

CHAPTER 2. POLICIES

The *2006 King County Flood Hazard Management Plan* policies, which are adopted by the King County Council, provide a framework for making decisions about floodplain management in King County. These policies also provide guidance for decision-making at the program and project level and define the level of discretion King County has in making floodplain management decisions. When a policy uses the term “shall” or “will,” it is intended that such terms be interpreted as mandatory, and that the associated action or decision is nondiscretionary. The use of “should” or “may” in a policy means that the associated action or decision is provided as guidance and indicates that there is discretion in making decisions based on such policies.

The policies in this chapter are divided into six categories: general; floodplain land use; structural and non-structural projects; river channel maintenance; flood warning and emergency response; and funding. The policies are based, in part, on adopted floodplain and water resource policies in the *King County Comprehensive Plan* (King County 2004b), which directs land use and growth in unincorporated King County. The Comprehensive Plan is updated annually, with major updates occurring every four years. An alternatives analysis of the floodplain and water resources policies is conducted with every update, and a public hearing is held prior to adoption of Comprehensive Plan amendments by the King County Council. An extensive analysis of the policies in this Plan was conducted during development of this Plan, with the participation of the Citizens Advisory Committee, incorporated cities and the general public. This analysis concluded that these policies are generally consistent with the policies contained in the *1993 Flood Hazard Reduction Plan* and support existing, ongoing flood hazard management programs. As a result, no new programs have been established and no new regulations proposed. All policies presented in the *2006 King County Flood Hazard Management Plan* reflect existing local, state and federal regulations.

Later chapters of this Plan contain recommendations and watershed-specific strategies. Recommendations differ from policies in that they describe specific program and project actions that implement the Plan. These actions are not mandatory; they are considered desirable actions that may be completed within staffing and budgetary limitations. All actions identified by this Plan are summarized in the Action Plan in Appendix F.

2.1 GENERAL POLICIES

The general policies listed below form a “mission statement” for King County, and provide general guidance for all of its floodplain management activities. In addition, the general policies define the standard that is binding on cities, towns and special districts in King County.

2.1.1 River and Floodplain Management

Flooding and channel migration are natural processes. Undeveloped floodplains provide storage for floodwaters, open space, recreational opportunities and habitat for fish and wildlife. When development takes place in the floodplain, flooding and channel migration processes present risks to the development and are in turn affected by the development. Flooding and channel migration can result in damage to many types of public and private property. Spending public funds may be more appropriate for some types of properties and areas of risk than others. For example, County facilities such as roads, bridges, and parks represent a taxpayer investment and are an important part of the public infrastructure.

Watersheds do not follow jurisdictional boundaries. Actions taken by a city or county in one part of a watershed—whether it be a land-use plan, development permit, or capital improvement project—can increase flood and channel migration risks experienced by other jurisdictions in the watershed and can impact ecological resources. Actions taken by a city or county can also have positive effects on neighboring jurisdictions. Cooperative floodplain management among counties, cities, towns and special districts is supported by Chapter 86.12 RCW. Multi-jurisdictional approaches to watershed management can produce a multitude of public and private benefits, including flood risk reduction and improved ecosystem functions and values.

The *King County Comprehensive Plan* establishes King County government as both a regional and local service provider. Among the regional services King County provides are flood warning and floodplain management, as specified in King County Comprehensive Plan Policy F-103. Floodplain management includes a range of services at both the regional and local level to reduce the risk of flood and channel migration hazards.

Policy G-1: Geographic Scope

King County should provide regional and local flood hazard management with emphasis along major rivers including: the South Fork Skykomish, Snoqualmie, Sammamish, Cedar, Green and White Rivers, and their significant tributaries, the Tolt, Raging, Miller and Greenwater Rivers. King County should also provide flood hazard management along other tributaries and smaller streams, including, but not limited to those with existing flood protection facilities such as Tokul Creek, Kimball Creek, Coal Creek (Snoqualmie), Issaquah Creek, Fifteen Mile Creek, and Holder Creek.

Policy G-2 Flood Risks

The natural processes of flooding and channel migration become risks when human development is located within flood hazard areas. The level of risk is evaluated on a case by case basis using the predicted likelihood of flooding and channel migration and the consequences that would result if no action is taken. Flood risks, and the resulting consequences that would result if no action is taken, are generally prioritized in the following order:

- a. Threats to public safety.
- b. Damage to public infrastructure.
- c. Impacts on the regional economy.
- d. Damage to private structures.

Policy G-3: Comprehensive River and Flood Hazard Management

King County should provide comprehensive river and flood hazard management through the implementation of projects and programs that result in multiple benefits, including those created by meeting any or all of the following non-prioritized objectives:

- a. Effectively meet site- and reach-specific flood risk reduction needs;
- b. Achieve benefits that exceed the total cost of projects or programs, including long-term maintenance costs;
- c. Avoid the creation of new flood, channel migration or other risks that cannot be mitigated;
- d. Protect productive agricultural soils;
- e. Protect and, where possible, enhance aquatic and riparian habitat in a manner consistent with adopted salmon habitat recovery plans, and

- f. Leverage flood hazard management revenues through partnerships with other agencies and stakeholders.

Policy G-4: River and Flood Hazard Management Services

King County should provide river and flood hazard management services to reduce the risk of flood and channel migration hazards, including but not limited to:

- a. Prepare technical studies to identify flood hazard areas and channel migration zones,
- b. Provide technical information and assistance to other agencies, jurisdictions and individuals,
- c. Develop, implement and enforce flood hazard area and channel migration zone regulations and stormwater management standards within unincorporated King County,
- d. Construct, monitor, maintain, repair, retrofit, or remove King County managed flood protection facilities,
- e. Preserve open space in flood hazard areas and channel migration zones,
- f. Monitor conditions in the river channels and take actions to reduce risks,
- g. Remove, relocate or elevate at-risk buildings,
- h. Coordinate flood preparedness activities and operate a flood warning program for mainstem rivers and major tributaries,
- i. Perform emergency flood risk reduction actions,
- j. Coordinate with other agencies with flood and channel migration risks or programs within King County or in basins shared with King County,
- k. Collaborate with other jurisdictions in floodplains to implement flood risk reduction actions, and
- l. Take any other action deemed necessary to reduce flood and channel migration related risks and the environmental impacts of flood hazard management on a regional scale.

Policy G-5: Inter-County River Improvement Agreement

King County should collaborate with Pierce County to implement consistent flood hazard management objectives for the White and Greenwater Rivers. King County should partner with Pierce County to evaluate whether the Inter-County River Improvement Agreement should be allowed to expire or should be updated to provide for the continuation of funding and coordinating flood hazard management activities for the White River.

Policy G-6: Inter-Governmental Coordination and Cooperation

King County's flood hazard management activities should be planned and implemented in close cooperation with cities, counties, tribes, salmon habitat recovery planning partners and other agencies sharing jurisdiction in each basin.

Policy G-7: Intra-Governmental Coordination and Cooperation

This Plan will be implemented by multiple King County departments. The River and Floodplain Management Program will work with other departments to define roles and responsibilities to ensure flood hazard management coordination within King County government.

Policy G-8: Dam Operations

To the extent possible, major dams should be designed and operated to meet multiple objectives, which could include flood risk reduction, water supply, power generation, water quality, recreation and natural resource protection. Natural flow regimes should be protected or restored, when feasible. King County should work with dam operators to minimize potential damage to County flood protection facilities.

Policy G-9: Multi-Objective Management

King County's rivers and major tributaries and their associated floodplains should be managed for multiple, and sometimes competing, uses and objectives. Flood hazard management actions should support long-term flood risk reduction outcomes.

Policy G-10: Protecting Natural Functions and Values

King County shall protect flood storage, conveyance, and ecological values of floodplains, wetlands, and riparian corridors and, when feasible, should enhance or restore these ecological functions and values. Flood risk reduction strategies and projects should be coordinated on a river-reach scale with the salmon habitat recovery plans.

2.1.2 Compliance with RCW 86.12.210

Under RCW 86.12.210, a flood control management plan that includes an area where a city or town is located shall be developed by the county with full participation of the city or town. Following adoption by a county, a comprehensive flood control management plan is binding on each jurisdiction and special district located within the area included in the plan. In the event that a city or town does not adopt the county plan within 120 days of the county adoption, the statute provides for an arbitration process on issues of dispute.

King County recognizes that adoption of a set of flood risk reduction policies and regulations identical to King County's is not necessarily appropriate for each city or town in King County, in particular for those cities and towns that have adopted their own comprehensive flood control management plans and implementing policies and regulations applicable to their jurisdiction.

However, because actions in one jurisdiction have the potential to affect the frequency, duration or magnitude of flood hazards in neighboring jurisdictions, state code requires jurisdictions preparing comprehensive flood control management plans to adopt the minimum requirements of the National Flood Insurance Program and minimum state requirements adopted pursuant to RCW 86.16.041. Therefore, except for Policy G-11, the policies contained in this Plan are not binding on cities and towns that have adopted minimum requirements of the state and National Flood Insurance Program.

Policy G-11: Minimum State Standards

Cities and towns located within the geographic scope of this Plan shall meet the minimum standards of the National Flood Insurance Program and the minimum state requirements adopted pursuant to RCW 86.16.041.

Policy G-12: Higher Regulatory Standards

King County should encourage cities and towns to adopt policies and regulations that meet or exceed the standards contained in *Floodplain Management: Higher Regulatory Standards*, prepared by the Federal Emergency Management Agency, Region 10.

Policy G-13: No Adverse Impact Floodplain Management

King County and cities and towns should work cooperatively to manage floodplain resources. King County staff should provide ongoing technical and planning flood risk reduction assistance to cities and towns, as requested, to ensure that development within each jurisdiction will not have an adverse impact on upstream or downstream property owners.

2.1.3 National Flood Insurance Program

The National Flood Insurance Program provides a financial mechanism to respond to flood disasters by making flood insurance available to private property owners. This program provides federally-backed flood insurance that encourages communities to enact and enforce floodplain regulations in order to qualify residents for flood insurance. Communities can also receive flood insurance premium discounts by adopting regulations that exceed federal minimum standards. Numerous local governments and agencies share jurisdiction over flooding and other issues in King County's large river watersheds. However, many local governments lack the staff and resources to develop new flood hazard regulations and programs. In such cases, King County should provide assistance when staffing and other resources are available.

Policy G-14: National Flood Insurance Program

King County shall exceed the federal minimum standards stipulated by the National Flood Insurance Program for unincorporated areas, utilizing the Community Rating System as a guide to better protect public safety, reduce the risk of flood and channel migration hazards to existing public and private property, and achieve flood insurance premium discounts.

2.2 Floodplain Land Use Policies

Development in the floodplain can create two types of challenges:

- Because of its location in a hazardous area, the development may be at risk from inundation, erosion, or both.
- The development can increase risks to neighboring properties by creating a barrier to the conveyance of floodwaters, thus causing backwater flooding upstream, and by reducing the area available to store and slowly release floodwaters, increasing flow velocities and erosion downstream.

This subsection contains policies to guide land-use planning and development regulations in floodplains and channel migration hazard areas in unincorporated King County. The goal of these policies, which incorporate floodplain restrictions already adopted in King County's Critical Areas Ordinance, is to reduce flood risks to future developments and prevent increased risks to surrounding properties.

2.2.1 Changes in Floodplains and River Channels Over Time

Historically, King County flood hazard regulations have been applied within the 100-year floodplain as mapped by FEMA. FEMA maps are based on current or historical land use in the watershed. As watersheds develop, however, the rate and volume of runoff reaching rivers and streams can increase. The boundaries of the 100-year floodplain may change over time, creating inconsistencies between actual floodplain conditions and those portrayed on FEMA maps. In addition, some rivers in King County migrate laterally, endangering properties along their banks. Areas that are at risk due to channel migration are sometimes outside the mapped floodplain, so that residents may not be aware of the risk.

Policy FP-1: Future Conditions

Wherever future-conditions flows have been modeled and adopted or approved by King County as a component of a basin plan or technical study, they shall be used within unincorporated King County to define the 100-year future-conditions floodplain that would occur with build out in the basin under current zoning and regulations. In these basins, land use policies and flood hazard regulations shall apply to the 100-year future-conditions floodplain.

Policy FP-2: Channel Migration Hazard Areas

King County should identify channel migration hazard areas through geomorphologic analyses and review of historical channel migration patterns and rates. Land-use regulations shall restrict unsafe development in identified channel migration hazard areas.

2.2.2 Floodplain Land Use Regulations

King County regulates development in flood hazard areas in unincorporated areas through the Critical Areas Ordinance, which was adopted to implement the Growth Management Act requirement to protect “frequently flooded areas.” The Critical Areas Ordinance includes higher standards than are required by the National Flood Insurance Program and state law. These standards provide greater reduction in flood and channel migration risk to and from development within the 100-year floodplain and channel migration zones. Flood hazard areas include both the 100-year floodplain and channel migration zones. The FEMA maps designate a portion of the 100-year floodplain as a “floodway,” which generally is immediately adjacent to the channel and is often associated with deep, rapidly moving water. King County maps channel migration zones as having a moderate channel migration hazard area and a severe channel migration hazard area, based on the expected rate of migration.

The best way to ensure that people and property are not at risk from flooding and channel migration would be to completely avoid development within the 100-year floodplain and channel migration zones. However, since many of King County’s floodplains and channel migration zones are very broad and encompass a significant amount of public and private property, King County regulations for unincorporated areas allow some development within the 100-year floodplain and channel migration zones if the development is primarily outside the floodway and the severe channel migration hazard area. Some development is allowed within the floodway and the severe channel migration hazard area, but is significantly limited. A number of standards have been adopted to reduce the risk to people and property associated with allowed development in flood hazard areas and to decrease the risk to other properties upstream or downstream of the development. The following policies support the development regulations for unincorporated King County that have already been adopted under the King County Critical Areas Ordinance.

Policy FP-3: Subdividing Property

New subdivisions, short subdivisions, urban planned developments, and binding site plans shall ensure that new lots contain sufficient buildable land outside the zero-rise floodway and severe channel migration hazard area.

Policy FP-4: Development in the FEMA Floodway

New residential and nonresidential structures shall be prohibited within the FEMA one-foot floodway.

Policy FP-5: Zero-Rise

King County shall not authorize any placement of structures or fill in the floodplain that would cause an increase in the elevation of the 100-year flood.

Policy FP-6: Compensatory Storage

The existing flood storage volume of the floodplain shall be preserved. Structures and fill that displace floodplain storage volume shall be compensated for by excavation of equivalent volumes at equivalent elevations. The compensatory storage area shall be hydraulically connected to the source of flooding.

Policy FP-7: Base Flood Depth and Base Flood Velocity

King County shall require a base flood depth and base flood velocity analysis for all new development in flood hazard areas.

Policy FP-8: Development in the Floodplain

New development and substantial improvements in the floodplain shall be constructed so that they can withstand the 100-year flood without sustaining significant damage. They shall, at a minimum, be built so that the lowest finished floor is 1 foot above the 100-year flood elevation. Areas below the lowest finished floor of residential structures shall be designed to allow for the entry and exit of floodwaters.

Policy FP-9: Utilities

Utilities should be allowed within the floodplain only when no reasonable alternative location is available. When allowed, they shall be designed and built to resist flood damage.

Policy FP-10: Structural Stability

Structures in the floodplain shall be designed and built to prevent flotation, lateral movement or collapse.

Policy FP-11: Critical Facilities

Critical facilities and land uses that have the potential to create hazardous conditions if impacted by flooding shall not be allowed in a 100-year floodplain unless no reasonable alternative location is available. If no alternative site is available, the critical facility shall be flood protected, including the access road to the critical facility, to 3 feet above the 100-year flood elevation or the 500-year flood elevation, whichever is higher. Critical facilities shall be prohibited in the severe channel migration hazard area.

2.3 STRUCTURAL AND NON-STRUCTURAL PROJECTS POLICIES

The policies in this section guide a comprehensive program that can implement a range of flood hazard management projects, including both structural and non-structural projects. Structural projects consist primarily of revetments, levees, and structures associated with levees such as pump plants and flap gates. King County rarely pursues new construction of these types of structural projects; the majority of King County's flood hazard management projects focus on maintenance and repair of structures built in the 1960s and 1970s. Maintenance and repair often involve retrofitting existing flood protection facilities, including setting back levees and replacing traditional riprap using biostabilization techniques for bank protection to reduce the long-term maintenance costs and provide habitat for fish and wildlife. Non-structural projects include relocation, acquisition, and elevation of flood-prone homes and the removal of existing flood hazard management structures that are no longer needed.

2.3.1 Criteria for Taking Action

Hundreds of public and private properties in King County are vulnerable to flood-related hazards. If no action is taken to address a flooding or channel migration risk, King County needs to assess the consequences that will result. Some risks may need to be addressed sooner than others depending on the severity of the risk and what is vulnerable. Under certain circumstances, King County may have legal responsibility to take action to address flooding risks, such as when there is a contractual agreement with a property owner or another agency to maintain a flood protection facility.

Policy PROJ-1: Prioritizing Flood Hazard Risks

King County should prioritize actions to address flood and channel migration risks using the following criteria in order of importance:

- a. The consequences that will result if no action is taken. Consequences should be prioritized as identified in Policy G-2.
- b. Urgency, where urgency is a measure of how quickly an action needs to be taken in order to prevent a risk from growing worse.
- c. Legal responsibility and authority, where legal responsibility and authority is a contractual relationship between King County and another person or agency to maintain a flood protection facility.
- d. Funding or partnership opportunities.

2.3.2 Land Acquisition and Management of Flood Hazard Management Properties

Structural and non-structural approaches to flood hazard management often necessitate the acquisition of property interests. When a flood protection facility such as a levee or revetment is constructed, maintained, repaired or reconstructed, sufficient land is needed to meet design standards, provide room for equipment and materials, and ensure that King County employees have access to the facility for monitoring and maintenance. In some cases, property acquisition takes the form of an easement granted to King County by the underlying property owner. In other cases, King County may purchase land for flood hazard management purposes. King County is authorized under RCW 86.12.030 to condemn property for flood risk reduction purposes. King County would only exercise that authority under extreme circumstances, such as when federal, state or local regulations prohibit reconstruction on the site, development on the site is causing significant flood or erosion risks to other properties, or the property is needed to complete a flood risk reduction project. All condemnations for flood risk reduction purposes must be approved by the King County Council prior to filing with the court. When King County purchases land through either a voluntary sale or through condemnation, the property owner is given fair market value based on an independent private-sector appraisal.

King County is committed to managing its public lands, including vacant floodplain properties, for a variety of public values and benefits, including fish and wildlife habitat, passive recreation, trails, or other purposes that do not create a new risk from flooding and channel migration. Property acquisition in support of flood hazard management outcomes is often funded through external funding sources, some of which have specific deed restrictions associated with future uses of the property. Proposed uses of County-owned property are evaluated on a case-by-case basis to determine the impact the public may have on flood protection facilities and natural resources, as well as overall public safety issues.

Policy PROJ-2: Property Acquisition

Property acquisition for flood risk reduction projects should be voluntary on the part of the property owner, except under very limited circumstances.

Policy PROJ-3: Easements

New or additional easements necessary to construct, maintain, repair, or retrofit a flood protection facility should be sufficient to meet applicable King County design and construction standards and federal and state technical guidelines. Acquisition of easements for flood hazard management projects should be consistent with Policy PROJ-2.

Policy PROJ-4: Management of King County Properties

King County shall manage its public lands and easements within flood hazard areas in accordance with the policies in this Plan. Public access to flood hazard management properties may be allowed on a case-by-case basis after evaluating overall public safety issues to determine the appropriate level of public access.

2.3.3 Flood Protection Standards and Design

Flood protection facilities built to contain floodwaters, such as levees, or to provide erosion protection, such as revetments, are typically designed for a certain magnitude of flood event. Events that exceed this design level can overtop or otherwise damage the facility. Flood protection facility retrofit projects are typically designed for the 100-year flood, although in some cases, such as when insufficient land is available, that standard cannot be met. Future conditions information should be incorporated into project designs when such information is available. In addition, flood protection facility design must consider the facility's impact on fish and wildlife habitat, wetlands, open space and recreation resources, and long-term maintenance costs.

Policy PROJ-5: Flood Protection Standard

New flood hazard management projects, whether protecting new or existing development, should seek to provide protection from the 100-year, future conditions flood, plus a margin of safety. When new projects are being built to protect existing development, lesser protection may be provided where 100-year protection is not practical. Existing flood hazard management projects protecting existing developments should be maintained at their current level of protection unless the alternatives evaluation shows that a different level of protection is warranted.

Policy PROJ-6: Flood Protection Facility Design and Maintenance Objectives

King County should construct new flood protection facilities and maintain, repair or replace existing flood protection facilities in such a way as to:

- a. Require minimal maintenance over the long term,
- b. Ensure that flood or channel migration risks are not transferred to other sites,
- c. Protect or enhance aquatic, riparian and other critical habitats, and
- d. Protect or enhance multiple beneficial uses of flood hazard areas.

Policy PROJ-7: Flood Protection Facilities within Critical Areas Ordinance Aquatic Areas and Aquatic Area Buffers

Wherever possible, King County should relocate existing flood protection facilities farther from the river edge and associated buffers to increase flood conveyance and allow natural river processes to occur.

2.3.4 Cultural Resources and Historic Preservation in the Flood Hazard Management Corridor

Since the earliest period of human history, humans have occupied river corridors because of their value for food, water, transportation and fertile soils. Human occupation in and along King County's rivers, especially by Native American Tribes, has resulted in historically significant artifacts, information and other culturally sensitive aspects of their presence that are in need of protection and preservation.

Policy PROJ-8: Cultural and Historic Resources

King County will consult with affected Native American Tribes, the Washington State Office of Archaeology and Historic Preservation, and the King County Historic Preservation Program staff when designing flood hazard management projects beyond existing flood protection facility footprints to ensure that archaeological, cultural and historic resources and Traditional Cultural Properties are identified, evaluated and appropriately protected.

2.3.5 Applying King County Standards to Non-County Projects

King County partners with federal and state agencies and incorporated cities to implement local and regional projects that King County or local jurisdictions may not be able to fund on their own. These projects may include road improvements, utilities, recreational infrastructure or other public projects. However, the standards applied by other agencies may be inconsistent with King County's policies and standards for flood hazard management projects.

Policy PROJ-9: Non-County Projects

King County should only participate in flood hazard management projects that are consistent with or that exceed King County flood hazard management policies and standards.

Policy PROJ-10: King County Sponsored Projects

All King County sponsored projects located in flood hazard areas shall be consistent with policies in the *2006 King County Flood Hazard Management Plan* and meet or exceed the standards adopted in the King County Code to implement those policies.

2.3.6 Flood Protection Facility Monitoring and Adaptive Management

When permits are issued for maintenance, repair or replacement of flood protection facilities, the permit conditions generally require that the flood protection facility be monitored for a specific period of time to ensure that the facility is functioning as designed. Monitoring can provide valuable information on how future projects should be designed and constructed. Following the principles of adaptive management, King County should use this information to modify and adjust design approaches and construction and maintenance practices to ensure that the most appropriate methods and materials are used.

Policy PROJ-11: Monitoring and Adaptive Management

Flood hazard management projects shall be monitored to assess their functions relative to performance measures. Adaptive management principles shall be used to manage projects over time to meet permit requirements or improve the effectiveness of projects. Lessons learned will be used to inform the design and implementation of future projects.

2.4 RIVER CHANNEL MAINTENANCE POLICIES

River and stream channels are dynamic systems that naturally transport logs, sediments and other debris from their upper reaches to lower elevations. These materials are integral parts of the natural ecology and geomorphology of the stream, and are particularly vital in the life cycle of salmon and trout. However, in some circumstances, these materials can increase flooding or channel migration risks. For this reason, King County has sometimes relocated large woody debris and removed sediment from river channels.

This section recommends policies to direct future channel maintenance activities undertaken by King County. The policies seek a balance between resource concerns and the protection of public property and private structures. Routine maintenance of natural drainage systems is conducted using best management practices contained in the *King County Regional Road Maintenance Guidelines*, which were designed to

be compatible with the Endangered Species Act and were approved by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service. Staff conducting this maintenance have received training on how to conduct these maintenance activities with the least impact on the aquatic habitat.

2.4.1 Large Woody Debris Removal, Repositioning or Relocation

King County responds to requests from the public and other agencies to remove, reposition or relocate fallen trees from rivers and streams. This response includes an initial site investigation to assess the channel dynamics and level of risk created by the woody debris. In some cases, it is appropriate for King County to take action to remove or alter large woody debris to reduce flood or channel migration risks.

Policy RCM-1: When to Reposition or Relocate Large Woody Debris

Naturally occurring accumulations of large woody debris should be repositioned or relocated for flood hazard management purposes only if one or more of the flood and channel migration risks in Policy G-2 is present and all reasonable flood and channel migration risk reduction alternatives have been considered.

Policy RCM-2: How to Reposition and Relocate Large Woody Debris

Repositioning or relocation of naturally occurring large woody debris should be accomplished using the technique that results in the least disturbance to the river channel and riparian corridor. If repositioned or relocated, the wood should be put back into the river in a manner that does not create new flood or channel migration risks. If it is not practical or reasonable to return the large woody debris to the channel, it should be incorporated into an adjacent riparian corridor.

2.4.2 Gravel Removal

One of the most common requests King County receives from the public is to conduct dredging within channels that have large accumulations of gravel. If King County is to conduct gravel removal, its effectiveness as a flood risk reduction strategy, its potential adverse impacts, and its priority relative to other King County projects must be considered. If gravel removal is done, the operation must be conducted in a way that does not damage existing King County flood protection facilities. The following policy applies only to projects that King County sponsors or participates in but does not apply to projects sponsored entirely by other jurisdictions or individuals.

Policy RCM-3: Gravel Removal

King County should remove gravel from rivers and streams for flood hazard management purposes only when:

- a. It can be demonstrated that gravel accumulation poses a flood risk, as defined in Policy G-2 of this Plan,
- b. Hydraulic and geomorphic studies conclude gravel removal has a long-term benefit of flood risk reduction,
- c. Biologic studies determine it does not, with appropriate mitigation, result in a net loss of ecological function,
- d. It is part of a comprehensive, long-term flood management strategy,
- e. It is consistent with the best available science, the provisions of this Plan, and state and federal guidelines and regulations, including the Endangered Species Act, and

- f. It is determined to be the best flood risk reduction alternative available, based on criteria in this Plan.

2.5 FLOOD WARNING AND EMERGENCY RESPONSE POLICIES

2.5.1 Flood Warning

Early warning of developing flood conditions is essential to effective flood risk reduction during flood events. Weather forecasts and real-time river gage data must be interpreted and made available through a variety of means to allow agencies, organizations and private individuals to take appropriate action before and during a flood event. King County operates a flood warning center for this purpose.

Policy ER-1: Flood Warning Services

King County should provide regional flood warning services including the operation of a Flood Warning Center. King County should consider expanding these services if resources are available.

2.5.2 Responsibilities During Emergencies

Many agencies and jurisdictions play a role in responding to flood emergencies. The specific responsibilities of each agency must be clear to avoid confusion or miscommunication during the emergency. The River and Floodplain Management Program holds annual coordination meetings in each major river basin, largely to clarify the various flood-related roles and responsibilities of the many agencies that work in those basins. The River and Floodplain Management Program works to support the work of those other agencies by providing timely flood warnings and additional technical advice as may be requested. The River and Floodplain Management Program is also responsible for the inspection and maintenance of King County flood protection facilities. This responsibility can include the planning and implementation of emergency actions to address flood damage to those facilities.

Policy ER-2: Regional Flood Emergency Response

King County should coordinate regional flood emergency response services during and after flood emergencies through the River and Floodplain Management Flood Warning Center and King County Emergency Coordination Center.

2.5.3 Emergency Response Actions

While emergency response actions should be consistent with the long-term flood risk reduction vision of this Plan, it may, at times, be necessary to implement flood protection facility repairs or other short-term actions to prevent or reduce flood damage until such time as long-term solutions can be implemented.

Policy ER-3: Emergency Response Actions

King County should consider long-term risk reduction and habitat restoration objectives when taking emergency response actions.

2.5.4 Sandbag Availability for Flood Fighting

During flood events, many citizens call King County agencies to request sandbags and sand to protect their property. As resources permit, King County may make sandbags available to property owners for pick up in public locations, such as fire stations and roadsides. However, property owners should not rely on King County to provide these materials, as County supplies can be overwhelmed by demand. Some cities are also able to provide sand and sandbags for flood protection to their residents.

Policy ER-4: Sandbags

Property owners living in flood hazard areas are responsible for obtaining sandbags, sand and other flood-fighting materials to protect their property during flood events. Property owners are responsible for filling and placing sandbags, cleaning up sandbags after the flood event, and meeting any other regulations relating to sandbagging activity. King County may provide sand and sandbags for private property owners during flood emergencies to the extent that resources are available.

2.6 FUNDING POLICIES

King County's major funding sources for flood hazard management are the River Improvement Fund and the Green River Flood Control Zone District. Other funding sources include the Inter-County River Improvement Agreement levy, which funds flood risk reduction projects on the White and Puyallup Rivers through an agreement between King and Pierce Counties. King County has also been successful in leveraging federal and state grant and disaster assistance funds. The policies in this section provide a framework for making decisions about how these funding sources are used for flood hazard management in King County.

2.6.1 Risk Assessment

A flood risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from a flood by assessing the vulnerability of people, buildings and infrastructure to the flood hazard. A risk assessment is considered an integral part of the information needed to determine and prioritize funding for flood protection facility capital improvement projects and maintenance programs. It is also a key element in identifying the benefits of a project as required under federal grant programs. The structural integrity of existing flood protection facilities, some of which were constructed many years ago, is not fully known. Development conditions within the flood hazard areas have also changed over time. Due to limited resources, King County has not conducted a comprehensive assessment of its flood protection facility inventory, or the development protected by these facilities. A King County Risk Assessment was performed for this Plan using geographic information system data, pursuant to the requirements of the Disaster Mitigation Act and the Community Rating System, and is included in Appendix C. However, the detail of approach in this King County Risk Assessment differs from the comprehensive assessment of facilities suggested in this section. Contemporary risk assessment methods can be used to determine the current level of risk associated with King County flood protection facilities and should be viewed as dynamic tools that can change as information and technology change.

Policy FF-1: Economic Impact Assessment

King County should complete economic impact assessments along major river systems to determine the economic impact of potential flood-related damages that may occur as a result of failure of King County managed flood protection facilities. These analyses should be consistent with the River and Floodplain Management Program goals and objectives and should be used to inform flood hazard management actions and to prioritize funding allocations.

2.6.2 Maintaining and Securing Funding

When a major flood event occurs, local jurisdictions are generally required to match federal and state funds that are available for recovery and repair of damaged structures or the mitigation of flood damaged structures. There are also pre-disaster funds available under federal programs that require a local cost share. Currently King County does not have a dedicated emergency fund balance that is sufficient to meet the demand that could result from a major flood disaster. Current funding levels in support of flood risk reduction are significantly inadequate; additional regional funding sources that are integrated to meet the multiple objective needs of flood risk reduction are needed.

Policy FF-2: Designated Emergency Fund Balance

King County should establish a designated emergency fund balance reserve to be used exclusively for flood emergency response. To the extent that new funding is approved, these funds should be used to leverage state and federal funds, but should also be sufficient to allow King County to respond to emergencies when state and federal funding is not readily available. The reserve allocation should be based on the projected costs for the local share of flood disaster recovery plus a cost contingency.

Policy FF-3: Regional Funding

New or expanded regional funding sources should be identified and secured to meet the need for enhanced or expanded flood hazard management projects and programs to address flood hazard management goals and objectives.

Policy FF-4: Pre-Disaster Mitigation Grant Program

King County should identify and prioritize eligible projects on an annual basis for submittal to the FEMA Pre-Disaster Mitigation Grant Program.