

CHAPTER 1. INTRODUCTION

The Yakima River and its watershed are valuable resources for Yakima County residents. The importance of this water resource was described as follows in the *Yakima Valley Visioning Reports* (Citizens of the Greater Yakima Area 1992; Citizens of the Lower Yakima Valley 1992):

The air we breath and water we drink are of their greatest value in their purest form, and the open lands and Yakima River corridor which exist in their natural state are essential resources.

Uses are managed in a manner that is institutionally and environmentally acceptable to meet the ever increasing demand for this resource. The community appreciates the special bond between itself and water.

Water flows into and out of this community, thus linking a whole region to our collective activity.

The importance of water to this community provides the central focus of care and concern with all of the community's diverse activity.

These statements reflect the regional concern of County residents for the Yakima River watershed and emphasize the need to plan for its use and protection into the future. The County is addressing this need by preparing a Comprehensive Flood Hazard Management Plan (CFHMP). Developed by the County and its consulting firm, KCM, Inc., with input from the public and all affected public agencies, this CFHMP presents a balanced approach to flood damage protection, resource protection, environmental enhancement, and land development.

BACKGROUND

Yakima County, east of the Cascade Mountains in central Washington and encompassing approximately 4,400 square miles (Figure 1-1), is the state's second largest county in land area, and is bordered by Kittitas, Klickitat, Skamania, Lewis, Pierce, and Benton Counties. This CFHMP focuses on the floodplain of the mainstem of the Yakima River from the mouth of Yakima Canyon to Union Gap, and on the floodplain of the Naches River from its mouth to Twin Bridges (Figure 1-2). This study area is the primary urban area within the County, and therefore has the greatest potential for flood damage.

Flooding Issues in Study Area

Flooding in the study area normally occurs in winter or spring. Spring floods occur when warm weather and rainstorms accelerate snow melt and runoff. Winter floods, which are more frequent and of larger magnitude, occur when rainfall on accumulated snow and warm winds produce large volumes of runoff from snowmelt and rain.

The largest recent flood in the study area occurred on February 9, 1996, with damage amounting to several million dollars in the study area and over \$17.7 million in Yakima County as a whole (Lacey, E., 1 March 1996, personal communication). Numerous other historical flood events resulted in significant damage, and are documented in this report. A review of historical flood events identified recurring flood issues, which are detailed in Chapter 8.

Principles Of Flood Hazard Management

The terms *flood hazard management*, *flood control*, *floodplain management*, and *stormwater management* are commonly used to describe ways to minimize or prevent flood damages:

- *Flood control* usually entails structural techniques for separating people and property from damaging floodwaters. Nonstructural techniques, such as land use regulations and growth management, have typically been excluded from flood control management.
- *Floodplain management* involves resource protection, environmental enhancement, flood damage protection, and regulation of land use within the floodplain.
- *Stormwater management* focuses on the quality, quantity, and controlled conveyance of surface runoff from urban areas during precipitation events.
- *Flood hazard management* encompasses flood control management and floodplain management techniques, including structural and nonstructural approaches affecting the river, the floodplain, and the watershed beyond.

Flood hazard management, to be successful, must take into account the entire river system. Any activity in a river or its watershed can change the nature of the river's flooding. Human intervention can exacerbate or reduce the extent of flooding and its effects on human health, property, and the environment. These effects must be fully understood before any flood control actions are taken.

Authority and Scope for Yakima County CFHMP

On January 10, 1995, Yakima County contracted KCM, Inc., to assist in the development of a CFHMP for the upper Yakima River near Yakima, Washington. The final CFHMP report is scheduled to be approved by the Washington State Department of Ecology (Ecology) and adopted by Yakima County prior to June 1997.

The material developed in Phase I, including the first six chapters of this report, was combined with additional study findings, analysis of flood mitigation alternatives, and recommendations to make up the final CFHMP. Phase I of the CFHMP study established a citizen and agency participation process, initiated the plan's public policy framework, and provided the technical information necessary to make informed decisions during subsequent evaluation of flood hazard reduction alternatives.

Funding for the Yakima County CFHMP was provided under an agreement between Ecology and Yakima County, with Ecology contributing 75 percent of the project costs through the state's Flood Control Assistance Account Program (FCAAP) and Yakima County contributing the remainder from County funds. Completion of the CFHMP makes the County eligible for State funds for emergency and non-emergency activities that reduce property loss and threats to human health from flooding.

PLAN DEVELOPMENT PROCESS

Figure 1-3 outlines the CFHMP process. The planning process conforms with the Revised Code of Washington (RCW) Chapter 86.26: State Participation in Flood Control Maintenance, and Washington Administrative Code (WAC) Chapter 173-145: Administration of the Flood Control Assistance Account Program. Phase I of the CFHMP study addressed the first five steps of the planning process:

- Establish a citizen and agency participation process
- Set goals and objectives for flood hazard management
- Develop an inventory and analysis of physical conditions
- Determine the need for flood hazard management measures
- Review existing regulations that impact flood hazard management.

Phase II of the CFHMP study concentrated on the remaining planning steps:

- Identify alternative flood hazard management measures
- Evaluate alternative measures
- Hold Advisory Committee meetings for evaluation of alternatives
- Develop a flood hazard management strategy
- Complete the draft CFHMP and submit to Ecology
- Submit the final CFHMP to Ecology
- Hold a public hearing and adopt the CFHMP
- Notify Ecology the final plan is adopted.

Involving the Public and Affected Agencies

Public and inter-agency involvement is critical to the success of a CFHMP for the following reasons (Ecology 1991):

- Proposed measures will affect local property owners and their support will be needed to take action.
- WAC 173-145-070 calls for review of all FCAAP projects by state agencies including the Washington Department of Fish and Wildlife (WDFW) and the Washington Department of Natural Resources (DNR), as well as by affected Native American tribes and other public entities; all of these parties should be involved in formulating the plan.
- Special interest groups, such as recreation clubs, real estate development interests, environmental groups, and business organizations, may have an interest in the plan, and their objectives should be considered.
- Since watersheds typically cross jurisdictional lines, representatives from neighboring local governments should be incorporated into the process
- As the plan must be adopted by the local government, it is important to build support among the local constituency.
- The planning process offers an opportunity to educate the public on the issues, opportunities, and public responsibilities of flood hazard management.

Public and agency involvement was achieved by forming an Advisory Committee whose members—representatives of public and private organizations and agency representatives—provided input through meetings and document review. Additional agency representatives were contacted as needed throughout the plan preparation, and contact was maintained with Ecology to ensure compliance with FCAAP requirements. Table 1-1 lists Advisory Committee members and their affiliations. Meeting dates and topics discussed are presented in Table 1-2.

TABLE 1-1.
YAKIMA COUNTY CFHMP ADVISORY COMMITTEE

Committee Member	Affiliation
Mr. Dan Arnett	Yakima Chamber of Commerce
Mr. David Carlton, P.E. (County staff)	KCM, Inc.
Mr. Guy Couture	Washington State Department of Transportation
Mr. Tom Durant	Yakima County Planning Department
Mr. Steve Erickson	Yakima County Planning Department
Ms. Katherine H. Gempler	League of Women Voters
Mr. Perry Harvester	Washington State Department of Fish and Wildlife
Mr. Jess Heaverlo	Diking Improvement District No. 1
Mr. Daniel Hesse, P.E., Director	Yakima County Department of Public Works
Mr. William Jensen	Diking Improvement District No. 1
Mr. Wayne Kalbfleisch, Vice President	Central Pre-Mix
Mr. Jeff Louman, P.E. (County staff)	Huibregtse, Louman Associates, Inc.
Mr. Larry Meeks	Diking Improvement District No. 1
Mr. Glenn Miller	Trout Unlimited
Mr. Robert Molacek (County staff)	KCM, Inc.
Mr. Darrell Monroe	Washington State Department of Ecology
Mr. Scott Nicolai, Assistant Environmental Manager	Yakama Nation Fisheries
Mr. Dan Olsen	Mayor, City of Union Gap
Mr. Bill Rathbone	City of Union Gap
Mr. Roy A. Simonson, P.E.	Yakima County Department of Public Works
Mr. Dan Valoff	City of Yakima Planning Department
Ms. Cec Vogt, Executive Director	Yakima Greenway Foundation

TABLE 1-2.
SUMMARY OF ADVISORY COMMITTEE MEETINGS

Meeting Date	Topic
May 17, 1995	Overview of CFHMP planning process and review of flooding issues
July 12, 1995	Vision statement, goals and objectives, Existing Conditions report review
August 30, 1995	Finalize CFHMP goals and objectives, refine identified flooding issues
October 18, 1995	Discuss land use in floodplain and review land use and regulatory flood hazard reduction strategies
January 24, 1996	Review ranking of land use and regulatory flood hazard reduction alternatives, discuss alternatives analysis for additional flood protection below SR 24
March 27, 1996	Rank flood hazard reduction alternatives to address identified flooding issues, review flooding issues arising from February 1996 flood
July 17, 1996	Rank flood hazard reduction alternatives for remaining flooding issues, establish priorities for recommended actions

August 14, 1997 CFHMP review

Organizations declining to participate on the Advisory Committee included the following:

- Association of Realtors
- Diking Improvement District #3
- New Vision
- Audubon Society (attended meeting of August 14, 1997).

Defining Goals and Objectives

Defining goals and objectives provided a framework for carrying out the CFHMP. Goals reflect the broadest expression of a community's desires in preparing the plan; objectives target specific results that fulfill the intent of the goals.

The following mission statement describes the overall goal of the Upper Yakima River CFHMP:

The CFHMP is a systematic process to identify and prioritize areas and property susceptible to flood damages, select alternatives to solve identified flood problems, and implement solutions.

Specific short- and long-term goals and objectives are presented in Table 1-3. Short-term goals and objectives include activities and actions to be conducted prior to or immediately after approval of the CFHMP (i.e., during 1997). Long-term goals and objectives include all subsequent activities and actions (after 1997).

Collecting Data

Background information for the CFHMP was compiled from sources including the County, state and federal agencies, and Advisory Committee members. Data collected to define the study areas physical, social, and historical characteristics included the following:

- Land use and topographic information from County Geographic Information System (GIS) maps
- Information describing the physical setting, including climate, soil, vegetation, hydrology, water quality, fisheries, and wildlife
- Population data
- The findings of past flood-related studies performed by the U.S. Army Corps of Engineers (COE) and the Federal Emergency Management Agency (FEMA)
- County Comprehensive Plan background documents
- Records of historical flood control activities including permanent records and newspaper accounts.

Other sources of data were existing local, state, and federal regulations pertaining to flood hazard management, historical documents, newspaper articles, and interviews with local officials and citizens. The advisory committee continually provided valuable information throughout this phase of CFHMP development.

TABLE 1-3a.
SHORT-TERM GOALS AND OBJECTIVES FOR YAKIMA COUNTY CFHMP

Goals	Objectives
Identify flood hazards, propose alternatives, and select appropriate flood hazard management measures and funding plans.	<p>Prepare a comprehensive flood hazard management plan to address flooding problems in study area:</p> <ul style="list-style-type: none"> • At a minimum, propose permanent management measures for the principal flood problems • Review existing O&M plan. • Select flood hazard management measures based on the following criteria: <ul style="list-style-type: none"> — Severity of problem — Effectiveness, with emphasis on solving regional problems — Cost — Public acceptance — Impact • Prepare a Capital Improvement Program (CIP) from selected alternatives • Secure County and Ecology approval of the CFHMP.
Implement short-term actions to help alleviate current flooding problems.	Identify maintenance actions and other changes to existing City and County programs that can be achieved with existing resources.
Ensure that pending and near-term development proposals are consistent with goals and objectives of the CFHMP.	<p>Communicate with private developers to convey the results of interim CFHMP analyses affecting proposed development parcels.</p> <p>Review development proposals to ensure consistency with flood hazard management alternatives that are likely to be developed in the CFHMP.</p>

TABLE 1-3b.
LONG-TERM GOALS AND OBJECTIVES FOR YAKIMA COUNTY CFHMP

Goals	Objectives
Prevent the loss of life, creation of public health or safety problems, and damage to public and private property.	<p>Implement flood hazard management measures as approved in the CFHMP.</p> <p>Give preference to nonstructural measures such as regulations and preservation of existing drainage corridors.</p>
Maintain the varied uses of existing drainage pathways and floodplains within the County	<p>Preserve opportunities for floodplain uses that are compatible with periodic flooding. Discourage land uses in the floodplain that are incompatible with periodic flooding.</p> <p>Adopt flood control measures that preserve or enhance existing fishery, wildlife, and other natural uses of the riparian zone.</p> <p>Ensure that changes in land use in drainage corridors restore the natural character wherever possible.</p>
Prevent the degradation of surface and groundwater	<p>Minimize the impact of contaminants and sediment in stormwater runoff on receiving waters (Yakima River) and groundwater aquifers.</p> <p>Integrate water quality needs with flood control needs to provide consistency in flood hazard management.</p>

TABLE 1-3b (continued).
LONG-TERM GOALS AND OBJECTIVES FOR YAKIMA COUNTY CFHMP

Goals	Objectives
Establish and adopt a systematic and comprehensive approach to flood hazard management.	<p>Pursue strategies for flood hazard management that balance engineering, economic, environmental, and social factors</p> <p>Evaluate goals and objectives every five years to maintain consistency with current policy.</p> <p>Maintain consistency with Yakima County and local comprehensive plans, the state Growth Management Act, and related policy plans through measures including:</p> <ul style="list-style-type: none"> • Providing appropriate public services for new developments. • Preserving natural drainage areas, especially known floodplains. • Adopting development codes that reflect policies on flood hazard management. <p>Coordinate flood hazard planning with all interested and affected parties in both public and private sectors:</p> <ul style="list-style-type: none"> • Coordinate with the Yakama Indian Nation • Cooperate with reclamation district, utilities, WSDOT, etc. • Coordinate with cities to solve mutual flooding problems • Establish an Advisory Committee while developing the CFHMP • Provide public opportunity to comment on flood hazard management decisions <p>Improve public understanding of flood hazard management through public education.</p>
Establish a stable, adequate, and publicly acceptable long-term source of financing.	<p>Determine flood hazard management funding needs and alternatives in the CFHMP (i.e., a Capital Improvement Plan).</p> <p>Establish a funding mechanism to help implement the CFHMP.</p>
Minimize the expenditure of public funds, including funding of emergency measures, through effective flood hazard management.	<p>Develop structural and nonstructural measures to prevent or minimize existing flood problems that are the responsibility of the county.</p> <p>Adopt regulations to prevent new development from causing flood damage or from being susceptible to damage by floods.</p>

RELATED STUDIES

Two studies currently being conducted in Yakima County directly affect CFHMP development: the County's comprehensive plan and the County's revised flood insurance study.

Plan 2015—Yakima County's Comprehensive Plan

Plan 2015 is mandated under the state's Growth Management Act (GMA), which requires planning by all counties with a population of 50,000 or more, or a population increase of 10 percent or more over the last 10 years. Both apply to Yakima County. A draft plan is being reviewed by the Planning Commission, with final plan adoption scheduled before December 1996. *Plan 2015* will balance growth and development needs with environmental objectives and will guide growth in the unincorporated areas of the Upper and Lower Yakima Valley.

The Yakima County Comprehensive Plan will provide protection for water resources and plan for flooding and needed surface water runoff controls. Therefore, CFHMP and GMA planning have common goals. The following elements of the GMA process will facilitate CFHMP development (Ecology 1991):

- Population forecasts and development projections to predict increased stormwater runoff and flooding problems.
- Floodplain information, such as the identification of critical areas.
- Definition of urban growth boundaries which, if properly located, can minimize the need for flood control structures.
- Integration of flood hazard management measures into a capital improvement program to adequately service new growth.

Yakima County Revised Flood Insurance Study

The COE, at FEMA's request, has revised the Flood Insurance Study (FIS) for Yakima County; the revised preliminary FIS was issued in December 1995. The final revised FIS is to be issued in late 1997. The FIS defines the 100-year floodplain and floodway, as mandated by the National Flood Insurance Program (NFIP). The NFIP implements a comprehensive set of regulations for mitigating flood damage. Yakima County participates in the NFIP by adopting zoning restrictions and enforcing building standards to limit flood damage in the 100-year floodplain. The revised FIS modifies the previously defined 100-year floodplain to reflect changed hydrologic and hydraulic conditions of the Yakima River. These modifications will affect regulatory requirements in specific areas along the Yakima River.

FLOOD CONTROL ASSISTANCE ACCOUNT PROGRAM

The Washington State program to assist local jurisdictions with comprehensive planning and flood control maintenance is described in *State Participation in Flood Control Maintenance* (RCW 86.26), originally enacted in 1951 and amended in 1994. Funds for flood control maintenance projects and preparation of this CFHMP have been provided to Yakima County through FCAAP. Administrative and procedural information concerning FCAAP and RCW 86.26 can be found in *Administration of the Flood Control Assistance Account Program* (WAC 173-145).

Funding

Distribution of FCAAP grant money depends on the amount appropriated by the state legislature each biennium and is based on eligibility of the applicant and the proposed project. Proposals are reviewed by several state agencies to ensure that appropriate resource issues and regulations are adequately addressed.

Legislative appropriations for the Flood Control Assistance Account, made each biennium, have varied from no funding (during the years 1975 through 1985) to the current appropriation of up to \$4 million. Restrictions include the following:

- Grants are limited to 50 percent of the total cost for non-emergency projects.
- The non-emergency FCAAP contribution is limited to \$500,000 per county.

- Emergency funds of up to \$150,000 per county per biennium are available on a first-come-first-served basis; the State will fund up to 80 percent of the cost of emergency projects.
- Unused emergency funds (\$500,000 total emergency fund) can be disbursed on a discretionary basis by Ecology.
- The State can fund 75 percent of the cost of a CFHMP.

Requirements for CFHMPs

To obtain funds for flood control maintenance through FCAAP, jurisdictions must prepare a CFHMP that, as discussed in RCW 86.26.105, accomplishes the following:

- Identifies the river's meander belt or floodway
- Establishes the need for flood control work
- Considers alternatives to in-stream flood control work
- Identifies and considers potential impacts of in-stream flood control work on the state's in-stream resources.

The CFHMP must also identify and rank appropriate structural and nonstructural measures to reduce flood damage. The study area may include the entire watershed or, at a minimum, the 100-year floodplain within a reach of the watershed. The reach must be of sufficient length that a comprehensive evaluation can be made of its flood problems. The completed CFHMP provides the technical foundation for future nonstructural and structural flood hazard management measures.

State law requires that a CFHMP describe the area where any proposed project is located and the types and locations of existing flood problems. A complete description of the information that a CFHMP must include is contained in WAC 173-145-040. Among the required information is certification from the Washington Department of Community, Trade, and Economic Development (CTED) that the local emergency management organization is administering an acceptable comprehensive emergency operations plan. The law allows up to three years for local authorities to complete and adopt a CFHMP. Applications for project funding under FCAAP require the county engineer to certify that a CFHMP plan has been completed and adopted or is in preparation. Ecology must approve the final CFHMP, and the municipality must subsequently adopt the plan.

Applicant Eligibility

Counties, cities, and other entities with flood control responsibilities, such as flood control districts and diking districts, are eligible to receive state funding for flood control maintenance projects. Eligible entities must file a flood control budget with Ecology by February 15 each year.

To receive funding for flood control maintenance projects, the county, city, or town having planning jurisdiction over the project area must have its floodplain management activities approved by Ecology. The requirements include the following:

- Participation in the National Flood Insurance Program (NFIP)

- Certification of the local emergency response plan by the State Department of Emergency Management
- Restriction of land uses to flood-compatible uses within a river's meander belt or floodway.

Adoption of a Shoreline Master Program (SMP) may also be required.

Maintenance Project Eligibility

Evaluation of proposed FCAAP projects is based on cost-benefit relationships, local priority of projects, severity of local flood hazard management problems, and information in the CFHMP. Maintenance projects must reflect a comprehensive approach to flood hazard management planning and must meet specific guidelines with respect to project goals. Typical structural measures funded through FCAAP include installation of riprap on eroding stream banks, repair of riprap embankments, and the construction and maintenance of levees.

FCAAP legislation describes in general terms the type of maintenance work eligible for funding, including "maintaining and restoring the normal and reasonably stable river and stream channel alignment and capacity" and "restoring, maintaining, and repairing natural conditions, works and structures." State participation can also include "restoration and maintenance of natural conditions, works, or structures for the protection of lands and other property from inundation or other damage by the sea or other bodies of water" (RCW 86.26.090).

Funding for enhancement of flood control facilities was authorized by Engrossed Senate Substitute Bill (ESSB) 5411, enacted in July 1991. This expands FCAAP project eligibility to include purchase of flood-prone property or land to be used for flood storage, but only if these measures are identified in the applicable CFHMP (Ecology 1991).

Permits such as the Hydraulic Project Approval (HPA), Shoreline Substantial Development, and Conditional Use must be obtained before the project is funded by Ecology. All projects must be planned and designed in accordance with applicable SMPs and CFHMPs, and must benefit the public, as opposed to strictly private interests.

Emergency Projects

A portion of the available FCAAP funding is reserved by law for emergency use. Projects considered emergencies are those that must be done immediately to protect life and property from "unusual, unforeseeable, and emergent flood conditions" (WAC 173-145-100). Release of emergency funds is contingent on an emergency declaration by the appropriate authority. Depending on the emergency measure, a shoreline permit or HPA may be required.

Required Consultation with Other Agencies

A variety of state and federal agencies are involved in key river issues such as fishery resources, wildlife habitat, and public use. The presence of fishery resources, primarily salmon and steelhead, is a key consideration in performing any flood hazard management activities in and around the waters of the State of Washington. The potential loss of fish habitat resulting from

construction in and next to rivers has been a major concern of fisheries agencies, sports fishermen, and Native American groups.

To ensure that fishery resources are maintained, the WDFW has review authority for most phases of FCAAP. Ecology is required to consult with WDFW before approving any CFHMP. Applicants for FCAAP project funds must review their proposals with WDFW, DNR, and affected Native American tribes.

Construction work to be performed in or adjacent to navigable waters of the United States, including wetlands, must be approved by the COE. The COE permit process ensures that all federal, state, and local regulatory agencies with jurisdiction over the project are properly notified and have approved the project. The COE will not approve a project that has been rejected by another permitting agency.