

# Rochester Water Primer

*An Introduction to our Water Resources*



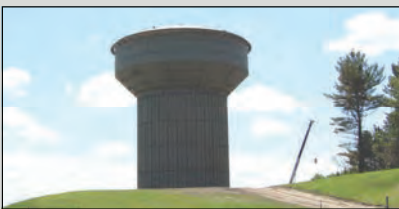
Natural Water Features



Rochester's Water History



Local Geology



Groundwater Resources



Storm Water Management



Wastewater Treatment



Constructed Water Features







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Dear Water Users:

Each day, we turn on our faucets and we have plenty of clean water for drinking, showering, cooking, and cleaning. We flush the toilet and wastewater goes away. When it rains, storm water is carried away in pipes and channels to protect our property. Since 1985, treating dirty storm water has been part of every new development in Rochester. During major storms, several reservoirs store water to prevent flooding. Because these City-provided services are so reliable, they almost seem invisible and we have come to take clean water, in just the right amount, for granted.

Water is the basis for life and it is needed for most of life's activities. It is a limited resource that continuously recycles both locally and globally. Did you know that most of earth's water is salt water? Only about 2.5% is freshwater and about two-thirds of that (or 2% of all water) is unavailable because it is stored as solid ice in glaciers! That means only 1% of all water is available from surface and groundwater sources as fresh, liquid water. Unfortunately, some of that water is polluted to the point where it does not meet water quality standards. To keep the water resources that we need clean and plentiful, each of us needs to make choices that protect the quality and availability of water.

The Rochester Water Primer will help us understand the many ways we use and impact water – right here in Rochester, today and in the future. Learning about water will help us become citizens that take action to protect the City's surface and groundwater resources each and every day.

Welcome to the world of water in Rochester, Minnesota!

Sincerely,

Ardeff Brede,  
Mayor, City of Rochester



Rochester Mayor Ardeff Brede



## Introduction

### What is this document?

A primer, by definition, is a book that covers the basic elements of a subject. This is the “Rochester Water Primer”. It provides **locally relevant information** about most water topics that impact people and the environment in Rochester. It was designed to complement “Minnesota Water Ways – A Minnesota Water Primer and Project WET Companion” ([www.dnr.state.mn.us/projectwet/waterways](http://www.dnr.state.mn.us/projectwet/waterways)).

As you use this reference document, you will learn basic, and sometimes surprising, information about the many facets of water in Rochester. Hopefully, you will be inspired to responsibly use and protect our water resources as a result of your new knowledge. Discover what you can and should be doing to make sure Rochester has clean and plentiful water today and in the future. Join the ranks of Rochester citizens who are “Keeping it Clean” in Rochester.

### Who should use it?

Everyone that uses water in Rochester can benefit from this information, but particular audiences that will be drawn to use it include:

- **teachers**, of all grade levels, needing local water data to incorporate in their existing curricula
- **students** developing environmental service learning, science fair, or extra credit projects
- **scouts** completing requirements for environmental badges or planning community projects
- **volunteers** who want to improve Rochester’s environment
- **parents** that homeschool their children
- **naturalists** and educators at local nature and science centers
- **citizens** that want to know more about storm water management, wastewater treatment, and water supply protection
- **elected officials** that want to make informed decisions about water infrastructure projects
- **water management agency staff** who need Rochester-specific water facts in their work
- **visitors** who are curious about Rochester’s surroundings

### How can I provide feedback?

Water issues and data are not static, they are continuously evolving. This Primer is not all inclusive. Individuals and groups are encouraged to keep this document alive and interesting by making suggestions like these:

- identify factual errors
- fill data gaps
- update data so it is current
- add ideas for classroom activities
- suggest service learning projects for students
- describe what you like or don’t like about it

Suggestions should be shared with Megan Moeller, Rochester Storm Water Educator, at [mmoeller@rochestermn.gov](mailto:mmoeller@rochestermn.gov) for consideration during the preparation of the next edition.



## Rochester's Water Facts

- **Drinking Water:**
  - Municipal Wells – 33
  - Pumping Capacity - 35,882,000 gallons per day
  - Pumping Daily Average (2012) – 13,183,000 gallons per day
  - Highest Use Record– 30,229,000 gallons in one day on August 1, 2007
  - Water Customers – 37,919
  - Water Storage: Capacity 15.2 million gallons
  - Water Storage: Facilities – 20
  - Length of Water Pipes – 573.6 miles
  - Volume of Water Pipes – 9,800,000 gallons
  - Fire Hydrants – 6,799
  - Values – 14,903
  
- **Wastewater Treatment:**
  - Treatment Capacity – 23.85 million gallons per day
    - High Purity Oxygen Plant – 19.1 million gallons per day
    - Aeration Basin Complex Plant – 4.75 million gallons per day
  - Average Treatment - 13 million gallons per day
  - Time to Treat – 24 hours
  - Time to Travel From Downtown to the treatment plant – about 2 hours
  - Length of Sanitary Sewer Pipes – 505.8 miles or 2,670,520 feet
  - Length of Trunk (12" or larger pipe) – 488,320 feet
  - Range of Pipe Diameters – 8 to 84 inches in diameter (4" and 6" older pipes are still in service in a few areas)
  - Energy Production from Biogas – meets 40 % of the treatment plant's requirements, saving about \$500,000 annually
  - Annual Quantity of 6% Biosolids Produced – 12,000,000 gallons or 3000 dry tons
  - Permitted Acreage for Biosolids Dispersal – 6,000 acres
  - Biosolids Dispersal 2012 – 2,000 acres
  - Fertilizer Value of Biosolids - \$300 per acre
  
- **Storm Water:**
  - Catch Basins: 15,692
  - Additional Storm Sewer Structures 14,857
  - Length of Storm Sewer – 417.3 miles or 2,203,263 feet
  - Water quality treatment ponds -77
  - Raingardens - 53



- **Flood Control**

- Number of storage reservoirs – 7
- Length of channel modifications – 6.9 miles
- Length of levees - 1.3 miles
- Level of protection – 160 year storm event for most of the City, 100 year storm event for Cascade Creek

**Rochester's 1929 Water System Versus Today's System:**

	<b>Year 1929</b>	<b>Year 2012</b>
City Population	21,523	108,992 (estimated)
Water Main	38.75 miles	573.6 miles
# of Water Meters	3,650	37,919
Sanitary Sewer	38.19 miles	505.8 miles
Storm Sewer	9.2 miles	417.3 miles



**Table of Contents:**

**Chapter 1 - Rochester's Water Cycle**

**Chapter 2 - Rochester's Water History**

**Chapter 3 - Rochester's Natural Water Features**

**Chapter 4 - Rochester's Constructed Water Bodies**

**Chapter 5 - Rochester's Water Supply**

**Chapter 6 - Rochester's Wastewater Treatment System**

**Chapter 7 - Rochester's Storm Water Management System**

**Chapter 8 - Water Resource Management Agencies**

**Chapter 9 - Rochester's Water Learning Activities**



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