Chapter One
EXECUTIVE SUMMARY

1.1 LOCATION

The City of Newberg is located in eastern Yamhill County, Oregon, along U.S. Highway 99. The City is approximately 13 miles northeast of McMinnville, the County seat, and approximately 23 miles southwest of Portland (Figure 3-1).

Three major creeks drain the study area including Chehalem Creek, Hess Creek and Spring Brook. The watersheds for these creeks extend beyond the boundaries of the Urban Growth Boundary (UGB). Hence, the hydrologic study area of 3,984 acres extends beyond the boundaries of the UGB to include watershed uplands that drain into the City (Figure 3-2). The drainage system of the City of Newberg consists of open channels, with culverts and underground storm sewer in developed portions of the City (Figure 4-1).

1.2 PROJECT OBJECTIVES

Objectives for this project include:

- Identify projects to solve existing problems of flooding, ponding, and inadequate storm drainage throughout the City of Newberg.
- Guide extension of the storm drainage system to serve future growth.
- Estimate costs and relative priority for recommended improvement projects.
- Identify stormwater quality and detention policy issues.

1.3 SCOPE OF WORK

The focus of the study effort was on those areas of the Chehalem Creek, Hess Creek, and Spring Brook watersheds that are located within the City of Newberg's UGB. The project scope of work calls for evaluating the hydrology, conveyance systems, and hydraulics within these watersheds to determine needed structural and nonstructural controls for safely conveying stormwater runoff.

The project includes the following elements:

- Conduct an assessment of known drainage and erosion problems through working meetings with public works and maintenance staff.
- Assess the current status of the City's mapping and facilities inventory for use in developing drainage system models.
- Work with City GIS staff to research and fill data gaps in the City's storm drainage system mapping and facilities inventory.

- Develop computer models for hydrologic and hydraulic analysis for each of the three watersheds within the City's UGB.

- Determine existing stormwater system capacity and future capacity requirements under zoned land use conditions.

- Estimate CIP costs and develop a phasing plan to assist the City with implementation.

- Review water quality issues as they relate to the Endangered Species Act, Total Maximum Daily Loads, and NPDES Phase II.

- Review the issues related to development of a stormwater detention ordinance.

- Document the analysis and CIP plan in a drainage master plan report.

1.4 DRAINAGE SYSTEM ANALYSIS RESULTS

Hydrologic/hydraulic computer models were created for the three major drainage basins using the XP-SWMM model. The Runoff Module calculated runoff hydrographs from each subcatchment based on the watershed characteristics. The Extran Module routed flows through the storm sewer infrastructure.

Hydrologic modeling runs were performed on each basin for both existing and future land use conditions during 2-, 5-, 10-, 25-, and 100- year return frequency 24-hour duration design storm events, for a total of ten runs for each basin. Hydraulic modeling was performed on each basin for the 10-year, 24-hour design storm to assess the performance of the current storm drainage system under existing and future hydrologic conditions.

The results of the hydrologic and hydraulic analyses are presented in Appendices C and D. The hydraulic capacity of 25 percent of the existing major pipes or culverts is insufficient to convey the runoff generated during a 10-year, 24-hour storm event under future land use conditions as shown in Appendix D.

Appendix E presents the recommended pipe diameters that will convey the 10-year, 24-hour storm without surcharging or flooding of the conveyance system. As a check, the recommended pipe sizes were modeled hydraulically to ensure that the upgraded system would not flood during a 25-year, 24-hour storm event, although surcharge may occur during the larger 25-year storm.

1.5 CAPITAL IMPROVEMENT PROJECT RECOMMENDATIONS

As summarized in Table 5-1, a total of 50 projects located throughout the City of Newberg are included in the Capital Improvement Plan. The total estimated cost for completing these construction projects is about $7.3 million in Year 2001 dollars. The CIP locations are shown on the maps in Appendix F.

Implementation of the recommended CIP program is proposed to occur over a 20-year period. Each of the projects was assigned an implementation priority as outlined in Section 5.2. The priority ranking roughly represents the 5-year period in which the project is recommended for construction. However, it is recommended that the City review the CIP plan on an annual basis to determine which projects to implement each year.

1.6 STORMWATER QUALITY AND DETENTION POLICY ISSUES

As a result of steelhead and chinook salmon being listed as a threatened species in the Willamette River under the Endangered Species Act, the City of Newberg needs to evaluate their stormwater practices to determine whether the City has the potential to affect the listed species. In addition, the Willamette Basin TMDLs of temperature, bacteria, mercury, and fish skeletal deformities may affect the City of Newberg. DEQ is expected to complete its report by the end of 2003. The City of Newberg is on the list of cities to be evaluated for inclusion in the NPDES Phase II. If Newberg is included in Phase II, it will be required to develop, implement, and enforce a stormwater management program.

Since there are a multitude of policy issues that should be considered prior to developing an ordinance relating to stormwater quality and detention, it is recommended that the City of Newberg hold one or more meetings to discuss the issues. The costs and benefits must be weighed and a policy format must be chosen that will meet the needs of Newberg. A logical first meeting would be between the City's public works and engineering staff and its consulting engineers. Such a meeting can determine if the City of Newberg will have stormwater quality and/or detention requirements and provide a rough outline of the significant elements of the City's policy. Additional meetings may be required to develop the initial policy, notify the public regarding the proposed regulations, and obtain public input to ensure community endorsement.