Information Item:

Environmental Services 2023 Intern Capstone Presentations

METROPOLITAN COUNCIL

Environment Committee: August 8, 2023

Workforce & Equity

Workforce Planning

METROPOLITAN COUNCIL

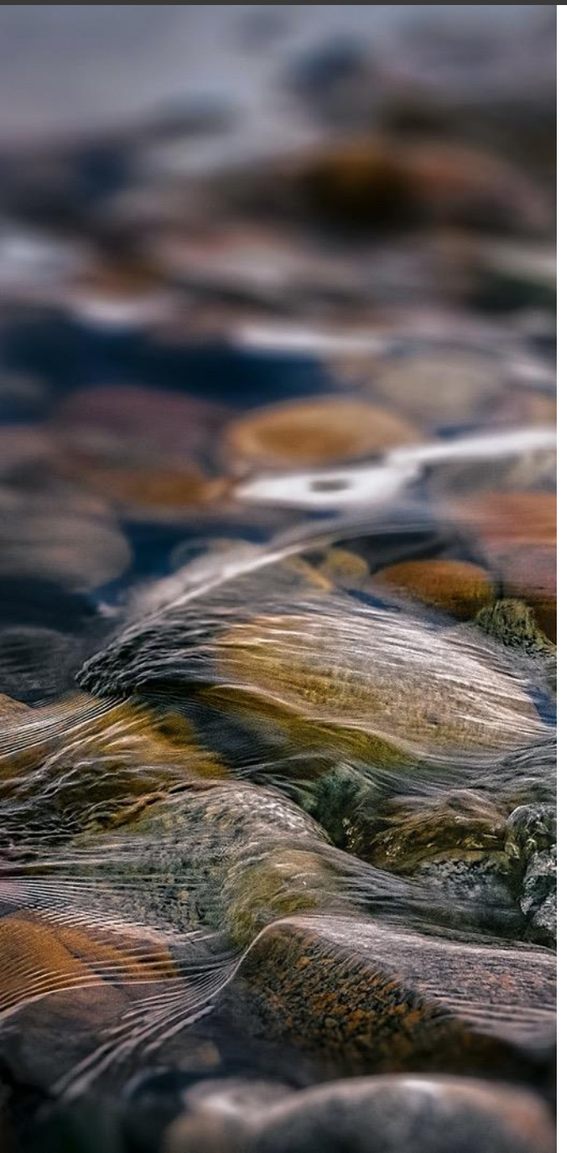
Cayla Bishop

My name is Cayla!

- University of Minnesota – Twin Cities
- Family Social Science B.S.
- Youngest of two
- Dancer, Reader, and Napper
- Workforce Planning Intern & Met Scholar

Metropolitan Council

Environmental Services Internship



What have I learned & accomplishments?

- Exploring Procurement and Requisition
- Explored Metropolitan Council Underutilized Business Program
- Workforce and Equity Tracker
- Inclusive Spaces Project
- Helping support Employee Resource Group
- Presenting to Integrated Servant Leadership Team
- Current project: Racial Equity Strategic Action Plan

Final Thoughts: It was worth it!

- Professional experience
- Community building skills
- Ask why
- Challenge yourself

Thank you

Cayla Bishop
Workforce Planning Intern,
Workforce and Equity

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Applying Molecular Techniques to Wastewater

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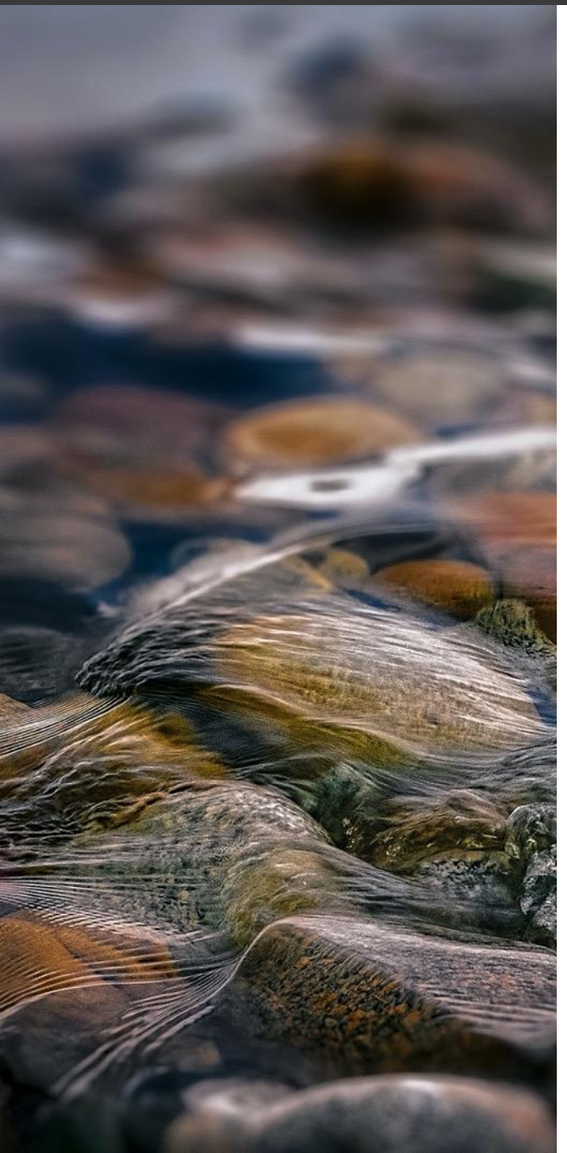
Ty Flanagan

Introduction



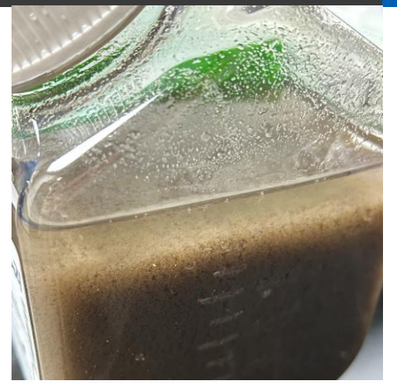
Ty Flanagan

- University of Minnesota Twin Cities – College of Biological Sciences.
- Going into my 3rd year.
- Major: Plant and Microbial Biology Minor: Statistics.
- Molecular Biology Intern → Process Engineer, Research and Development (R&D) and Air Quality → Operations Support Services → Environmental Services.

Applying Molecular Techniques to Wastewater

Key Highlights of Project / Career Impact

- Use quantitative polymerase chain reaction (qPCR) to measure quantities of important types of microbes in the Metro Plant treatment process.
- Have high certainty in validity and reproducibility of measurement.
- Expand the current measurement to measure a wider range of microbes of interest.
- Learn new molecular techniques by performing them.
- Gain a great amount of practice reporting and discussing findings.
- Learn more about careers in my field as well as the vast range the Met Council has.
- Talk to and get career advice from people in positions similar to what I want to get into.



questions

Ty Flanagan

Molecular Biology Intern,
Process Engineering, R&D and Air Quality
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Air Compressor Efficiency Optimization

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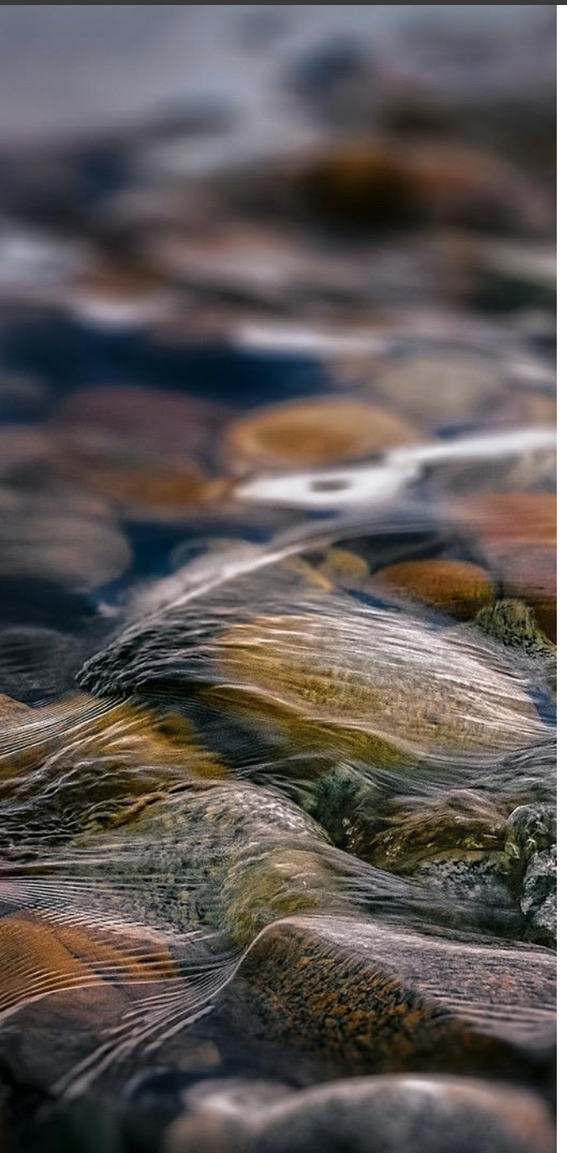
Audra Hakanson

Introduction



Audra Hakanson

- University of St. Thomas
- Senior
- Majors: Data Analytics and Business Economics
- Minors: Statistics and Computer Science
- Air Compressor Efficiency Optimization

Air Compressor Efficiency Optimization

Key Highlights of Project

- Running 2-3 air compressors (“blowers”) at the Metro Plant is the largest single use of power
- Calculated metrics to track efficiency in real time which helps inform our operations team
- Goal: create a tool to maximize the efficiency of the Metro Plant air compressors by suggesting the optimal combination of blowers to save power

Career Impact

- How has this work been meaningful in assisting with your career, its development, etc.?
  - Attention to detail
  - Getting diverse perspectives
  - Interest in the Environmental or Sustainability fields

questions

Audra Hakanson

Sustainability Climate Mitigation and Energy Management Intern, Process Engineering

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Climate and Water Equity Report

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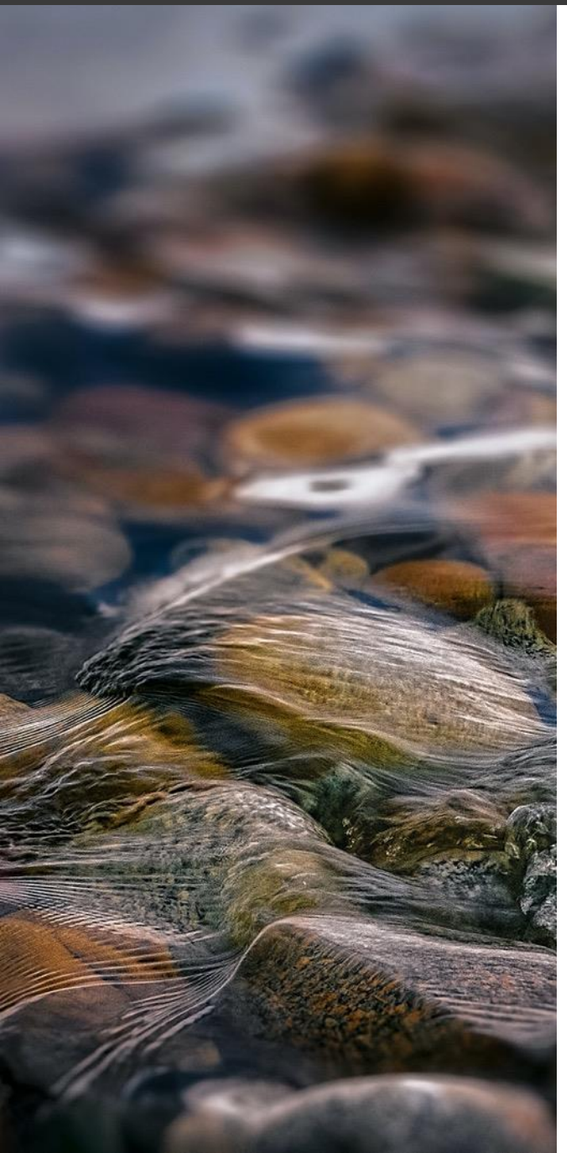
Henry Holcomb

Introduction



Henry Holcomb

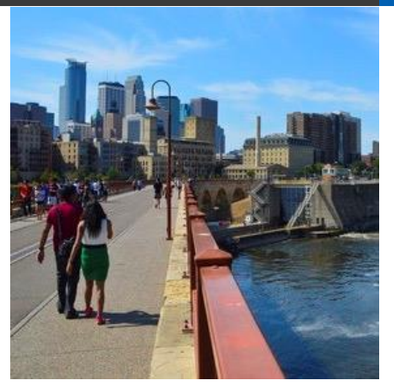
- Carleton College
- Class of 2023
- Major: Environmental Studies, Minors: Public Policy, Africana Studies
- Fun Fact: I have worked at a YMCA camp for the last five summers
- Climate and Water Equity Report

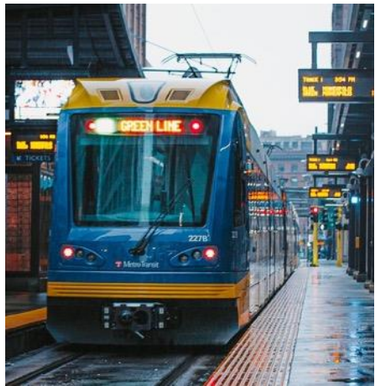
Climate and Water Equity Report

The Project and Takeaways

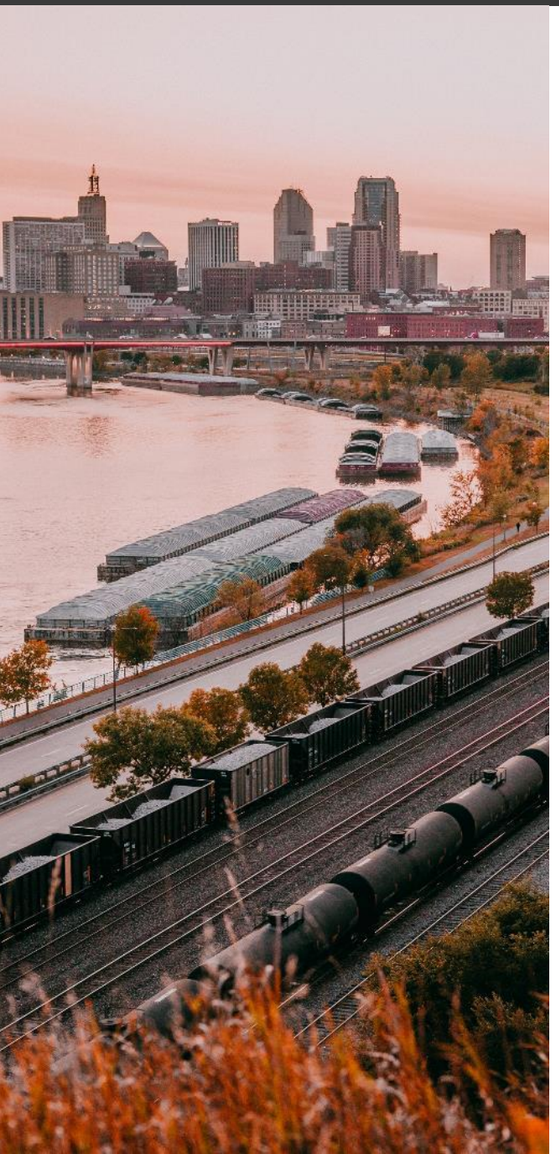
- Nationwide, water resources have been inequitably distributed, creating vulnerable communities
- How can the Metropolitan Council alleviate water inequities and create solutions?
- Many of the Metro Region's relationships with water are complicatedly wound up into social, economic, and historical issues
- Framing water equity is a new approach for the Council

- We have joined the Water Equity Network in the US Water Alliance to deepen our commitment to water equity
- What lessons and solutions can we draw from other organizations' work?
- How can we integrate these into the upcoming Water Resources Policy Plan?





Lessons from the Internship



A New Perspective

- A new window into equity work
- Coalition building with other allies is key for effective water equity work
- The relationships between planners, policy makers, advocates, and the public are layered
- Learned from an incredible group of people, thank you to my advisors Jen Kostrzewski and Andrea Kaufman, manager Roderic Southall, mentor Corey Coutier, fellow interns Laura Wagner, Julia Kloiber, Sabrina Lor, Met Scholar leaders Niambi Shakir and Lila Eltawely, and finally to the many friends made during my time in the Met Scholars

questions

Henry Holcomb

Climate and Water Equity Intern,
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Community Outreach

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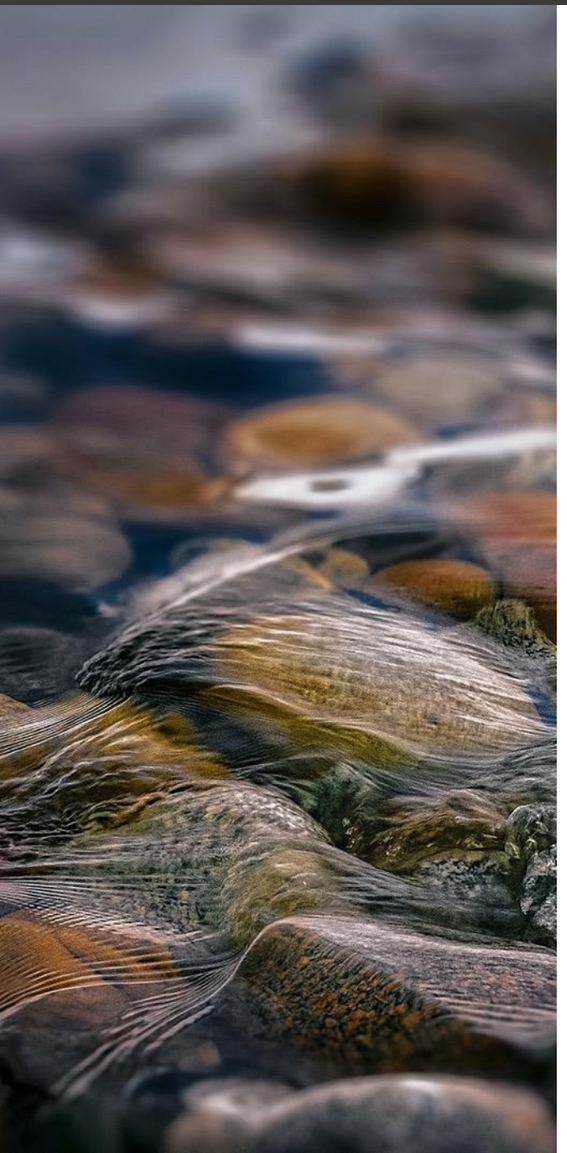
Idman Ibrahim

Introduction



Idman Ibrahim

- Minnesota State University, Mankato / University of Minnesota - May 2023
- Bachelor of Social Work and Gender and Women Studies
- Master of Social Work and Master of Public Policy

Projects

Career Exploration Outreach and Education

- Youth Career Exploration
- Career Fairs

Monthly Equity/Cultural Education

- Cultural Event Posters
- Community Events

Space Inclusivity Project

- Lactation space
- Quiet prayer space
- Learning Spaces

questions

Idman Ibrahim

Urban Scholar, Equity and Equal Opportunity Intern,
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Automation of sample streamflow determination for pollutant load calculations

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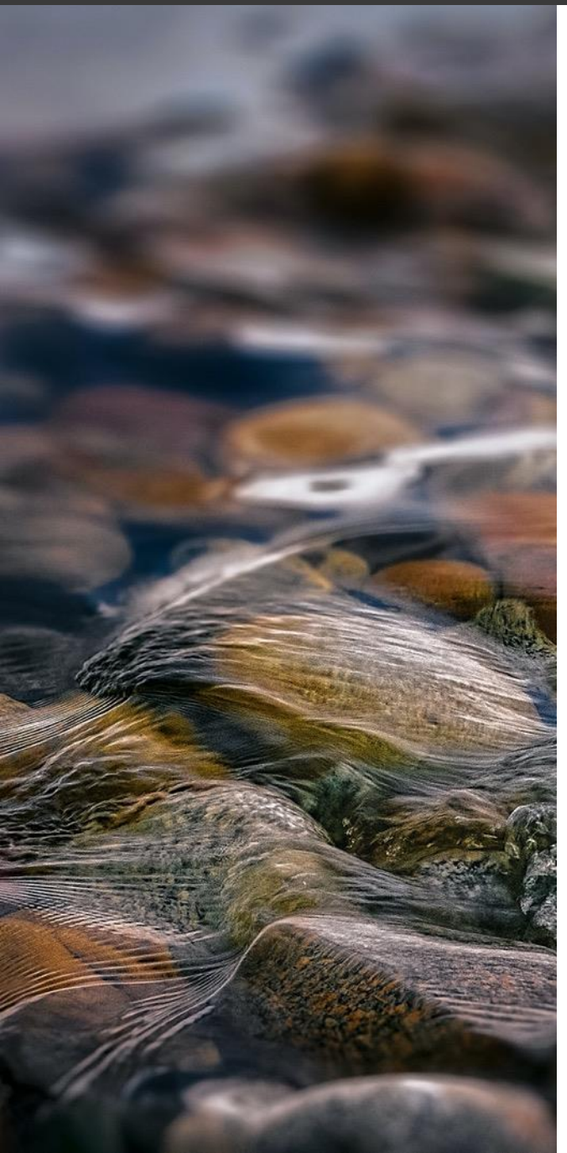
Julia Kloiber

Introduction



Julia Kloiber

- University of Wisconsin-Madison
- December 2023
- Major: Data Science, Minor: Environmental Studies
- Automation of sample streamflow determination for pollutant load calculations

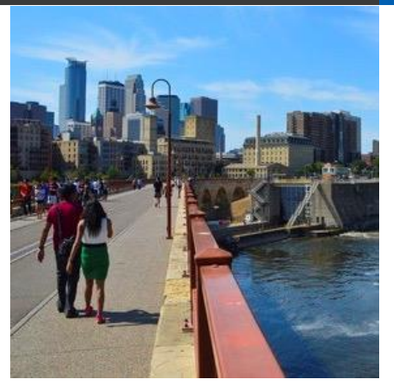
Automating streamflow determination for pollutant loads

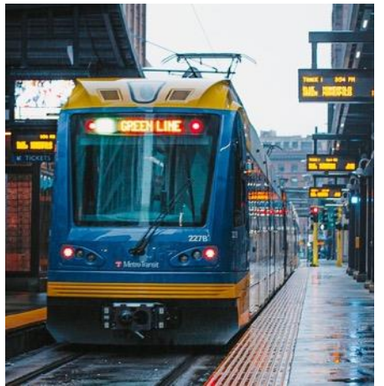
Key Highlights of Project / Career Impact

- Metropolitan Council calculates pollutant loads to understand pollutant sources to major rivers
- Pollutant loads are calculated using monitored streamflow data matched with water quality sample data
- Pollutant Load =

  Streamflow X Concentration

- Process used to be done manually by cross referencing sample with stream flow data
- Used R statistical program to bring in flow data from various sources and match up sample times with appropriate streamflow value
  - Incorporated quality control checks
- Less time spent on parsing data and reduced opportunity for human error





questions

Julia Kloiber

Water Quality Database and Assessment Intern, Water Resources
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Inflow and Infiltration Grant Program

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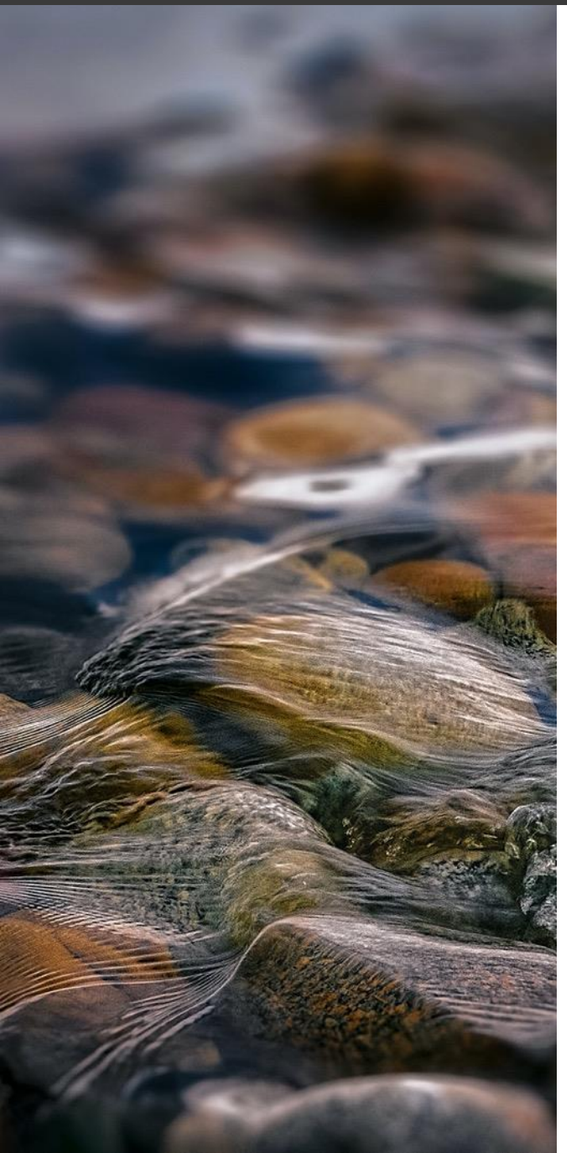
Sabrina Lor

Introduction



Sabrina Lor

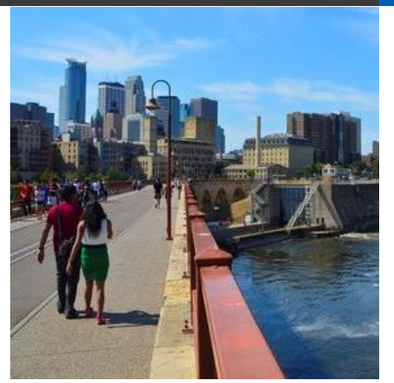
- The University of Minnesota
- Junior
- Major: Strategic Communications (Public Relations focus)
- Inflow and Infiltration Grant Program

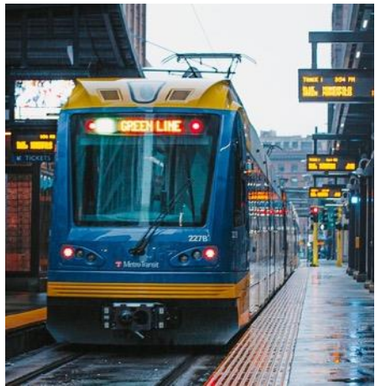
Inflow and Infiltration Grant Program

Key Highlights of Project / Career Impact

- An educational opportunity with financial support for municipalities and residents.
- Supports homeowners and municipalities with covering the repair cost of a sewer lateral.
- Not every homeowner knows that they are responsible for all or part of the cost to repair their sewer lateral.
- Funded through wastewater revenue.
- This is a program that will be rolled out January 2024.

- I was trusted to initiate meetings and start the conversation
- Learned to ask clarifying questions.
- Supported Emily Schon and her vision for the program.





questions

Sabrina Lor

Communications Intern,
Administration and Communications
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Metro Plant Certification Guidebook

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August Pirkl

Introduction

August Pirkl

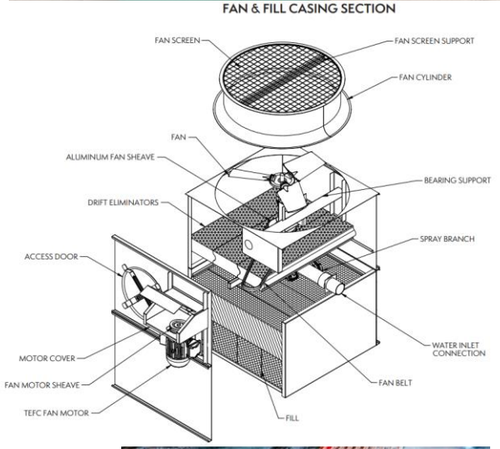
- University of Minnesota Twin Cities
- Class of 2024
- Major: Environmental Sciences, Policy, and Management (ESPM),
  Minor: Sociology
- Metro Plant Utility Air System Certification Guidebook Project

Metro Plant Certification Guidebook

Key Highlights of Project / Career Impact

- Worked to create an Operator Certification Guidebook covering the Metro Plant's Utility Air system
- Gathered content from Standard Operating Procedures (SOPs), record drawings, training manuals
- Went into the plant for physical investigations of processes
- Consulted operators
- Edited and reformatted existing content

- Learned content collection, creation, and organization skills
- Bluebeam Revu application
- Understand the wastewater treatment process and the utility air system
- Working with a team in a professional setting



questions

August (Gus) Pirkl

Operations Intern,
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The Role of Industrial Automation In Wastewater Treatment

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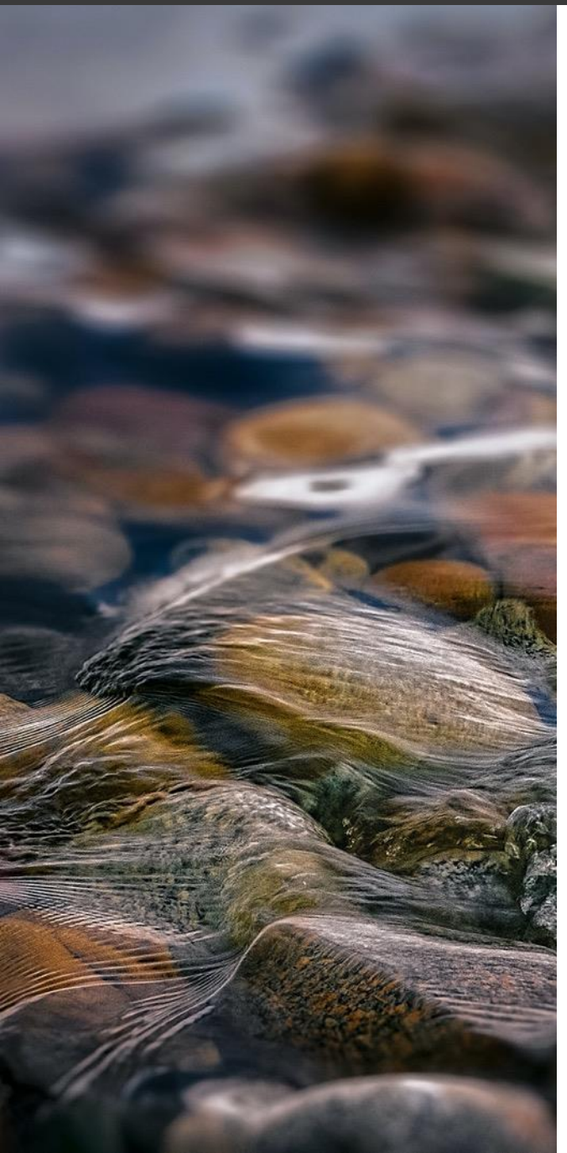
Shujaa Green

Introduction



Shujaa Tongrit Green

- Saint Paul Community & Technical College
- Class of December 2022
- Associate of Applied Science in Electromechanical Automation Systems
- Programmable Logic Controller (PLC) & Human Machine Interface (HMI) Configuration Intern

PLC Replacement Project

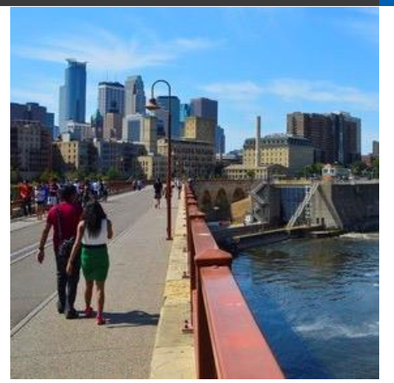
Key Highlights of Project / Career Impact

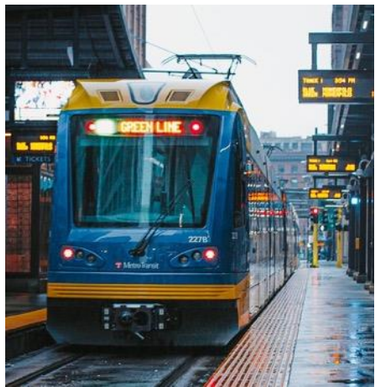
My first career related job was as a Student Assembly Assistant. I worked for a local manufacturing company based In Arden Hills, MN. There, I learned a lot of the basic concepts of machine building, and a number of the different mechanical techniques and terms used in manufacturing assembly.

This summer I had the opportunity to try learning new skills, related to the programming of automation systems and how to monitoring them.

I also gained experience in a new industry field, i.e. in Waster Water Treatment and Process Control.

- I worked with Ethan Zabel, and Sean Coffey as my mentors on a few different test projects.
- By test projects, I mean practice assignments meant to build muscle memory in different programming softwares such as PLC Logix 500, and FactoryTalk Panel View 5000, and EcoStructure.
- The projects were replicated versions of the The Aeration Processes and Blower Header Pressure Control Loop. It was similar to the process used in smaller plants such as to Eagle's Point, in Cottage Grove, MN.





questions

Shujaa Tongrit-Green

PLC and HMI Configuration Intern,
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Asset and Infrastructure Management for Climate Resilience

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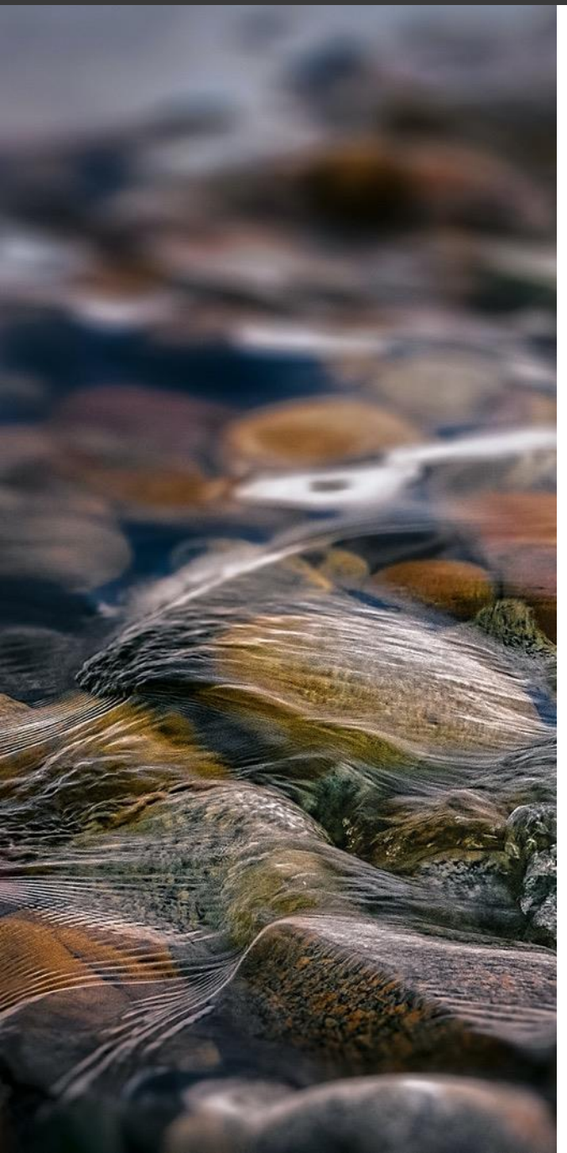
Laura Wagner

Introduction



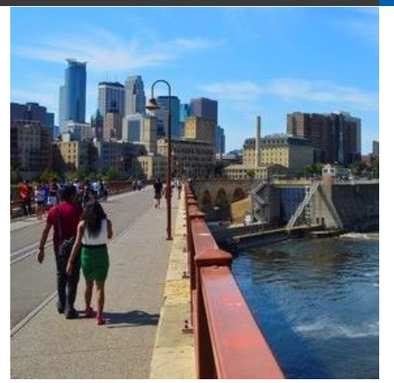
Laura Wagner

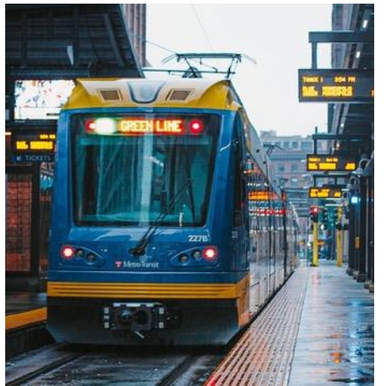
- University of Minnesota – Humphrey School of Public Affairs
- 2nd year graduate student
- Major: Science, Technology, & Environmental Policy
- Project: Asset and Infrastructure Management for Climate Resilience

Asset and Infrastructure Management for Climate Resilience

Key Highlights of Project / Career Impact

- Meet goals of the Climate Action Work Plan
- Understand how asset management can be utilized for climate resilience and adaptation
- Research current state of city level resilience and adaptation planning in Minnesota
- Provide technical assistance recommendations to the Metropolitan Council
- I made meaningful connections with professionals within and outside of the Metropolitan Council
- Project deliverable: internal memo document





questions

Laura Wagner

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Data for Lake Quality Grades

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Mirae Guenther

Introduction

Mirae Guenther

- University of Minnesota – Twin Cities
- Graduate student in Natural Resources Science and Management
- Thesis research: How does removing urban trees impact stormwater quality?
- Working as the Water Resources Monitoring Intern for summer 2023

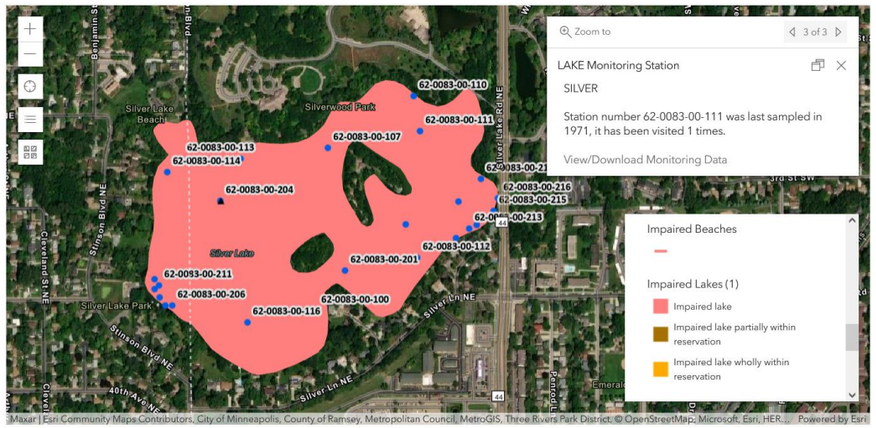
- Project: Data for Evaluating the Lake Grading System

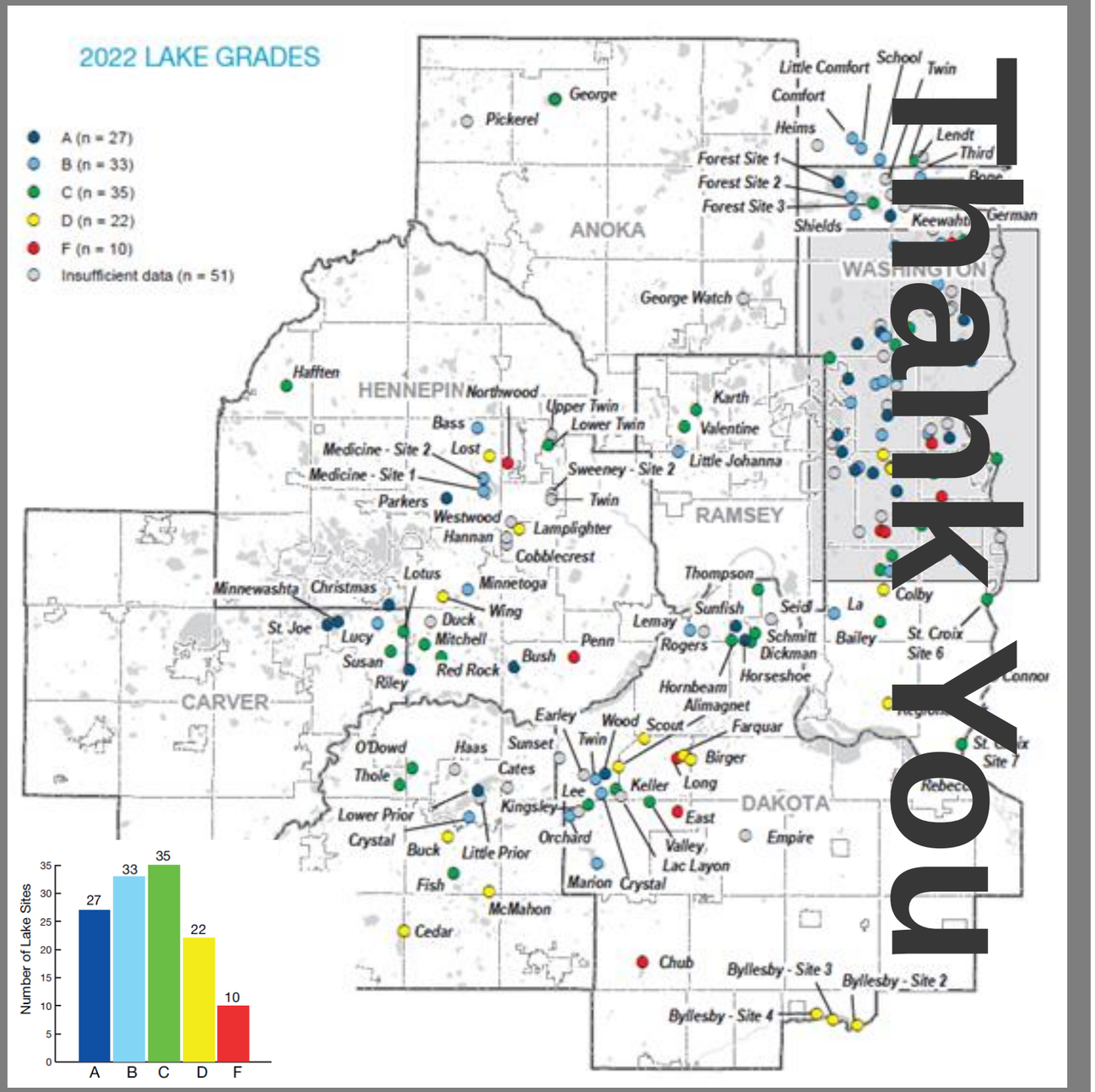
Data for Evaluating the Lake Grading System

My project involves organizing historical lake quality data to create a baseline for modern lake conditions

- Current grading system is built on water quality data collected from 1980 – 1988 and designed like classroom grade curves
- Data have continued to be collected through present day and more lakes are monitored
- I am compiling the long-term datasets for all Priority Water List lakes in the Twin Cities Metropolitan Area (TCMA) into a single document
- These data will be used to evaluate the grading curve system for lake water quality grades
- This project has built my data management and programming skills, and increased my knowledge of water management in the region

Grade	Percentile	Summertime Means		
		TP (µg/L)	CLA, trichromatic (µg/L)	Secchi Depth (m)
A	< 10	< 23	< 10	> 3.0
B	10 – 30	23 – 32	10 – 20	2.2 – 3.0
C	30 – 70	32 – 68	20 – 48	1.2 – 2.2
D	70 – 90	68 – 152	48 – 77	0.7 – 1.2
F	> 90	>152	> 77	< 0.7





Thank you

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