT: \$142,400 potential credit payment by December 31, 2025



Public Utilities Commission

Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Schedule Public Hearing: Project Priority List Request - Main Lift Station Improvements

ACTION REQUESTED: Approve/Deny Motion

ESTIMATED TIME (MIN): 12

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Danny Loch, Finance Manager

SUMMARY OF ISSUE:

The Project Priority List (PPL) is a ranking system used by the Minnesota Public Facilities Authority (PFA) in coordination with the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Health (MDH) to prioritize water/wastewater infrastructure projects for funding. The list helps determine which water/wastewater-related projects receive state and federal funding, including low-interest loans and grants. The goal is to improve water quality, protect public health, and maintain compliance with environmental regulations. Projects on this list are not provided funding or considered for funding until they are ranked or prioritized. This submission is good for a 5-year period.

Projects are ranked based on several factors, including:

- **Public Health Impact** – Addressing contamination risks or compliance with drinking water standards.
- **Environmental Benefits** – Reducing pollution and protecting water resources.
- **Regulatory Compliance** – Ensuring systems meet state and federal environmental laws.
- **Readiness to Proceed** – Whether the project is ready for implementation.

As part of the PPL process, a submission of a facilities plan and public hearing must be scheduled. The PPL application is due March 7, 2025. A public hearing will provide an opportunity for public input on the proposed improvements, ensuring transparency and community engagement in the planning process. The discussion will focus on project prioritization, funding considerations, and the overall impact on wastewater infrastructure.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION: Staff recommendation coming out of committee is moving forward with the submission to the PPL by March 7, 2025 for main lift station improvements, and to schedule a public hearing which will be held at the next regularly scheduled commission meeting.

FINANCIAL IMPACT:



Public Utilities Commission

Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Discuss Twilio Outage Notification Roll Out & Enrollment

ACTION REQUESTED: Discussion Item

ESTIMATED TIME (MIN): 4

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Mike Higgins, Commission Member,
Danny Loch, Finance Manager, Trent Hawkinson,
Operations Manager

SUMMARY OF ISSUE:

The utility is launching a new electric outage notification system for residential customers to enhance communication and transparency during service disruptions. This system, powered by Twilio, will automatically send text notifications to customers when their meter detects an outage. In addition to unplanned outages, the system will also improve communication for planned outages related to maintenance and construction projects.

With the system ready for rollout, staff are preparing to launch an enrollment campaign. To maximize participation, residential customers with known mobile numbers will be automatically enrolled. Utilizing the most up-to-date contact information from the Lead/Copper Inventory, the utility aims to ensure broad and effective outreach. To improve efficiency, staff will also sort known phone numbers to prevent customers from receiving multiple or unnecessary text messages. Additionally, all new customers will automatically be enrolled in the system unless they choose to opt out.

This initiative will provide real-time notifications, keeping customers informed during power outages while also offering proactive updates on planned maintenance. By increasing transparency and improving service reliability, this new system represents a significant step forward in enhancing customer communication and satisfaction.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION:

FINANCIAL IMPACT:



Public Utilities Commission Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Accept Bolton & Menk Inc. proposal related to 20-year Wastewater Assessment

ACTION REQUESTED: Discussion Item

ESTIMATED TIME (MIN): 10

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Chris Evans, Public Utilities Director,
Danny Loch, Finance Manager

SUMMARY OF ISSUE: Bolton and Menk Inc. was contracted to complete a 20-year Wastewater Use and Needs assessment as part of the Joint Wastewater Management Board discussion in July 2024. The attached report has been submitted for discussion by Bolton & Menk. The attached report has been reviewed by staff and applicable comments were addressed in this final draft.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION: Staff recommend accepting the final draft of the proposed 20-year wastewater use and needs assessment and to direct staff to schedule a Joint Wastewater Management Board meeting to discuss the findings of the report.

FINANCIAL IMPACT:

20 Year Assessment

Wastewater Treatment Facility

Brainerd Public Utilities, MN

24X.136470.000

February 20, 2025



Real People. Real Solutions.

Submitted by:

Bolton & Menk, Inc.
7656 Design Road
Suite 200
Baxter, MN 56425
P: 218-825-0684

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Table of Contents

I.	EXECUTIVE SUMMARY	1
II.	INTRODUCTION.....	4
	A. Purpose.....	4
	B. Background.....	4
III.	DESIGN CONDITIONS.....	6
	A. Planning Period.....	6
	B. Development Projections	6
	C. Wastewater Flows	8
	D. Wastewater Loadings	10
	E. Existing Effluent Limits.....	17
	F. Influent Design Criteria Summary	18
IV.	EXISTING WASTEWATER FACILITIES	20
	A. Overview.....	20
	B. Headworks	20
	C. Sequencing Batch Reactors (SBR) and SBR Building.....	23
	D. UV Disinfection	26
	E. Outfall Structure and Perimeter Fence	26
	F. Control Building and Lab.....	26
	G. Biosolids Processes	27
	H. Treatment Performance	30
V.	FUTURE LIMITS AND REGULATIONS	37
	A. Nitrogen.....	37
	B. Polyfluoroalkyl and Perfluoroalkyl Substances (PFAS)	39
VI.	WASTEWATER TREATMENT FACILITY IMPROVEMENT NEEDS.....	43
VII.	PROJECT FUNDING.....	50
	A. Bonding.....	50
	B. Assessment.....	50
	C. State Revolving Fund Loan (through the PFA).....	50
	D. Wastewater Infrastructure Funding Program	50
	E. Point Source Implementation Grant (PSIG).....	50

Figures

Figure 2.1: Liquid and Biosolids Block Flow Diagram.....	5
Figure 3.1: Population History and Projections	8
Figure 3.2: Brainerd WWTF Historical Influent Flow	9

Figure 3.3: Historic CBOD5 Concentrations (top) and Mass loadings (bottom)	12
Figure 3.4: Historic TSS Concentration (top) and Mass Loading (bottom)	13
Figure 3.5: Historic Total Kjeldahl Nitrogen Concentration (top) and Mass Loading (bottom).....	14
Figure 3.6: Historic Phosphorus Concentration (top) and Mass Loading (bottom).....	15
Figure 4.1: Biosolids Storage Retention Time	30
Figure 4.2: Historical Effluent CBOD Concentrations (Top) and Mass Loadings (Bottom)	31
Figure 4.3: Historical Effluent TSS Concentrations (Top) and Mass Loadings (Bottom)	32
Figure 4.4: Historical Effluent Total Phosphorus Concentrations (Top) and Mass Loadings (Bottom)	33
Figure 4.5: Historical Effluent Total Phosphorus Concentrations (Top) and Mass Loadings (Bottom)	34
Figure 4.6: Historical Effluent Total Nitrogen Concentrations (Top) and Mass Loadings (Bottom)	35
Figure 5.1: Historical Effluent TN and TP relationship	38

Tables

Table 3.1 – Population History and Projections.....	7
Table 3.2 – Historical Influent Flow Data Summary (2019 – 2024)	9
Table 3.3 – Historical Wastewater Flow, Brainerd Public Utilities WWTF, MN.....	7
Table 3.4 – Summary of Allocated 2045 Design Flows	10
Table 3.5 – Historical Influent Loading Summary	11
Table 3.6 – Per Capita Loading.....	16
Table 3.7 – 2045 Design Loads.....	16
Table 3.8 – NPDES Discharge Limits.....	17
Table 3.9 – Existing and Proposed Influent Design Criteria Summary.....	18
Table 4.1 – Headworks Building Recommended Repairs & Replacements	22
Table 4.2 – SBR Building Recommended Repairs & Replacements	25
Table 4.3 – UV Disinfection Recommended Repairs & Replacements	26
Table 4.4 – WAS Holding Tank Repairs & Replacements	27
Table 4.5 – Gravity Belt Thickeners Repairs & Replacements	28
Table 4.6 – Brainerd Public Utilities WWTF Historical Effluent Loads	30
Table 5.1 – Potential Nitrogen Limit Improvements (2025 dollars)	39
Table 5.2 – Biosolids Improvements Capital Budgets.....	41
Table 5.3 – Additional Biosolids Treatment for PFAS Capital Cost	42
Table 5.4 – Additional Biosolids Landfilling O&M Annual Costs.....	42
Table 6.1 – 2025-2030 Capital Improvements.....	43
Table 6.2 – 2030-2035 Capital Improvements.....	45
Table 6.3 – 2035-2045 Capital Improvements.....	47

Appendix

Appendix A: Wastewater Asset Inventory

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I. EXECUTIVE SUMMARY

This wastewater treatment facility provides an assessment of existing conditions and recommendations for wastewater treatment facility (WWTF) improvements and what can be expected over the next 20 years. The intent of this report is to provide guidance and a framework for improvements that both entities can use to guide the decision-making process when it comes to capital improvements at the WWTF to maintain the existing facility and for improvements needed to meet future nutrient and emerging contaminant limits (total nitrogen removal and PFAS removal).

Projected populations, flows, and wastewater nutrient loadings were estimated based on planning documents provided by both Baxter and Brainerd and standard design parameters. These documents should continually be reviewed and updated by each city to ensure accuracy for growth projections. The cities should both review the populations estimated to verify accuracy for the 2045 population projections.

Below is a summary of estimated costs for recommended improvements for facility maintenance broken out over a 5-year, 10 year, and 20 year period. The costs for recommended improvements for meeting future nitrogen and PFAS limits are in the following tables.

Estimated Capital Costs for Recommended WWTF Improvements (2025 dollars)		
Item	Preliminary Budget Range	
Total Budget for 2025-2030	\$8,700,000	\$16,400,000
Total Budget for 2030-2035	\$7,500,000	\$13,400,000
Total Budget for 2035-2045	\$42,300,000	\$75,400,000
Note: costs do not include nitrogen or PFAS treatment		

The wastewater treatment facility is in good condition overall. General maintenance, equipment replacement, and rehabilitation are required to keep the facility in good condition. The liquid treatment processes have adequate capacity for current flows and loadings. If discharge limits change the liquid treatment processes should be re-evaluated, and capital improvements should be made to meet new limits.

The current biosolids processes are able to thicken biosolids produced at the treatment facility but the system has inadequate sludge storage capacity and processing capabilities. Biosolids processing is the limiting treatment for expansion or additional loadings at the current WWTF. To make sure the utility is prepared for the future and has a proper plan in place to handle biosolids, the utility should consider reviewing and design new biosolids processing system for cake production (up to 15% or more) and drying of the cake to reduce volume of sludge storage required. This would allow the utility to phase in PFAS treatment if and when PFAS limits are imposed on biosolids, or the utility cannot land apply biosolids due to PFAS concentrations. PFAS limits are not currently imposed, but if imposed, would drastically alter the required biosolids treatment.

The costs for the biosolids improvement options evaluated range from \$60 million to over \$100 million, depending on the improvements and technology selected. In order to meet future PFAS limits in biosolids, the utility will need to first dewater then dry the biosolids before a PFAS destruction/removal technology. The total estimated project cost range for the dewatering and drying facility is \$57 million to \$78 million without PFAS treatment of the biosolids. The utility

should expect to add an additional \$12 million to \$19 million to the biosolids cost to add equipment and infrastructure to treat PFAS in the biosolids.

Biosolids Dewatering and Drying Capital Costs (2025 dollars)	
Convert Existing Facilities + Dewatering and Drying	
Item	Budget
Convert Digesters to Storage	\$10,000,000
Remove GBT System	\$1,000,000
Rehabilitate Existing Sludge Storage	\$21,400,000
Rehabilitate WAS System	\$750,000
Dewatering Equipment	\$2,500,000
Drying Equipment	\$4,500,000
Building	\$3,000,000
Chemical Feed	\$150,000
Piping and Valves	\$2,000,000
Electrical, Instrumentation, and Control	\$6,795,000.00
Subtotal	\$52,100,000
Engineering, Legal, Contingencies (30%)	\$15,600,000
Total Cost	\$67,700,000
Cost Range (+/- 15%)	\$57M - \$78M

Additional Biosolids Treatment for PFAS Capital Cost (2025 dollars)	
Item	Budget
Pyrolysis unit	\$5,000,000
Pyrolysis building	\$1,500,000
Pumps, piping, valves, chemical feed	\$1,500,000
Electrical, Instrumentation, and Controls	\$2,400,000
Subtotal	\$10,400,000
Engineering, Legal, Contingencies	\$3,100,000
Total Cost	\$13,500,000
Cost Range	\$12M - \$19M

Improvements to meet potential future nitrogen limits were also evaluated. If nitrogen limits are enacted, the utility should evaluate the following options for capital improvements and the utility plan accordingly for these improvements:

- Aeration Basin improvements including the addition of anoxic, anaerobic, aeration basin additions. The SBR tanks would be repurposed to specific tanks depending on the volume requirements needed to meet treatment and design goals.
- Secondary clarifier addition for chemical phosphorus removal.
- Chemical feed system for phosphorus removal.

- Chemical feed system for carbon addition to supplement denitrification processes (recommended even if there is sufficient influent BOD).
- Additional piping and pumping for recycle and wasting.
- New lift station for effluent pumping.
- Side stream treatment for nitrogen and phosphorus of the supernatant from the biosolids dewatering.

Below is a cost estimate for the capital improvements the facility could expect when a total nitrogen limit needs to be met:

Potential Nitrogen Limit Improvements (2025 dollars)		
Item	Preliminary Budget Range	
SBR tank modifications and aeration basins	\$5,000,000	\$8,000,000
EQ tank modifications	\$1,500,000	\$3,000,000
RAS and WAS Pumps and building	\$1,995,000	\$2,750,000
Process piping modifications	\$1,000,000	\$2,000,000
New secondary clarifiers and splitter structure	\$10,000,000	\$15,000,000
Chemical Feed	\$250,000	\$500,000
New effluent lift station	\$1,500,000	\$3,000,000
Site work and yard utility piping	\$2,100,000	\$3,400,000
Site process piping and valves	\$1,490,000	\$2,400,000
Plumbing/HVAC	\$1,100,000	\$1,700,000
Electrical, Instrumentation, and Control	\$5,300,000	\$8,600,000
Subtotal	\$31,200,000	\$50,400,000
Engineering, Legal, Contingencies (30%)	\$9,400,000	\$15,100,000
Total Cost	\$40,600,000	\$65,500,000

II. INTRODUCTION

A. Purpose

This report provides the City of Brainerd, Brainerd Public Utilities, and the City of Baxter with an assessment of existing conditions and recommendations for wastewater treatment facility (WWTF) improvements and what can be expected over the next 20 years. The intent of this report is to provide guidance and framework for improvements that both entities can use to guide the decision-making process when it comes to capital improvements at the WWTF. The recommendations in this report should not be considered final until a decision is made by both entities on the final direction for WWTF improvements. Ultimately, a Facility Plan that meets Minnesota Pollution Control Agency (MPCA) requirements is recommended to be written based on the findings of this report and submitted to MPCA for review at a later date.

Expected influent flow volume and quality were determined through the prescribed Minnesota Pollution Control Agency and Public Facilities Authority process based on documents provided by the cities of Brainerd and Baxter. Necessary effluent water quality is assumed based on current permit limits and needs to be confirmed with the MPCA. Visual inspection of existing infrastructure conditions, input from existing stakeholders, and an evaluation of facility requirements in accordance with current recommended practices serves as the background for this report. Recommendations are based on input from Brainerd Public Utilities staff and an evaluation of the facility requirements in accordance with the current recommended practices and regulatory agency requirements.

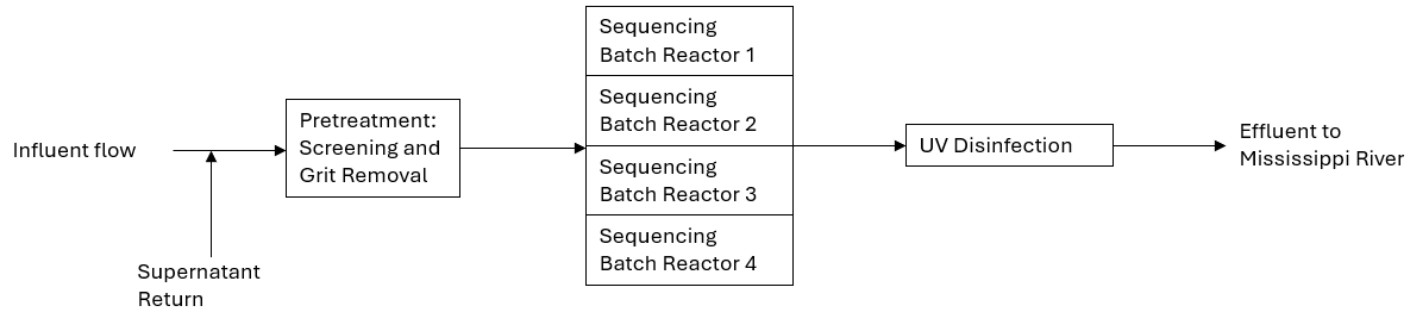
B. Background

Brainerd Public Utilities provides wastewater treatment services to the communities of Brainerd and Baxter through a Class A facility located in the City of Baxter, Minnesota in Crow Wing County. Lift stations are used to convey flow to the WWTF and are owned and operated separately by Brainerd and Baxter

The Brainerd WWTF is a Class A facility originally constructed in 1982. The original liquid treatment consisted of bar screening, two primary clarifiers, two rotating biological contactors, two secondary clarifiers, and chlorination and dichlorination. The original biosolids treatment consisted of two anaerobic digesters and sludge storage. In 2009 the facility underwent improvements which consisted of additional pretreatment and grit removal, converting the liquid phase to four sequencing batch reactors (SBR) followed by ultraviolet (UV) disinfection, the addition of sludge thickening, two additional anaerobic digesters, an additional sludge storage tank, and converting the secondary clarifiers to waste activated sludge (WAS) tanks.

The Brainerd WWTF is designed for a continuous discharge to the Mississippi river. The 100-year flood level of the Mississippi river at the discharge location is 1164.00 and the system is designed with a gravity discharge. The existing block flow diagram is shown in Figure 2.1.

Liquid Phase Block Flow Diagram



Biosolids Phase Block Flow Diagram

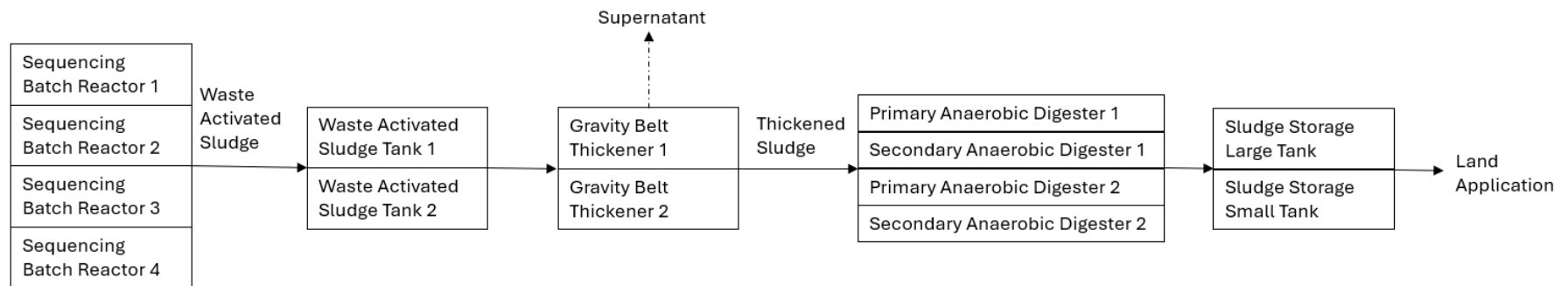


Figure 2.1: Liquid and Biosolids Block Flow Diagram

III. DESIGN CONDITIONS

A. Planning Period

Wastewater treatment facilities are typically designed based on a 20-year planning period as it is generally not feasible to make frequent changes in the capacity of a wastewater treatment facility. State and federal funding programs for wastewater infrastructure require at least a 20-year planning period and this report is to be used as the framework to develop the 20-year planning period. A facility plan should be written to finalize the planning to meet all funding requirements. Projected wastewater flows and loadings are developed from analyzing historical flows, loadings, and population along with future residential, commercial, and industrial growth projections from documents provided by both Brainerd and Baxter.

A design year of 2045 is used for this evaluation.

B. Development Projections

Wastewater is broken into four different categories: residential, commercial, institutional, and industrial. Each category is defined by what generates wastewater. Residential wastewater is from homes and apartments and has a predictable volume and strength associated with the contributing population. Commercial wastewater is from businesses and is similar to residential wastewater in strength and has an assigned volume based on square footage of the business community.

Institutional wastewater is from hospitals, schools, prisons, and similar facilities. The strength and volume can be predicted based on the number of beds or other factors associated with the specific institutions in the community.

Industrial wastewater is generated by businesses which discharge process water to make the products being produced or to clean the facilities. Industries range from metal plating facilities to food and beverage production. The discharge volume and strengths vary greatly. Industrial contributors are requested to project their anticipated needs. Pretreatment may be required to reduce the strength to near residential wastewater levels.

1. Population Projections

Several methods are used for predicting population trends for cities the size of Brainerd and Baxter. Historical city and county population trends are reviewed. Historical data from the Minnesota State Demographic Center (SDC) and the decennial census and documents provided by Brainerd and Baxter were used for population analysis. Future trends can be predicted using a variety of mathematical projections including arithmetic, geometric, and linear regression methods.

Table 3.1 and Figure 3.1 show the historical and projected populations for the Cities of Brainerd and Baxter as reported by the Minnesota State Demographic Center or provided by the Cities of Brainerd and Baxter. The population of Brainerd has remained relatively steady, slightly increasing from 13,671 in 2015 to 14,689 in 2024. Brainerd's growth is expected to decline, as projections by the Minnesota State Demographic Center indicate that the population of Brainerd will be 14,601 in 2045, a 0.6% decrease from 2024. Population projections are highly variable and may not always take into account local population trends, housing, and other factors that affect migration of peoples. Therefore, a more accurate depiction of population trends can be found in local planning documents provided by the city.

The City of Brainerd has provided population projections from comprehensive planning and housing documents. Those documents indicate a population increase for both Crow Wing County and the City of Brainerd. Estimates from these planning documents indicate a population served in the city of Brainerd of 15,200 by 2030, representing 11% growth from 2015 populations. Using the 2024 population estimate, 3.5% growth is expected through 2030 to match the planning documents. Assuming this trend remains consistent over the design period, a design population of 15,700 is used for City of Brainerd domestic flows and loadings.

The population of Baxter has been increasing, growing by 16% from 2015 to 2024. Populations from Baxter were provided through planning documents provided by the City. The projections indicate a slight increase over the 20-year design period. The design population for Baxter is 13,100 as indicated in planning documents provided by the City. The total population for Brainerd and Baxter in the 2045 design year is projected to be 28,800.

Prior to finalizing a facility plan for MPCA approval, it is recommended that each City, Brainerd and Baxter, review the population projections to ensure they are accurate and address all growth factors for both cities.

Table 3.1 – Population History and Projections			
Year	Baxter	Brainerd	Total
2015	8,065	13,671	21,736
2016	8,318	13,679	21,997
2017	8,360	13,719	22,079
2018	8,478	13,732	22,210
2019	8,555	13,755	22,310
2020	8,612	14,395	23,007
2021	8,911	14,679	23,590
2022	9,030	14,895	23,925
2023	8,835	14,670	23,505
2024	9,341	14,689	24,030
2030	11,105	14,800	25,905
2035	11,721	15,200	26,921
2040	12,373	15,500	27,873
2045	13,100	15,700	28,800

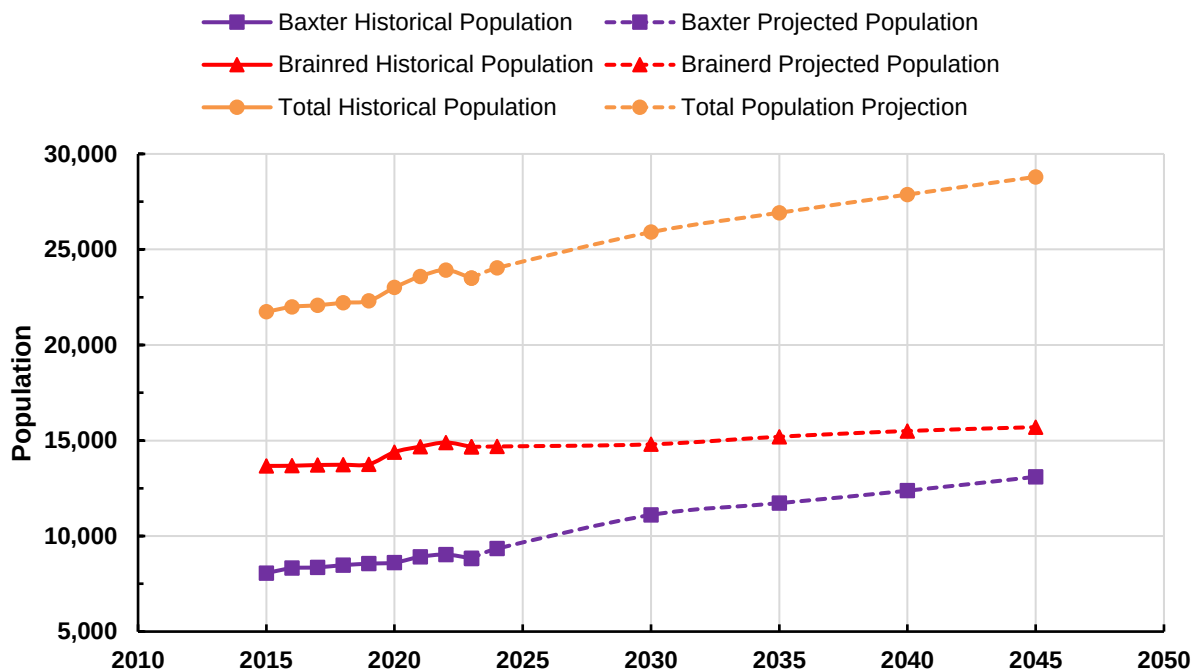


Figure 3.1: Population History and Projections

2. Commercial and Industrial Development

The Brainerd-Baxter area has seen a growing commercial and industrial base over the last 20 years. The majority of the projected commercial growth is associated with population growth and includes businesses such as restaurants and retail stores.

Brainerd and Baxter do not anticipate any new significant industrial development which would add significant flow to the WWTF. Significant industrial development includes food production facilities, bottling companies, and others that use a significant volume of water and end up discharging a significant volume of water or high strength waste. Based on planning documents provided, there are not any high-strength users planned in the next 20 years. If there are updated plans for high strength or high flow industries, it is recommended to revisit the flow analysis and update flows and loadings accordingly with the projected flows and loadings from those specific industries.

C. Wastewater Flows

1. Historical Monitoring Data

a) Influent Monitoring

The existing Brainerd WWTF is designed for a continuous discharge to the Mississippi River. The Mississippi River at the point of discharge is designated Class 2Bg, 3C, 4A, 5, 6 Water. The NPDES permit allows for an influent average wet weather (AWW) flow of 6.0MGD, 240 mg/L of carbonaceous biochemical oxygen demand (CBOD5), and 240 mg/L of total suspended solids (TSS).

A summary of the historical average, minimum, and maximum influent flows to the Brainerd WWTF are presented in Table 3.2. The historical flows to the WWTF are presented in Table 3.3 and Figure 3.2. The maximum day flow peaks

occur between April and September. High flow days correspond to spring snowmelt and heavy rain events. The historic peaking factor (peak day to average day ratio) is 1.9 over the last 5 years.

Table 3.2 – Historical Influent Flow Data Summary (2019 – 2024)			
	Date	Flow (MGD)	GPCD
Average Daily Flow	January 2019- October 2024	2.00	85
Low Flow Month Average Flow	Nov-2023	1.63	69
Maximum Month Average Flow	Oct-2019	3.00	127
Maximum Day Flow	Sep-2019	3.80	161

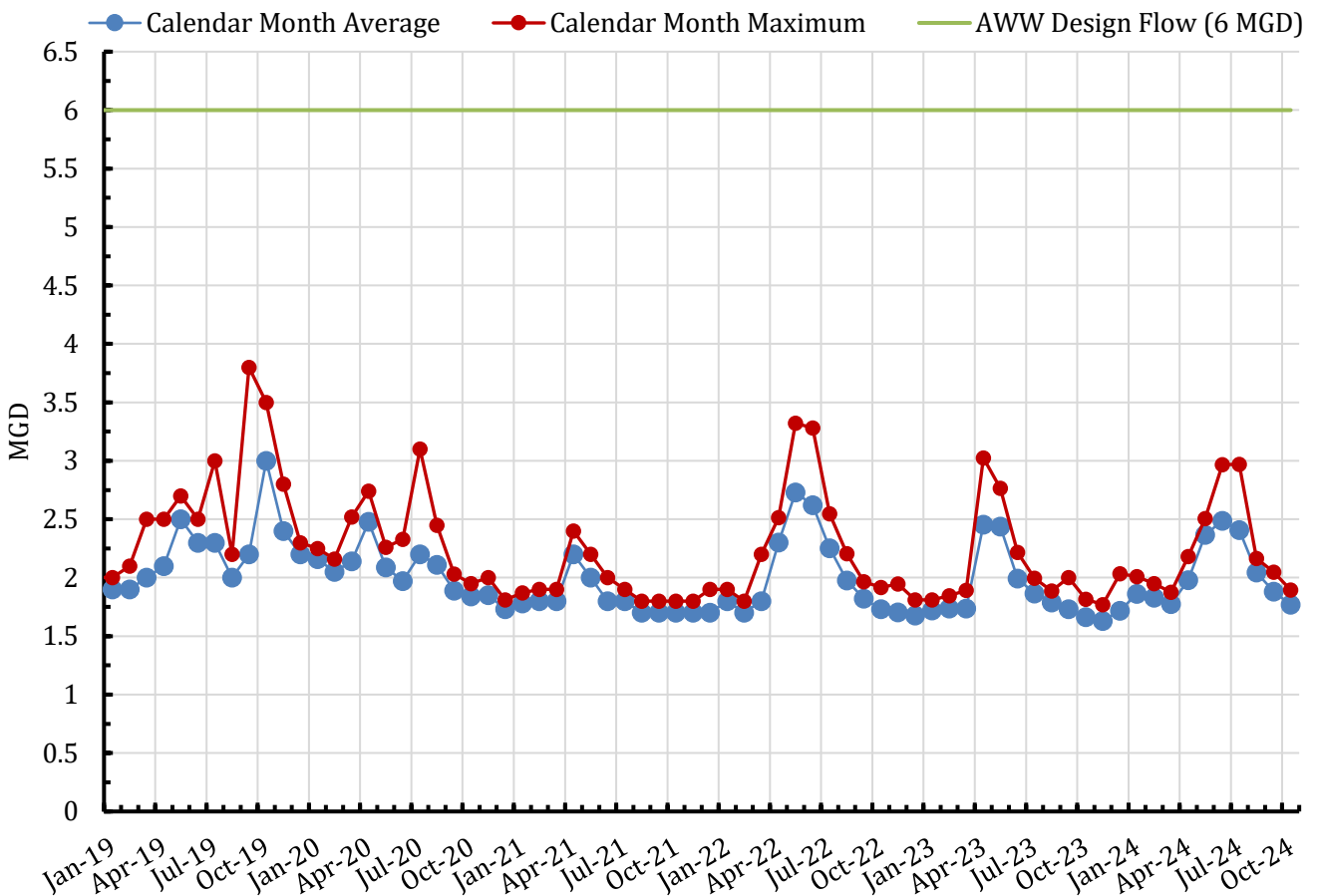


Figure 3.2: Brainerd WWTF Historical Influent Flow

b) Infiltration and Inflow Analysis

The Minnesota Pollution Control Agency (MPCA) has developed guidelines to provide a comprehensive and systematic approach to analyze Inflow and Infiltration (I&I). These guidelines were used to determine if I&I is considered excessive in the Cities of Brainerd and Baxter wastewater collection system. The following are definitions of inflow and infiltration as provided by the MPCA guidelines:

- Infiltration – is water other than wastewater which enters a sewer system, including service sewer connections and foundation drains, from the ground through broken or defective pipes, pipe joints, connections, manholes, and wet basements.
- Inflow – is water other than wastewater which enters a sewer system, including sewer service connections, through sources such as, but not limited to, roof leaders, foundation drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, catch basins, storm waters, surface runoff, street wash water, or other drainage structures.
- Excessive Infiltration – infiltration is excessive if the quantity of flow (domestic base flow and infiltration) is greater than 120 gallons per capita per day (gpcd). The quantity of flow was determined using the max average wet weather residential/commercial flow over the past six years and the 2022 population of 23,925.

$$3,000,000 \text{ gpd} / 23,925 \text{ people} = 125 \text{ gpcd}$$

Investigation and correction of excessive infiltration to 120 gpcd reduces the maximum average wet weather flow by 119,000 gpd.

$$(125 \text{ gpcd} - 120 \text{ gpcd}) * 23,925 = 119,000 \text{ gpd}$$
- Excessive Inflow – inflow is excessive if the quantity of flow during storm events results in chronic operational problems related to the hydraulic overloading of the treatment system or that results in a total flow of more than 275 gpcd (domestic base flow plus infiltration and inflow). The flow during storm events was determined using the maximum residential/commercial flow over the past six years and the 2022 population of 23,925.

$$3,800,000 \text{ gpd} / 23,925 \text{ people} = 159 \text{ gpcd}$$

Table 3.3 – Historical Wastewater Flow, Brainerd Public Utilities WWTF, MN

	<u>2019</u>		<u>2020</u>		<u>2021</u>		<u>2022</u>		<u>2023</u>		<u>2024</u>		<u>6 Year</u>	
Month	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	Monthly Average (MGD)	Daily Max (MGD)	6-Year Monthly Average (MGD)	6-Year Daily Max (MGD)
January	1.90	2.00	2.16	2.25	1.78	1.87	1.80	1.90	1.72	1.81	1.86	2.01	1.87	2.25
February	1.90	2.10	2.05	2.16	1.80	1.90	1.70	1.80	1.74	1.85	1.83	1.95	1.84	2.16
March	2.00	2.50	2.14	2.52	1.80	1.90	1.80	2.20	1.74	1.89	1.77	1.88	1.88	2.52
April	2.10	2.50	2.48	2.74	2.20	2.40	2.30	2.51	2.46	3.02	1.98	2.18	2.25	3.02
May	2.50	2.70	2.09	2.26	2.00	2.20	2.73	3.32	2.44	2.76	2.37	2.51	2.35	3.32
June	2.30	2.50	1.97	2.33	1.80	2.00	2.62	3.28	1.99	2.22	2.49	2.97	2.20	3.28
July	2.30	3.00	2.20	3.10	1.80	1.90	2.25	2.55	1.87	2.00	2.41	2.97	2.14	3.10
August	2.00	2.20	2.11	2.45	1.70	1.80	1.98	2.21	1.79	1.89	2.05	2.17	1.94	2.45
September	2.20	3.80	1.89	2.03	1.70	1.80	1.82	1.97	1.73	2.00	1.88	2.05	1.87	3.80
October	3.00	3.50	1.84	1.95	1.70	1.80	1.73	1.92	1.66	1.82	1.77	1.90	1.95	3.50
November	2.40	2.80	1.85	2.00	1.70	1.80	1.70	1.95	1.63	1.77	N/A	N/A	1.86	2.80
December	2.20	2.30	1.73	1.81	1.70	1.90	1.68	1.81	1.72	2.03	N/A	N/A	1.80	2.30
Yearly	2.23	3.80	2.04	3.10	1.81	2.40	2.01	3.32	1.87	3.02	2.04	2.97	2.00	3.80
Average/Max														

According to MPCA criteria, inflow in the Brainerd and Baxter wastewater collection system is below the high threshold but the infiltration into the system is above the high threshold. The Cities of Brainerd and Baxter should invest in reducing the infiltration to below the described value by locating sources of inflow and infiltration and correcting them. Inflow and infiltration reduction will help extend the life of the plant by keeping systems operating within the design parameters of the equipment and facilities. Source identification can be achieved through several methods, including the following:

- Residential/Commercial sump pump and foundation drain inspections – involves inventorying residential and commercial sump pump and drain tile installations to verify discharge to storm water systems rather than to the sanitary sewer system.
- Smoke testing – identifies sources of inflow and infiltration by setting up a blower and pumping a non-toxic, pressurized smoke through sewer mains and residential lines. The smoke aids in identifying leaks or cross-connections in the sanitary sewer system.
- Dye testing – identifies sources of inflow by adding NSF-approved tracing dye to potential cross-connections (storm sewer, foundation drains, etc.) to verify if any specific drains flow to the sanitary sewer system.
- Sewer televising – identifies sources of inflow and infiltration by taking camera footage of the interior sanitary sewer piping. The camera footage helps identify broken or defective piping, offset joints, and potential cross-connections.
- Manhole inspections – involves taking an inventory of all sanitary manholes throughout the collections system to identify leaking joints, covers, and other installation or age-related issues.

2. Design Flow

a) MPCA Flow Conditions

The MPCA has guidelines to determine the design wastewater flows for new or expanded treatment facilities. Flow projections are developed for different climatic conditions as described below:

- Average Dry Weather (ADW) Flow – Measure of flow during which there is no inflow due to precipitation and/or snowmelt and no infiltration due to high groundwater. This flow typically occurs during winter months or very dry summers. It is also strongly correlated with drinking water usage.
- Average Wet Weather (AWW) Flow – Daily average flow for the wettest 30 consecutive days for mechanical treatment facilities. AWW flow is based on flow with infiltration due to high groundwater and typical inflow due to precipitation and/or snowmelt. This flow typically occurs during the spring and early summer.
- Peak Hourly Wet Weather (PHWW) Flow – Peak flow during the peak hour of the day at a time when the groundwater is high and a five-year one-hour storm event is occurring.
- Peak Instantaneous Wet Weather (PIWW) Flow – Peak instantaneous flow during the day at a time when the groundwater is high and a 25-year one-

hour storm event is occurring. This flow is used for sizing pumps and piping systems. The flow parameters described above are determined by following the procedures outlined in the MPCA document *“Design Flow and Loading Determination Guidelines for Wastewater Treatment Plants.”* Additional flow from population increase will be estimated based on historical per capita flow and loadings, as discussed in the following sections.

b) Residential, Commercial, Institutional Flow

Commercial flows include wastewater from businesses, small industries, restaurants, and city offices. These flows are typically similar in strength to residential flows and will be considered in future flow allocations. Institutional flows include wastewater from the School District buildings, healthcare facilities, and other educational buildings. Residential flows include household wastewater flows. These flows contribute to a significant portion of flow for the City of Brainerd.

c) Industrial Flow

There are several existing significant industrial users (SIU) located within Brainerd and Baxter. The SIU's have agreements for the quality and quantity of wastewater that can be discharged to the Brainerd WWTF.

No major additional SIU's are projected.

d) 20 Year WWTF Design Flow

Calculated design flows for 2045 have been projected utilizing the following criteria:

- 2045 Design Population of 28,800 capita.
- Flow from population increase will be estimated using historical per capita flow rates. The Recommended Standards for Wastewater Facilities (commonly known as Ten States Standards) recommends a flow of 100 gal/cap/day for Wet Weather Flow projections and 75 gal/cap/day for Dry Weather Flow projections. The City's historical per capita flow rates are 78 gal/cap/day for dry weather flow and 100 gal/cap/day for wet weather flow. The historic per capita flow rates are very similar to the 10SS recommendations and, thus, will be used in projections.
 - The Brainerd water treatment plant (WTP) will be adding a backwash reclamation tank to the facility in the upcoming years. The water that is not reclaimed will be sent to the sanitary sewer. Based on current and estimated WTP operations once the reclaim tank is installed, the estimated sludge volume which will be discharge to the sanitary sewer is 150,000 gallons per week, typically pumped in a 1- or 2-day period. The additional flows from the reclaim tank will be added to residential flows for flow development.
- Commercial and Institutional flows will increase proportionally with residential flows and are accounted for by the population growth.
- Industrial Flows are not projected to increase since there are no new projected SIU's that will significantly increase flows to the WWTF. If SIU's are projected, then the design flows should be updated to reflect estimates by the industry for peak flows and loadings.

Table 3.4 presents a summary of the allocated calculated 2045 design flows, along with the existing facility design flows.

Table 3.4 – Summary of Allocated 2045 Design Flows			
Parameter	2024 Existing Flows	2045 Calculated Design Flows	Facility Design Flows
Average Dry Weather Flow (MGD)	1.85	2.26	--
Average Wet Weather Flow (MGD)	2.35	3.32	6.00
Average Annual Flow (MGD)	2.00	2.54	4.78
Peak Hourly Wet Weather Flow (MGD)	4.77	5.40	10.36
Peak Instantaneous Wet Weather Flow (MGD)	5.45	6.17	10.88

D. Wastewater Loadings

1. Historical Monitoring Data

a) Influent Monitoring

The City of Brainerd monitors influent pollutant loadings per the requirements of their NPDES Discharge Permit. The City monitors the 5-day Carbonaceous Biochemical Oxygen Demand (CBOD5), Total Suspended Solids (TSS), and Total Phosphorus (TP). The City also monitors Total Kjeldahl Nitrogen (TKN) and Total Nitrogen (TN). The historical loadings for the City of Brainerd WWTF are shown in Table 3.5. The historic loading for CBOD5, TSS, TKN, and TP, are shown in Figures 3.3-3.6, respectively.

The average influent loadings for CBOD5, TSS, TKN, and TP have been consistent over the past six years.

Table 3.5 – Historical Influent Loading Summary								
Parameter	Unit	2019	2020	2021	2022	2023	2024	6-Year Average
Population Estimate		22,310	23,007	23,590	23,925	23,505	24,030	23,395
Average Flow	MGD	2.23	2.04	1.81	2.01	1.87	2.04	2.00
	gpcd	100	89	77	84	80	85	86
CBOD5	mg/L	169	214	218	190	189	197	196
	lb/d	3,149	3,641	3,283	3,190	2,959	3,357	3,263
	lb/cap/d	0.14	0.16	0.14	0.13	0.13	0.14	0.14
TSS	mg/L	246	252	301	301	308	298	284
	lb/d	4,574	4,297	4,530	5,036	4,811	5,073	4,720
	lb/cap/d	0.21	0.19	0.19	0.21	0.20	0.21	0.20
TKN ⁽¹⁾	mg/L				41	41	41	41
	lb/d				687	640	698	675
	lb/cap/d				0.03	0.03	0.03	0.028
TP	mg/L	4.58	5.84	6.30	5.93	6.13	5.64	5.74
	lb/d	85	99	95	99	96	96	95
	lb/cap/d	0.004	0.004	0.004	0.004	0.004	0.004	0.004
(1) TKN was not monitored until 2022								

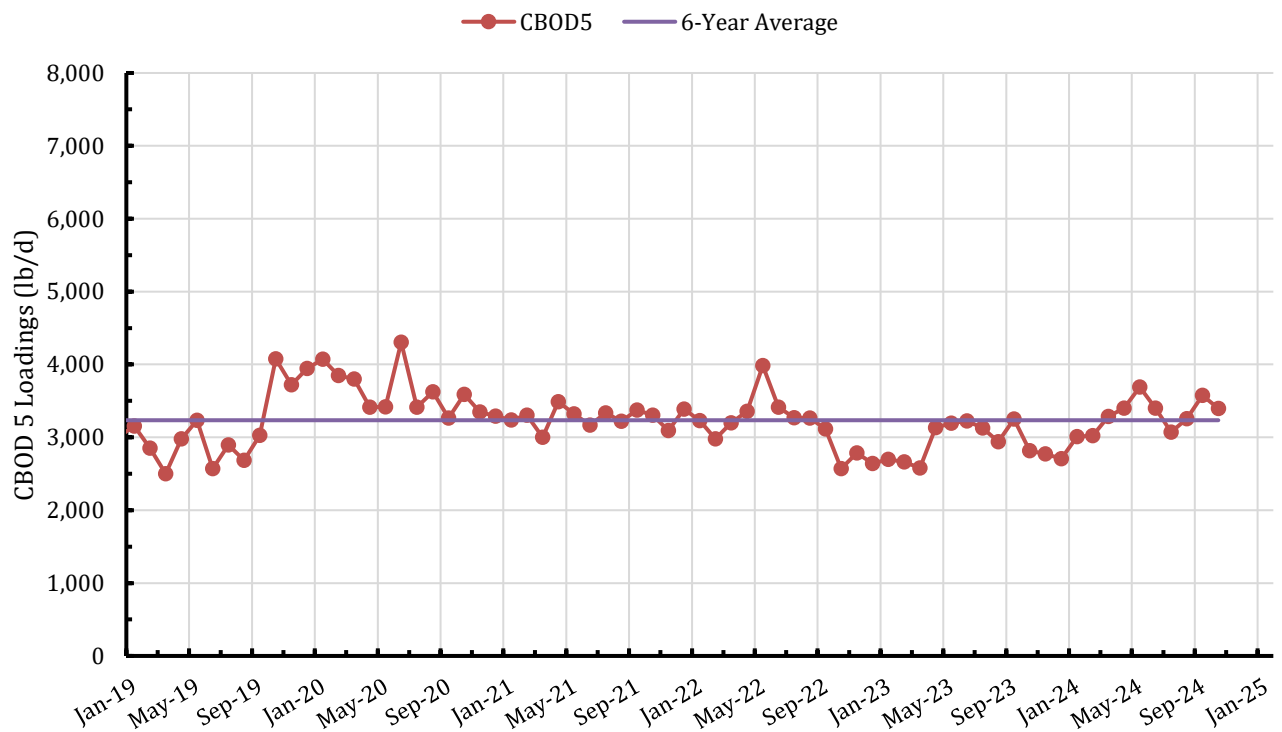
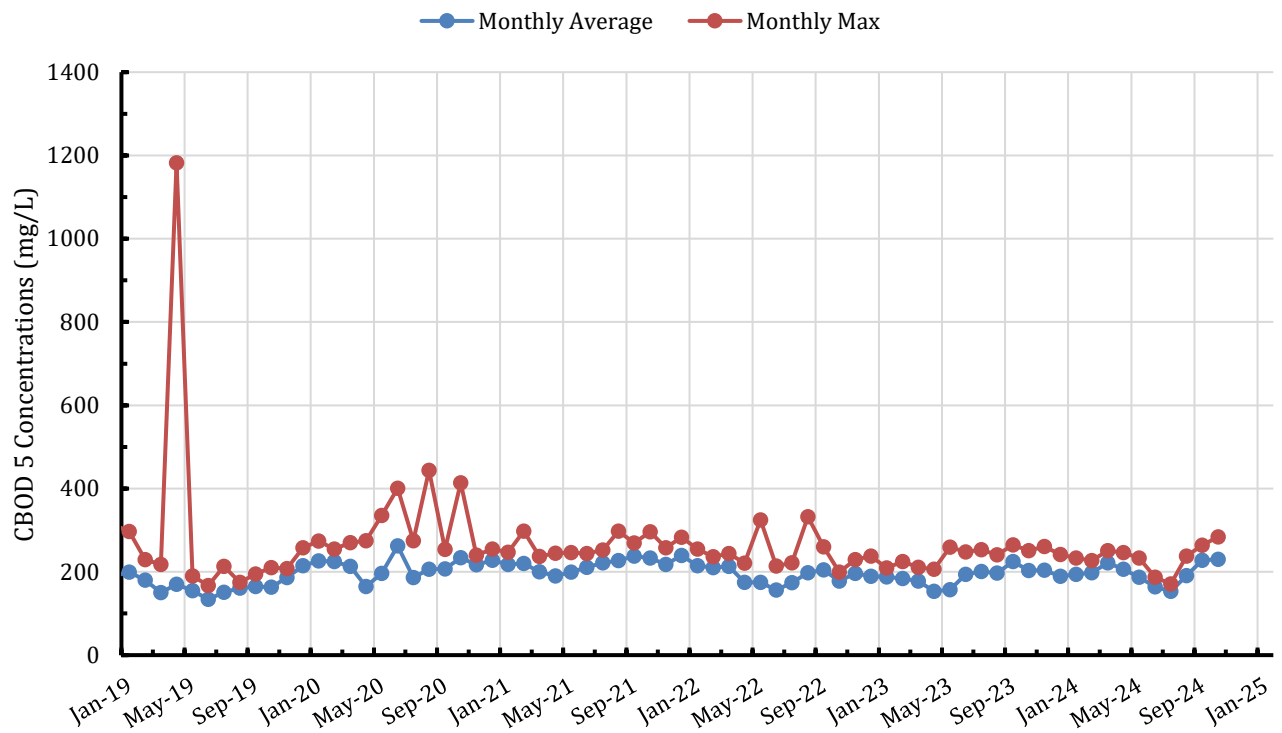


Figure 3.3: Historic CBOD5 Concentrations (top) and Mass loadings (bottom)

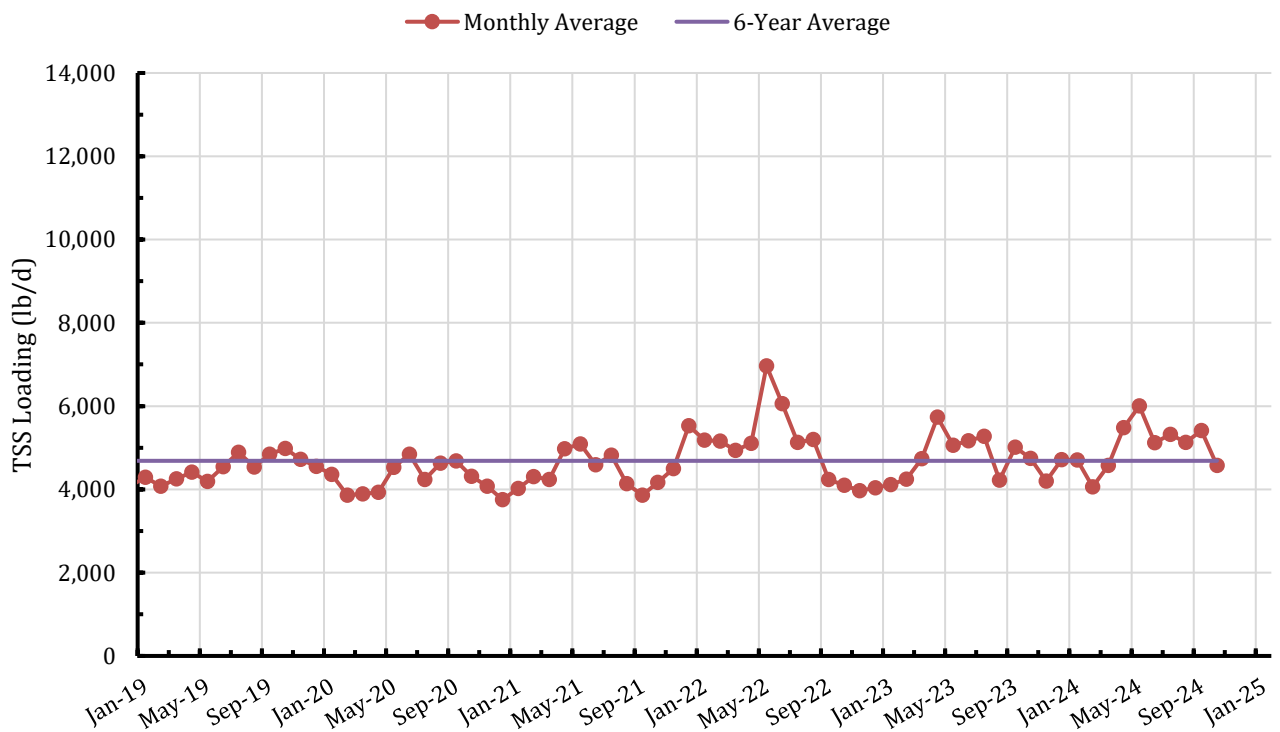
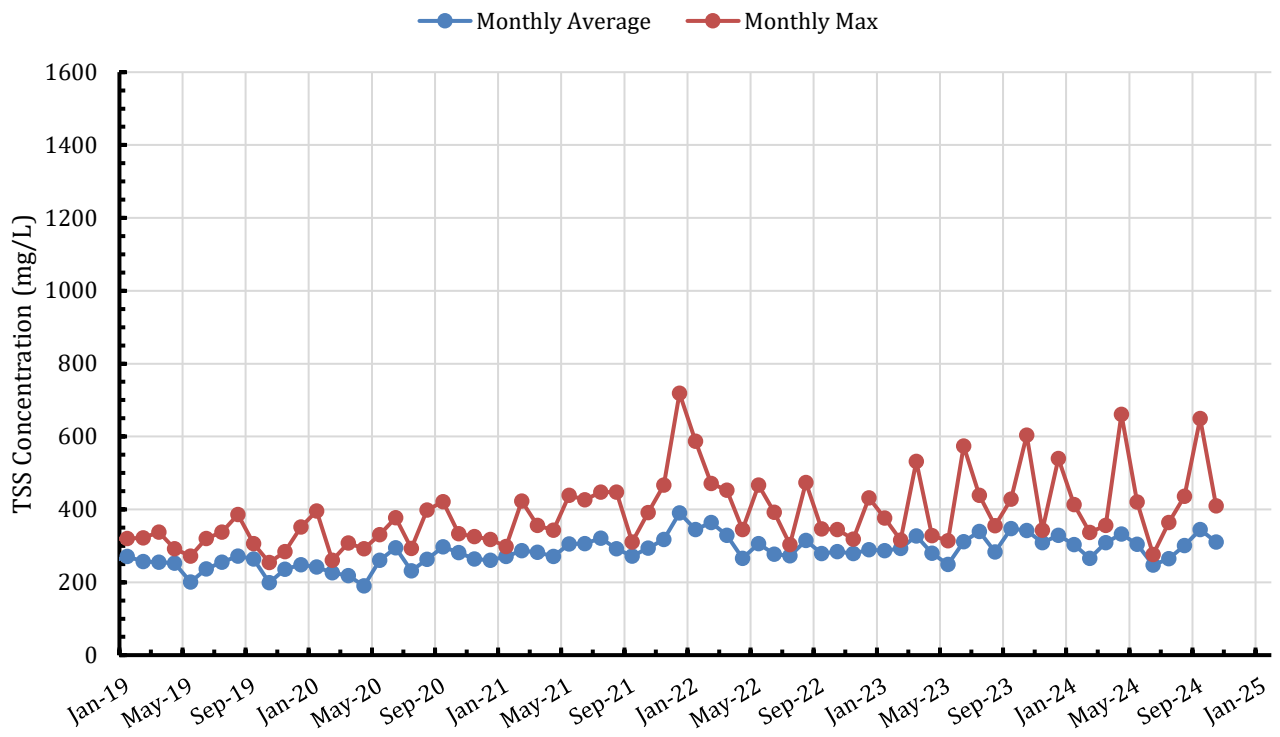


Figure 3.4: Historic TSS Concentration (top) and Mass Loading (bottom)

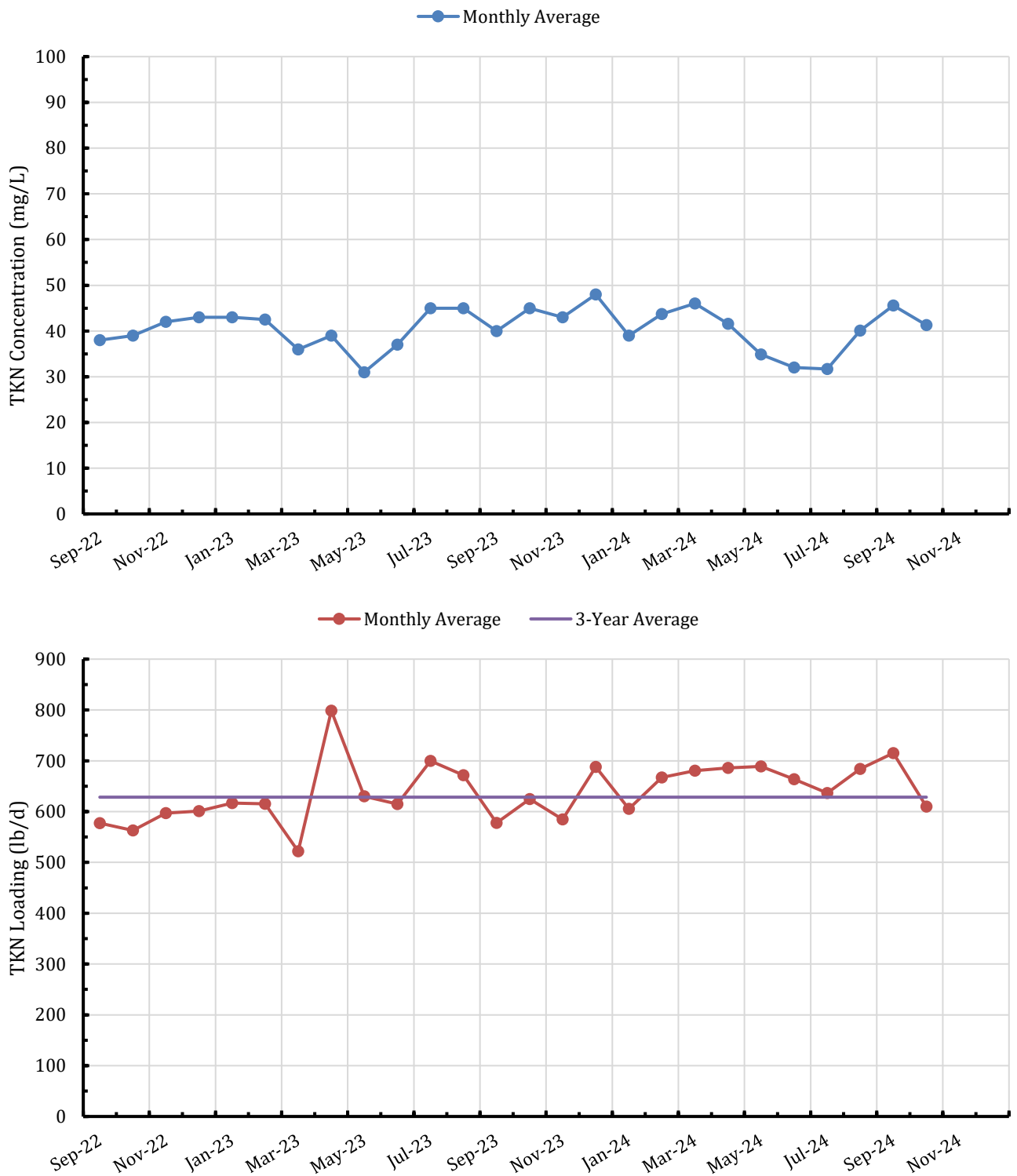


Figure 3.5: Historic Total Kjeldahl Nitrogen Concentration (top) and Mass Loading (bottom)

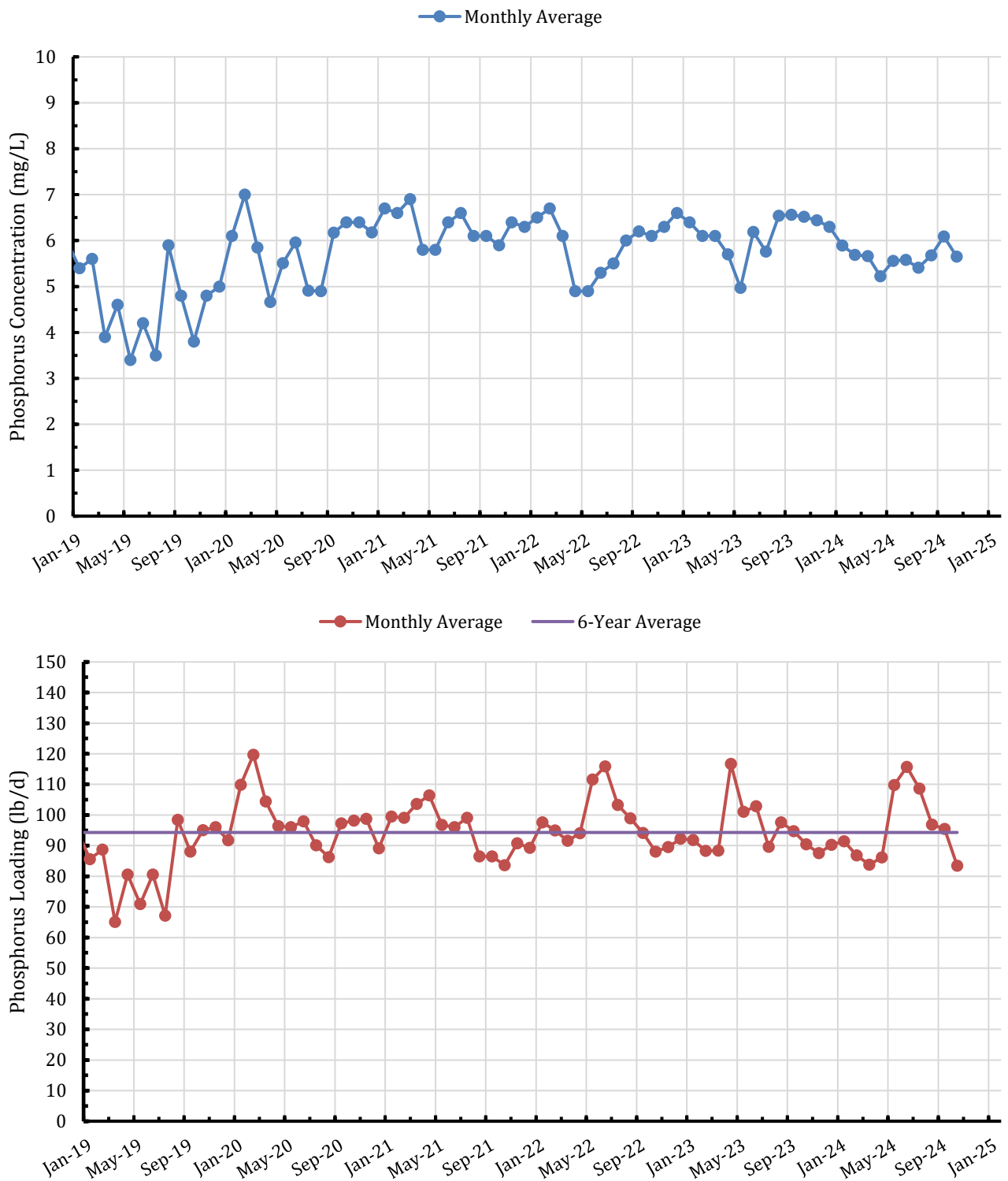


Figure 3.6: Historic Phosphorus Concentration (top) and Mass Loading (bottom)

2. Design Loadings

The City of Brainerd's WWTF receives pollutant-loading contributions from residential, commercial, institutional, and industrial users. The flows from each are discussed below.

a) Residential, Commercial, Institutional Loadings

Design loadings from residential/commercial/institutional users can be developed using either historical loading data or common recommended design loading values. Common per capita design loading rates for residential/commercial sources, as per the Ten States Standards, are 0.17-0.22 lbs. CBOD5/capita/day, 0.20-0.25 lbs. TSS/capita/day, and 0.036-0.048 lbs. TKN/capita/day. According to Metcalf & Eddy (2003), typical per capita Total Phosphorus loading is 0.008 lbs./capita/day. The historic per capita loading for the City of Brainerd WWTF is summarized in Table 3.6 along with the common recommended design loading values. The historic per capita loading values for Brainerd WWTF are slightly under the common design loadings. To be conservative, the Ten States Standards common design loading values are used for future load projections.

Table 3.6 – Per Capita Loading		
Parameter	Per Capita Design Loading	Historical Per Capita Loading
CBOD5	0.200 lbs/capita-day ⁽¹⁾	0.14 lbs/capita-day
TSS	0.220 lbs/capita-day ⁽¹⁾	0.20 lbs/capita-day
TP	0.008 lbs/capita-day ⁽²⁾	0.004 lbs/capita-day
TKN	0.036 lbs/capita-day ⁽¹⁾	0.028 lbs/capita-day

(1) Design loading from Ten States Standards

(2) Recommended design loading from Metcalf & Eddy (2003)

b) Industrial Loadings

There are no anticipated additional SIU loadings. If SIU's are projected, then the design flows should be updated to reflect estimates by the industry for peak flows and loadings. All existing loadings are accounted for in historical data.

c) 20 Year WWTF Calculated Design Loading

The calculated 2045 design loadings are shown in Table 3.7. The design loadings include the projected load increase due to population (residential/commercial/institutional) growth and assumes no major additional SIU's.

Table 3.7 – 2045 Design Loads			
Parameter	Existing Load	2045 Calculated Design Load	Facility Design Loads
CBOD5 (lbs/day)	3,263	4,238	9,568
TSS (lbs/day)	4,720	5,793	9,568
TP (lbs/day)	95	134	343
TKN (lbs/day)	675	851	2,392

E. Existing Effluent Limits

The existing effluent limits for the Brainerd Wastewater Treatment Facility are described in NPDES Permit No. MN0049328. A copy of the permit is included in Appendix A. A summary of the current effluent limits is presented in Table 3.8.

Table 3.8 – NPDES Discharge Limits			
Parameter	Season	Limit Type	Limit
5-Day Carbonaceous BOD	Jan-Dec	Calendar Month Average	25 mg/L (296 kg/d)
	Jan-Dec	Maximum Calendar Week Average	40 mg/L (473 kg/d)
Total Suspended Solids (TSS)	Jan-Dec	Calendar Month Average	30 mg/L (355 kg/d)
	Jan-Dec	Maximum Calendar Week Average	45 mg/L (533 kg/d)
Total Phosphorus	Jan-Dec	12-Month Moving Average	1 mg/L average (8,278 kg total)
Total Ammonia Nitrogen (NH ₃ -N)	Oct-May	Calendar Month Average	Monitor Only
Total Kjeldahl Nitrogen	Jan-Dec	Calendar Month Average	Monitor Only
Total Nitrogen	Jan-Dec	Calendar Month Average	Monitor Only
Dissolved Oxygen (DO)	Jan-Dec	Calendar Month Average	Monitor Only
Fecal Coliform, MPN, or Membrane Filter 44.5C	Apr-Oct	Calendar Month Geometric Mean	200 organisms per 100 mL
pH	Jan-Dec	Min-Max	6.0 - 9.0
Perfluorooctane Sulfate	Mar, Jun, Sep, Dec	Calendar Month Average	287 ng/L
		Daily Maximum	497 ng/L
Mercury	Jan, Mar, May, Jul, Sep, Nov	Calendar Month Average	6.9 ng/L
		Daily Maximum	11.95 ng/L
Copper - Phase 1	Mar, Jun, Sep, Dec	Calendar Month Average	802 ug/L
		Daily Maximum	1,984 ug/L
Copper - Phase 2	Mar, Jun, Sep, Dec	Calendar Month Average	235 ug/L
		Daily Maximum	581 ug/L

F. Influent Design Criteria Summary

The existing and proposed design criteria are shown in Table 3.9.

Table 3.9 – Existing and Proposed Influent Design Criteria Summary		
Parameter	2009 Design Criteria	Proposed Design Criteria
Design Flow (MGD)		
Average Dry Weather Flow (ADW)	--	--
Average Annual Flow (AA)	4.78	4.78
30-day Average Wet Weather Flow (AWW)	6.00	6.00
Maximum Day Flow	--	--
Peak Hourly Wet Weather Flow (PHWW)	10.36	10.36
Peak Instantaneous Wet Weather Flow (PIWW)	10.88	10.88
Design Load (lb/day)		
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	9,568	9,568
Total Suspended Solids (TSS)	9,568	9,568
Total Kjeldahl Nitrogen (TKN)	2,392	2,392
Total Phosphorus (TP)	343	343

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IV. EXISTING WASTEWATER FACILITIES

A. Overview

Construction of the WWTF was completed in 2009/2010. Since then, there have not been any major improvements to the facility with the exception of regular maintenance and anaerobic digester improvements. This section will give a high-level summary of the assessment of the major treatment components of the facility.

B. Headworks

1. Influent Channel

The influent channel is used to convey the flow from Brainerd and Baxter to the mechanical fine screens. Brainerd's main lift station pumps across the Mississippi River where the flow joins with the sanitary sewer for the portion of Brainerd West of the Mississippi River. Brainerd's wastewater then flows by gravity to the WWTF and enters the influent channel via gravity. Baxter's final lift station in the collection system is at the entry gate to the WWTF. Baxter's final lift station pumps wastewater into a metal box above the influent channel. The metal box aids in the flow split between the mechanical screens, but the channels still surge and receive uneven flow split when Baxter's final lift station is pumping. The influent channel is in good condition and has adequate freeboard for current flows. However, the freeboard is fully consumed when Baxter's final lift station is pumping. Flow equalization should be considered for Baxter's flow after the final lift station.

2. Headworks Building

The headworks contain a number of components used for pretreatment and grit removal. The building was constructed in 2009 and is in good condition. There is minor settlement around the building which should be monitored over the next several years and repaired if it continues to get worse. The roof is in good condition and there have been no reported leaks in the building. Inside the building, the condition of the equipment is good due to the air scrubber that sits in the next room. The air scrubber helps to remove hydrogen sulfide and other gases from the room atmosphere which helps to prevent corrosion. Minimal corrosion was observed inside the building.

3. Mechanical Fine Bar Screens

Wastewater enters the plant from Brainerd and Baxter and both lines have a sampler which allows both sources to be sampled independently. The wastewater flows through one of two mechanical bar screens. The bar screens are mechanical fine screens. Screened material is disposed of in dumpsters. Mechanical components, such as the fine screens, grit collector and grit classifier, have a typical useful life of 15 to 20 years due to normal wear overtime. The mechanical traveling fine screens should be replaced in kind within the next 5 to 10 years to avoid a major equipment failure.

The screenings pipe currently has a hole in the side which allows material to spill onto the floor. This equipment and piping should be replaced with new equipment.

4. Grit Removal System

Once the water flows through the screens, it enters a channel where it flows through a vortex grit removal chamber. The equipment included is a Pista Grit paddle, grit pump, grit cyclone, and grit classifier. The grit removal equipment is in good

condition, but it is recommended to replace the pump and classifier within the next 5 – 10 years.

5. Flow Measurement

After grit removal, the water flows through a Parshall flume for flow measurement and then is conveyed to the SBR building. The Parshall flume is in good condition and is not in need of replacement within the next 10 years.

6. Headworks HVAC equipment

The HVAC equipment in the headworks building is in poor condition and is adequately maintained given the current condition. The heaters are all original from 2009. A typical life expectancy of a heater in a headworks building is 10 – 15 years. It is recommended to replace the existing heaters with new explosion proof heaters. The ductwork in the building is in good condition and appears to be resisting corrosion. No repairs are needed on the ductwork in this room.

7. Headworks Electrical Equipment

The headworks building is made up of three rooms, the screening room, scrubber room, and electrical room. The screening room has exposed process in the space, which makes the area a hazardous location for electrical installations. The danger is the buildup of flammable gases which a spark or heat from electrical equipment could ignite. The electrical equipment installed in the screening room is rated for a hazardous location and is in visually good condition.

NFPA 820 is a nationally recognized standard which identifies and labels hazardous locations for wastewater collection and treatment system/facilities. Per this standard, any room which has shared openings with the screening room would be classified as a Class 1, Division 1 hazardous location and would require all electrical equipment in the shared space to be rated as explosion proof. However, both the scrubber room and electrical room have exterior access and do not share an opening with the classified space.

The motor control center (MCC), SCADA control panel (SCP), and panelboard and other electrical and HVAC equipment is in the electrical room. It appears the panelboard was installed in 2009 and the equipment in this space visually looks good. The existing programmable logic controller (PLC) cards are obsolete and should be replaced.

The lighting in the headworks spaces is halogen bulbs. Halogen bulbs take a significant amount of time to reach maximum luminary output. It is recommended to replace the lighting with LED luminaires to reduce energy consumption, produce better lighting and less maintenance.

A summary of various components in need of repair/replacement can be found in table 4.1 below.

Table 4.1 – Headworks Building Recommended Repairs & Replacements		
Item	Replace/Repair	Other Notes
Air Scrubber	Have manufacturers inspect media and replace media if recommended.	Calcium bridge forming in media. Will affect the performance of air scrubber.
	Replace the recirculation pump at bottom of scrubber.	
HVAC	Replace all the heating in building. Add/fix thermostat for Berko heater.	
Lighting	Replace halogen with LED.	
Grit Removal System	Requires maintenance. Paddles need to be inspected.	Sufficient capacity. Concrete is in good condition.
Sample Lines	Replace wall penetration foam with filler that is able to stop odors and gasses.	
MAUs	Replace MAU-2.	
Structure	Caulking should be re-done on exterior joints.	
Structure Septage Receiving Station	Membrane roofs should be replaced every 20 years (next replacement due in 2030).	
	Consider adding a new CIP septage receiving station to handle septage.	Existing septage receiving station for vac-trucks.
Mechanical Traveling Fine Screens	Replace in kind	
Screenings Compactor/Washer	Replace in-kind	Grit has worn a hole in the pipe.
Wemco Grit Pump	Replace the pump.	
Grit Classifier	Replace Classifier	
Electrical/Controls	Replace PLC cards with updated versions	
Piping	No major updates needed	Minor corrosion, mainly near flanges or bolts. No epoxy coating on piping at chemical injection locations.
Brainerd Influent Sampler	Move sample line to a location to accurately grab a sample of the influent	Sampling line is too close to dump station and sometimes results in erroneous readings.

C. Sequencing Batch Reactors (SBR) and SBR Building

1. SBR Building and Laboratory

The SBR building houses all of the equipment and tanks for the SBR's. There are four (4) 1.5-million-gallon SBR tanks. The main level of the building is comprised of a laboratory/classroom, garage, blower room, and electrical room. The overall structure is in good condition since its construction in 2009. There are no major improvements needed to the building or structure at this time.

Vibration testing has shown that the laboratory in the SBR building cannot be used as a certified lab due to excessive vibration. Additionally, modifications such as a fume hood and computer additions would be required to function as a fully operational lab even if the vibrations were below the allowable threshold. Therefore, BPU staff use the laboratory in the main control building for testing, and the SBR building laboratory/classroom is mostly used for conducting training classes and holding other events and tours.

2. SBR Tanks and EQ Tanks

The SBR tanks are the main biological treatment component at the facility. The existing concrete tanks are in good condition since construction in 2009. It is expected that the concrete in the SBR tanks and EQ tanks will have a life expectancy of at least 75 years. No major improvements have been required. Water is conveyed to the SBR tanks from the headworks facility through a large pipe. Once at the SBR building, water is split to the SBR tanks depending on the cycle of each tank. Each tank, when in operation, goes through a four-step treatment process: filling (both anoxic and aerobic fills), react, settling, and decanting (with sludge wasting). The operation and setpoints for the process are all controlled by the PLC and SBR equipment supplier controls. When a SBR goes into decant mode and the PLC signals for the wasting pumps to turn on, the waste activated sludge from the SBR is pumped to the WAS holding tanks prior to thickening and digestion.

Once an SBR tank decants in the final stage, the water flows to the EQ tank prior to flowing to the UV disinfection building. The EQ tanks sit between the SBR tanks. No major improvements are needed for the EQ tanks at this time.

On top of both the SBR and EQ tanks are access hatches. The safety grating/netting in the access hatches should be replaced with new grating to allow safe observation of the tank.

3. Pumps, Piping, and Blowers

When a tank is in the fill cycle, influent wastewater enters the tank and fills until it hits the "stop" setpoint. At that time, the cycle will switch into the aeration mode to supply oxygen to the wastewater. Blowers supply the air to the SBR. Blowers have an estimated useful life of 20-25 years. The blowers are all in good condition and no major improvements are needed at this time.

Jet motive pumps are used to provide mixing in the SBR tanks during the aeration cycle. Jet motive pumps are high capacity pumps that create significant turbulence in the piping. Due to the orientation and fittings around the pump, cavitation has caused significant degradation in the piping on the discharge side of the pump. One fitting has already been replaced and others need replacement due to the cavitation. It is recommended to replace all downstream fittings from the pump and monitor for cavitation.

Once a SBR goes into the settling/decant mode, waste activated sludge is pumped to the WAS storage tanks via the WAS pumps. The WAS pumps currently have sufficient capacity and do not require replacement within the next 5 – 10 years.

When an SBR enters decant mode, effluent pumps move water from the EQ tank and pump it to the UV building. The effluent pumps have an estimated useful life of 20 years. The effluent pumps currently have sufficient capacity and do not require improvements at this time.

4. Filter Pipe Gallery

The piping in the pipe gallery shows minor signs of corrosion. The utility has done an excellent job on maintenance on the pumps, piping, and equipment in the pipe gallery. Minor improvements such as touching up coatings on the piping should be made over the next few years. No major improvements are recommended for the filter pipe gallery.

5. HVAC and Plumbing Systems

The HVAC and plumbing systems in the SBR building are all in good condition. The split-case air condition units in the electrical room are not functioning as intended and should be replaced with properly sized units. This work should happen within the next couple of years to protect the electrical equipment from overheating. All other HVAC systems appear to be operating as intended and no other major improvements are needed other than regular maintenance.

a) Restrooms

The restrooms appear to be in good condition. No improvements are needed at this time.

6. Electrical and Controls

a) Electrical Room

The electrical room in the SBR building houses the MCC, switchgear, and electrical service for the facility. The electrical gear was installed in 2009 and is in good condition. No major improvements are needed on the electrical gear and there is adequate space for new electrical equipment in the existing room.

The existing control panel and PLC contain outdated PLC cards that are no longer in production. The utility currently has to shop online for PLC cards if one were to fail. This makes repairs extremely difficult and parts difficult to obtain in a timely manner. It is recommended to replace the PLCs with new PLC cards and to update the SCADA system.

It is also recommended to update the SBR controls as the system is outdated.

b) Lighting

There are several types of luminary structures in the SBR building. It is recommended to evaluate replacing all lighting fixtures with LED luminaries to reduce energy consumption and provide bright white light for working.

c) Generator Systems

A diesel standby generator is provided at this facility. The generator was installed in 2009. The generator is located outside on the North side of the SBR building in an outdoor enclosure on top of a sub-base fuel tank.

An automatic transfer switch is provided in the SBR building electrical room. This transfer switch connects to the utility source via the breaker at the switchgear. The load side of the transfer switch feeds the motor control center in the control building, which in turn feeds other processes at the facility.

The generator and Automatic transfer switch visually appear to be in good condition and staff did not report any present issues with the generator assembly.

A summary of various components in need of repair/replacement can be found in table 4.2 below.

Table 4.2 – SBR Building Recommended Repairs & Replacements		
Item	Replace/Repair	Other Notes
Effluent Pumps 1-3	No work needed	
Sump Pumps 1-4	Replace in kind	
WAS Pumps 1-4	No work needed	
Laboratory	It cannot be used as a certified lab due to vibrations. If it is to be used as a training lab, consider adding a fume hood and eyewash station.	No improvements are needed if BPU does not move to the lab space in the SBR building.
Building Lighting	Add LED lighting in pump/pipe gallery on lower level.	Could replace the lighting in a sequence of room by room or as fixtures fail.
Electrical Panel/Controls	Replace existing PLC cards with new updated cards. Update SCADA and SBR controls to allow more operational flexibility.	Sufficient room to install new panels, MCCs, etc.
Jet Motive Pumps	Replace fittings downstream of pumps.	To assist with phosphorus reduction, consider adding a ferric or alum feed line to allow injection of chemical into the SBR tanks.
SBR Tanks	Replace all safety grating/netting on the SBR access hatches. Caulk control joints in buildings, tanks, and edges.	Consider adding MLSS probe into tanks to provide additional data for process control.
HVAC systems	Replace the AC in the electrical room.	Existing AC does not work as intended.
EQ Tanks	Add storm catch basin on west side of SBR's to collect stormwater and convey away from the tanks.	

D. UV Disinfection

Disinfection at the WWTF is accomplished with a Trojan UV 3000plus system. The system was installed in 2009. UV disinfection systems have a useful life of 15 – 20 years. The UV system at the time of inspection was operating as intended and operators have not noticed any disinfection issues to date. The system currently operates during the disinfection season (April through October) and is shut off in the winter. Regular maintenance has been conducted on the channel and the UV bulbs as well as bulb replacement as needed.

The current system is always run at 100% capacity with both banks of bulbs running. This can provide sufficient disinfection but also increases energy consumption. The Trojan UV systems are programmable and can be programmed to ramp bulb intensity up and down to maintain an adequate UV dose to meet design standards for UV dosing. It is recommended the utility evaluate updating the programming of the UV system to allow for flow paced UV dosing to increase the energy efficiency of the system.

Once the water passes through the UV bulbs, it flows over a finger weir to the outfall pipe which flows via gravity to the Mississippi River.

A summary of various components in need of repair/replacement can be found in table 4.3 below.

Table 4.3 – UV Disinfection Recommended Repairs & Replacements		
Item	Replace/Repair	Other Notes
UV Module	No major improvements needed.	Consider updating programming to flow pace the UV dose.
UV Building	Replace lighting and add LED lights.	
Site Improvements	Add high flow hydrant in building to more easily wash down the channel and clean equipment.	

E. Outfall Structure and Perimeter Fence

After the water is disinfected in the UV channel, the water flows through an outlet structure to the river. From discussions with utility staff, the outfall structure is in okay condition. It is recommended that this structure be evaluated yearly and assessed for erosion to ensure proper function and to prevent damage to the structure.

During the site inspection it was observed that the perimeter fence was in good condition.

F. Control Building and Lab

The existing control building currently has the main SCADA PLC, office spaces, and the laboratory. The building also has a garage for truck and equipment storage and a room that houses the original generator that is still used. Above the garage space there is an old room that used to house centrifuges for dewatering biosolids, but the room is currently not in use.

The generator is original and is past its useful life and needs to be replaced. The electrical system for the west side of the WWTF, including the GBT's, anaerobic digesters, WAS tanks, and sludge storage are all powered from the original controls building. The electrical system

for the controls building is original from 1982 and is in need of significant improvements. The MCC's should be replaced with electrical improvements.

The laboratory space in the original control building is used as the certified lab on site since the SBR laboratory has excessive vibration and cannot be used as discussed above. The laboratory is original from 1982 and needs capital improvements.

The roof is at its useful life and needs to be replaced on the control building. Additionally, window and door replacements should be considered for increased energy efficiency.

G. Biosolids Processes

1. Waste Activated Sludge (WAS) Tanks

Sludge from the SBR tanks is sent via the WAS pumps to the WAS storage tanks. The WAS storage tanks are the original secondary clarifiers from the original WWTF. The tanks are in need of concrete rehabilitation. The domes on the tanks are in adequate condition but likely should be replaced if these tanks are to remain in operation for more than 10 years. The diffusers in the tanks appear to be operating as intended and provide evenly dispersed aeration of the WAS across the diameter of the tank.

WAS is pumped from the storage tanks to the gravity belt thickeners prior to going to the digesters.

A summary of various components in need of repair/replacement can be found in table 4.4 below.

Table 4.4 – WAS Holding Tank Repairs & Replacements		
Item	Replace/Repair	Other Notes
Hoisting Crane	Hoisting cranes are in poor condition – remove and replace as needed.	
Coatings	Clean and coat tanks if tanks are to be used for more than 10 years.	
Concrete	Repair spalling concrete and repair door thresholds.	If tanks are to be used for more than 10 years, it is recommended to completely rehab the concrete to ensure proper function of the tanks.
HVAC		Review HVAC for building code compliance

2. Gravity Belt Thickeners (GBT)

Sludge from the WAS tanks is fed to the gravity belt thickeners via the GBT feed pumps. Polymer is fed to the influent sludge to aid in the thickening process. The polymer system has been modified by the utility to allow it to function more efficiently. It is recommended to review new polymer systems that will provide additional operational flexibility for the GBT's, if the GBT's will be used long-term.

The liquid supernatant from the GBT's is sent to the head of the facility to be treated while the thickened sludge from the gravity belt thickeners is then sent to the

thickened sludge holding tank. The thickened sludge tank sends sludge to the primary/anaerobic digesters via the thickened sludge pumps. The filtrate holding tank sends filtrate to the headworks of the plant via the filtrate pumps.

The building that houses the GBT's is in good condition and no major building improvements are needed. The GBT's have been very well maintained and are operating as intended to produce a solids concentration of about 5% -7%. Typical GBT operations produce solids ranging from 4% - 10%. The utility has done a good job of thickening the WAS prior to digestion.

A summary of various components in need of repair/replacement can be found in table 4.5 below.

Table 4.5 – Gravity Belt Thickeners Repairs & Replacements		
Item	Replace/Repair	Other Notes
MAUs	Inspect MAUs and determine if they need to be upsized.	
Electrical/Controls	Add separate space for electricals outside of odor control building.	

3. Anaerobic Digesters

The anaerobic digestion process consists of two primary digesters and two secondary digesters. Two of the digesters, one primary and one secondary, are from the original facility while the other two digesters were constructed in 2009. Overall, the digester structures are in fair condition. The secondary digesters are being used as an overflow of the primary digesters and they are not currently functioning as secondary digesters. The primary digesters have fixed covers, so the condition of the covers is not known. The secondary digester covers are floating metal covers but the condition of them is unknown. To inspect the covers, the digesters would need to be taken offline, cleaned, and air tested to ensure a safe environment for inspection. However, in order to take the digesters offline, the utility would need to find alternative biosolids treatment for the duration of the inspection. That could lead to problems with biosolids treatment and there is not enough liquid sludge storage volume to hold the volume of sludge needed.

Methane production occurs in the primary digesters. Boilers provide supplemental heat to the digesters to assist in the biological activity to break down the waste. Methane produced is used to fire the boilers (supplemented with natural gas) and also flared off with a waste burner outside the digester building.

After digestion, the sludge from the anaerobic digesters is sent to the sludge storage tanks by the sludge transfer/mixing pumps. The mixing pumps are also used to recirculate sludge within the anaerobic digesters. All the digested sludge from the WWTF is loaded into tankers and land applied as liquid biosolids. The utility has over 1,000 acres of land available to apply biosolids to which meet MPCA requirements.

Anaerobic digestion requires a significant investment in repair and maintenance over the life span of the digesters. Discussed in the next section are alternatives to anaerobic digestion with estimated capital costs for the improvements. Ultimately, the decision to make a biosolids processing change should be dependent on future

nitrogen limits, Per and polyfluoroalkyl substances (PFAS) limits, land application availability, landfill availability, and utility preference. Rehabbing anaerobic digesters may not be the most feasible option in the future when looking at potential emerging contaminant limits. The MPCA has released the biosolids management plan for land application of biosolids. Utilities like Brainerd may be significantly impacted if land application is no longer allowed with future restrictions or land application sites are no longer available. Discussion on future impacts and possible capital improvements for new limits are discussed later in this report.

4. Sludge Storage Tanks and Loadout

Sludge from the anaerobic digesters is sent via the sludge transfer pumps to the sludge storage tanks. The facility does not have adequate sludge storage. Between 2014 and 2020, the utility did not have adequate storage for biosolids to meet the 180-day storage requirements. From 2020 to now the facility has hovered right around the 180-day requirements, leaving little room for error. This limits operational flexibility and requires operators to maintain consistent sludge production. The sludge storage capacity is shown in Figure 4.1.

When the facility was designed in 2009, the sludge storage tanks were sized using 10SS recommended minimum sludge production value per population equivalent (P.E.) of 0.12 lb/P.E./day. However, historical facility loadings have resulted in a sludge loading of 0.16-0.24 lb/P.E./day, with an average loading of 0.20 lb/P.E./day.

Using existing sludge flow data, and assuming a digester feed of 5% solids and sludge storage at 3% solids, an additional 1.41-2.47 MG of sludge storage is required to meet the 180-day minimum requirement. The required volume of additional sludge storage depends on digester efficiency and other facility operational efficiencies. However, with future limits and emerging contaminants in mind, it is recommended to evaluate several biosolids treatment options to reduce the volume of biosolids and allow flexibility for biosolids disposal for both landfill and land applications. The biosolids and sludge storage options will be further discussed in the next section.

Supernatant from the sludge storage tanks is sent via the supernatant pumps to the filtrate holding tank. Sludge mixing pumps allow the sludge storage tanks to mix or send sludge to the sludge loadout area. It is recommended to consider adding dedicated mixing pumps to allow for mixing during loadout.

The sludge loadout area contains an overhead fill station to fill tankers when the utility hauls biosolids. The loadout station is in good condition and no improvements are needed at this time. If a new biosolids treatment system is installed, it is recommended to keep the existing sludge loadout system as a back-up system, so the utility has a way to remove liquid solids if the main processes are not operational. The utility is currently land applying biosolids as a Class B product. Anaerobic digesters achieve volatile solids reduction and therefore are able to meet requirements for land application.

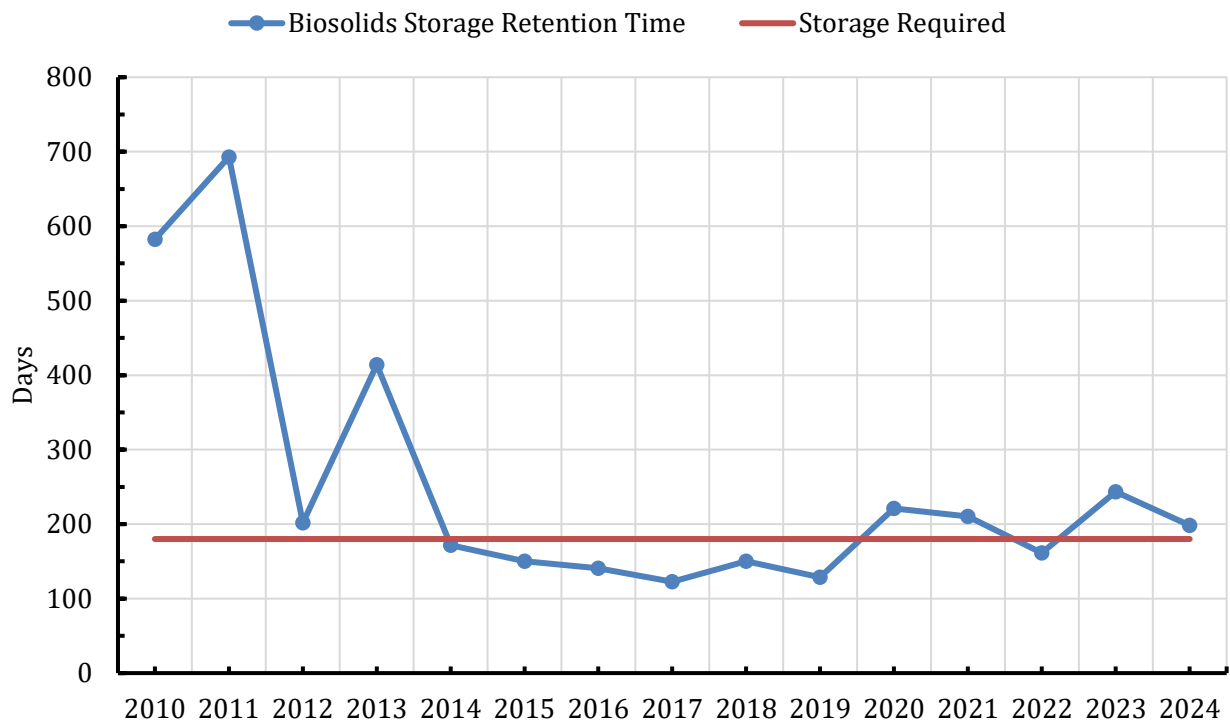


Figure 4.1: Biosolids Storage Retention Time

H. Treatment Performance

The reported effluent discharge values since 2019 for CBOD5, TSS, total phosphorus, and ammonia are shown in the figures below. During this period, the city did not have any discharge violations for these parameters.

Table 4.6 – Brainerd Public Utilities WWTF Historical Effluent Loads								
Parameter	Unit	2019	2020	2021	2022	2023	2024	Average
CBOD5	mg/L	2.3	4.2	3.3	3.2	2.9	2.9	3.1
	lb/d	42	68	50	53	47	49	51
TSS	mg/L	3.8	4.8	4.9	5.0	5.7	5.9	5.0
	lb/d	67	77	73	83	92	99	82
TKN	mg/L	7.1	4.7	9.1	5.7	8.1	5.8	6.8
	lb/d	127	77	136	93	129	99	110
Total Nitrogen	mg/L				6	12	11	9.5
	lb/d				88	194	180	154
NH ₃ -N	mg/L	3.7	2.6	3.4	6.3	7.0	3.5	4.4
	lb/d	67	42	52	103	111	59	72
TP	mg/L	0.35	0.48	0.24	0.45	0.56	0.81	0.5
	lb/d	6.2	7.8	3.6	7.3	8.8	13.8	7.9
(1) Total Nitrogen (TN) was not monitored until 2022								

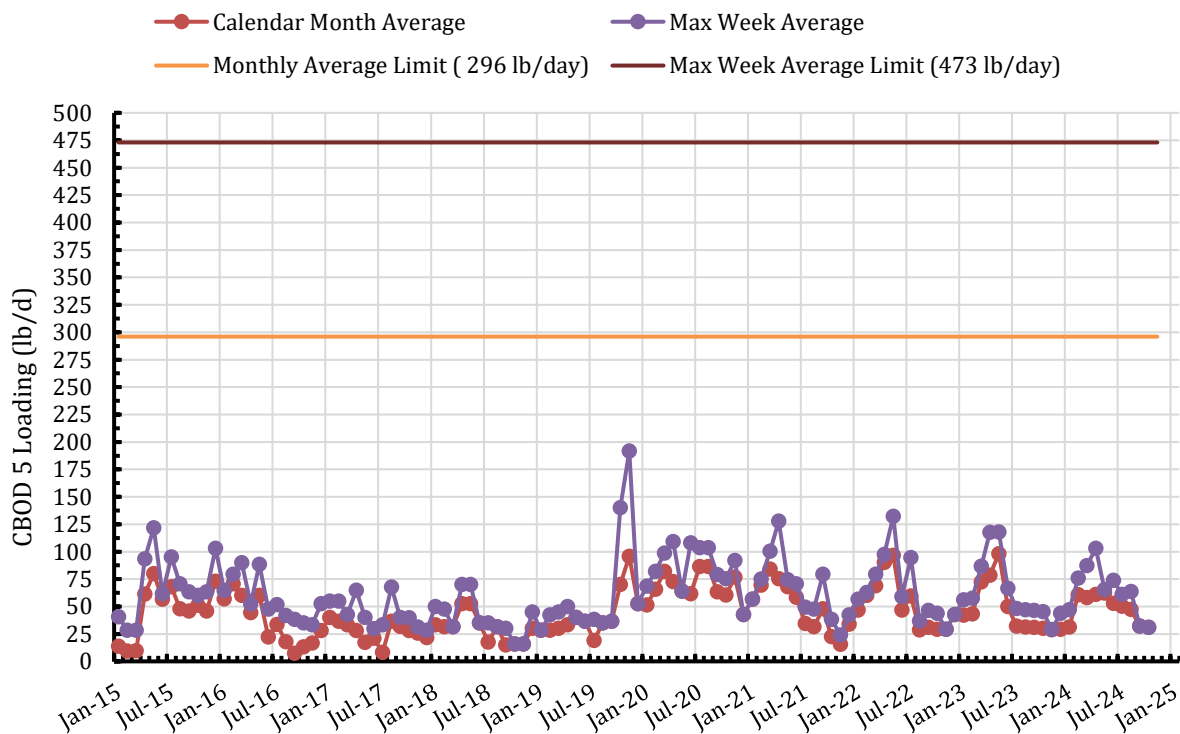
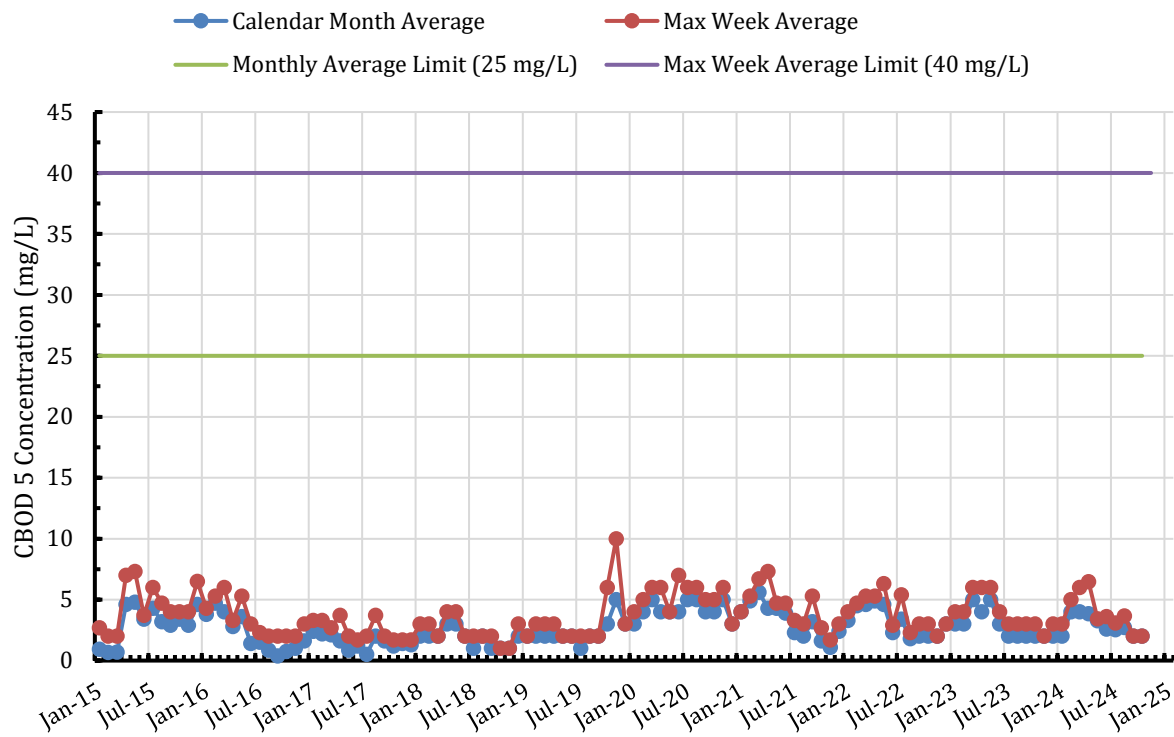


Figure 4.2: Historical Effluent CBOD Concentrations (Top) and Mass Loadings (Bottom)

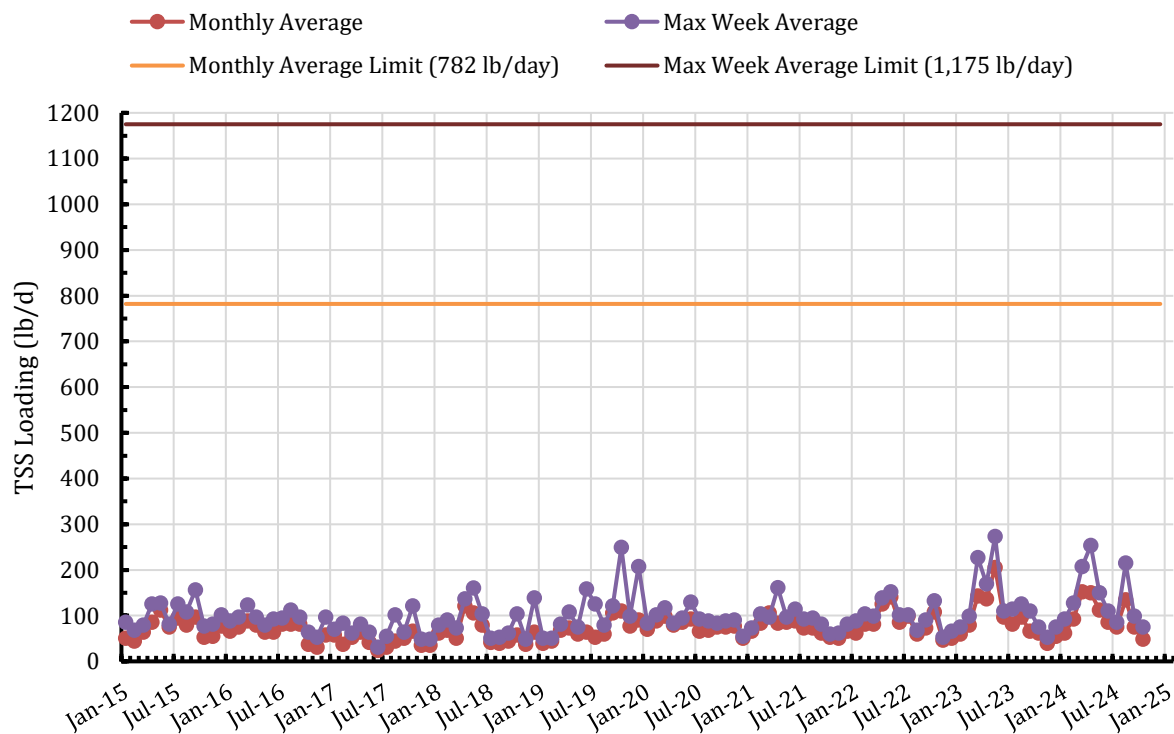
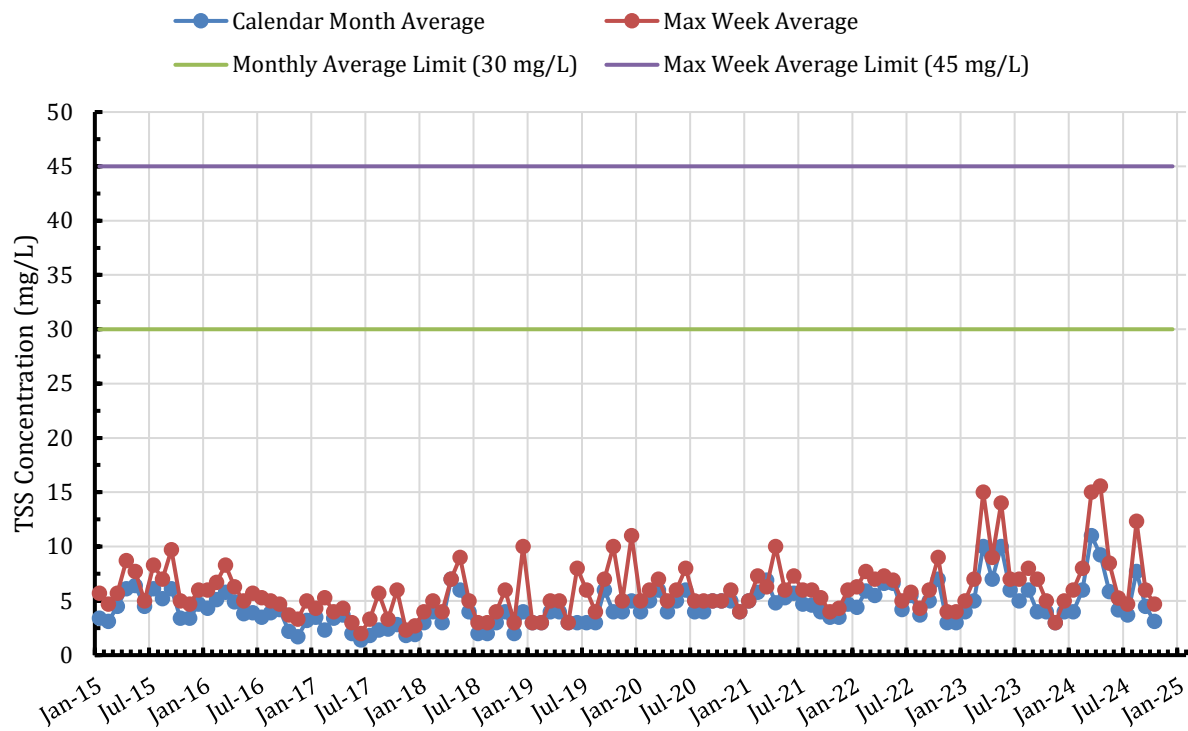


Figure 4.3: Historical Effluent TSS Concentrations (Top) and Mass Loadings (Bottom)

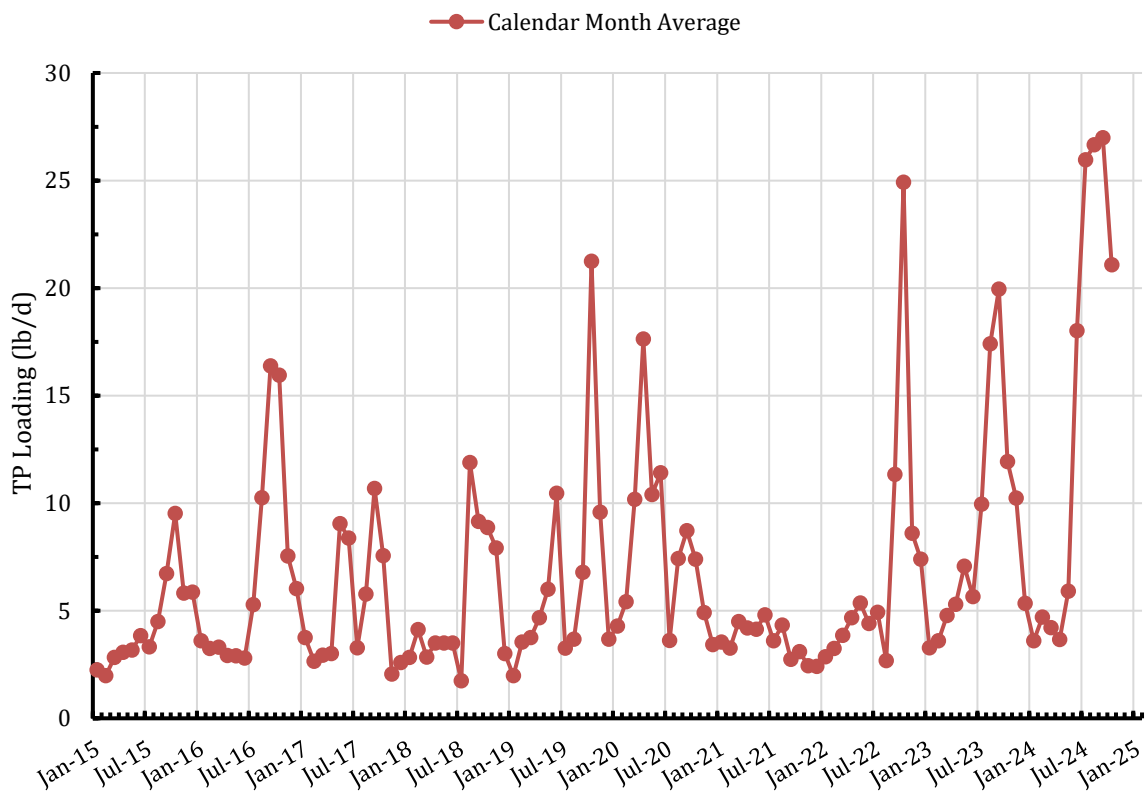
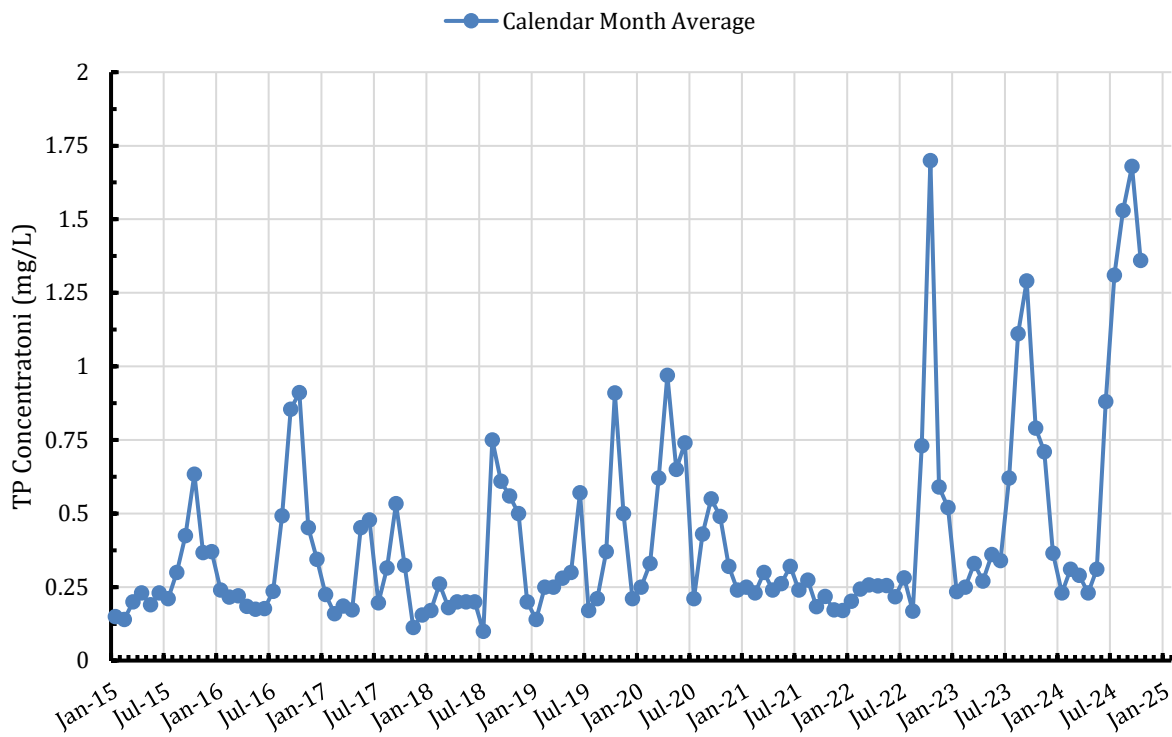


Figure 4.4: Historical Effluent Total Phosphorus Concentrations (Top) and Mass Loadings (Bottom)

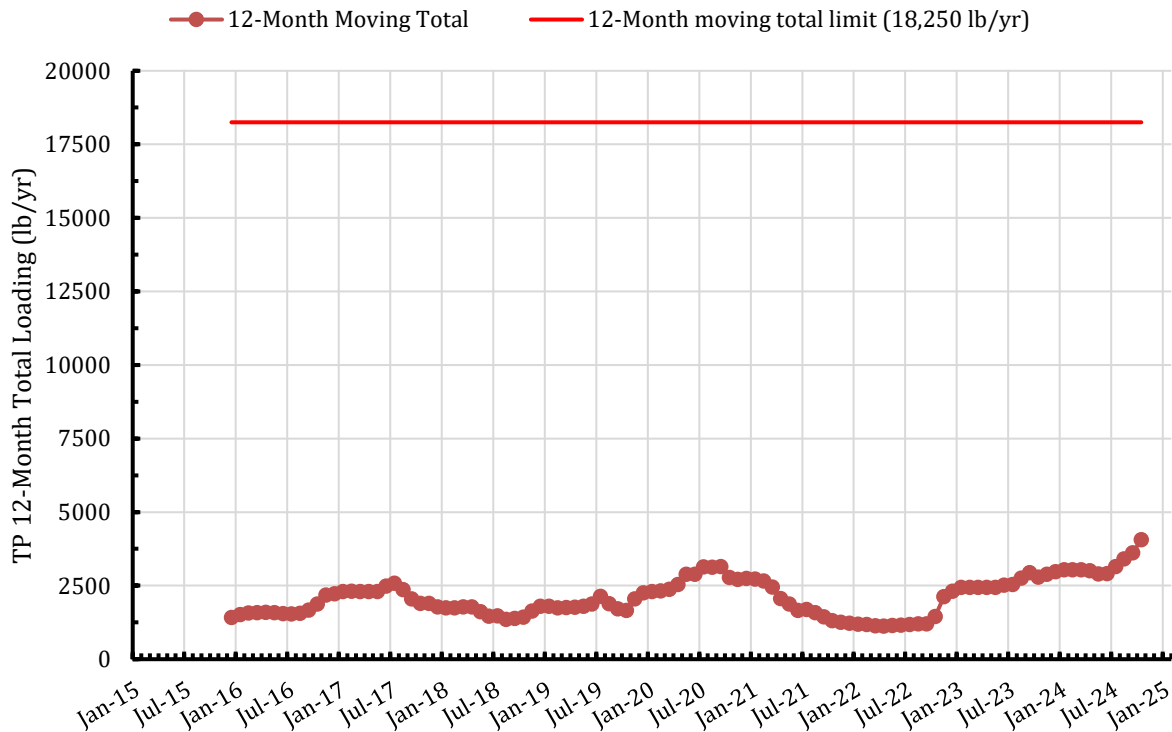
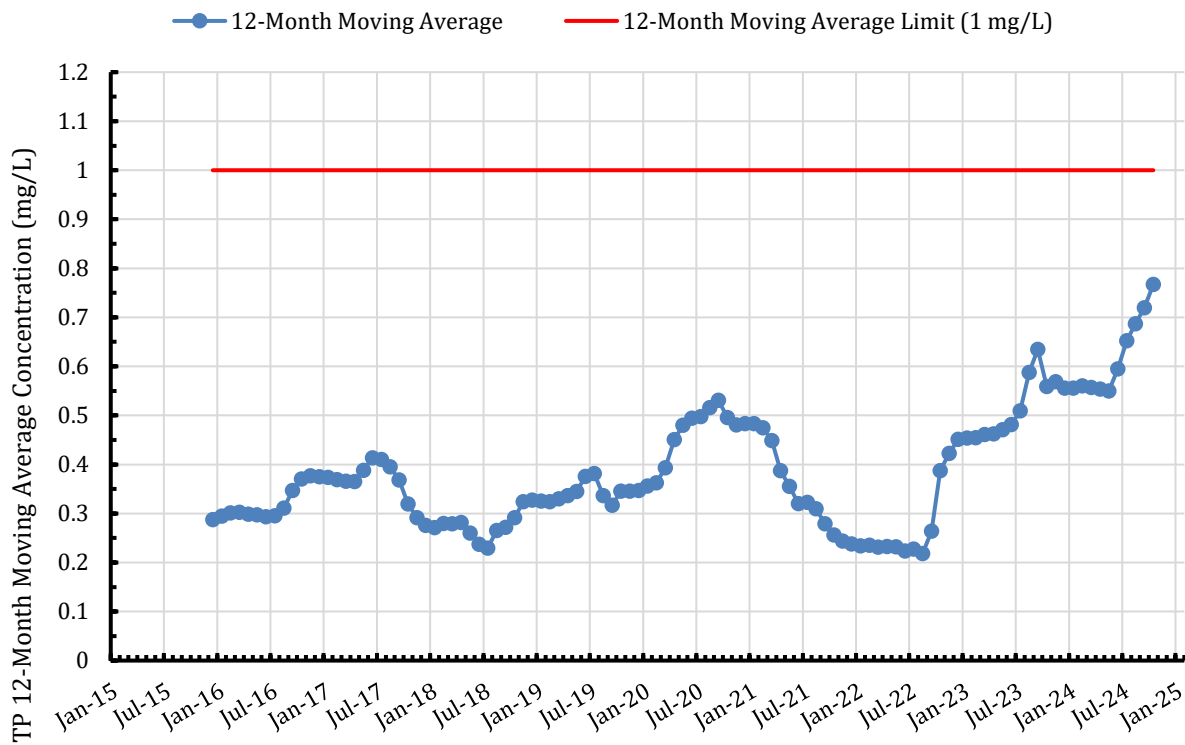


Figure 4.5: Historical Effluent Total Phosphorus Concentrations (Top) and Mass Loadings (Bottom)

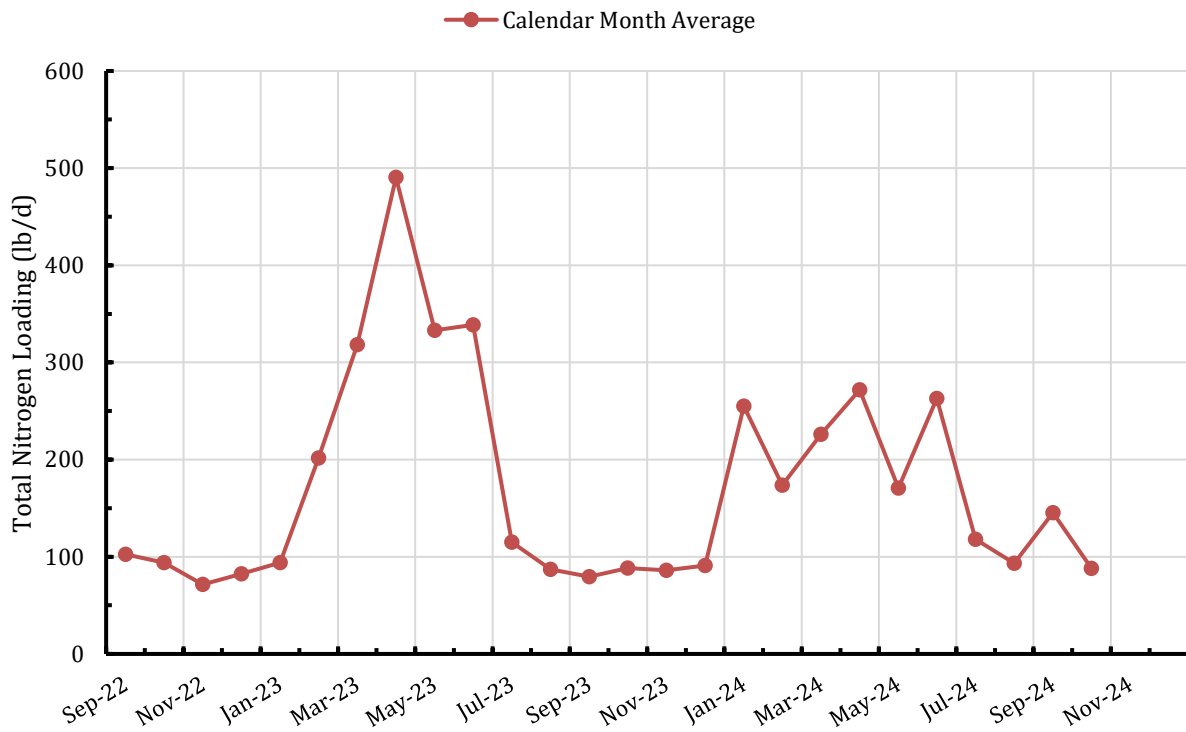
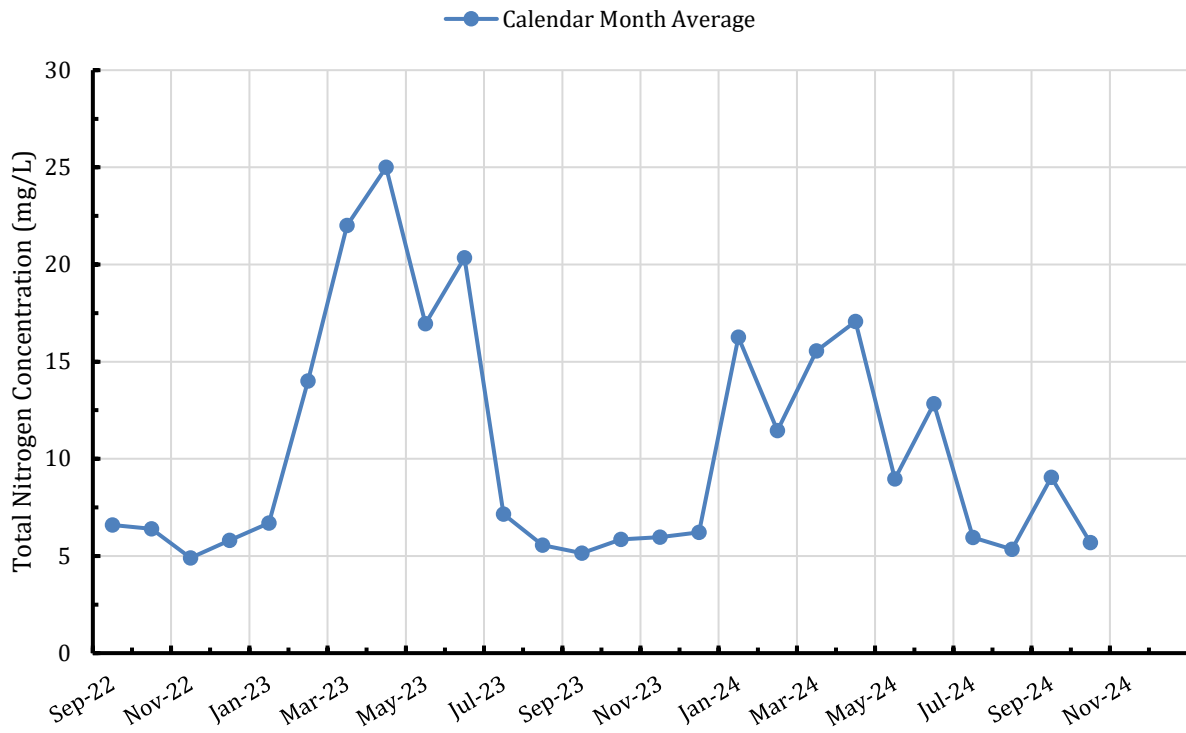


Figure 4.6: Historical Effluent Total Nitrogen Concentrations (Top) and Mass Loadings (Bottom)

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V. FUTURE LIMITS AND REGULATIONS

A. Nitrogen

Minnesota Pollution Control Agency (MPCA) has a 20% nitrate load reduction goal by 2025. This reduction is intended to aid not just Minnesota's rivers, lakes, and groundwater, but also downstream waterways such as the Gulf of Mexico. Phase 1 of the nitrogen reduction and implementation strategy went into effect in April 2024. As facilities are built or upgraded, they will need to keep these new limits in mind. Minnesota's Nutrient Reduction Strategy also plans to have 50% reduction by 2040. By phase 3, facilities that successfully optimized operations during phase 1 will have a limit of 10 mg/L TN SDR. If Brainerd WWTF is upgraded, MPCA will conduct preliminary effluent limit reviews at the beginning of the planning process. If MPCA identifies any Nitrogen concerns, they will develop a nitrogen limit for the NPDES permit.

It is likely that a nitrogen limit will come with a compliance schedule to allow the utility time to plan and construct new infrastructure to meet the nitrogen limit. At this time, it is difficult to predict what a compliance schedule would look like but limits for nitrogen are quickly moving into effect. The impact of nitrogen can have a serious negative effect on water quality and combined with phosphorus, there is a risk of impairing waters downstream of a treatment facility.

The existing SBR treatment system has done a good job at removing phosphorus to meet permit limits. However, due to the nature of biological activity and SBR sequencing there can be a slight inverse relationship between phosphorus and nitrogen removal. In a conventional activated sludge system, biological material is oxidized, and the organic material is converted into food for microorganisms and CO₂ gas is released. For nitrogen, the influent form is typically an ammonia species. Ammonia can be extremely toxic to aquatic animals and other species. Through biological processes and treatment, the ammonia nitrogen in the wastewater is nitrified by nitrifying bacteria to create nitrate-nitrogen (NO₃-N). Nitrate-nitrogen is less toxic to aquatic organisms but can have an adverse effect on human health in high concentrations.

The MPCA has set goals described above to reduce nitrogen and has identified a future limit of 10 mg/L for total nitrogen. Total nitrogen is the sum of all species of nitrogen (ammonia, nitrite, nitrate, and other forms of nitrogen). Conventional WWTF's convert the ammonia to nitrate-nitrogen which is discharged to the receiving stream. In order to denitrify, or convert the nitrate-nitrogen to nitrogen gas, additional processes at the Brainerd WWTF are required.

It is unlikely that the SBR's will be able to accomplish total nitrogen reduction along with total phosphorus reduction without significant capital improvements. The figure below shows the relationship between effluent total nitrogen and effluent total phosphorus. This trend indicates the wastewater is likely CBOD5 limited since the phosphorus decreases when nitrogen increases. Additionally, the influent ratio of BOD to Nitrogen to Total Phosphorus for the Brainerd WWTF is 100 : 21 : 3. The recommended BOD : N : P ratio for activated sludge is between 100 : 10 : 1 – 100: 5 : 1. The Brainerd WWTF needs to more than double the BOD loading, or reduce influent nitrogen and phosphorus, to achieve the recommended limits, all of which require large capital expenditures.

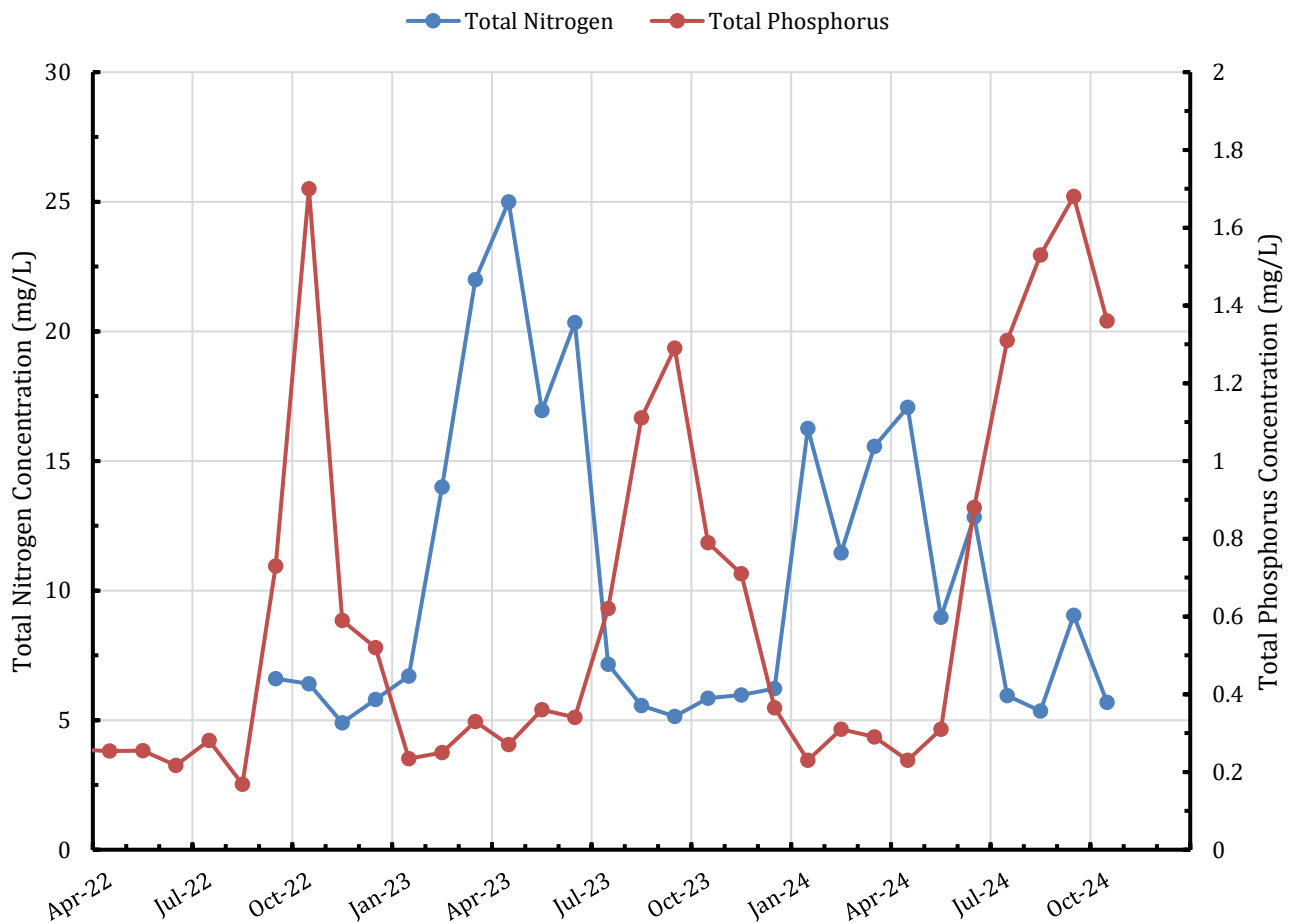


Figure 5.1: Historical Effluent TN and TP relationship

Nitrogen limits will also affect the biosolids processes implemented at the treatment facility. Depending on the biosolids treatment selected, side stream treatment may be necessary to reduce nitrogen loading for the liquid treatment processes. Supernatant from dewatering or digestion can be highly concentrated with nitrogen which can impact treatment and potentially lead to high effluent nitrogen concentrations, above potential limits which can lead to violations and fines.

In order to meet future nitrogen limits, it is recommended to evaluate the following options for capital improvements and the utility plan accordingly for these improvements:

- Aeration Basin improvements including the addition of anoxic, anaerobic, aeration basin additions. The SBR tanks would be repurposed to specific tanks depending on the volume requirements needed to meet treatment and design goals.
- Secondary clarifier addition for chemical phosphorus removal.
- Chemical feed system for phosphorus removal.
- Chemical feed system for carbon addition to supplement denitrification processes (recommended even if there is sufficient influent BOD).
- Additional piping and pumping for recycle and wasting.
- New lift station for effluent pumping.

- Side stream treatment for nitrogen and phosphorus of the supernatant from the biosolids dewatering.

Below is a cost estimate for the capital improvements the facility could expect when a total nitrogen limit needs to be met:

Table 5.1 – Potential Nitrogen Limit Improvements (2025 dollars)		
Item	Preliminary Budget Range	
SBR tank modifications and aeration basins	\$5,000,000	\$8,000,000
EQ tank modifications	\$1,500,000	\$3,000,000
RAS and WAS Pumps and building	\$1,995,000	\$2,750,000
Process piping modifications	\$1,000,000	\$2,000,000
New secondary clarifiers and splitter structure	\$10,000,000	\$15,000,000
Chemical Feed	\$250,000	\$500,000
New effluent lift station	\$1,500,000	\$3,000,000
Site work and yard utility piping	\$2,100,000	\$3,400,000
Site process piping and valves	\$1,490,000	\$2,400,000
Plumbing/HVAC	\$1,100,000	\$1,700,000
Electrical, Instrumentation, and Control	\$5,300,000	\$8,600,000
Subtotal	\$31,200,000	\$50,400,000
Engineering, Legal, Contingencies	\$9,400,000	\$15,100,000
Total Cost	\$40,600,000	\$65,500,000

B. Polyfluoroalkyl and Perfluoroalkyl Substances (PFAS)

1. Liquid PFAS Treatment

By 2026 PFAS water quality standards will be regulated for Class 1 waters. Thus, NPDES permits that discharge to Class 1 waters will have more strict PFAS effluent limits. In addition, MPCA will broaden PFAS regulations on NPDES permits in the future. The MPCA expects NPDES permitting to be implemented in 2025 or later. There are multiple treatment methods that could be used for liquid stream PFAS removal including Granular Activated Carbon (GAC), Ion Exchange (IX), supercritical water oxidation (no full scale facilities exist at this time for this technology), and Reverse Osmosis (RO) membrane filtration. RO is effective against many different PFAS compounds and can also remove other contaminants such as chlorides or hardness. However, RO can be costly and cannot be tailored to only remove PFAS. With RO treatment, utilities are also left with the question of what to do with a concentrated stream of PFAS in the RO reject stream. This can have unintended consequences for side stream treatment and will likely require advanced treatment of the liquid waste stream to remove or destroy PFAS compounds.

Brainerd currently has a PFAS limit for Perfluorooctane Sulfate in the NPDES permit for the liquid discharge and has so since the early 2000's. It is recommended that Brainerd and Baxter continue monitoring the influent and effluent for PFAS and continue to follow the PFAS management plan approved by the utility. Eliminating PFAS at the source (in the distribution system) can be highly effective and more cost efficient than building new treatment technologies. If high concentrations are found in the influent, the city should follow the steps in the PFAS management plan to

identify the source and evaluate solutions to reduce or eliminate the source of PFAS into the system. If additional liquid stream PFA limits are imposed, additional treatment technologies would likely be required to meet the discharge limits. It is difficult to predict the exact treatment needed or the cost because it is highly variable depending on the constituent of concern or the PFAS chain needing to be removed.

2. Biosolids PFAS Treatment

For biosolids, PFAS limits and regulations are highly anticipated. The MPCA has officially released the biosolids management strategy that has a tiered system for biosolids land application for utilities and cities. The purpose of this section is to discuss options for biosolids treatment systems where PFAS destruction technologies can be phased into the process train for future PFAS destruction or reduction.

Brainerd currently has biosolids that meet the MPCA Tier 2 criteria which still allows for land application, but at any time landowners can reject accepting solids which can have a significant impact on the amount of land available for biosolids disposal. More recently, the EPA released guidance for land application of biosolids related to PFAS which could have the potential to limit more land availability.

To date, there are limited full-scale treatment technologies available for PFAS destruction or reduction for biosolids produced at wastewater treatment facilities. High temperature thermal oxidation shows promising potential for biosolids PFAS destruction but there are very limited installations in the US. Pyrolysis, or high temp burning without oxygen, is the most promising treatment technique and has been tested with large scale pilots. Pyrolysis pilots have also been testing PFAs in the smokestack exhaust to verify complete destruction of the PFAs in all process streams, since PFAs have been found in the smokestack exhaust for high temp thermal oxidation and other potential treatment techniques. A treatment technique that completely destroys PFAs in all process streams will likely be required when limits are imposed.

The cost tables below are intended to be used for planning purposes to evaluate biosolids dewatering, drying, and also PFAS destruction. Table 5.2 shows biosolids improvement options to meet facility needs and does not include costs for treatment of PFAS. These costs are estimates for rehab and treatment improvements to meet current biosolids needs at the facility.

- Option one (1) consists of rehabilitating the current processes and adding the required additional sludge storage.
- Option two (2) consists of rehabilitating the existing processes and adding dewatering and drying.
- Option three (3) consists of converting the existing anaerobic digesters to additional sludge storage, removing the gravity belt thickeners (GBTs) and replacing the GBTs with dewatering and drying. Dewatering and drying the biosolids greatly reduces the volume of biosolids and allows for operational flexibility for biosolids disposal.

Table 5.3 shows the capital cost required, in addition to the cost from option 2 or 3 in Table 5.2, for PFAs treatment and destruction in biosolids.

Table 5.4 shows additional O&M costs for landfilling biosolids.

Table 5.2 – Biosolids Improvements Capital Budgets

Option 1 - Rehabilitate Existing Facilities		Option 2 - Rehabilitate Existing Facilities + Dewatering and Drying		Option 3 - Convert Existing Facilities + Dewatering and Drying	
Item	Budget	Item	Budget	Item	Budget
Rehabilitate Digesters	\$27,000,000	Rehabilitate Digesters	\$27,000,000	Convert Digesters to Storage	\$10,000,000
Rehabilitate GBT System	\$3,900,000	Rehabilitate GBT System	\$3,900,000	Remove GBT System	\$1,000,000
Rehabilitate Existing Sludge Storage	\$21,400,000	Rehabilitate Existing Sludge Storage	\$21,440,000	Rehabilitate Existing Sludge Storage	\$21,400,000
Rehabilitate WAS System	\$750,000	Rehabilitate WAS System	\$750,000	Rehabilitate WAS System	\$750,000
Additional Sludge Storage	\$10,000,000	Dewatering Equipment	\$2,500,000	Dewatering Equipment	\$2,500,000
Subtotal	\$63,050,000	Drying Equipment	\$4,500,000	Drying Equipment	\$4,500,000
Engineering, Legal, Contingencies (30%)	\$18,900,000	Building	\$3,000,000	Building	\$3,000,000
Total Cost	\$81,950,000	Chemical Feed	\$150,000	Chemical Feed	\$150,000
Cost Range (+/- 15%)	\$70M - \$94M	Piping and Valves	\$1,000,000	Piping and Valves	\$2,000,000
		Electrical, Instrumentation, and Control	\$9,630,000.00	Electrical, Instrumentation, and Control	\$6,795,000.00
		Subtotal	\$73,800,000	Subtotal	\$52,100,000
		Engineering, Legal, Contingencies (30%)	\$22,100,000	Engineering, Legal, Contingencies (30%)	\$15,600,000
		Total Cost	\$95,900,000	Total Cost	\$67,700,000
		Cost Range (+/- 15%)	\$82M - \$110M	Cost Range (+/- 15%)	\$57M - \$78M

Table 5.3 – Additional Biosolids Treatment for PFAS Capital Cost	
Item	Budget
Pyrolysis unit	\$5,000,000
Additional Building Space	\$1,000,000
Pumps, piping, valves, chemical feed	\$1,500,000
Electrical, Instrumentation, and Controls	\$2,250,000
Subtotal	\$9,750,000
Engineering, Legal, Contingencies (30%)	\$2,900,000
Total Cost	\$12,650,000
Cost Range (+/- 15%)	\$12M - \$19M

Table 5.4 – Additional Biosolids Landfilling O&M Annual Costs	
Item	Budget
Landfill Tipping Fees	\$200,000
Fuel, Equipment, and Staff	\$5,000
Total Annual Additional Cost	\$205,000
Cost Range (estimated)	\$200,000-\$400,000

The costs in Table 5.4 are additive to what the utility spends now on O&M costs for biosolids disposal. The above costs assume tipping fees based on 2025 dollars and does not factor inflation into the costs or new fees from landfills. This also assumes the utility will be less than a 60 minute drive, one-way, to a landfill who will accept the biosolids. This also assumes that the utility will haul solids out twice a year as they do now.

VI. WASTEWATER TREATMENT FACILITY IMPROVEMENT NEEDS

The wastewater treatment facility is in good condition overall. General maintenance, equipment replacement, and rehabilitation are required to keep the facility in good condition. The liquid treatment processes have adequate capacity for current flows and loadings. If limits change, as discussed above, the liquid treatment processes should be re-evaluated and capital improvements made to meet new limits.

The biosolids processes are able to thicken biosolids produced at the treatment facility but the system has inadequate sludge storage capacity and processing capabilities. Since 2020, the utility has been making adjustments to maintain the minimum storage of biosolids at 180 days which has impacted operations and does not allow operational flexibility if there is a change in the treatment process or upset that requires more storage or biosolids processing. If there is a change or upset, the utility would be left with renting equipment or disposing of biosolids at a different treatment facility that can handle the additional solids. This would require agreements and add cost to the operations budget as the solids would need to be trucked long distances for disposal. There is also no guarantee that a different facility would take the solids which could leave the utility in a difficult position of how to dispose of the solids generated.

To make sure the utility is prepared for the future and has a proper plan in place to handle biosolids, the utility should consider review and design new biosolids processing system for cake production (up to 15% or more) and drying of the cake to reduce volume and achieve a class B or Class A solid for land application. This would allow the utility to phase in PFAS treatment if and when PFAS limits are imposed on biosolids or the utility cannot land apply biosolids due to PFAS concentrations. PFAS limits are not currently imposed, but if imposed would drastically alter the required biosolids treatment as discussed above.

The following table are capital expenditure improvements to maintain the facility assuming no new limits are imposed. If limits are imposed, reference the tables in Section 5.

Table 6.1 – 2025-2030 Capital Improvements		
Item	Preliminary Budget Range	
Headworks		
Replace seals, brushes, and ancillary components on the two fine screens	\$60,000	\$120,000
Replace Screenings Compacter	\$100,000	\$200,000
Replace Grit Pump	\$35,000	\$60,000
Replace Grit Classifier	\$150,000	\$300,000
Replace Sump Pumps and Piping	\$30,000	\$50,000
SBR Building		
Replace existing control panels and add SBR data to SCADA	\$50,000	\$85,000
Replace Safety Netting on all 3 hatches on all 4 tanks (12 total)	\$7,200	\$9,600
Caulk building and tank corners and edges	\$10,000	\$20,000
Replace Exhaust Fans	\$45,000	\$65,000
Replace Air Conditioning Units in electrical room	\$10,000	\$30,000
WAS*		
Replace Hoisting Crane in each tank	\$50,000	\$75,000

Table 6.1 Continued - 2025-2030 Capital Improvements		
Repair concrete spalling	\$20,000	\$50,000
Replace Middle (third) GBT feed pump with Borger rotary lobe	\$25,000	\$50,000
<u>Sludge Thickening*</u>		
Replace Chemical Feed Systems for GBT	\$50,000	\$100,000
Replace Makeup Air Unit 3 and 4	\$250,000	\$500,000
<u>Anaerobic Digesters*</u>		
Replace Sludge Mixing Pumps 1-4	\$200,000	\$340,000
Replace air handling unit	\$50,000	\$100,000
Replace sump pumps 1-4	\$30,000	\$50,000
Replace waste gas burner	\$20,000	\$30,000
<u>Sludge Storage*</u>		
Add mixing pumps to allow mixing during loadout	\$230,000	\$370,000
Replace Sump Pumps	\$30,000	\$50,000
<u>UV Disinfection</u>		
Replace lights with LED lighting	\$25,000	\$50,000
<u>Chemical Feed</u>		
Replace roofing	\$35,000	\$85,000
<u>Controls/Office Building</u>		
Replace roofing	\$600,000	\$800,000
Replace generator	\$300,000	\$600,000
Electrical Systems Improvements	\$4,000,000	\$8,000,000
Subtotal	\$6,700,000	\$12,600,000
Engineering, Legal, Contingencies (30%)	\$2,000,000	\$3,800,000
Total Budget for 2025-2030	\$8,700,000	\$16,400,000
* Note: recommended capital improvements for biosolids are greatly dependent on potential PFAS limits.		

Table 6.2 – 2030-2035 Capital Improvements		
Item	Preliminary Budget Range	
Headworks		
Replace Pista-Grit	\$150,000	\$300,000
Repaint Process Piping and Interior	\$250,000	\$400,000
Add a Parshall Flume for Brainerd flow or Flow meter at main lift	\$60,000	\$150,000
Replace Make-Up air units	\$75,000	\$150,000
Replace piping and water recirculation pump for odor control unit	\$35,000	\$65,000
Replace Roofing	\$215,000	\$350,000
Replace Control Panels	\$25,000	\$50,000
Improve Receiving Station	\$100,000	\$200,000
Replace heaters	\$35,000	\$65,000
SBR Building		
Replace 4 sump pumps	\$40,000	\$100,000
Replace all 4 WAS pumps	\$180,000	\$280,000
Replace lighting with LED	\$65,000	\$125,000
Repaint Process Piping	\$125,000	\$300,000
Add Storm Catch Basin on West side of SBR	\$750,000	\$1,250,000
Replace roofing	\$500,000	\$750,000
WAS*		
Replace air diffusers	\$50,000	\$75,000
Sludge Thickening*		
Replace filtrate pump 1 and 2	\$45,000	\$70,000
Relocate electrical and controls to new separate building	\$1,000,000	\$2,000,000
Replace roofing	\$180,000	\$300,000
Anaerobic Digesters*		
Replace Heat Exchanger 1 and 2	\$250,000	\$350,000
Replace Backup electric boiler	\$80,000	\$120,000
Replace roofing	\$300,000	\$500,000
Sludge Storage*		
Replace mixing diffuser nozzle system	\$300,000	\$500,000
Replace sludge loadout/mixing pumps 1 and 2	\$140,000	\$220,000
Replace supernatant pumps 1 and 2	\$70,000	\$100,000
Replace roofing	\$100,000	\$200,000

Table 6.2 Continued - 2030-2035 Capital Improvements		
<u>UV Disinfection</u>		
Replace effluent sampler	\$10,000	\$20,000
Replace roofing	\$100,000	\$200,000
<u>Chemical Feed</u>		
Replace Chemical feed systems	\$80,000	\$150,000
<u>Controls/Office Building</u>		
Lab rehabilitation and improvement	\$500,000	\$1,000,000
Subtotal	\$5,800,000	\$10,300,000
Engineering, Legal, Contingencies (30%)	\$1,700,000	\$3,100,000
Total Budget for 2030-2035	\$7,500,000	\$13,400,000
* Note: recommended capital improvements for biosolids are greatly dependent on potential PFAS limits.		

Table 6.3 – 2035-2045 Capital Improvements		
Item	Preliminary Budget Range	
Headworks		
Replace Odor Control Unit	\$250,000	\$500,000
Replace Lighting with LED	\$50,000	\$100,000
SBR Building		
Replace WAS Blower 1 & 2	\$360,000	\$400,000
Replace Effluent Pumps 1, 2, & 3	\$195,000	\$270,000
Replace Second Air Compressor	\$20,000	\$40,000
Replace Heat Recover Pump 1 and 2	\$100,000	\$150,000
Replace Heat Recovery Pump 3 and 4	\$70,000	\$120,000
Replace 5 SBR Blowers	\$900,000	\$1,000,000
Replace 4 Jet Motive Pumps	\$300,000	\$600,000
Replace SBR Diffusers	\$75,000	\$125,000
Replace Engine Generator by SBR/EQ tanks	\$300,000	\$500,000
WAS*		
Replace and update electrical and controls	\$300,000	\$500,000
Sludge Thickening*		
Replace GBT 1 and 2	\$350,000	\$600,000
Replace Thickened Sludge Pump 1 and 2	\$65,000	\$120,000
Replace GBT Belt Wash Pump 1 and 2	\$65,000	\$120,000
Replace Filtrate and Thickened sludge mixers	\$50,000	\$100,000
Anaerobic Digesters*		
Digester cover repair and structure rehabilitation	\$15,000,000	\$25,000,000
Replace all 4 sludge recirculation pumps	\$240,000	\$340,000
Replace Sludge Transfer Pumps 1 and 2	\$120,000	\$170,000
Sludge Storage*		
Rehabilitate Sludge Storage Tanks	\$10,000,000	\$20,000,000
UV Disinfection		
Replace electrical and controls	\$250,000	\$500,000

Table 6.3 Continued- 2035-2045 Capital Improvements		
Chemical Feed		
Replace electrical and mechanical systems	\$400,000	\$750,000
Controls/Office Building		
Replace electrical systems	\$3,000,000	\$6,000,000
Subtotal	\$32,500,000	\$58,000,000
Engineering, Legal, Contingencies (30%)	\$9,800,000	\$17,400,000
Total Budget for 2035-2045	\$42,300,000	\$75,400,000
* Note: recommended capital improvements for biosolids are greatly dependent on potential PFAS limits.		

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VII. PROJECT FUNDING

There are several alternatives that the City can consider for project funding when moving forward with facility improvements. The funding sources are described below.

The first step for public funding sources is to write and submit a Facility Plan for approval. A facility plan details alternatives for improvements and lays out the selected project and is required to be eligible for funding. Additionally, many of the grant sources also require a new NPDES limit to be accepted to be eligible for the grant. It is recommended to write and submit a facility plan by March of 2026 or March 2027 to get placed on eligible funding lists.

A. Bonding

The cities could sell general obligation, local improvement, or revenue bonds in order to raise the capital costs to improve the treatment facility. The proceeds of the bonds would need to be repaid, either through property taxes, assessments, or user charges to the system.

B. Assessment

A portion of the capital costs of the project can be assessed to local property owners under Minnesota Statute 429. Using this method, a one-time assessment could be levied and repaid over a period of 10 to 20 years. This cost could help offset some monthly increases in user fees and permit use of general obligation bonding.

C. State Revolving Fund Loan (through the PFA)

The loan program was created under the State Revolving Fund (SRF) provisions in the Federal Clean Water Act to provide financial assistance for water pollution control projects. Minnesota's revolving loan program provides loans to municipalities for planning, design and construction of wastewater treatment projects. The loans are typically for a 20-year period at an interest rate of two to four percent. The loan monies are administered through the Public Facilities Authority. To be eligible for PFA funding, the City must submit a Facilities Plan for review and approval by the Minnesota Pollution Control Agency. Revenue for loan repayment is typically generated by user rates, availability charges or assessment.

D. Wastewater Infrastructure Funding Program

Supplemental assistance to municipalities is currently available through the wastewater infrastructure (WIF) program. The Public Facilities Authority (PFA) administers the WIF program to those communities who are applying for funding under the Clean Water Revolving Fund Loan program. Assistance is in the form of grants with a maximum value of 80% of the project and a maximum grant of \$5 Million.

This program is income and debt based. The debt service for the city must result in the average residential user's monthly rate, which is determined by the rates required to pay back the debt service, to exceed the affordability threshold of 1.4% of the Median household income (MHI). WIF should be investigated when a project is completed.

E. Point Source Implementation Grant (PSIG)

In addition to the CWRF program, the MPCA and PFA jointly administer Point Source Implementation Grant programs funded by the Clean Water Legacy money. The grant program provides 80% grant on eligible portions of the project for up to \$7,000,000 for TMDLs and new limit compliance. If new limits are necessary at Brainerd WWTF, Point Source Implement Grant eligibility should be investigated. A facility plan is required to be eligible for PSIG monies.

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Appendix A: Wastewater Asset Inventory

**Brainerd WWTF
Asset Inventory-BPU**

February 2025

Item Name	Location	Redundancy % Backup	Year Installed	Condition	General Notes	Equipment Information and Operating Notes
River Crossing	Buried-under river	50	1978	No access		2-20" FM's. Pipe thickness was tested. Slightly below average DIP wall thickness. No reading on bottom of pipe thickness. Minimum velocity in FM=2 fps, Max = 8-10 fps. Inverted Siphons should be minimum of 3 fps (1055)
Valve MH 2 (East Crossover)	East side of River. Pre crossing	0	1978			
Valve MH 1 (West Crossover)	West Side of River. Post Crossing	0	1978			
Plant Scada/Controls	WWTF	0	2010			New Computers/Electrical controls/fiber, etc being installed in phases starting this year
SBR Building						
WAS Blower 1 (30B6)	Blower Room	50	2010			60 HP Motor. Sutorbilt Legend Model 8M Blower- rotary lobe. 1800 rpm
WAS Blower 2 (30B7)	Blower Room	50	2010			60 HP Motor. Sutorbilt Legend Model 8M Blower- rotary lobe 1800 rpm
Effluent Pump 1 (30P9)	SBR Building Pump/Piping Gallery (Lower Level)	100	2010	Good	Pump uses seal water.	Fairbanks Morse 12" Model B5741CT. 40 HP. 3500 gpm @ 22' TDH n=885
Effluent Pump 2 (30P10)	SBR Building Pump/Piping Gallery (Lower Level)	100	2010	Good	Pump uses seal water.	Fairbanks Morse 12" Model B5741CT. 40 HP. 3500 gpm @ 22' TDH n=886
Effluent Pump 3 (30P11)	SBR Building Pump/Piping Gallery (Lower Level)	100	2010	Good	Pump uses seal water.	Fairbanks Morse 12" Model B5741CT. 40 HP. 3500 gpm @ 22' TDH n=887
Kaiser Air Compressors	Blower Room	0	2024	Good	Had troubles in past with alternator issues. Replaced one of two generators in 2024	Model SX 5. 21 cfm @ 125 psig. 5 HP n=3520.
Sump Pump 1,2 (SPU5)	SBR Building Pump/Piping Gallery (Lower Level)	0	2010		Recommended to replace.	
Sump Pump 3,4 (SPU6)	SBR Building Pump/Piping Gallery (Lower Level)	0	2010		Recommended to replace.	
Heat Recovery Pump 1 (Heat pump 10)	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good		US motors 20 HP n-17565 motor. 5 x 3 -10.25" impeller pump
Heat Recovery Pump 2 (heat pump 9)	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good		US motors 20 HP n-17565 motor. 5 x 3 -10.25" impeller pump
Heat Recovery Pump 3 (heat pump 7)	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good		Nema Premium 5 HP n=1755 motor. Armstrong 5 HP n=1800 pump, 106 gpm @ 61' TDH
Heat Recovery Pump 4 (heat pump 6)	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good		Nema Premium 5 HP n=1755 motor. Armstrong 5 HP n=1800 pump, 106 gpm @ 61' TDH
Energy Recovery Ventilator (2)	Mechanical Room	0	2010	Good		
WAS Pump 1	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	good	Pump uses seal water.	7.5 HP n=885 Emerson U.S electric Motor. Fairbanks Morse 6" Model B5423 pump, 900 gpm @ 20.8' TDH n=885
WAS Pump 2	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good	Pump uses seal water.	7.5 HP n=885 Emerson U.S electric Motor. Fairbanks Morse 6" Model B5423 pump, 900 gpm @ 20.8' TDH n=886
WAS Pump 3	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good	Pump uses seal water.	7.5 HP n=885 Emerson U.S electric Motor. Fairbanks Morse 6" Model B5423 pump, 900 gpm @ 20.8' TDH n=887
WAS Pump 4	SBR Building Pump/Piping Gallery (Lower Level)	50	2010	Good	Pump uses seal water.	7.5 HP n=885 Emerson U.S electric Motor. Fairbanks Morse 6" Model B5423 pump, 900 gpm @ 20.8' TDH n=888
Boiler	Mechanical Room	0	2010			
Heat Pump 1	Mechanical Room	50	2010			
Heat Pump 2	Mechanical Room	50	2010			
SBR Blower 1	Blower Room	20	2010	good	Blowers were inspected in 2023.	
SBR Blower 2	Blower Room	20	2010	good	Blowers were inspected in 2023.	
SBR Blower 3	Blower Room	20	2010	good	Blowers were inspected in 2023.	250 HP n=3575 motors. Continental centrifugal blowers model 51A.07 n=3600.
SBR Blower 4	Blower Room	20	2010	good	Blowers were inspected in 2023.	
SBR Blower 5	Blower Room	20	2010	good	Blowers were inspected in 2023.	
Aeration Diffusers	SBR tanks	0	2010?	No access		
Building Structure	SBR Building	0	2010	Excellent	Replace lighting with LED lighting. Add eyewash on lower level.	
HVAC (general)	SBR Building	0	2010	Good		
Electrical Panel/Controls	Electrical Room	0	2010	good	Plenty of room to install new panels, MCCs, etc. Recommended to replace existing panels and to put SBR data to SCADA and to hard drive instead of the printer.	
Electrical					Replace lighting in pipe gallery with LEDs.	
Air Handling Unit (AHU-2)	Mechanical Room	0	2010	good		

Energy Recovery Ventilator (5)	Mechanical Room	0	2010	good		
Water Heater	Mechanical Room	0	2010			
SBR Jet Motive Pump 1	SBR Building Pump/Piping Gallery (Lower Level)	0	2010	Fair-Good	Pump uses seal water. Pump impeller and fittings after the jet pumps are cavitating and need replacement. BPU is starting to replace these in 2024. Ferric feed is on the second 90. However, the cavitation causes the chemical tube to shake and crack at the pipe connection.	US Motors 150 HP n=1785 motor. Goulds Jet Motive Model AF pump: 13,542 gpm @ 25.5' TDH n=827 20x20-20" impeller. Cast iron
SBR Jet Motive Pump 2	SBR Building Pump/Piping Gallery (Lower Level)	0	2010	Fair-Good	Pump uses seal water. Pump impeller and fittings after the jet pumps are cavitating and need replacement. BPU is starting to replace these in 2024. Ferric feed is on the second 90. However, the cavitation causes the chemical tube to shake and crack at the pipe connection.	US Motors 150 HP n=1785 motor. Goulds Jet Motive Model AF pump: 13,542 gpm @ 25.5' TDH n=827 20x20-20" impeller. Cast iron.
SBR Jet Motive Pump 3	SBR Building Pump/Piping Gallery (Lower Level)	0	2010	Fair-Good	Pump uses seal water. Pump impeller and fittings after the jet pumps are cavitating and need replacement. BPU is starting to replace these in 2024. Ferric feed is on the second 90. However, the cavitation causes the chemical tube to shake and crack at the pipe connection.	US Motors 150 HP n=1785 motor. Goulds Jet Motive Model AF pump: 13,542 gpm @ 25.5' TDH n=827 20x20-20" impeller. Cast iron
SBR Jet Motive Pump 4	SBR Building Pump/Piping Gallery (Lower Level)	0	2010	Fair-Good	Pump uses seal water. Pump impeller and fittings after the jet pumps are cavitating and need replacement. BPU is starting to replace these in 2024. Ferric feed is on the second 90. However, the cavitation causes the chemical tube to shake and crack at the pipe connection.	US Motors 150 HP n=1785 motor. Goulds Jet Motive Model AF pump: 13,542 gpm @ 25.5' TDH n=827 20x20-20" impeller. Cast iron
Piping/Valves/Painting	SBR Building Pump/Piping Gallery (Lower Level)	0	2010	Mostly Good		Most piping/painting in good shape. Some paint starting to flake & pipes show rust. WAS line are the worst, could use new paint job
Spare Jet motive motor	Blower Room					
spare jet motive pump	Blower Room					
SBR 1 Tank	SBR 1 Cell	25	2010	No View	Recommended to replace all safety netting on the 3 access hatches.	Plant Currently runs 3 Cells. Have SBR 2 off-backup cell if needed. Average SRT of 9 days, MLSS of 1,100 mg/L, WAS of 4,500 mg/L (0.45 %)
SBR 2 Tank	SBR 2 Cell	25	2010	No View	Recommended to replace all safety netting on the 3 access hatches.	
SBR 3 Tank	SBR 3 Cell	25	2010	No View	Recommended to replace all safety netting on the 3 access hatches.	
SBR 4 Tank	SBR 4 Cell	25	2010	No View	Recommended to replace all safety netting on the 3 access hatches.	
SBR Tanks and building	Exterior		2010		Add caulking in building and tanks and edges.	
crane 1	blower room					
crane 2	Blower Room					
crane 3	downstairs					
crane 4	downstairs					
Air conditioning unit	Mechanical Room					
Engine Generator	Just West of SBR 1	0	2010			Runs SBR, headworks, chemical, and other upper building
Exhaust Fan 1	roof					
Exhaust Fan 2	roof					
Exhaust Fan 3	roof					
Exhaust Fan 4	roof					
Exhaust Fan 5	roof					
Portable Generator 1						25 kW
A/C units					Replace AC in electrical room.	
Portable Generator 2						150 kW
eq tank 1					Recommendated to add storm catch basin west side of SBRs.	Located between 2 sbrs. Takes flow from SBR to equalize flow to the uv
eq tank 2					Recommendated to add storm catch basin west side of SBRs.	Located between 2 sbrs. Takes flow from SBR to equalize flow to uv
Utility Transformer	Just West of EQ tank 1, S of engine generator					
SBR Lab					No fume hood, fume hood is necessary for VS testing with anaerobic digesters. Admin building has fume hood in lab. No eyewash station.	
Headworks						

	headworks, top floor	0	2010	good	Concrete in ok condition.	brainerd influent pipe-gravity line- comes in at bottom of trough.
Influent Trough						
Mechanical Traveling Fine Screen 1	Pretreatment building (top floor)	50	2010	Good	Replace seals, brushes, and ancillary components. General maintenance required.	Monster Fine Screens: Model (MFS) Traveling mechanical fine screens. 7.5 MGD rated Capacity. 2.5' x 6.5' channel, 70 degree's from horizontal-standard 1/4" perforations.
Mechanical Traveling Fine Screen 2	Pretreatment building (top floor)	50	2010	Good	Replace seals, brushes, and ancillary components. General maintenance required.	Operators happy with screen performace. No issues with rags/clogging down plant
Manual Bar Screen	Pretreatment building (top floor)	0	2010	Good		
Screenings Compactor/Washer (Screenings Washer Monster)	Pretreatment building (top floor)	0	2010	Good	Grit has worn a hole in the pipe after the compactor. Brainerd has 2 lift stations with screening. Evaluate Baxter pretreatment for their growth projections to reduce grit in baxter influent. BPU currently has bids out to suppliers to replace the Screenings Washer Monster (compactor).	Model SWM4018. 3hp
Wemco Grit Pump	Pretreatment building (basement)	0	2010	Fair-Good	Recommended to replace pump.	10 HP motor. Model C 3x3 torque flow pump. 220 GPM @ 23' TDH n=850 rpm
Pista Grit	Exterior East side of pretreatment building	0	2010	Good	Only needs general maintenece; check paddles. Has sufficient capacity. Concrete in good condition.	Smith and Loveless Type concrete 270-Model 20.0 Rated for peak flow of 20 MGD. Operators have had no issues. Plenty of size. 2hp
Wemco Hydrogritter Separator	Pretreatment building (top floor)	0	2010	Good	Needs full replacement. BPU has bids open currently. BPU looking at replacing as is (painted steel) vs SS.	1-12" full flared hydrogritter with 1- 100C Wemclone. 0.5 hp
Grit Dumpsters	Pretreat building	0	2010	good		
System Piping	Pretreatment Building	0	2010	good		Piping and paint mostly in good condition. Grit piping could use a recoating in near future
Baxter FE 1	Pretreatment Building (main floor)	50	2010	good		
Baxter FE 2	Pretreatment Building (main floor)	50	2010	good		
Parshall Flume	Pretreatment building (top floor)	0	2010	good	Consider adding a parshall flume manhole to measure brainerd flow ahead of headworks	Brainerd currently has no Flow Meter off main lift station. Only way to determine brainerd flow is from Parshall flume minus baxter Flow meter.
Filtrate FE	Pretreatment Building (main floor)	0	2010	good		
Makeup Air Unit (MAU-5)	Exterior on west side of odor control	0	2010	good		
Energy Recovery Ventilator	Exterior on west side of odor control	0	2010	good		
Makeup Air Unit (MAU-2)	Exterior on North side of pretreat	0	2010	good	Recommended to replace MAU-2.	Need air unit for pretreat for gas/hydrogen sulfide control
Odor Control Unit	Odor control room (west of pretreat room)	0	2010	Good		biorem. 11.5 hp. 460v. Serial no. 1936F
Water Recirculation Pump for Odor Control Unit	Odor control room (west of pretreat room)	0	2010	good		30.36 gpm @ 136 ft tdh. 1.5 hp. Lines clog with calcium from brainerd water hardness. Uses lots of water. Flow meter in the panel next to pump. Design flow normally 23.4 gpm. lines are so clogged with calcium bpu gets 10 gpm
Building structure	Headworks (both pretreate and odor control)	0	2010	Good	Ballasted membrane roof is still original, should be replaced every 20 years (2030). Caulking touchups needed. Concrete walls are in good condition. No coating but no pitting or loose aggregate either. Wall penetrations for sample lines only has foam to stop air flow. Odors seep through foam. Settling in pavement around front of building.	
Electrical/Controls	Electrical Room-East side of building	0	2010	Good	Panel replacent is recommended, replace the 5/05 cpu's.	20-mmcc-1 has spare buckets. Add thermostat to electrical room
Lighting					Replace lighting in electrical room. Replace lighting in air scrubbing room with LEDs.	
Piping					Minor corrosion, mainly near flanges or bolts. No epoxy coating on piping at chemical injection locations.	
Sump Pump	Pretreat-basement/grit pump floor	0			Reommended to replace discharge piping and brackets. Existing piping shakes and has disconnected in past.	
Brainerd Influent Sampler	Electrical room	0			Sampling line is too close to receiving station. Sometimes results in errounous reading. Recommended to relocate sample line.	
Baxter Influent Sampler	Electrical room	0				New pump was installed in 2023. BPU has spare parts and keeps up on maintenance.
CombinedMixed Influent Sampler	Electrical room	0				
Exhaust Fan	Roof	0				
Exhaust Fan	roof	0				
Receiving Station	truck receiving station	0			Always full of debris. Recommended to make improvements to the dump station to make an updated septage receiving station.	Receive from Baxter and Brainerd. No leachate is accepted.
HVAC (general)	Pretreatment building	0	2010	good	Replace all heating in headworks building.	No thermostat on Berko heater except for on the unit which is difficult to adjust.
WAS						
WAS Storage Tank - West	WAS structure	50	1982	fair-good	Hoisting cranes are in poor condition, remove and replace. Needs to be cleaned and painted.	WAS tanks have bad mixing. GBT feed pumps airlock/cant pump solids when draining tank to bottom.
WAS Storage Tank - East	WAS structure	50	1982	fair-good	Hoisting cranes are in poor condition, remove and replace. Needs to be cleaned and painted. Concrete repair needed to correct spalling.	Plant looking at installing mixers and a thicker solids pump in third spot for this

GBT feed pump 1	WAS building (lower level)	50	2022	good		New Borger Rotary Lobe (PD) pump in 2022. Original Design Point: 375 gpm @ 33' TDH.
GBT feed pump 2	WAS building (lower level)	0	2010	good		Pump is backup pump. Possible Rotary lobe pump installed here instead for better pump at end of cycle with thicker solids
GBT feed pump 3	WAS building (lower level)	50	2022	good		New Borger Rotary Lobe (PD) pump in 2022. Original Design Point: 375 gpm @ 33' TDH.
electrical/controls	Building-upper level		2010			
HVAC/Plumbing	Building					
Odor Control	Building				Calcium buildup on media due to use of city water.	
Air Diffusers	WAS tanks	0		fair		
Air Handling Unit		0	2010			
Thickening						
Gravity Belt Thickener 1	Thickening Building	50	2010	Fair-Good		Komline-Sanderson Model GSC-2 Series III Gravabelt. 3HP Baldor drive motor. Machines are in mostly good condition. Belts replaced as needed from wear. Plant has been running both GBT's to reduce time of operation
Gravity Belt Thickener 2	Thickening Building	50	2010	Fair-Good		
Thickened Sludge Holding Tank	Below Thickening Building	0	1982	No access		Tank is previous primary settling tanks, with one end filled with sand. Storage depth has been roughly 5.5-6.5 Ft. Stays relatively level as digesters are fed approx the same each day as thickened storage feed. Currently at the design storage depth of 5 ft. Storage has depth of 11 ft until HWL/emergency
Filtrate Holding Tank	Below Thickening Building	0	1982	No access		Tank is previous primary settling tanks, with one end filled with sand. Depth goes from approx 1.5 ft to 7-8.5 FT during GBT use. Provided storage depth of 11 ft at HWL. Filtrate pumps run during GBT use to keep tank at capacity. Estimated fill rate of 500-600 gpm
Filtrate Pump 1	Electrical/Control Building- Lower Floor	50	2010			Fairbanks Morse 4" Model B5441K - 400 gpm @ 20 ft TDH. 5 HP Motor
Filtrate Pump 2	Electrical/Control Building- Lower Floor	50	2010			Plant is currently running 1 pump constantly and another turns on for 15-20 min as needed to keep up with pumping while both GBT's are being used. Average filtrate flow is mid 500's gpm. Pumps currently fine. Charlie does want to upgrade eventually as plant flow increases: roughly 600-650 gpm pumps to only have to run 1, then have firm/redundant capacity
Thickened Sludge Pump 1	Electrical/Control Building- Lower Floor	50	2024			Borger rotary lobe installed in 2024. Original Design Point: 100-150 gpm @ 30 Ft TDH.
Thickened Sludge Pump 2	Electrical/Control Building- Lower Floor	50	2024			Borger rotary lobe installed in 2024. Original Design Point: 100-150 gpm @ 30 Ft TDH.
Chemical/Polymer Feed Pump 1	Thickening Building	50	2010			
Chemical/Polymer Feed Pump 2	Thickening Building	50	2010			
Polymer Storage Tank	Thickening Building	50				
Polymer Storage Tank	Thickening Building	50				
Belt Wash Pump 1	Thickening Building	50	2010			G & L Goulds Model SSh frame mounted. 7.5 HP 3500 rpm, 40 gpm @ 127' TDH
Belt Wash Pump 2	Thickening Building	50	2010			G & L Goulds Model SSh frame mounted. 7.5 HP 3500 rpm, 40 gpm @ 127' TDH
Biofilter Odor System	Thickening Building-South Room	0	2010	good		
Electrical/Controls	Thickening Building	0	2010			
Makeup air unit MAU-4	south side of bioodor room	0	2010		MAU has a hard time keeping up.	
Energy recovery ventilator	south side of bioodor room	0	2010			
Makeup air unit MAU-3	t exterior of thickening building	0	2010		MAU has a hard time keeping up.	
HVAC/Plumbing	Thickening Building	0	2010	good		
Air compressor	Electrical/Control Building- Upper Floor	0	2010			
Air compressor	Electrical/Control Building- Upper Floor	0	2020			
Mixer-thickening	North exterior of thickening building, on well portion of storage tank	0	2020	good		Added in 2020
Mixer-Filtrate	North exterior of thickening building, on well portion of storage tank	0	2020	good		Added in 2020
Spare GBT Motor	SBR blower room					
Exhaust Fan	Biorem room roof					

Electrical/Controls	Electrical/Control Building- Upper Floor	0			Electricals for GPT is technically separate but practically not, would be good to have separate space for electrical outside of odor control building.	
Digestors						
Boiler/Heat Exchanger 1	Boiler Room-Upper floor or digester building	50	2010	Fair		
Boiler/Heat Exchanger 2	Boiler Room-Upper floor or digester building	50	2010	Fair		
Electric Backup Boiler	Boiler Room-Upper floor or digester building	0	2010	Fair-Good		
Primary 1	Primary Digester #1	50	1982			Digestors have gas piping problem. Plant also having trouble with transferring contents from primaries to secondaries. Lines/pumps airlock and primaries cant fully drain. Struvite found in biosolids: could possibly be an issue in digestors? Possible feed of ferric chloride if needed to minimize chances of struvite?
Primary 2	Primary Digester #2	50	2010			
Secondary 1	Secondary Digester #1	50	1982			
Secondary 2	Secondary Digester #2	50	2010			
Chemical feed						
Mix piping					Remove air actuated valves.	
Secondary 1 Floating Cover	Secondary Digester #1	0	2010			
Secondary 2 Floating Cover	Secondary Digester #2	0	2010			
Primary 1 Fixed Cover	Primary Digester #1	0	2010			
Primary 2 Fixed Cover	Primary Digester #2	0	2010			
Sludge Recirculation Pump 1A	Digester Building-Lower Floor	100	2020	Good		Boerger Rotary Lobe Pump-Model Classic PL 300 170 gpm @ 10.8 psi at discharge
Sludge Recirculation Pump 1B	Digester Building-Lower Floor	100	2020	Good		Boerger Rotary Lobe Pump-Model Classic PL 300 170 gpm @ 10.8 psi at discharge
Sludge Recirculation Pump 2A	Digester Building-Lower Floor	100	2020	Good		Boerger Rotary Lobe Pump-Model Classic PL 300 170 gpm @ 10.8 psi at discharge
Sludge Recirculation Pump 2B	Digester Building-Lower Floor	100	2020	Good		Boerger Rotary Lobe Pump-Model Classic PL 300 170 gpm @ 10.8 psi at discharge
Sludge Transfer Pump 1A	Digester Building-Lower Floor	100	2020	Good		Boerger Rotary Lobe Pump-Model Classic PL 300 170 gpm @ 10.8 psi at discharge
Sludge Transfer/Mixing Pump 1B	Digester Building-Lower Floor	100	2010	Fair		Vaughan 1600 gpm @ 37' TDH
Sludge Transfer/Mixing Pump 1C	Digester Building-Lower Floor	100	2010	Fair		Vaughan 1600 gpm @ 37' TDH
Sludge Transfer Pump 2A	Digester Building-Lower Floor	100	2020	Good		Boerger Rotary Lobe Pump-Model Classic PL 300 170 gpm @ 10.8 psi at discharge
Sludge Transfer/Mixing Pump 2B	Digester Building-Lower Floor	100	2010	Fair		Vaughan 1600 gpm @ 37' TDH
Sludge Transfer/Mixing Pump 2C	Digester Building-Lower Floor	100	2010	Poor-Fair		Vaughan 1600 gpm @ 37' TDH. Seal out-pump still runs, but seal needs replacement. Pump at end of 10 year solids/sludge pump life
Air Handling Unit	Building Roof	0	2010			
Air Compressor					Remove air compressor.	
Gas Meter	Digester Gas lines	0				
Gas Burner	Digester Gas lines	0				
Sump Pump	Digester Building					
Sump Pump	Digester Building					
Sump Pump	Digester Building	0	2010	Good		
HVAC/Plumbing	Digester Building	0	2010	Good	Some HVAC issues, glycol in system.	
Electrical/Controls	Digester Building	0	2010	Good		
Waste Gas Burner	Exterior	0		Poor	Replace waste gas burner.	
Sludge Storage						
Large Tank	Sludge Storge Tank	0	2010	Good		Tanks have bad mixing. Seem to be dead spots between air headers where sludge doesn't mix. 11-17% solids when tested last time towards end of loadout. Struvite found in solids-could lead to also ferric chloride. Possible feed of ferric chloride to minimize chances of struvite?

						pipe/pump issues. possible reed or ferric chloride to minimize struvite
Small Tank	Sludge Storage-Underground Tank	0	1997	Good		
Sludge Mixing/Loadout Pump 1	Sludge Building-Lower Floor	50	2010		Consider adding mixing with transfer pump for more consistent solids loadout.	Vaughan Model HEBN10CSB n=925 rpm. 3000 gpm @ 38 TDH
Sludge Mixing/Loadout Pump 2	Sludge Building-Lower Floor	50	2010		Consider adding mixing with transfer pump for more consistent solids loadout.	Vaughan Model HE10R12CSB 16" impeller n=885 rpm. 3000 gpm @ 38 TDH
Supernatant Pump 1	Supernatant Building-Lower Floor	50	2010			3 HP 1175 rpm motor. 100 gpm @ 10 Ft TDH Fairbanks Morse Pumps- 3" model B5421K
Supernatant Pump 2	Supernatant Building-Lower Floor	50	2010			3 HP 1175 rpm motor. 100 gpm @ 10 Ft TDH Fairbanks Morse Pumps- 3" model B5421K
Electrical/Controls						
HVAC/Plumbing						
Alumidone cover						
Sump Pump						
A/C Unit						
Exhaust Fan						
Mixing/air header piping						
UV Disinfection						
UV module	UV building	0	2010	good	Could save energy by flow pacing and changing the dose with the change in flow.	new bulbs every 2 years. 3000plus. No ramp down. UV does doesn't change as the system is set for 100% (maximum dose).
Serpentine Weir	UV building	0	2010	good		
Parshall Flume	UV building	0	2010	good		
UV Building	UV building	0	2010	good	Add LED lights. Add hydrant in building for washing out.	
Electrical/Controls	Electrical room-UV Building	0	2010	good		
HVAC/Plumbing	UV building	0	2010	good		some corrosion on the copper plumbing
Effluent Sampler	UV building	0	2010	good		
lighting	UV building	0	2010	good		Could replace lighting with LED to conserve energy.
Chemical						77860-from pumps
Chemical Pump 1	Chemical Building	100	2019	Good	No room for future skids.	Flex-Pro Model M-424-MNL Peristaltic pump 100 GPH at 50 Psi max
Chemical Pump 2	Chemical Building	100	2019	Good		Flex-Pro Model M-424-MNL Peristaltic pump 100 GPH at 50 Psi max
Storage Tank 1	Chemical Building	0		Good		500 Gallon Hawkins tank-35% ferric
Storage Tank 2	Chemical Building	0		Good		500 Gallon Hawkins tank-35% ferric
Storage Tank 3	Chemical Building	0	2010	Good		1900 Gallon double tank
Chemical Manhole	South of chemical building	0	2020			
Water Heater				Fair-Good		
Sump Pump						
Emergency Eyewash/Shower				Good		
Storage Building						
Control Building						
Generator	Inside	0	original-1982	Poor	Replace genset.	head replaced in 2019. runs all "old" stuff-digestors, sludge storge, control, uv, thickening
Diesel Tank	exterior east side	0	2020	Good		275 gallon
Decant Blower						Sutborbilt Model GAFMDPA
Decant Pump 1						Goulds Model 12B2-B Pump. 2 HP motor
Decant Pump 2						Goulds Model 12B2-B Pump. 2 HP motor
Overhead Crane						

Overhead Crane						
Portable Godwin Pump				Poor	Repair/replace electrical.	
Electrical				Good		
Lab Space						
General					Possible to install temp. centrifuge upstairs.	
General Site						
Influent Manhole	Just North of Headworks bldg		2010			
Effluent Manholes 1-4	N, NW, W, and SW of UV bldg		Varying			1 & 3 with 2010 project, Manholes Just N and Just W of UV
Sludge Control Manhole	South of digesters, by loadout structure					
Sludge Yard Hydrant	Just East of old tank					
Yard Hydrant-W of Digester Boiler Room						
YH- East of digester boiler room						
YH- W side off thickening building						
YH- W of thickenign building in yard						
YH-W of control buidling on conc.						
Hydrant-NE of chemical , NW of pretreat						
Hydrant- north of decant tank						
generator-has diesel tank in it						feeds sbr-headworks-chemical-uooer
Biosolids Disposal						
Load out Semi						
Loadout Semi 2						
Tractor						
Applicator Apparatus						
Other items-find where they go						
Plunger pumps	no longer in use		2010			Carter plunger pumps. Model 8000 (duplex) 150 gpm @ 50 TDH, 50 rpm. 7.5 HP 1750 rpm motor
Chopper Pump ISP-1	??		2010			Vaughan Model SE3G2 SHP 170 rom chopper pump. 80 gpm @ 32 TDH
Chopper Pump ESP-1	??		2010			Vaughan Model SE3F2 SHP 170 rom chopper pump. 80 gpm @ 32 TDH
decant pumps						



Public Utilities Commission Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Authorize Change in Bank Signers

ACTION REQUESTED: Approve/Deny Motion

ESTIMATED TIME (MIN): 2

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Danny Loch, Finance Manager

SUMMARY OF ISSUE: With the new appointment of the finance committee the authorized signers with the bank need to be updated. This is performed on an annual basis with changes in the finance committee.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION: Staff request approval to change the authorized signers with the bank removing, Commissioner Matten and adding Commissioners Angland and O'Day.

FINANCIAL IMPACT:



Public Utilities Commission Agenda Request

MEETING DATE: February 25, 2025

TITLE OF ITEM: Consider Customer Credit Request

ACTION REQUESTED: Approve/Deny Motion

ESTIMATED TIME (MIN): 2

SUBMITTED BY: Danny Loch, Finance Manager

PRESENTER: Danny Loch, Finance Manager

SUMMARY OF ISSUE:

A customer requests a credit for the wastewater collection and treatment fee associated with account 05-59750-00. The customer experienced a leak in their crawl space during the service period outlined in the attached documentation. As the leaked water was pumped out and did not enter the wastewater collection or treatment system, the customer is requesting a credit for the wastewater fees charged during this period.

ALTERNATIVE, OPTIONS, EFFECTS ON OTHERS/COMMENTS:

RECOMMENDED ACTION/MOTION: Staff recommend crediting the treatment and collection fees for the water pumped not entering the collection or treatment system.

FINANCIAL IMPACT: \$113.75

Brainerd Public Utilities
Bill Adjustment Request Received From
For the Billing Period 01/03/25 to 02/03/25
Account No. 05-59750-00

	Gallons Billed			Rates	Billed Amount	
	Original	Average	Adjustment		Original	Adjustment Amt
<u>Water</u>						
Fixed Customer Charge				\$ 23.97	23.97	-
Commodity Charge (Per 1000 Gallons)	23,522	726	-	\$ 4.92	115.73	-
Total Water					139.70	-
<u>Sewer and Stormwater</u>						
Commodity Charge (Per 1000 Gallons)						
Wastewater Treatment	23,522	726	22,796	\$ 3.65	85.86	83.21
Wastewater Collection	23,522	726	22,796	\$ 1.34	31.52	30.55
Total Water, WWT, WWC Billed					257.07	\$ 113.75 WWT/WWC Adjustment

Customer Request:

Customer asking for credit as water did not enter the sanitary sewer system.

HR Director's Report to Public Utilities Commission

February 20, 2025

Personnel:

- Two Public Utilities Department employees were off work intermittently this past month with one of them being a work-related medical issue.
- Journey Lineworker Travis Donnelly submitted his resignation letter on February 14th and his last working day will be February 28, 2025. We wish Travis well in his future career endeavors! Staff's preliminary discussions are to advertise for both the journey and apprentice lineworker positions to expedite the hiring process with an opportunity to review our best options.

IT and Finance Integration Update:

On February 3, 2025, the City Council approved the Technology Department's Organizational Chart and new job descriptions. Council also directed Staff to negotiate the wages for the new Technology Department positions with the IBEW Administrative Support Union. The Union has demanded to negotiate the impacts, terms, conditions, and wages for these new positions. Negotiations are scheduled for March 3, 2025.

Finance Staff have provided a presentation with their recommendation regarding a single integrated Finance Department. City Administrator Broyles will be scheduling an Integration Work Group meeting in the near future to discuss this.

Wellness Committee:

Our January Lunch-N-Learn took place on Wednesday, January 29, 2025. This Lunch-N-Learn offered a presentation that went over programs and things to know regarding our new health insurance provider, Blue Cross/Blue Shield, that was effective on January 1st.

For the month of February, all Staff were invited to participate in the reThink Your Drink Challenge that is conducted annually by Crow Wing Energized. This is a great opportunity to encourage each other to drink more water as well as remind us of the importance of staying hydrated!

Attached is a recent Brainerd Dispatch article noting that Brainerd Public Utilities, as an active participant of the City's Wellness Committee, was honored with a Crow Wing Energized Community Partner Award highlighting its dedication to advancing the health and wellness of the community. Public Utilities Department Staff applied for and installed an in-house water bottle filling station. This was the third water bottle filling station installed at City facilities within the last three years. Congrats & well done Public Utilities Department Staff!

Performance Evaluations:

We are currently in the middle of the performance evaluation process. Employees should be working on their comments and providing their review to their supervisor to be finalized. City Administrator Broyles has directed that all final and signed 2024 reviews be submitted to the HR Department for filing no later than April 4, 2025.

Hydration station transforms BPU employees' hydration habits

MIDWEEK MOTIVATOR



Contributed

Brainerd Public Utilities employees Jason, Mandy and Laura teamed up to secure the partner award and bring the new hydration station to life.

By Laura Jewell – Brainerd Public Utilities

In 2024, Brainerd Public Utilities was honored with a Crow Wing Energized Community Partner Award, a recognition facilitated through the collaborative efforts of Crow Wing Energized and the Statewide Health Improvement Partnership.

This recognition highlights Brainerd Public Utilities' dedication to advancing the health and wellness of the community.

As an active participant in the city of Brainerd's Wellness Committee, Brainerd Public Utilities staff took the initiative to apply for and install an in-house water bottle filling station. This project aimed to provide convenient access to clean drinking water for both employees and community members, thereby promoting healthier hydration habits. The successful installation of the water bottle filling station has led to a notable increase in water consumption within the BPU business office and positively impacted the overall well-being of its staff. Since its installation, approximately 500 plastic water bottles have been saved, contributing significantly to waste reduction and environmental protection.

A BPU employee commented, "I use the water filling station every day, it has completely transformed my hydration habits. It's so convenient and accessible that I've found myself drinking much more water without even thinking about it. The crisp, cold water motivates me to refill throughout the day, and I feel more energized and focused as a result. I do not think a lot of us consider the results of staying hydrated or how simple it is. The LCD screen stating the amount of plastic saved is a bonus incentive to refill and stay hydrated. It's been a simple, but powerful change for my health!"

The application process for the water bottle filling station was straightforward. BPU staff conducted research to identify products compatible with their existing water fountain infrastructure. The necessary equipment was purchased online, and, leveraging their in-house expertise, BPU personnel installed the unit themselves.

This initiative aligns seamlessly with SHIP's mission to support community-driven solutions that expand opportunities for active living and healthy eating. By improving access to essential health resources, BPU

exemplifies the proactive steps organizations can take to foster healthier communities and workplaces.

Crow Wing Energized, a grassroots movement dedicated to improving health and wellness in the community, played a pivotal role in this achievement. Their mission focuses on making healthy choices more accessible, and their collaboration with SHIP and local organizations like BPU demonstrates a steadfast commitment to creating environments that support healthy lifestyles. Their partnership makes projects for certain workplaces more attainable and possible.

The recognition of BPU with the Partner Award not only highlights the organization's dedication to employee and public health but also serves as an inspiration for other entities to engage in similar health-promoting initiatives. Such efforts contribute to the broader goal of building a healthier, more vibrant community.

Crow Wing Energized was founded with the mission to “Improve health and wellness in our community by making the healthy choice the easy choice.” We know this is best accomplished when we work together to improve our communities, which is why we also recognize the works of other organizations and programs in our Midweek Motivator article. We want to connect readers to services, events, organizations, and resources that promote healthy living as well as healthy and productive workplaces. If you are interested in learning more about Crow Wing Energized and our upcoming classes and events visit CrowWingEnergized.org. You can also stay updated by following Crow Wing Energized on Facebook.

The Statewide Health Improvement Partnership supports community-driven solutions to expand opportunities for active living, healthy eating, and commercial tobacco-free living; helping all people in Minnesota prevent chronic diseases including cancer, heart disease, stroke and type 2 diabetes.

Statewide Health Improvement Partnership works with community partners to increase opportunities for safer physical activity, increase access to healthy and affordable foods, reduce commercial tobacco use and secondhand smoke exposure, improve wellness opportunities in the workplace and create opportunities for improved emotional well-being.

Statewide Health Improvement Partnership helps build thriving communities, creating opportunities for all people in Minnesota to live longer, healthier lives. Ninety percent of the nation's health care costs are

for people with chronic conditions, and the majority of those costs are preventable.



BRAINERD PUBLIC UTILITIES

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www.bpu.org

Utility Director Report February 2025

Headlines with Implications

General:

Consumer prices rose last month at a 3% annual pace higher than expected and the biggest gain since June according to government reports released Wednesday. This may cause the prime rate to stay as-is through May.

Electric:

AEP was able to secure pricing to extend the contract into 2033/2034 below the authorized level set by Commission last meeting. The new firm contracted MWh energy rate starting in June 2025 will go from \$44.60 to \$49.35 until the next extension or renegotiation in the event commodity priced drop significantly. As energy makes up only approximately 70% of the total cost of energy received, I recommend utilizing monthly power cost and formula rate adjustment mechanisms to deal with the transmission and capacity components as they will have more volatility in the future.

We are monitoring newly imposed requirements by MISO which could disqualify all of Voltus' 450 MW of demand response resources from the upcoming capacity auctions as MISO tariff requires that market participants give the grid operator results of "real power tests" to register resources as load modifying resources for capacity auctions.

Water/ Wastewater:

Minnesota Department of Health (MDH) will not be holding a spring round of Source Water Protection (SWP) Grants (Competitive, Plan Implementation, and Transient) in 2025. However, we anticipate that the funds that would have been awarded in the spring will be available in the fall in addition to the fall funding amount.

Minnesota Pollution Control Agency (MPCA) is accepting submissions for state funding for public wastewater, stormwater, and drinking water infrastructure improvement projects, including projects to replace lead-service lines and address emerging contaminants. Applications will be accepted through March 7, 2025, for the clean water project priority list (PPL) and May 2, 2025, for the drinking water PPL.

MESERB submitted comments to the Minnesota Pollution Control Agency (MPCA) as part of the 2025-2027 Triennial Standards Review addressing concerns about sulfate standards in Mississippi river pools as well as general PFAS and nitrate standards.

The fight to hold PFAS polluters accountable continues in the 119th Congress as Reps. Marie Gluesenkamp Perez (D-Wash.) and Celeste Maloy (R-Utah) have reintroduced the Water Systems PFAS Liability Protection Act, a bipartisan measure aimed at shielding water utilities from unjust PFAS liability under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This legislation has been strongly championed by NACWA and its partners in the Water Coalition Against PFAS. Despite the goals for protection, public water systems will still have to make significant investment to monitor and mitigate. The EPA evaluated over 120,000 comments submitted by the public on the rule proposal, as well as considered input received during multiple consultations and stakeholder engagement activities held both prior to and following the proposed rule.

Compound	Final MCLG	Final MCL (enforceable levels) ¹
PFOA	Zero	4.0 parts per trillion (ppt) (also expressed as ng/L)
PFOS	Zero	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index	1 (unitless) Hazard Index

The final rule requires:

- Public water systems must monitor for these PFAS and have three years to complete initial monitoring (by 2027), followed by ongoing compliance monitoring. Water systems must also provide the public with information on the levels of these PFAS in their drinking water beginning in 2027.
- Public water systems have five years (by 2029) to implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed these MCLs.
- Beginning in five years (2029), public water systems that have PFAS in drinking water which violates one or more of these MCLs must take action to reduce levels of these PFAS in their drinking water and must provide notification to the public of the violation.
- *NOTE: MDH has been testing these analytes under UCMR5 (Fifth Unregulated Contaminant Monitoring Rule) program since 2021.*

A snapshot of sampling data as well as definitions and changes to EPA MCL standards are shown on the next page.

Date	PFOS ppt	PFOA ppt	PFBS ppt	PFBA ppt	PFHxS ppt	PFHxA ppt	HFPO-DA (GenX) ppt	PFNA ppt	MDH HRI	HRI QRAA	EPA HI	HI QRAA	PFOS QRAA	PFOA QRAA	PFHxS QRAA
10/17/2024	3.5	0	4.5	5.3	3.3	0	0	0	0.3	0.3	0.3	0.2	0.0	0.0	1.7
08/29/2024	3.1	1.7	4.8	8.6	2.5	2.1	0	0	0.4	0.2	0.0	0.1	0.0	0.0	0.8
05/30/2024	1.8	0	0	0	0	0	0	0	0.1	0.2	0.0	0.1	0.0	0.0	0.8
02/07/2024	3.1	0.0	2.8	3.5	3.3	0.0	0.0	0.0	0.3	0.2	0.3	0.1	0.0	0.0	0.8
08/29/2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
06/13/2023	2.3		2.6	2.6	2.3				0.2	0.2	0.0	0.0	0.0	WDIV/DI	0.0
02/07/2023	2.9		2.0	2.0	1.8				0.3	0.3	0.0	0.0	0.0	WDIV/DI	0.0

MN Health Based Values

HRI = Health Risk Index

MDH Health-Based Guidance Values (HBVs) in ppt (ng/L)

QRAA = Quarterly Running Annual Average

0.50 < HRI < 1.0

HRI > 1.0

	2022 MDH HBVs	HRI Calculation:
PFOS	15	cPFOS/15
PFOA	35	cPFOA/35
PFBS	100	cPFBS/100
PFBA	7000	cPFBA/7000
PFHxS	47	cPFHxS/47
PFHxA	200	cPFHxA/200

HRI = Sum of Above

c = concentration in ppt

EPA MCLs

MCL = Maximum Contaminant Level

50%-100% MCL

>100% MCL

QRAA = Quarterly Running Annual Average

PQL = Practical Quantification Level

If result is < PQL, it is set to 0 in QRAA & HI calcs for MCLs

EPA MCLs in ppt (ng/L)

	2024 EPA MCL	PQL
PFOS	4.0	4.0
PFOA	4.0	4.0
PFHxS	10	3.0
HFPO-DA (GenX)	10	5.0
PFNA	10	4.0
PFBS	Use HI	3.0

HI = Hazard Index (MCL = 1)

0.50 < HI < 1.4

HI > 1.4

EPA Health-Based Water Concentrations (HBWC) in ppt

	2024 EPA HBWC	HI Calculation
PFBS	2000	cPFBS/2000
PFHxS	10	cPFHxS/10
HFPO-DA (GenX)	10	cGenX/10
PFNA	10	cPFNA/10

HI = Sum of Above

c = concentration in ppt

PFAS Compounds

PFOS = Perfluorooctane Sulfonic Acid

PFOA = Perfluorooctanoic Acid

PFBS = Perfluorobutane Sulfonic Acid

PFBA = Perfluorobutanoic acid

PFHxS = Perfluorohexane Sulfonic Acid

PFHxA = Perfluorohexanoic acid

HFPO-DA = GenX = Hexafluoropropylene Oxide Dimer Acid

PFNA = Perfluorononanoic acid

Conversions

Part per Billion (ppb) = (µg/L)

Part per Trillion (ppt) = (ng/L)

1 ppm = 1,000 ppb = 1,000,000 ppt

1 ppt = 0.001 ppb = 0.000001 ppm



BRAINERD PUBLIC UTILITIES

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Brainerd Public Utilities Finance Managers Report February 25, 2025

Financial Reports

December is on-going as we prepare for the audit and year-end entries and cost studies. January and February to follow the audited December financial statements.

Audit Preparation

The 2024 audit is underway. We continue our work with CliftonLarsonAllen on the audit. Preliminary documents and items have been prepared and provided to CLA. The audit fieldwork is scheduled for the week of March 10. CLA will be on-site during that week. They will be reaching out to the Finance committee members for an interview of processes at some point during that week. There are significant liabilities that are in process of being calculated related to the contract negotiation backpay and the new requirements related to compensated absences under GASB 101 that staff continue to work through.

MN Rural Water/Wellhead Protection Plan

Staff met with Rural water to discuss the wellhead protection plan. A joint meeting was held with multiple departments coordinating the priorities for response to the wellhead protection plan and the approved plan from MN Department of Health. Staff continue to work through the coordination with the team and project will be on-going.

MN Department of Health

Staff met with the MN Department of Health for funding considerations in 2026 as it relates to lead/copper service line replacements. There are several funding webinars and conferences that are occurring related to this project. Staff are working to provide up-to-date information to customers and drafting website updates to facilitate the public education on upcoming projects. March 5th MN Rural water and MDH are presenting in St. Cloud for updates on legislative changes and the process MDH would like utility systems to follow. Staff will be attending this event.

Streetlighting/Water/Wastewater Cost Studies

The cost studies for streetlighting/water/wastewater have begun and are collecting data for Utility Financial Solutions. Meetings with UFS have continued to determine their data needs and requests for the cost studies. UFS is awaiting staff responses before continuing. Staff are compiling information and expect to have all the information to UFS.

Communities Local Energy Action Program:

Scope work related to the NREL project is underway and staff have provided NREL all requested information for the first phase of 4.

After Hours Call Center:

The utility department is in the trial period with Gold Cross Answering services for 24 hour call and dispatching service. All have been going as planned.



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Brainerd Public Utilities Operations Managers Updates February 25, 2025

Electric Department:

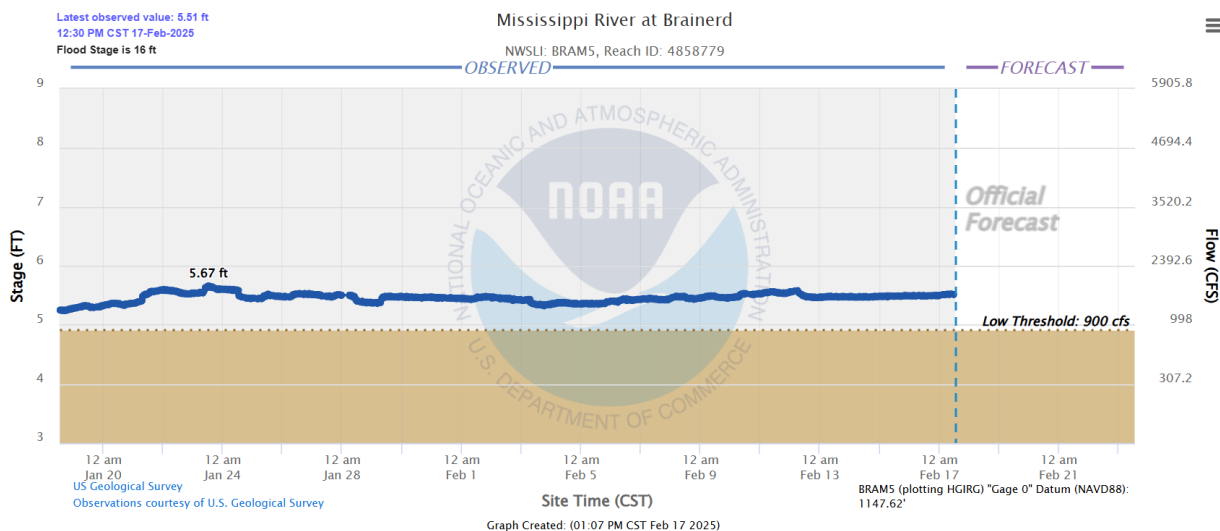
Maintenance and updates at the Oakridge substation are currently in progress. BPU crews are working with National Conductor to carry out this work. Minnesota Power is also involved with this project for transmission switching. We expect to complete the bus updates in the next few weeks. Once completed the focus will be on testing and upgrading the bus protection relays.

Staff is working on vegetation management by removing hazardous trees and undertaking preventative pruning. Removals and brush mowing is currently being concentrated in traditionally wet areas of our service territory that are difficult to access with equipment.

The maintenance and reconstruction project on NW 7th St. is nearly complete. A small portion of the underground work will be finished in the spring to conclude this project.

Hydro Department:

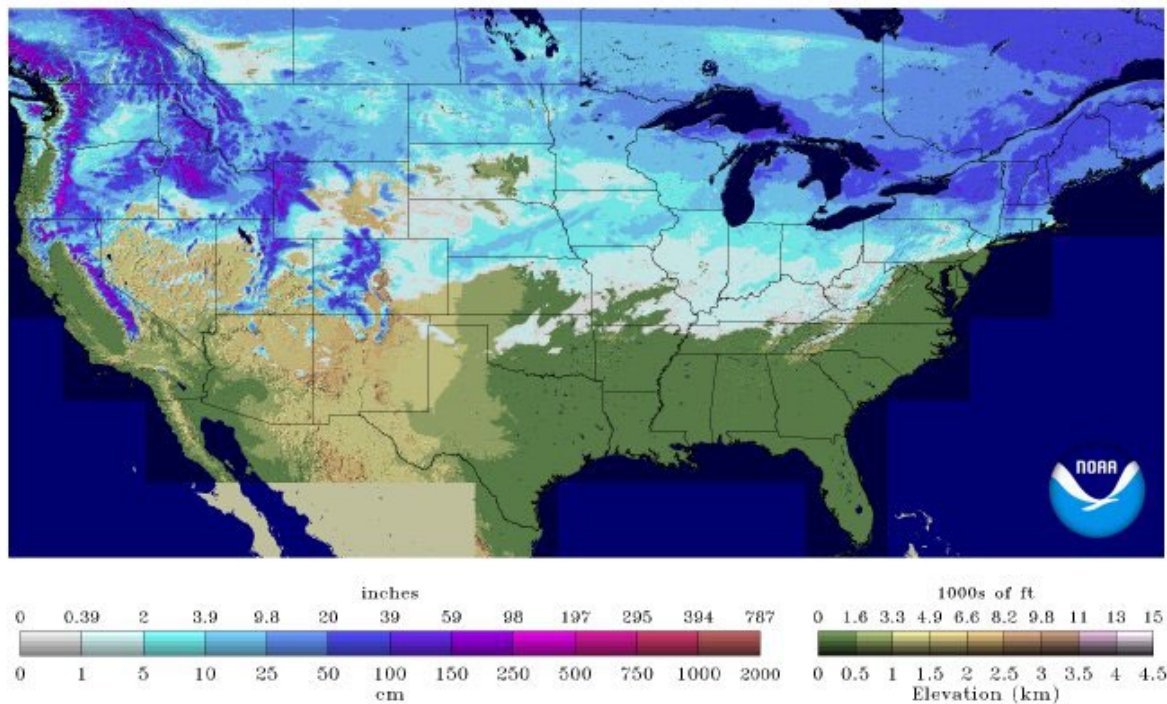
Flows have ranged from 1350-1850 cfs. Generators #1 and #2 have been in service, operating at 100% of their capacity and generating approximately 1.10-1.6 MW continuously since December 9th 2024.



Staff is monitoring the snowpack in the upper Mississippi watershed. This analysis provides insights into what the spring runoff may look like as we prepare for and review high water flow plans in anticipation of the seasonal changes.

Snow Depth

2025-02-17 06 UTC



Staff and Barr engineering is currently addressing the FERC Part 12 requirements for 2025. The following tasks are outlined with their respective deadlines:

1. Routine maintenance of the Tainter gate - Due by October 31, 2025.
2. Development of a plan for shoreline stabilization - Due by October 31, 2025.
3. Implementation of ODSP audit recommendations - Due by December 31, 2025.
4. Implementation of EAP recommendations - Due by December 31, 2025.
5. Conducting a movement monitoring survey - Due by December 31, 2025.
6. Filling the gap near the powerhouse - Due by December 31, 2025.

Water Distribution:

The staff is currently developing a grid design layout for the water distribution system. Unlike a conventional square grid, this design will be adjusted for funding and project management. The goal is to synchronize lead service line replacement construction plans and timelines with the City's 10-Year Streets and Sewer Capital Improvement Plan.

There are two variations in this process. The first focuses on identifying approximately 500 lines that still need to be identified. These identifications will be done by excavation, either Hydro vacuum or conventional excavating methods. The second variation centers on the City's (CIP) projects. Our goal is to maintain flexibility so we can effectively align with the City's plan while also meeting the MDH service line replacement deadlines. Staff has set an internal goal to have this completed for first review by March 31st, 2025. This information will start the foundation for lead service replacement projects.

OUTAGES		Jan.	2025	2025	
Location	Date	Meters	Time	Cause	Solution
400 block washington St.	28-Jan	1	24 min	primary fuse fell apart.	Replaced with new fuse

Water Service Interruptions			
Date	Address	Interruption	Other
1/10/2025	1500 Block of 13th Ave NE	Water Main break	
1/20/2025	700 Block of 7th St NW	Leak on customer side	Emergency Water Shut Off's
1/20/2025	400 Block of C St NE	Valve broke/leak	Emergency Water Shut Off's
1/20/2025	1300 Block of M St	Water in crawl space	Emergency Water Shut Off's
1/27/2025	700 Block of 16th St SE	Water in bsmt	Emergency Water Shut Off's
1/28/2025	700 Block of 6th Ave NE	yard	Emergency Water Shut Off's
1/21/2025	700 Block of Washington		Frozen water meter
1/22/2025	1700 Block of Graydon		Frozen water meter
1/22/2025	600 Block of 6th St N		Frozen water meter
1/27/2025	1300 Block of M St		Frozen water meter
1/28/2025	300 Block of 8th St N		Frozen water meter
1/29/2025	100xx Island Dr		Frozen water meter
1/31/2025	200 Block of 4th St NW		Frozen water meter/Pike paid for water meter
1/31/2025	600 Block of 4th St N		Meter stuck. Replace. N/C



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Brainerd Public Utilities Water Production Department Report February 2025

January 2025 Water Pumping Statistics

Water pumped to the North distribution system was 27.7 MG for an average of 0.895 MGD. Water pumped to the South distribution system was 4.494 MG for an average of 0.144 MGD. Chemical usage averages for the month: 2.21 gallons of fluoride per day, 3.35 gallons of caustic soda per day, 6.43 gallons of orthophosphate per day, and 22.12 pounds of chlorine per day. Went through 18 filter backwash events while using an average of 0.205 MG for each event.

Wells

Then Well out for service of Well 6. on February 10, 2025. Rehabilitation work on-site included acid treatment, brushing, surging and high pressure water jetting. Off-site work will include motor, pump, and piping inspection and repair. Expected completion in late March or early April.

Filtration Plant

January 2025 daily test results for finished water are 96.6% removal of iron and 98.2% removal of manganese.

Booster Pump Stations

Riverside booster station and Lum Park booster station continue to operate effectively.

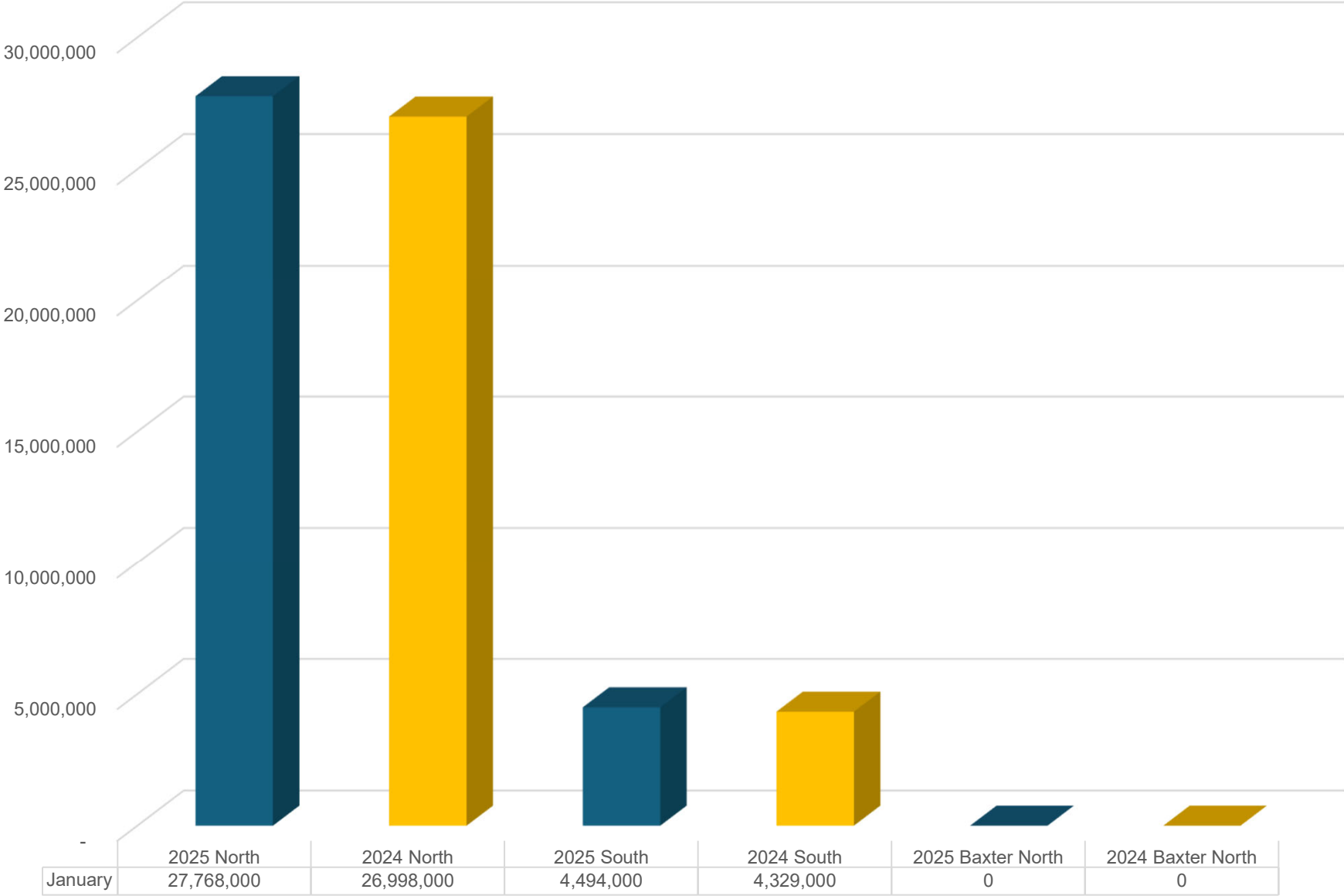
Minnesota Department of Health

Staff met with the MN Department of Health to discuss the updated changes related to the lead and copper inventory.

Wellhead Protection Plan (WHPP)

Called a meeting with the WHPP team to discuss plan for responding to priorities for 2025 and the access of funding with Minnesota Rural Water to aid the City in meeting wellhead protection plan goals.

January 2025 - 2024 Comparison Water Production Totals North and South Distribution System





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Brainerd Public Utilities Wastewater Manager's Report February 2025

Lift Station

Ongoing maintenance of wet wells, pumps, generators, and controls for the 17 lift stations. Ongoing cleaning and painting of main lift pumps and piping as time allows. Ongoing SCADA improvements at main lift.

Wastewater Treatment Plant

On-call operator tested Wastewater Treatment Facility and lift stations SCADA alarms. Equipment maintenance is ongoing. Replacing SBR 1 Jetmotive pump wear ring and the 90-degree elbow.

Biosolids

Working on the Minnesota Biosolids PFAS Strategy consisting of PFAS sampling, required actions include reduction efforts and communication. For CY 2025 we are in Tier 2 (43.5 ug/Kg). Ongoing development of the Minnesota Biosolids PFAS Strategy program for the approved Biosolids application sites.

Tier	Amount of PFOA or PFOS measured in biosolids (ug/kg)	WWTF requirement
Tier 4	≥ 125	Biosolids are considered industrially impacted Land application is not allowed, arrange for alternative management of biosolids Notify and provide results to the MPCA The WWTF must sample its wastewater plant effluent and have it analyzed for PFAS, if not already required Create and implement a PFAS source reduction pollutant management plan (PMP) or expedite efforts of an existing PMP Site specific requirements may be necessary
Tier 3	51 - 124	Notify and provide results to the MPCA, farmer, and landowner Create and implement a PFAS PMP or continue implementing an existing PFAS PMP Reduce rate to 1.5 dry tons per acre or propose an alternative risk mitigation strategy Report the land application rate to the MPCA
Tier 2	21 - 50	Notify and provide results to the farmer and landowner Create and implement a PFAS PMP or continue implementing an existing PFAS PMP Report the land application rate to the MPCA
Tier 1	≤ 20	Notify the landowner and farmer that PFAS results are available on request

Lab

Sent January 2025 Electronic Daily Monitoring Report, Significant Industrial User (SIU) 2024 annual report to MPCA and CY 2024 Biosolids report to EPA. Updating of Standard Operation Program and Standard Operation Guide for MPCA. Sampled influent and effluent for copper. Ongoing Mercury Minimization, Copper Minimization Plan, PFAS Minimization Plan. Ongoing delegation with Brainerd Significant and Categorical Industrial Users.

Drinking Water

Received 2024 4th Quarter PFAS sample results. Continuing to update the Lead and Copper program. Sampled 4 sites for Haloacetic acid (HAA), Trihalomethane (THMs), and sent to MDH lab. Ongoing testing for the Optimal Corrosion Control Treatment (OCCT) requirements. Collected the 15 required Coliform samples. Responded to 7 residential drinking water concerns from January 21, 2025 – February 18, 2025.

River crossing

Working on final payment and landscaping approval.

Generators

Test ran Evergreen Lift, Main Lift, SW6th Lift, portable 25KW, 150KW, 45KW and both plant generators. Added fuel where needed.

Personnel

Operators signed up for water, wastewater and biosolids schools for 2025.

January 2025 - 2024 Wastewater Influent Flow Comparisons

