



## **Guidelines For The Preparation Of The Hydraulic Analysis Reports LVVWD Planning Division**

### **General**

1. Provide the name of the developer, developer contact person's name, address, telephone, and fax numbers, on the cover of the report.
2. Submit two (2) copies of complete hydraulic analyses signed and sealed by a professional civil engineer licensed in the State of Nevada.
3. Number each page of the hydraulic analyses to be submitted.
4. Provide name and version of software used for the hydraulic analyses.

### **Project Description**

5. Provide a written description of the type of project, location, and existing facilities.
6. Include a site map showing project boundaries.
7. Provide development information including gross acreage, land use, number of units, anticipated fire flow requirements, development schedule and phasing requirements.
8. If the project is part of an oversizing agreement, indicate so in the report, and use the developer-required pipeline diameter when modeling the project.
9. Provide a node map clearly delineating the pipeline alignments, layout and names of streets/roadways in which the water lines will be installed, the pipe and node numbers used in the analyses and fire hydrant locations, if known.
10. The text and node maps shall use a minimum font size of 10 points.

### **Source HGL and Demand Calculations**

11. Clearly show the source node provided by the District and use the District-issued HGLs for that node in the analyses. Enclose a copy of the letter sent by the District issuing these HGLs.
12. Provide type and location of meters, backflow assemblies, etc. and account for the associated losses.
13. Calculate on-site and off-site demands using the District's Table 1 demand factors for gpm/acre and gpm/unit. Use the factor that produces the greater (conservative) total demand for each development. Show calculations.



### **Input Data Tables**

14. Provide input data tables for all pipes modeled. Pipe data tables shall include, at a minimum, pipe numbers as shown on the node map, beginning and ending nodes, lengths in feet, diameters in inches, coefficient of friction, and other pertinent information.
15. Provide input data tables for all nodes modeled. Junction node data tables shall, at a minimum, include node numbers as shown on the node map, elevation in feet for all nodes using the NAVD 88 datum, node demand in gpm, connecting pipes, and other pertinent information. All elevations shall be based on finish floor where applicable.

### **Analysis**

16. Separate analyses for Maximum Day, Maximum Day Plus Fireflow, and Peak Hour conditions are required for each phase of the development, as well as for the entire project. In the analyses for Maximum Day Plus Fireflow conditions, the worst-case scenario must be considered.
17. Explain any assumptions made as part of conducting the analyses; provide any comments that may ease and expedite the review of the analyses.

### **Output Data Tables**

18. Output results for pipes shall include, at a minimum, flow rate in gpm, flow velocity in ft/sec., head loss in feet, and other pertinent information for each pipe.
19. Output results for nodes shall include, at a minimum, hydraulic grade in feet, node pressure in psi, elevation, demand, and other pertinent information for each node.
20. Provide a summary table, for each phase of development, showing the minimum and maximum residual pressures for each condition, and minimum and maximum static pressures.

### **Miscellaneous**

21. Refer to the *Uniform Design and Construction Standards for Water Distribution Systems* (UDACS), 2<sup>nd</sup> Edition, for design criteria. The District reserves the right to request additional information from the developer, as well as the developer's engineer. The District will endeavor to provide a timely review for all analyses submitted. Any missing information will delay the review and approval of the analyses.