

Determining High and Low Domestic Pressures

The following instructions will enable an engineer to obtain a **general idea** if a particular site will have adequate fireflow pressures to serve proposed development. Only a detailed hydraulic analysis performed by the WSSC Planning Unit (of the fire flow pressures and system enhancements) should be used as the basis for final design plans.

Determine the Elevation: If no other source is available and you have approved access, go to **WERI**ⁱ. Locate the property. On the left side of the screen, select **Contour Lines**. Point the arrow cursor to the contour line and the elevation of the contour line will appear as a flyout. Point to multiple lines to determine the highest and lowest elevation on the property.

Determine the High and Low Hydraulic Grade:

1. Go to **wsscwater.com**
2. Select **WORK WITH US**
3. Select **Design and Construction**
4. Select **Planning (Phase 1) Forms**
5. Under Hydraulic Forms, select **Hydraulic Grades**.
6. A list will appear that contains hydraulic grades.
7. The document is a "PDF" file. Click on the magnify icon, and a search column appears on the left.
8. Enter the 200-ft sheet that the property is located on. Make a note of the high hydraulic grade (HHG) and the low hydraulic grade (LHG) that corresponds to the 200-ft sheet.

Some 200-foot sheets have more than one pressure zone, and if that is the case, go to **WERI** and turn on the **Pressure Zone** layer on the left side of the screen, and the pressure zone boundary will appear. Determine which pressure zone the property is located in. Make sure the **Mini-Basin** layer is turned off so there is no confusion between sewer mini-basins and water pressure zones.

Calculate High and Low Domestic Pressure:

High Domestic Pressure - Take the HHG and subtract the lowest elevation. Multiply the result by 0.433. The result will be the High Domestic Pressure in psi (pounds per square inch).

High Domestic Pressure (in psi) = (HHG - lowest elevation) x 0.433

Low Domestic Pressure - Take the LHG and subtract the highest elevation. Multiply the result by 0.433. The result will be the Low Domestic Pressure in psi (pounds per square inch).

$$\text{Low Domestic Pressure (in psi)} = (\text{LHG} - \text{highest elevation}) \times 0.433$$

Interpreting the Results:

Using the low and high domestic pressures provides a range of expected pressures that can be expected during normal operating conditions. Calculations using only the low and high domestic pressures **do not provide expected pressures during a fire flow situation**. To obtain fire flow pressures, WSSC calculates the pressures based on the low hydraulic grade and fireflow conditions at the site. Specifically, the sizes and ages of the pipes that provide service to the property from the source (an elevated tank, water pumping station, or large diameter water transmission main) determine the pressures that can be expected during a fire flow situation. Since fire flows are so large, the pressure is extremely sensitive to losses if the mains serving an area are either small or old.

To get a detailed analysis of the fire flow pressures and system enhancements that would be required for a particular site, it is necessary for WSSC to model the water system and perform hydraulic calculations to determine the pressures.

However, to get a rough idea if the site will have adequate fireflow pressures, the low domestic pressure and the water mains that serve the property may be examined.

1. If there are many small (less than 10-inches), old (older than 1965) pipes in the vicinity of the property, then it would be advisable to submit a Hydraulic Planning Analysis to WSSC to determine the adequacy of the water system to serve the property.
2. If low pressure is greater than 50 psi, and the mains serving the property are 10-inches and above and newer than 1965, then it is likely that there will be adequate fireflow pressure.

Please remember that the above information represents general guidelines. A Hydraulic Planning Analysisⁱⁱ to determine the adequacy of the water system to serve the property.

ⁱ To obtain information regarding obtaining access to **WERI**, go to **wsscwater.com**, search **WERI** (WSSC Engineering Record & Information).

ⁱⁱ Hydraulic Planning Analysis submittal forms and fee information can be found on the WSSC website, www.wsscwater.com.