CHAPTER 7.
DRAINAGE AND FLOODING PROBLEM ANALYSIS

7.1 APPROACH TO IDENTIFYING FLOODING/DRAINAGE PROBLEMS

Flooding, drainage, and erosion problems in the Patterson Creek Basin were identified as follows:

- The basin steward and other King County Department of Natural Resources and Parks staff identified problem areas based on their knowledge.
- Drainage complaints from the basin included in the County's drainage complaint log were reviewed.
- King County Road Maintenance staff identified problem areas based on their knowledge.
- Other agencies (City of Sammamish, Washington State Department of Transportation and the Washington State Department of Fish and Wildlife) identified problem areas based on their knowledge.
- King County's existing Capital Improvement Program (CIP) was reviewed for currently scheduled projects.

Following the collection of known drainage and erosion problems, two field reconnaissance trips were made to validate the problems and consider possible solutions. These field visits were limited due to the denial of access to two of the drainage problem sites on private properties. Information regarding drainage problems on these properties is based on information, data, and photographs provided by the County. The HSPF hydrology model was used to help estimate flows at some of the problem areas.

The King County Drainage Complaint Log includes over 150 complaints recorded within the Patterson Creek Basin since 1990; and scores of additional problems were identified from the other sources. Appendix E provides a complete list of the initially identified problems. After initial review of these, the following types of problems were eliminated from consideration for improvement actions:

- Private issues that do not present a life safety or habitat risk
- Nuisance flooding due to lack of maintenance of driveway culverts
- Problems that have already been corrected

The remaining drainage and flooding problems, which can be categorized as follows:

- Channel incision in the steep canyon reaches
- Insufficient capacity under road crossings
- Mainstem flooding

7.2 IDENTIFYING THE EXISTING DRAINAGE NETWORK

No map has been created of the existing manmade drainage network in unincorporated King County. However, the Washington State Department of Fish and Wildlife SSHEAR (Salmon Screening, Habitat Enhancement, and Restoration Section) fish passage inventory provides a list of culverts and fishways in the basin. The critical culverts from this study were investigated during the field reconnaissance, along with culverts identified from the King County complaint log.

Table 7.1 shown below lists the drainage and flooding problems identified during this analysis.

TABLE 7-1.
DRAINAGE PROBLEMS IDENTIFIED FOR POTENTIAL IMPROVEMENT PROJECTS

Reference Number	Name	Category
PC-1	Patterson Creek Access Issues	Flooding
PC-2	Flooding Near Endeavour School and Issaquah Fall City Road	Flooding
PC-3	Hirsovescu / Dry Creek Fish Passage	Habitat, Erosion
PC-4	Pond Berm on Canyon Creek Tributary (County Complaint No. 17S)	Habitat, Flooding, Erosion
PC-8	Erosion Along Dry Cr. and Ames Lake Rd.	Erosion
PC-9	Patterson Creek at SR 202 (County Complaint No. 22S)	Flooding, Habitat
PC-10	NE 67th Place Culvert	Habitat, Flooding
PC-13	4-by-2-Foot Culvert Under SR 202	Flooding
PC-14	Ponding on Union Hill Road	Flooding
PC-15	Patterson Tributary #0377 (County Complaint No. 13S)-	Habitat, Erosion
PC-18	Monte Lindsey Dam (County Complaint No. 05S)	Habitat, Flooding, Erosion

7.3 CONCLUSIONS AND RECOMMENDATIONS

The Patterson Creek Basin is largely rural except for the southwestern portion of Subbasin 2, the northwestern portion of Subbasin 3 and the northern portions of Subbasin 1. Most of the drainage system in unincorporated King County consists of open channel with roadway culverts. Eleven problems associated with flooding or erosion were identified for potential improvement projects. Some of the problems are associated with both flooding and erosion, and some also involve risks to habitat.

The upper reaches of Patterson Creek (Subbasin 1) and Dry Creek (Subbasin 2) contain several beaver dams, which fail occasionally, flooding the downstream areas and eroding stream banks. These upper reaches also tend to have steep gradients and high stream velocities. As these areas experience increased flows due to development, they tend to

experience accelerated erosion and channel incision. Flows in Subbasins 1 and 2a are expected to increase with future development, based on change in EIA (see Chapter 3).

Lower basin flooding problems from the confluence with the Snoqualmie River to RM 8.5 include blocked access to driveways, which are within the floodplain of Patterson Creek, and localized ponding on public roadways. Additional flooding and erosion problem areas in the lower basin are located in Subbasin 3, where two privately installed dams have the potential to fail. One is on the northwest side of Duthie Hill Road between 270th Avenue SE and 268th Place SE; the other is at 28305 Issaquah Fall City Road.

A list of potential CIP projects has been created to address the identified flooding and erosion problems. In addition to implementing the projects, it is recommended that more stringent development standards be implemented, including modification of current agricultural practices and securing adequate buffer strips adjacent to the stream banks to prevent additional flooding and erosion problems.