



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 Water Distribution Systems (UDACS), 2nd Edition, 2003, 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 present and future demands, population projections, and industrial expansion, 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, and date of analysis.
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.
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 in roadway easements.

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 address:

<http://www.cityofnorthlasvegas.com/Departments/Utilities/PDFs/EngineeringServices/FormHydraulicGradeLineRequest.pdf>

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

Anticipated fire flow requirements should be verified with CNLV Fire Department, (702) 633-1107, prior to submittal of the analysis. (Attach CNLV Fire Department verification and list who verified the established fire flows.)