civil engineering | planning
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**TECHNICAL MEMORANDUM**

Date: September 30, 2020

To: File, Project 19-342

From: Steven P. Soltys, P.E.
Storhaug Engineering
510 East Third Avenue
Spokane, WA 99202

Project: 19-342 Latah Glen Residential Community

Subject: Latah Glen Residential Community Sewer and Water Concept Design

## EXECUTIVE SUMMARY

This technical memorandum describes the design concept to provide the proposed 157-unit residential project with sanitary sewer disposal and water distribution for domestic use and fire protection. Sewer and water mains will be constructed within the private road system and stubbed to the individual lease areas throughout the project. The connection point for both sewer and water is at the entry to the project on S. Inland Empire Way. The designs discussed here are conceptual, as we do not yet have a design-level topographic survey available for the project.

## SANITARY SEWER

The point of connection for the sanitary sewer will be a new manhole built over the existing 27" PVC sewer line at the northern boundary of the site. 8-inch PVC sewer mains are proposed to be construction throughout the site to carry the wastewater to the point of connection. The system will be designed per City of Spokane Design Standards, and all lease spaces are intended to be served by gravity.

**WATER DISTRIBUTION**

The point of connection for the project is the 8-inch Ductile Iron water main at the northern boundary of the site. The distribution to the individual lease spaces will take place behind a meter vault with a 10-inch meter and double check valve assembly. Although the water system will be private, it will be designed and constructed per City of Spokane standards. Per the City of Spokane, the static pressure at the point of connection is approximately 126 psi. Individual pressure reducing valves will be needed for the water services at the lower elevations of the site. The static pressure at the highest water service proposed on the site is approximately 63 psi.

For fire protection at the site, we calculated how the system would react to a fire flow applied to the highest and most remote fire hydrant (test hydrant). From the existing fire hydrant on Inland Empire Way to the test hydrant, there is approximately 132 feet of elevation change. Friction losses were calculated as follows for a 1000 gpm fire flow at the test hydrant:

837 LF of 10" PVC – $H_f$ = 3.96 ft ( 1.7 psi) @ 1000 gpm

2259 LF of 8" PVC – $H_f$ = 8.78 ft ( 3.8 psi) @ 500 gpm (multiple feeds, longest pipe length used)

728 LF of 8" PVC – $H_f$ = 10.21 ft (4.4 psi) @ 1000 gpm

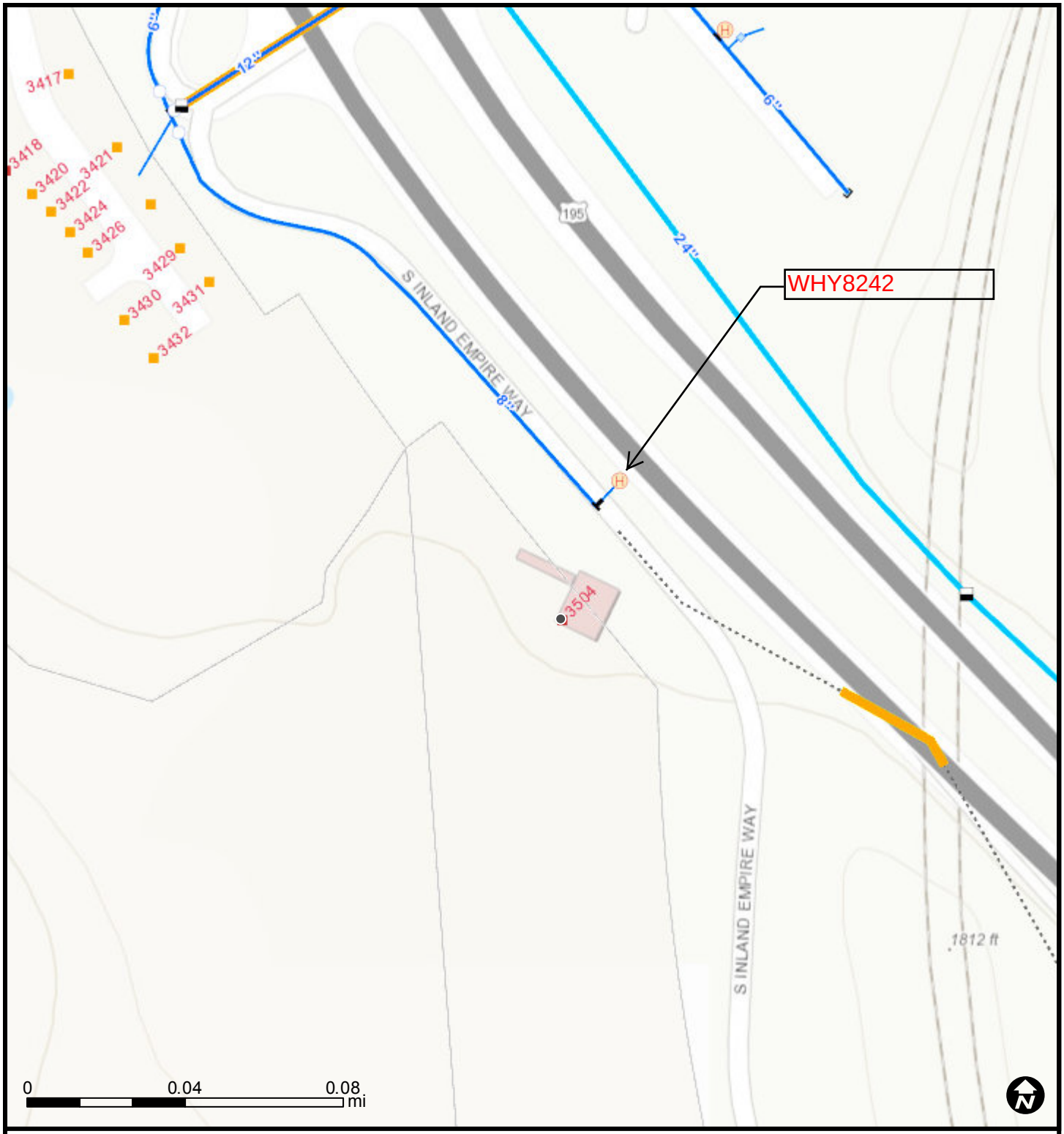
Pressure loss through meter and DCVA ~ 5 psi each = 23 ft (10 psi)

Total $H_f$ = 46 ft (19.9 psi)

Static loss = 132 ft (57.2 psi)

**Residual pressure at test hydrant = 48.9 psi @ 1000 gpm**

# 3504 S Inland Empire Way




**Legend**

- City of Spokane Boundary
- Curb Stop Valve

**Control Valve**

- AirControl
- Altitude
- Blowoff
- PressureRelief
- SimpleCheck

**Hydrant Foot Valve**

- Ball Valve
- Butterfly Valve
- Gate Valve

**System Valve**

- Ball Valve
- Butterfly Valve
- Gate Valve

**Valve Operation**

- Temporary Open Valve
- Normally Closed Valve
- Temporary Closed Valve

**System Change**

- System Change
- Pressure Reducing Valve

**City of Spokane GIS**



9/22/2020

# Hydrant Curve for Junction WHY8242 at 00:00 hrs