



Utilities Department – Utilities Engineering Services Division

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NETWORK HYDRAULIC ANALYSIS GUIDELINES

As part of the City of North Las Vegas' (CNLV) project review and approval process, unless otherwise directed by staff, all development submittals to the Utilities Department shall be accompanied by a water distribution hydraulic analysis. The analysis shall be prepared in accordance with the "Uniform Design and Construction Standards for Potable Water Systems (UDACS), 3rd Edition, 2010, Section 2.03.

Water mains must provide adequate maximum day, peak hour, and maximum day plus fire flow pressures. If the property is to be developed in phases, it is necessary to demonstrate that each phase of construction meets the minimum pressure requirements; otherwise additional looping and/or increased pipe sizes may be required. Other elements of the analysis may need to address demands which include but not limited to present and future, population projections, industrial expansion, and area population densities.

In addition to the requirements of UDACS Section 2.03, the network hydraulic analysis submittal shall include:

1. Cover sheet with project name, APN number, date of analysis, and professional engineer stamp.
2. Project information including type of development, number of acres, number of units, staging or phasing of development, fire flow requirements, and any other pertinent information.
3. The map or schematic drawing of the project shall show demands and sources with differentiation between existing and proposed water lines.
4. Outline all assumptions and provide calculations for existing static water pressure and a summary of on-site and off-site demands for data input sheets included in the analysis.
5. Losses across meters and/or backflow assemblies are not to be included in the analysis. Account for these losses in the conclusion and any summary tables. Submit manufacture data if requesting losses not identify in UDACS.
6. Provide summary tables of the analysis results showing resulting minimum and maximum pressures for maximum day, peak hour, and maximum day plus fire.
7. Provide statements with conclusions and any recommended actions.

General Information

The table below may be used to estimate the demands for various types of development:

CITY OF NORTH LAS VEGAS
Average Water Consumption of Various Types of Development
(Reproduced from Las Vegas Valley Water District data dated January 20, 1995)

FLOW RATES

Customer Class/Description	Average Day		Maximum Day		Peak Hour	
	gpm/unit	gpm/acre	gpm/unit	gpm/acre	gpm/unit	gpm/acre
Single Family/Residential	0.52	2.3	1.18	5.2	1.81	8.0
Residential Duplex & Triplex	0.52	2.3	1.18	5.2	1.81	8.0
Apts, Condos, Townhouses	0.21	5.7	.53	14.0	0.63	16.8
Mobile Home Parks	0.29	2.4	n/a	3.7	n/a	5.7
Hotels	n/a	n/a	0.36	n/a	0.45	n/a
Golf Course, Park, Open Spc	n/a	4.4	n/a	8.4	n/a	8.4
Industrial Park (light indust.)	n/a	1.1	n/a	1.5	n/a	2.3
Commercial	n/a	2.1	n/a	3.0	n/a	4.6
Schools	n/a	1.7	n/a	3.5	n/a	5.4

When considering fire flow in the network hydraulic analysis, use the hydrant located at the highest point in the development and/or the last hydrant on a dead-end main. The hydrant must be located at a junction node.

For all commercial developments, the fire flow demand used per fire hydrant on site shall be

1000 gpm maximum and 500 gpm minimum. This includes the use of any existing or proposed public hydrants.

For residential developments a demand of 1500 gpm at a single hydrant is acceptable.

The form for requesting a source HGL can be obtained from the CNLV website using the following link:

[Hydraulic Grade Line Request Form](#)

Submit copies of the HGL information obtained from CNLV in the analysis.

Anticipated fire flow requirements should be verified with CNLV Fire Department, (702) 633-2615, prior to submittal of the analysis.

For all commercial buildings to have sprinklers for fire protection, a sprinkle demand is required and shall be applied at the building. The sprinkler demand to be used in the analyses shall be as follows:

1. For buildings less than (<) 5,000 square feet, a demand of 250 gpm shall apply.
2. For buildings equal or greater than (>) 5,000 square feet, a demand of 500 gpm shall apply.

For all commercial developments, installation of a RPPA (domestic/irrigation) or RPDA (fire) is required. For the current approved RPPA & RPDA listings, please refer to the Approved Materials List (AML). AML is available online at the following address:

<http://www.cityofnorthlasvegas.com/docs/PublicWorks/ApprovedMaterialsListing.pdf>