



Water Infrastructure Project Details

Introduction

In 2018 the State adopted new lead and copper drinking water rules that require all water suppliers to replace all lead service lines at public cost. In Pleasant Ridge about 60% of our lead service lines are lead, and we estimate that it will cost about \$8.5 million to replace all of them. At the same time, our water mains are nearly 100 years old, are at the end of their useful life, and require replacement. Replacing our water mains is estimated to cost about \$16.5 million, for a total project cost of \$25 million.

This document provides details about the state of our water system and the infrastructure projects that we will be undertaking over the coming 20-30 years to remove all lead from our water system and reconstruct our aged, end of life water mains.

Details about project cost and funding are provided in the Water Infrastructure Millage Executive Summary fact sheet available online at: www.cityofpleasantrydge.org/water

What Will Be Replaced As Part of the Water Infrastructure Project?

There are two components to this project:

1. Removal of all lead service lines from the water system (33% of total project cost), and
2. Replacement of our 100-year-old cast iron water mains that are at the end of their useful life (66% of total project cost)

Every resident who has a lead service line (the pipe running from the water main into the water meter in your house) will have that removed and replaced at public cost.

Cast Iron Water Mains

The City's existing water mains are cast iron water mains that are nearly 100 years old. The mains are at the end of their expected lifespan. They are also 6 inches in diameter, while the current standard minimum size for a water main is 8 inches in diameter.

Being nearly 100 years old, our cast iron water mains will have internal corrosion which reduces their effective size (see photo at right). The corrosion in the pipes is what causes brown water for a time after a fire hydrant is used – the high volume of water flowing through the main to the hydrant causes some of the corrosion to become dislodged, browning the water.

The old, small, corroded pipes cause reduced water pressure in our system. Our water system is still adequate for normal day to day water supply, but whenever a fire hydrant is opened it causes unacceptable pressure drops throughout the city. This is a result of the reduced capacity in our water mains due to age and corrosion.



Corroded Iron Water Main

Replacing the City's water mains will improve water pressure, fire flow rates, and overall system reliability. Our water distribution system is at its useful life and investing in our water infrastructure will ensure that we have

reliable water service for the next 100 years. If we do not address this issue, it will only increase the cost to repair and replace our water infrastructure on an emergency basis in the future after it begins to fail.

Water System Pressure

The below map shows the current peak-hour static pressure. The areas in red are below 50 PSI and can suffer from peak-hour and fire flow pressure issues.

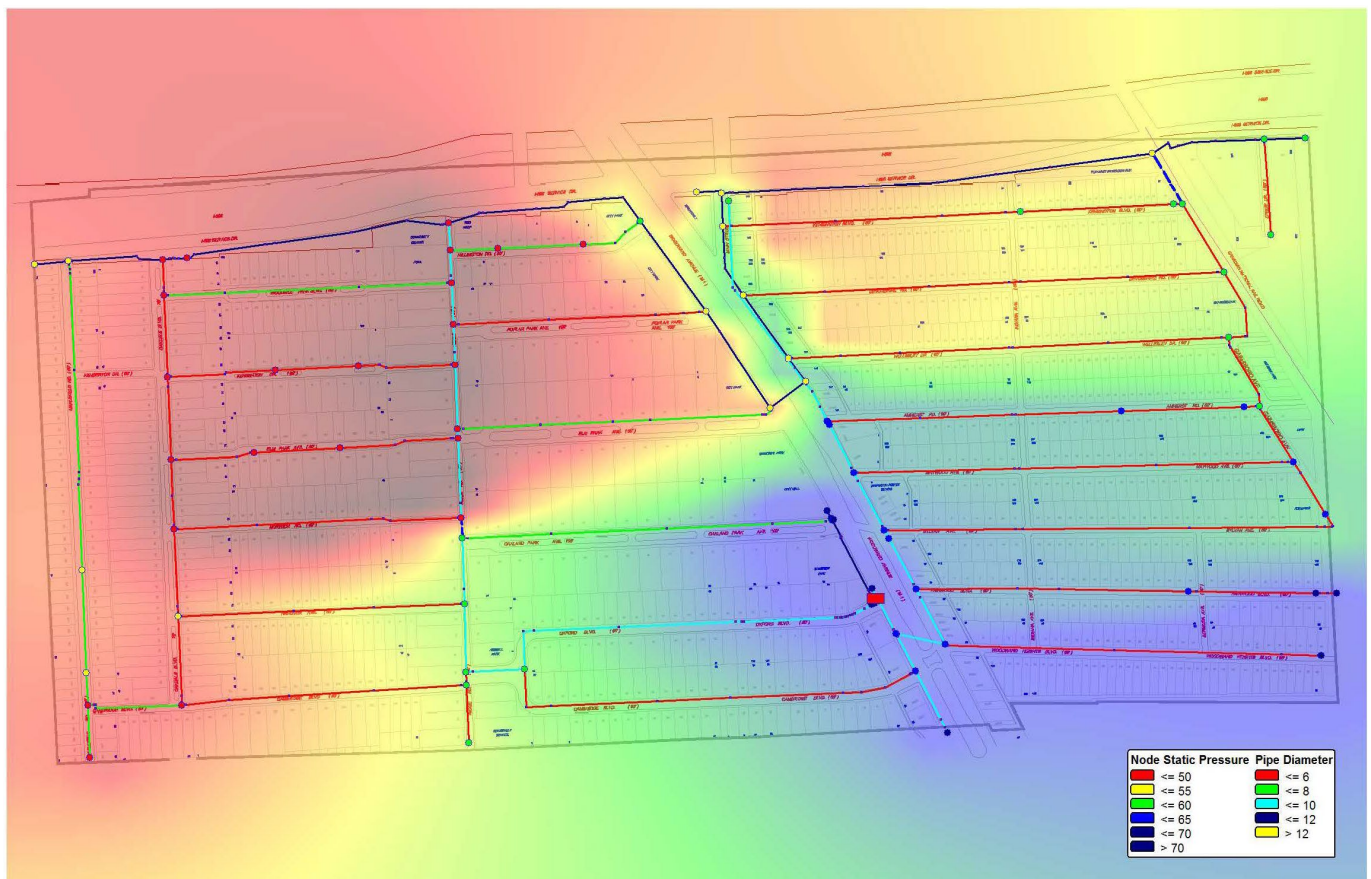
The colored lines on the map show the location and diameter of the existing water mains. The red lines are the original 6-inch water mains. Also of note is the red square at Woodward and Oxford – this is where the water flows into the City’s system from the SOCWA distribution water main. All water in the city flows from that source, so it must travel from that point through all the pipes in between to get to your house.

The map shows that even on streets like Maplefield where the water main has already been replaced, water pressure suffers because the water must travel through old corroded 6-inch water mains to get to Maplefield from the SOCWA supply source. Those old mains act like a bottleneck, limiting water pressure even where there are new mains.

The areas in red on the west side of the city also experience unacceptable pressure drops when fire hydrants are used. There have been instances where homeowners on Elm Park Avenue lost water pressure when a fire hydrant was opened on the east side.

The water infrastructure project will improve water pressure throughout the City by replacing the old 6 inch water mains with new 8 inch mains, and also by constructing new water mains to improve water circulation through the City.

Current Water System Pressure Map



New Water Mains

New water mains will be constructed along the west side of Woodward between Oakland Park and Elm Park, and along Indiana between Woodward Heights and the 696 Service Drive. These new water mains will provide additional loops in the system, helping to distribute water throughout the city more effectively and increasing reliability and water pressure. The new water main on Woodward will provide a more direct route for water to travel from the SOCWA source to the northwest portion of the City, improving water pressure and reliability in that entire area currently in the red zone.

The water mains on Elm Park Boulevard, Maplefield, and Millington have already been replaced with new 8-inch mains. Every other existing water main on the map on the previous page will be replaced as part of this project.

Why Weren't the Water Mains Already Been Replaced When the Streets Were Rebuilt?

One reason that the water mains have not already been replaced is the unique soil that Pleasant Ridge sits on. Most surrounding communities have clay soils, which do not move and cause water main breaks. As a result, nearby communities have had to replace many of their mains already. Pleasant Ridge sits on sandy soil, which is a remnant of a sandbar from the old glacial lake that once covered this area. Sand is less dense than clay and moves in response to underground pressures, meaning that we have almost no water main breaks in Pleasant Ridge.

The street reconstruction projects started nearly 30 years ago when the mains were "only" 70 years old and still had useful life left. Furthermore, replacing the water main could double the cost of a street reconstruction project. While it would be better for us today if the mains had been replaced, the cost to replace them would have required larger property tax or water rate increases in the past to fund those replacements.

When Will the Water Main on My Street Be Replaced?

We have divided the water infrastructure projects into two phases. We have developed a list of projects for the first 8-10 years. As we get to the end of phase one, we will start to prioritize streets for phase two projects.

The planned order of projects for phase one is as follows:

1. 2021 – Replace lead service lines on Elm Park Boulevard, Maplefield & Millington. This helps us meet the state lead service line replacement mandate at a lower cost since we must only replace the private side service lines which does not require excavating the street, and costs much less per house.
2. 2022 – Kensington
3. 2024 – Oakdale
4. 2026 – Wellesley
5. 2028 – New Indiana and Woodward (from Oakland Park to Elm Park) water mains

It will cost about \$1.6 million per street to replace the water mains on Kensington, Oakdale, and Wellesley, while we anticipate about \$850,000 of revenue per year. It will take two years' worth of revenue to pay for the replacement of each of those streets' water mains, which is why there is a project planned every other year for most of this first phase of projects.

How Were the Water Infrastructure Projects Prioritized?

There are three considerations that we have used as we developed our list of streets. Those are:

1. Streets with the highest concentration of lead service lines will be addressed first.
2. Projects which provide a City-wide pressure and reliability benefit will be addressed second.
3. Age and condition of the street

The following chart shows the number of lead service lines on each street.

The list of projects in phase one on the previous page used considerations one and two, which is why Kensington, Wellesley, and Oakdale are the three water mains which will be replaced first. The construction of new mains on Woodward and Indiana provides system-wide benefits, which is why they will be the last project in phase one.

Phase two projects will be prioritized as we get closer to the end of phase one 8 years from now. Our streets will have aged a further 8 years at that time, and some of them will be showing more deterioration than others. If a street is deteriorating and requires repairs, we will combine the street repairs with the water main project to be as efficient as possible with our infrastructure funding. If all else is equal, we will continue to prioritize projects based on the number of lead service lines on the street.

