CHAPTER 5.
FLOOD CONTROL FACILITIES AND PROGRAMS

The Yakima River is lined with levees of various forms throughout the CFHMP study area, from Selah Gap to Union Gap. Levees include public and private facilities of various design characteristics, providing various levels of protection. The extensive levee system was installed in response to damage incurred during the 1933 flood. Many of the structures built following the 1933 flood are still maintained today. This chapter describes flood control facilities in the study area and programs that affect flood control.

FACILITIES INVENTORY

Flood control works in the study area were inventoried by type and location; information was compiled from past studies, COE and County inspection reports, COE inventory records and drawings, and interviews with County and COE staff. The information was placed in a database to be integrated into the County's GIS. The inventory focused on facilities maintained by the County; other facilities were inventoried if information was available. The location and condition of the facilities was provided by the County. Appendix D contains a data sheet for each structure, including the following information:

- Facility name and location
- Type of structure
- Managing agency
- Physical characteristics (dimensions, construction material, elevations)
- Level of protection, freeboard, and internal drainage structures for levee facilities
- Agency responsible for maintenance, schedule of maintenance, and previous maintenance performed
- Inspection deficiencies, if applicable.

Federal Levees and Drainage Structures

On June 28, 1938, the Secretary of War authorized construction of the Yakima River flood control works to protect property along the Yakima and Naches River from floods of magnitudes up to that of the 1933 flood. The project involved constructing earthen levees from the US 97-US 12 interchange over the Yakima River to the Old Moxee Highway Bridge. Approximately 25,000 feet of levees were constructed along the right bank of the Yakima River and 9,300 feet along the left bank. A 1,400-foot low levee was constructed along the embankment for the Northern Pacific Railroad Moxee branch line. The project also included associated drainage structures. Construction began on July 15, 1947, and was completed March 26, 1948. The structures have since been maintained and upgraded.

The eight levees and 24 drainage structures constructed are listed in Tables 5-1 and 5-2. The levees, built to contain the 1933 flood, could not safely convey a flood of that magnitude (65,000 cfs at Parker) with adequate freeboard today due to altered hydraulic conditions and higher freeboard standards. The structures have recently been upgraded to convey the 100-year flood (56,300 cfs at Parker) with 3 feet of freeboard. Drainage structures were built to convey surface

runoff and irrigation water through the levees. Most contain floodgates to keep floodwater from backing up into the drainage channel.

Public Law 84-99 Levees

Public Law 84-99 authorizes the use of an emergency fund to prepare for emergency response to natural disaster, carry out flood-fighting and rescue operations, or repair or restore any flood control work threatened, damaged, or destroyed by flood. Disaster assistance is administered by the Secretary of the Army and implemented by the COE. A determination of eligibility follows detailed policies and procedures outlined in *Natural Disaster Procedures* (COE 1991). Eligibility requirements for PL 84-99 certification are typically less stringent than the requirements for federally authorized flood control works. Any completed, locally operated and maintained flood control work can be eligible for PL 84-99 funding except the following:

- Those constructed, modified, or repaired with financial assistance from other federal agencies
- Those constructed, operated, and maintained by the COE or other federal agencies
- COE or other federal agency projects uncompleted or under construction
- Those not meeting design and maintenance standards.

Nine PL 84-99-eligible levees were identified in Yakima County (Table 5-1), and have been certified by the COE as meeting all requirements of PL 84-99. These structures are listed as *active* with the COE. Six are maintained by the County, two by the City of Yakima, and one by the Yakama Indian Nation. The County considers one levee (FED-LB1) listed by the COE as PL 84-99-eligible (PL99-YSEG9) to be part of the federal levee system.

Other Flood Control Works

Other flood control works include levees inspected for PL 84-99 certification that did not meet the minimum eligibility requirements (Table 5-1). These are likely not maintained and provide minimal protection. Eight were initially managed by the County, but are not currently being maintained; three were initially managed by the Yakama Indian Nation, and three are private levees. In addition, Table 5-2 lists drainage facilities inventoried by the Bureau of Reclamation.

OPERATION AND MAINTENANCE

The County inspects federal flood control facilities semi-annually; PL 84-99-eligible levees are inspected annually. Flood control works are inspected for the following:

- Vegetation growth
- Bank erosion
- Caving of levee slopes
- Seepage, saturation areas or boils
- Accumulation of sediment and debris
- Road condition
- Encroachments by culverts or drainage channels
- Proper operation and condition of closure structures and materials
- Proper operation and condition of drainage and irrigation structures.

The County follows the 1955 *Operations and Maintenance Manual* developed for federal facilities (COE 1955) with a few modifications. A draft Memorandum of Agreement (MOA) between the COE, Ecology, and WDFW guides the County on vegetation and habitat management for flood control structures. In addition, the County performs levee maintenance under a modified Mitigated Determination of Nonsignificance that incorporates the MOA and additional conditions.

SPECIAL DISTRICTS

Yakima County has a variety of special districts, including diking, irrigation, and drainage districts. Diking districts construct and maintain dikes and levees; irrigation districts provide and maintain irrigation facilities; drainage districts provide drainage facilities for agricultural areas. These are municipal corporations that provide a public benefit and have no direct connection to County government other than project approval by the County Engineer and possible engineering support. They are controlled by locally elected governing bodies and serve constituents within their district boundaries. Funding is derived from assessments on properties that benefit from constructed improvements.

Yakima County has five diking districts. The geographic coverage of Diking District 1, the only one now active, extends from Selah Gap to Union Gap (Figure 5-1). The district recently upgraded the KOA levee upstream of the SR 24 bridge, and had it certified as a 100-year levee by the COE. The KOA levee is currently part of the federal levee system and is maintained by the County.

OTHER FLOOD-RELATED PROGRAMS

In the past year, activity concerning the management of the Yakima River Basin has increased. Programs are being developed to address threats to water supply, water quality, fisheries and wildlife resources, and the basin's ecosystem. Current programs have brought together concerned citizens with a mix of interests to address these issues. Local coalitions have been formed and conservation programs are underway. Each of these programs affects conditions in the Yakima River Basin, and therefore flooding conditions.

Yakima Greenway Foundation

The Yakima Greenway Foundation (Foundation) was created in 1980 to conserve, enhance, and maintain the Yakima River corridor as a continuing, living resource for future generations. The Foundation is guided by the Yakima Greenway Master Plan, originally developed in 1976 and most recently updated in September 1995. The State, the City of Yakima, and Yakima County adopted the plan September 18, 1995. The master plan helps direct future development in the Yakima River corridor, and will therefore affect possible flood hazard management alternatives. The 1995 Yakima Greenway Master Plan Update is described below (Foundation 1995).

The Greenway Corridor

The 3,600-acre Greenway corridor extends from Yakima Canyon to Union Gap (Figure 5-2). Greenway boundaries were originally defined in 1977 by the state legislature with the creation

of the Washington State Yakima River Conservation Area. The Foundation is actively seeking to expand this conservation area.

The Greenway corridor is subdivided into *natural*, *conservation*, and *recreation* areas. A natural area has paramount natural value in which recreational use will be incidental to the goals of preservation, enhancement, and reclamation. A conservation area has lower natural value and a higher need for reclamation and enhancement, or a greater suitability for recreational use. Conservation areas may contain both natural segments and recreational-use segments. A recreation area may have natural segments, but is primarily suitable for recreational use.

Currently, the Greenway corridor consists of one proposed natural area, three conservation areas, two recreational areas, and one proposed recreational area. Each Greenway corridor area contains various facilities developed by the Foundation and supporting public agencies and private land owners. Greenway facilities include pathways, recreational sites, boat landings, parks, playgrounds, campgrounds, and group camps. A summary of Greenway facilities is presented in Table 5-3; their locations are shown in Figure 5-2.

Land Use Policy and Design Standards

Yakima Greenway land use policy originated from the 1974 Yakima County Shoreline Master Program to promote reasonable use of Yakima County shorelines, preserve and protect fragile natural shoreline resources, and increase public access to publicly owned shorelines. Establishment of the Greenway, a designated Washington State Conservation Area, allows Yakima County Commissioners to authorize and coordinate the acquisition and development of land within the Greenway for conservation and parkway purposes.

The Board of Yakima County Commissioners continued to define land use policy within the Greenway corridor by adopting the Yakima Urban Area Comprehensive Plan in 1981. This plan included a policy that the cities of Yakima and Union Gap and Yakima County would coordinate the acquisition and development of the Greenway. In 1986, the Urban Area Zoning Ordinance was adopted to implement this policy.

The Urban Area Zoning Ordinance includes a Greenway Overlay District to coordinate zoning provisions with policies adopted in the Greenway Master Plan. Provisions of the Greenway Overlay District require a higher level of administrative review and approval to ensure protection of the Greenway. The Foundation is also seeking adoption by local municipalities of design standards outlined in the Greenway master plan. These standards include descriptions of unsuitable and compatible uses; general, site, building, landscaping, and parking design standards; and improvements to be provided by the developer. The Greenway Master Plan and associated design standards are include in Appendix E.

Vision for the Future

The Foundation's vision includes additional development alternatives within the Yakima River corridor. The vision does not dictate land use, but suggests possibilities for Yakima Valley residents to consider. The Foundation's suggested enhancements include the following (Foundation 1995):

- Establish a scenic parkway on the eastern border of the Greenway corridor connecting Yakima Valley Highway and the scenic Yakima River Canyon Highway
- Locate enterprises related to tourism and recreation between the Greenway and the parkway with industrial parks and residential communities located along the eastern edge
- Integrate attributes of the Greenway into urban design and planning decisions as development occurs between downtown Yakima and the freeway
- Establish circulation routes between downtown Yakima and the Greenway
- Designate 66th Avenue (or 72nd Avenue) and Ahtanum Road (or Ahtanum Creek) as greenbelt areas with provisions for paths and trails to provide a green border and circulation route around the Upper Valley
- Extend the Greenway corridor to encompass Plath Pathway and the Naches River to connect the present pathway to Cowiche Canyon Trail
- Extend the Greenway corridor along the Yakima River north from Selah to the Yakima River Canyon.

Yakima River Watershed Council

The Yakima River Watershed Council is a non-profit organization formed in March 1994 in response to deteriorating water quality, water supply, and fisheries and wildlife resources in the Yakima basin. The Council represents a community effort to address a wide spectrum of water-related issues in the Yakima River Basin. The Council's mission is to reach consensus among stakeholders to plan for sustainable development in the basin.

As of January 1, 1995, the Council had approximately 1,000 members from private and public corporations, advocacy groups, the Yakama Indian Nation, agriculture, environmental groups, business and financial institutions, local government, and electric utilities. The Council is governed by a 50-member board and directed by an executive committee, and has eight working committees (water quantity, water quality, off-stream storage, legislative and legal, water system supply management, conservation, water transfer and marketing, and finance). Working committees are identifying basin-wide issues and will develop potential solutions.

The Council has offices in the City of Yakima and presently has an administrative staff of five. The Council is scheduled is to produce a Yakima River Watershed Management Plan by December 1996.

Yakima River Basin Water Enhancement Project

As of October 31, 1994, Title XII of Public Law 108 authorizes the Yakima River Basin Water Enhancement Project. This project, developed by the Secretary of the Interior, with the State of Washington, the Yakama Indian Nation, Yakima River Basin irrigators, and other interested parties, will evaluate and implement measures to improve the availability of water supplies for irrigation and protect and enhance fish and wildlife resources and wetlands while improving

the water quality in the Yakima basin. The Bureau of Reclamation will operate and manage the program. Walt Fife, project manager in the Eastern Regional office, will direct the effort.

The primary project element is a basin conservation program to be completed in four phases within two and a half years from the date of enactment. The phases are as follows:

- Development of water conservation plan options
- Investigation of the feasibility of specific water conservation measures
- Implementation of conservation measures
- Monitoring and evaluation.

The project also includes Toppenish Creek corridor enhancement, a Yakama Indian irrigation demonstration project, modifications and improvements to Lake Cle Elum, Taneum Creek enhancement study, Kachess Dam modifications, modifications to Chandler pumping plant and power plant operations at Prosser Dam, and a comprehensive basin operating plan.

While the project is directed primarily toward water conservation, elements of it may affect flooding. For example, modifying the capacity and operation of upper basin storage reservoirs will affect flood control capabilities. Specifically, the proposed enlargement of Lake Cle Elum and diversion of Cabin Creek and Silver Creek to Kachess Dam may reduce peak flood flows.