



# CHAPTER 7

## Capability Assessment

Federal, state, and local laws, ordinances, and plans can support or impact the flood mitigation initiatives identified in Chapter 3. Development of this plan included a review and incorporation – if appropriate – of existing plans, studies, reports, and technical information. This chapter describes the major relevant laws, plans, and mitigation resources.

### 7.1 Federal

#### 7.1.1 Disaster Mitigation Act of 2000

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) provides the legal basis for Federal Emergency Management Agency (FEMA) mitigation planning requirements for state, local, and tribal governments as a condition of mitigation grant assistance. The

DMA amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by replacing previous mitigation planning provisions with new requirements that emphasize the need for planning entities to coordinate mitigation planning and implementation efforts. The law added incentives for increased coordination and integration of mitigation activities at the state level by establishing two levels of state plans. The DMA also created a new requirement for local mitigation plans, and authorized up to 7 percent of Hazard Mitigation Grant Program funds to be available for development of state, local, and tribal mitigation plans. Chapter 1 provides additional information about the DMA and its grant programs.

The Thurston region was among the first in Washington State to adopt a multi-jurisdictional hazard mitigation plan. Thurston County adopted the 3<sup>rd</sup> edition July 2017. The plan demonstrates the county's compliance with the DMA and with conducting a continuous, comprehensive, and coordinated approach to hazards mitigation planning.

### **7.1.2 FEMA Flood Mapping and Risk MAP**

FEMA conducts Flood Insurance Studies (FIS) to prepare Flood Insurance Rate Maps (FIRMs) that delineate flood hazard zones and to establish Base Flood Elevations (BFEs) in the United States. This is part of FEMA's regulatory mapping program. FEMA also provides supplemental mapping and flood risk information through the Risk MAP program. Because of the importance of understanding the nation's coastal flood risk, FEMA initiated coastal flood risk studies for the populated coastline as part of its Risk MAP effort.

Thurston County and FEMA completed a FIS and Risk MAP project for the Deschutes River basin in 2016, and the County adopted the remodeled and remapped floodway and floodplains into its Critical Area Ordinance in September 2016.

The second FIS and Risk MAP project for the county was the mapping of the marine coastal flood zones. This FIS and Risk MAP assessment was started in 2013. The first set were revised to align more closely with the neighboring Mason and Pierce counties. This project is currently in the "Appeal Period," with the revised maps expected to become "Effective" in winter 2017/2018.

The county's third FIS and Risk MAP assessment project addresses the Lower Chehalis Watershed. This assessment includes the Chehalis, Skookumchuck, Black River, and Scatter Creek. While the initial scoping meeting occurred in March 2010, funding issues held up work until 2016. Draft maps were released to the participating stakeholders. The revised maps are expected to become effective in fall 2018.

Planned for fall 2017, the fourth assessment will address the Nisqually River Basin, with effective maps expected in 2020. Planned for fall 2017, the fourth assessment will address the Nisqually River Basin, with effective maps expected in 2020.

### 7.1.3 National Flood Insurance Program

The National Flood Insurance Program (NFIP) makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities in exchange for communities enacting floodplain regulations. For most participating communities, FEMA prepared a detailed Flood Insurance Study. The study presents water surface elevations for floods of various magnitudes, including the 1 percent annual chance flood (100-year flood) and the 0.2 percent annual chance



flood (the 500-year flood). Flood Insurance Rate Maps (FIRMS) show base flood elevations and boundaries of the 100- and 500-year floodplains, and serve as the principal tool for identifying the extent and location of the flood hazard. FIRMs, the most detailed and consistent data source available, represent the minimum area of oversight under some community's floodplain management programs.

Participants in the NFIP must, at a minimum, regulate development in floodplain areas in accordance with NFIP criteria. Before issuing a permit to build in a floodplain, participating jurisdictions must meet three criteria:

- New buildings and those undergoing substantial improvements must, at a minimum, be elevated to protect against damage by the 100-year flood.
- New floodplain development must not aggravate existing flood problems or increase damage to other properties.
- New floodplain development must exercise a reasonable and prudent effort to reduce its adverse impacts on threatened salmonid species.

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To learn more about the county's NFIP standing and repetitive loss properties, view:

***CHAPTER 2 Risk Assessment***

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Thurston County entered the NFIP in 1982, and the first Thurston County FIRM was issued December 1, 1982. Structures permitted or built in the planning area before that date are called “pre-FIRM” structures, and structures built afterward are called “post-FIRM,” with insurance rates different for each. Other than for the

Deschutes River, the effective date for the current FIRM is October 16, 2012. The FIRM for the Deschutes River became effective on September 2, 2016. Post-FIRM properties are eligible for reduced flood insurance rates. Such structures are less vulnerable to flooding since they were constructed under regulations and codes that lead to decreased vulnerability. Properties built before a FIRM is adopted are more vulnerable to flooding because they do not meet code or are in hazardous areas.

#### **7.1.4 The Community Rating System (CRS)**

The CRS is a voluntary program within the NFIP that encourages floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premiums are discounted to reflect the lowered flood risk resulting from community actions to meet the CRS goals of reducing flood losses, facilitating accurate insurance rating, and promoting awareness of flood insurance.

For participating communities, flood insurance premium rates are discounted in increments of 5 percent. For example, a Class 1 community would receive a 45 percent premium discount, and a Class 9 community would receive a 5 percent discount. (Class 10 communities meet the minimum requirements and receive no discount). The CRS classes for local communities are based on 18 creditable activities in specific categories:

- Mapping and flood data

- Managing new development to minimize future flood damage
- Reducing flood losses to existing development
- Improving emergency preparedness and response
- Implementing public information activities

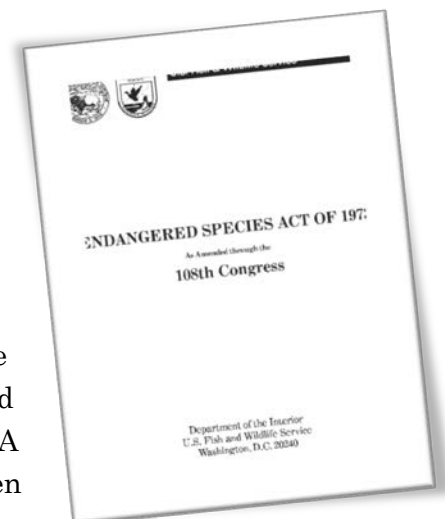
CRS activities can help save lives and reduce property damage. Communities participating in the CRS represent a significant portion of the nation's flood risk, with over 66 percent of the NFIP's policy base in these communities. Communities receiving premium discounts through the CRS range from small to large and represent a broad mixture of flood risks, including both coastal and riverine flood risks.

Enrolled since 2000, Thurston County is the only community within the planning area that participates in the CRS program. Thurston County received a Class II community rating (previously a Class IV) by FEMA in November 2016. This rating entitles property owners in the 100-year floodplain to a 40 percent discount on flood insurance. Those outside the 100-year floodplain receive a 10 percent discount.

The County's Class 2 rating is primarily due to its flood management program, land use and zoning regulations, and public education and outreach activities. Together these programs reduce flood damage, which results in a reduction in insurance premiums. To maintain this rating, the county must complete an annual recertification and a re-verification visit every three years. This Flood Hazard Mitigation Plan (FHMP) accounts for a portion of the county's CRS credit and is a prerequisite for becoming a Class 4 or better community.

### 7.1.5 Endangered Species Act

Enacted in 1973, the federal Endangered Species Act (ESA) intends to conserve species facing depletion or extinction and the ecosystems that support them. The act sets forth a process for determining which species are threatened and endangered and requires conservation of the critical habitat in which those species live. The ESA provides broad protection for species of fish, wildlife, and plants listed as threatened or endangered. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The ESA outlines procedures for federal agencies to follow when



taking actions that may jeopardize listed species. The procedures also include exceptions and exemptions. This enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora includes criminal and civil penalties violations of the ESA and the Convention.

Federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes. The ESA defines three fundamental terms:

- **Endangered** means that a species of fish, animal, or plant is “in danger of extinction throughout all or a significant portion of its range.” (For salmon and other vertebrate species, this may include subspecies and distinct population segments.)
- **Threatened** means that a species “is likely to become endangered within the foreseeable future.” Regulations may be less restrictive for threatened species than for endangered species.
- **Critical habitat** means “specific geographical areas that are...essential for the conservation and management of a listed species, whether occupied by the species or not.”

The following five sections of the ESA supply information critical to understanding the act:

- **Section 4: Listing of a Species**—The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) is responsible for listing marine species; the U.S. Fish and Wildlife Service is responsible for listing terrestrial and freshwater aquatic species. The agencies may initiate reviews for listings, or citizens may petition for them. A listing must be made “solely on the basis of the best scientific and commercial data available.” After a listing is proposed, agencies solicit comment and conduct further scientific reviews for 12 to 18 months, after which they must decide if the listing is warranted. Economic impacts cannot be considered in this decision, but it may include an evaluation of the adequacy of local and state protections. Critical habitat for the species may be designated at the time of listing.
- **Section 7: Consultation**—Federal agencies must ensure that any action they authorize, fund, or carry out is not likely to

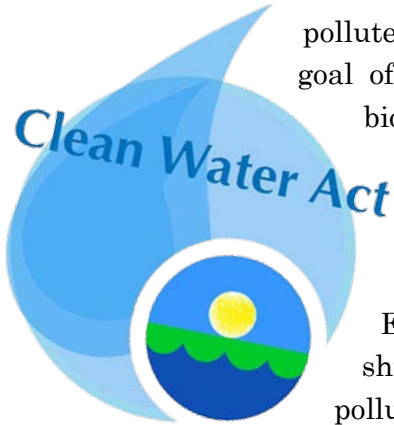
jeopardize the continued existence of a listed or proposed species or adversely modify its critical habitat. This includes private and public actions that require a federal permit. Once a final listing is made, non-federal actions are subject to the same review, termed a “consultation.” If the listing agency finds that an action will “take” a species, it must propose mitigations or “reasonable and prudent” alternatives to the action; if the proponent rejects these, the action cannot proceed.

- **Section 9: Prohibition of Take**—It is unlawful to “take” an endangered species, including killing or injuring it or modifying its habitat in a way that interferes with essential behavioral patterns, including breeding, feeding, or sheltering.
- **Section 10: Permitted Take**—Through voluntary agreements with the federal government that provide protections to an endangered species, a non-federal applicant may commit a take that would otherwise be prohibited if it is incidental to an otherwise lawful activity (such as developing land or building a road). These agreements often take the form of a “Habitat Conservation Plan.”
- **Section 11: Citizen Lawsuits**—Civil actions initiated by any citizen can require the listing agency to enforce the ESA’s prohibition of taking or to meet the requirements of the consultation process.

With the listing of salmon and trout species as threatened or endangered, the ESA impacts most of the Pacific Coast states. Although some areas have been more impacted than others due to the known presence of listed species, the entire region has been impacted by mandates, programs, and policies based on the presumption of the presence of listed species. Most West Coast jurisdictions must now consider the impact of their programs on habitat. Thurston County communities are also affected by the listing of prairie species including the Mazama pocket gopher, the Streaked horned lark, and the Taylor’s checkerspot butterfly. Affected communities within the planning area are currently developing Habitat Conservation Plans to protect these species and their habitats.

### 7.1.6 The Clean Water Act

The federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's surface waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."



Evolution of CWA programs over the last decade included a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. The watershed approach places equal emphasis on protecting healthy waters and restoring impaired ones and addresses a full array of issues, not just those subject to CWA regulatory authority. Stakeholder involvement in the development and implementation of strategies for achieving and maintaining water quality and other environmental goals is a hallmark of this approach.

## 7.2 State

### 7.2.1 Washington State Enhanced Hazard Mitigation Plan

The Washington State Enhanced Hazard Mitigation Plan (2013) provides guidance for hazard mitigation throughout Washington. The plan identifies hazard mitigation goals, objectives, actions and initiatives for state government to reduce injury and damage from natural hazards. By meeting federal requirements for an enhanced state plan (44 CFR parts 201.4 and 201.5), the plan allows the state to seek significantly higher funding from the Hazard Mitigation Grant Program following presidential declared disasters (20 percent of federal disaster expenditures vs. 15 percent with a standard plan).

### 7.2.2 Washington State Floodplain Management Law

Washington's floodplain management law (Revised Code of Washington (RCW) 86.16, implemented through Washington Administrative Code (WAC) 173-158) states that prevention of flood damage is a matter of



statewide public concern and places regulatory control with the Department of Ecology. Floodplain management literature, including FEMA's national assessment, cites RCW 86.16 as one of the nation's first and strongest. A 1978 major challenge to the law – *Maple Leaf Investors Inc. v. Department of Ecology* – is cited in legal references to floodplain management issues. The court upheld the law, declaring that denial of a permit to build residential structures in the floodway is a valid exercise of police power and did not constitute a taking. RCW Chapter 86.12 (Flood Control by Counties) authorizes county governments to levy taxes, condemn properties, and undertake flood control activities directed toward a public purpose.

### **7.2.3 Flood Control Assistance Account Program**

The state of Washington passed its first Flood Control Maintenance Program in 1951. In 1984, RCW 86.26 (State Participation in Flood Control Maintenance) established the Flood Control Assistance Account Program (FCAAP), which provides funding for local flood hazard management (FCAAP rules: WAC 173-145). The Washington State Department of Ecology (Ecology) distributes FCAAP matching grants to cities, counties, and other special districts responsible for flood control. This is one of the few state programs in the U.S. that provides grant funding to local governments for floodplain management. The program has been funded for \$4 million per biennium since its establishment, with additional amounts provided after severe flooding events.

To be eligible for FCAAP assistance, flood hazard management activities must be approved by Ecology in consultation with the Washington State Department of Fish and Wildlife. The appropriate local authority must have completed and adopted or be in the process of preparing a comprehensive flood hazard management plan to receive FCAAP flood damage reduction project funds. This policy evolved through years of the Flood Control Maintenance Program and early years of FCAAP in response to the observation that poor management in one part of a watershed may cause flooding problems in another.

Local jurisdictions must participate in the NFIP and be a member in good standing to qualify for an FCAAP grant. Grants can provide grants up to 75 percent of total project cost for comprehensive flood hazard management planning. Flood damage reduction projects can receive

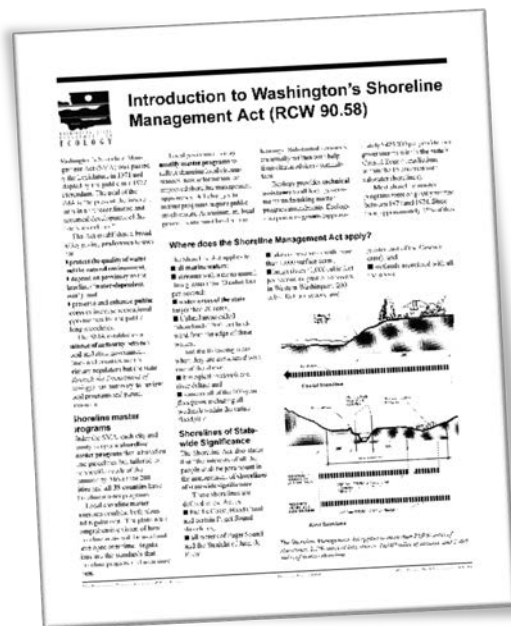
grants up to 50 percent of total project cost, and must be consistent with the comprehensive flood hazard management plan. Emergency grants are available to respond to unusual flood conditions. FCAAP can also be used for the purchase of flood prone properties, for limited flood mapping, and for flood warning systems. Funding currently is split 60 percent planning/40 percent projects.

Thurston County updated and adopted its Flood Hazard Mitigation Plan in 2012. The county is currently in compliance and good standing with the FCAAP program. The mitigation initiatives identified in this plan may be eligible for funding under FCAAP. FCAAP funds can be used as matching funds for some types of mitigation projects funded under the FEMA Hazard Mitigation Grant Program.

### 7.2.4 Shoreline Management Act

The 1971 Shoreline Management Act (RCW 90.58) was enacted to manage and protect the shorelines of the state by regulating development in the shoreline area. The act intends to prevent the “inherent harm in an uncoordinated and piecemeal development of the state’s shorelines.” Covered areas include: The Pacific Ocean and Puget Sound shorelines; the Strait of Juan de Fuca; rivers, streams, and lakes above a certain size; and the wetlands associated with these shorelines.

Shoreline management activities “implement policies and regulations to help protect water quality for our marine waters, lakes and stream systems; increase protection of lives and property from flood and landslide damage; protect critical habitat as well as fish and wildlife; promote recreational opportunities in shoreline areas.” Often these policies and programs complement or are critical in mitigation programs for communities.



### **7.2.5 Growth Management Act**

The 1990 Washington State Growth Management Act (RCW Chapter 36.70A) mandates that local jurisdictions adopt land use ordinances to protect the following critical areas:

- Wetlands
- Critical aquifer recharge areas
- Fish and wildlife habitat conservation areas
- Frequently flooded areas
- Geologically hazardous areas

The Growth Management Act regulates development in these areas, and therefore can affect hazard vulnerability and exposure at the local level. More information about the Growth Management Act is in Chapter 3.

### **7.2.6 Washington State Building Code**

With respect to growth and new development, adhering to the most current building codes can provide a community's greatest line of defense in avoiding future disaster losses. Washington State's building codes are mandatory for residential and commercial buildings, statewide. The Washington State Building Code Council adopted both the 2015 editions of national model codes with some amendments, and the Washington State Energy Code and Ventilation and Indoor Air Quality Code. The 2015 codes went into effect as the Washington model code on July 1, 2016. Hazard loss avoidance is intrinsic with adoption of and compliance with appropriate building codes. More information about Thurston County's Building Codes is in Chapter 3.

### **7.2.7 Comprehensive Emergency Management**

#### **Planning**

Washington's Comprehensive Emergency Management Planning law (RCW 38.52) establishes parameters to ensure that the state's preparations will be adequate to deal with disasters. It ensures the administration of state and federal programs providing disaster relief to individuals and ensures adequate support for search and rescue operations. The law also:

- Provides for emergency management by the state, and authorizes the creation of local organizations for emergency management in political subdivisions of the state.
- Confers emergency powers upon the governor and upon the executive heads of political subdivisions of the state.
- Provides for the rendering of mutual aid among political subdivisions of the state and with other states and for cooperation with the federal government with respect to the carrying out of emergency management functions.
- Provides a means of compensating emergency management workers who may suffer any injury or death, who suffer economic harm including personal property damage or loss, or who incur expenses for transportation, telephone or other methods of communication, and the use of personal supplies as a result of participation in emergency management activities.
- Provides programs, with intergovernmental cooperation, to educate and train the public to be prepared for emergencies.

This law requires that emergency management functions of the state and its political subdivisions coordinate to the maximum extent possible with comparable functions of the federal government, agencies of other states and localities, and of private agencies of every type.



WAC 118-30-060(1) requires each political subdivision to base its comprehensive emergency management plan on a hazard analysis, and sets forth definitions related to hazards:

- Hazards are conditions that can threaten human life as the result of three main factors:
  - Natural conditions, such as weather and seismic activity
  - Human interference with natural processes, such as a levee that displaces the natural flow of floodwaters
  - Human activity and its products, such as homes on a floodplain.
- The definitions for hazard, hazard event, hazard identification, and flood hazard include related concepts:
  - A hazard may be connected to human activity
  - Hazards are extreme events
  - Hazards generally pose a risk of damage, loss, or harm to people and/or their property

### **7.2.8 Watershed Management Act**

Washington's Watershed Management Act of 1998 encourages local communities to develop plans for protecting local water resources and habitat, since they know their own regions best. The Department of Ecology establishes Water Resource Inventory Areas (WRIAs), dividing the state into 62 WRIAs, each loosely drawn around a natural watershed or group of watersheds. A watershed is an area of land that drains into a common river, lake, or the ocean

### **7.2.9 State Environmental Policy Act**

The Legislature enacted the State Environmental Policy Act (SEPA) in 1971 to provide a regulatory framework for state and local agencies to address environmental issues in their decisions. The act provides information to agencies, applicants, and the public to encourage the development of environmentally sound proposals. The environmental review process involves identifying and evaluating probable environmental impacts and developing mitigation measures to reduce adverse impacts.

Modeled after the National Environmental Policy Act, SEPA ensures the consideration of environmental values during decision making by state and local agencies. When the act was adopted, the Legislature identified four primary purposes:

1. To declare state policy which will encourage productive and enjoyable harmony between people and the environment.
2. To promote efforts which will prevent or eliminate damage to the environment.
3. To stimulate the health and welfare of people.
4. To enrich the understanding of the ecological systems and natural resources important to the state and nation.

The law requires local governments to:

- Utilize a systematic, interdisciplinary approach that ensures the integrated use of natural and social sciences and the environmental design arts in planning and decision making that may affect the environment.
- Ensure that environmental amenities and values are given appropriate consideration in decision making along with economic and technical considerations.

Local agencies may use SEPA in combination with their own critical area regulations to provide a robust approach to environmental protection and hazard avoidance. Thurston County, for example, uses SEPA to fill gaps in local regulations related to mitigating hazards. Communities that take the SEPA process seriously can use it to improve their mitigation efforts. A checklist helps communities determine the environmental impact of a proposed development. SEPA review requirements may apply to certain mitigation actions identified in this plan.

## **7.3 Local**

### **7.3.1 Comprehensive Plans**

Local agency Comprehensive plans form the cornerstone of community growth and development. They guide a county or city's physical development and identify transportation and other public facilities needed to meet the needs of population growth. These plans serve as the framework for zoning and other development regulations, which

must be consistent with comprehensive plans. A thorough review of Thurston County's Comprehensive Plan is in Chapter 3.

### **7.3.2 Emergency Management Plan**

The Comprehensive Emergency Management Plan (CEMP) is Thurston County's all-hazards emergency management plan. The plan includes a Basic Plan promulgated in 2015 and Emergency Support Function (ESF) Annexes currently being updated. CEMP is consistent with the Washington State Comprehensive Emergency Management Plan and the federal-level National Response Framework (NRF). The basic plan and its annexes address prevention and mitigation, preparedness, response, and recovery activities. The county's Comprehensive Emergency Management Plan is reviewed and updated on a four-year cycle. This plan, and the state's approval, is a requirement for recognition of a jurisdiction's emergency management program under RCW 38.52.070. The county and incorporated cities and towns must have a state approved CEMP or be covered under another jurisdiction's plan. More information about Thurston County's emergency service activities is in Chapter 3.

### **7.3.3 Critical Areas Ordinance**

Washington's Growth Management Act requires local governments to protect five types of critical areas: important fish and wildlife habitat areas, wetlands, critical aquifer recharge areas, frequently flooded areas, and geologically hazardous areas, such as bluffs. Thurston County's critical areas regulations respond to that law, regulating how development and redevelopment can safely occur on lands that contain critical areas. On July 24, 2012, the Board of County Commissioners adopted Ordinance No. 14773 amending the Thurston County Critical Areas Ordinance and other related chapters of the Thurston County Code. A thorough review of Thurston County's Critical Areas Ordinance is in Chapter 3.

### **7.3.4 Municipal Stormwater Permits**

Stormwater management is an effective tool to control stormwater flooding. Under the Clean Water Act, Ecology regulates the issuance of municipal stormwater permits to local governments. The stormwater permits regulate a community's ability to discharge stormwater into streams, rivers, lakes, and the Puget Sound. Thurston County, Lacey, Olympia, and Tumwater are Phase II Western Washington Municipal

Stormwater Permit communities and must comply with the Western Washington National Pollutant Discharge and Elimination System Municipal General Stormwater Permit. Phase II counties and cities must make Low Impact Development (LID) the preferred and commonly used approach to site development. LID is a stormwater management strategy designed to minimize impervious surfaces, maximize native vegetation retention, and filter stormwater on site as much as possible to manage pollutants and control stormwater flows to prevent erosion. The county and cities amended and updated their zoning and development codes to incorporate LID strategies in 2016. Additional information about Thurston County's stormwater management regulations is in Chapter 3.

### **7.3.5 Shoreline Master Program**

In 1972, the Shoreline Management Act (RCW 90.58) was approved by the voters of the State of Washington. This law regulates the development and use of certain river, lake and marine shorelines within the State. A part of this law requires local governments (cities and counties) to adopt local Shoreline Master Programs (SMP's). The overall goal of the Shoreline Management Act (SMA) is to "prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The act is designed to provide for three broad polices: (1) protect shoreline natural resources and ecological functions, (2) reserve shorelines for water dependent and associated water-related uses, and (3) promote public access.

The Act provides for regulation of shoreline development and use in two principal ways. First, it requires that each local Shoreline Master Program contain policies and regulations which define permitted uses and activities. All development activity within shoreline jurisdiction must be consistent with the Master Program, hence these policies and regulations. In one respect, the Master Program is like a comprehensive plan for shorelines because it contains goals and policies, and in another respect it is similar to a zoning code which contains specific performance standards and regulations.

The second way the Act regulates shoreline activities is by requiring permits for certain types of development or use. Compliance with the permit requirements is in addition to the need to comply with the program regulations. Thus, even if a person does not have to obtain a



permit for a project, the proposed project still must comply with the regulations.

In addition to a letter of exemption for developments not required to get shoreline permits there are 3 shoreline permit types. The 3 permits are Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, and Shoreline Variance permit. Each have their own conditions and requirements to meet under the SMP.

A major component of the SMP is a shoreline inventory. The inventory categorizes the shoreline into different shoreline environments based on criteria including type of habitat, ecological functions, surrounding land use, and zoning. In 1990, Thurston County adopted the most recent update of the Thurston Regional Shoreline Master Program (Aaland, 1990). There have been several text amendments since that time and a new shoreline inventory was completed in 2013 associated with the current on-going update to the Thurston County Shoreline Master Program.

In the current 1990 SMP for the Thurston Region, shorelines regulated under the SMA were designated as one of the following shoreline environments:

- Natural
- Conservancy
- Rural
- Urban

The type of permit required is based on the proposed use or development, in conjunction with the shoreline environment designation where it's proposed.

### **7.3.6 WRIA Planning**

Although Washington's Watershed Management Act does not require planning, Thurston County and local governments have undertaken related planning activities, with technical and financial support from Ecology. Thurston County has participated in watershed planning for four WRIsAs:

- Nisqually River Watershed (WRIA 11)
- Deschutes Watershed (WRIA 13)

- Kennedy-Goldsborough Watershed (WRIA 14)
- Upper and Lower Chehalis River Watershed (WRIAs 22 and 23)

### **7.3.7 School District Bonds**

Under the authority of the Superintendent of Public Instruction, school districts may issue bonds for major and minor structural additions to buildings, facilities, structures, and sites (RCW 28A.525). Replacing aging school buildings with newer, modern facilities, constructed with current building codes, is at its core, a practice in hazard mitigation. While Thurston County does not have authority to issue school district bonds, school districts may voluntarily designate a facility such as a gymnasium, cafeteria, or portable classroom as emergency shelters (if they don't interfere with their primary function of student education) due to their strength and emergency provisions such as electrical backup systems, kitchens, and restrooms with shower facilities.

## **7.4 Regional Planning**

### **7.4.1 The Emergency Management Council of Thurston County**

The Emergency Management Council (EMC) was created in 1993 and renewed in 2013 via an interlocal agreement to coordinate emergency management activities with the county, cities, and tribes. The nine-member council includes the emergency management representatives from Thurston County, the Town of Bucoda, the cities of Lacey, Olympia, Rainier, Tenino, Tumwater, and Yelm, the Confederated Tribes of the Chehalis Reservation, and the Nisqually Indian Tribe. The Council convenes monthly and regularly invites a variety of stakeholders and subject matter experts to address a wide array of issues related to emergency preparedness, response, recovery, and mitigation. The EMC also lends their expertise as the steering committee for the All Hazards Mitigation Plan for the Thurston Region.

The EMC has hosted numerous Executive Disaster Recovery Seminars to engage community leaders and to enhance their awareness of regional activities such as hazards mitigation and catastrophic disaster recovery planning. On October 20, 2014, the EMC convened a countywide seminar on floods and winter storms in Thurston County. Elected officials and department directors from jurisdictions across the

county attended the seminar to learn more about Thurston County's most prevalent natural hazard.

### 7.4.2 Thurston Regional Planning Council

Thurston County is an original member of the Thurston Regional Planning Council (TRPC), a council of governments established in 1967. TRPC fosters the region's livability through collaborative, informed planning. It carries out regionally focused plans and studies on topics such as transportation, growth management, and environmental quality. Decision-makers from 21 jurisdictions and organizations in Thurston County make up the council, which meets monthly to address challenges related to the region's growth.

TRPC also provides information and education regarding the region and its emerging planning issues. Regional statistics, trends, analyses, and maps provide a basis for planning and decision-making on both the regional and local levels. A variety of council-sponsored community forums relating to regional planning help to educate and promote public participation and dialogue. TRPC's major planning efforts touch nearly every community in the county:

#### Creating Places Preserving Spaces: A Sustainable Development Plan for the Thurston Region

The Sustainable Thurston project began in early 2011 with a simple question for the Thurston Region's quarter-million residents: How do

you want your community to look, function, and feel in 2035? Online and in person, thousands of engaged residents helped the *Sustainable Thurston Task Force* craft a regional vision of sustainable development that encompasses land use, housing, energy, transportation, food, health, public safety, and other

interconnected issues. This community conversation identified a vision for a vibrant, healthy, and resilient future, as well as the actions and responsibilities to achieve it:

[www.trpc.org/259/Sustainable-Thurston](http://www.trpc.org/259/Sustainable-Thurston).



Sustainable Thurston identified several goals and corresponding actions to achieve the region's vision. Two goals specifically addressed public safety:

- Public Safety Goal 1: Provide emergency services in a dependable and efficient way to meet the dynamic needs of a diverse society.
- Public Safety Goal 2: Create a resilient region by improving disaster preparedness, response, and recovery efforts as well as by expanding public safety education.

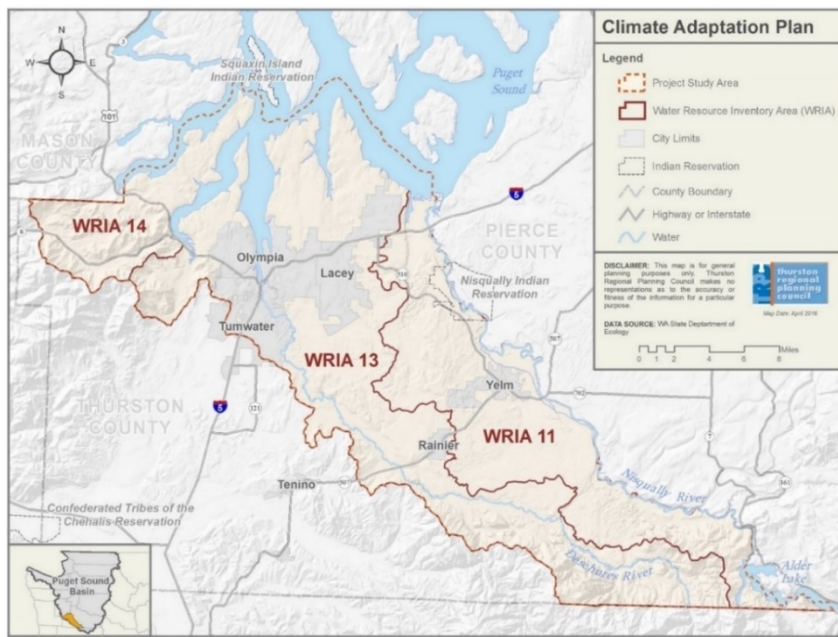
The plan also includes seventeen actions to support creating disaster resilient communities:

ID	ACTION
PS-2.01	Fund an update to the region's FEMA approved hazard mitigation plan every five years.
PS-2.02	Encourage local governments, tribes, schools, special-purpose district, and major private employers, such as hospitals, to participate in a regional risk-assessment process and adopt local plans.
PS-2.03	Identify cost-effective mitigation actions that provide all sectors of the community protection from disaster events.
PS-2.04	Consider emergency facilities in community planning and permitting.
PS-2.05	Prioritize relationship building among public safety agencies and other entities to leverage response capacities during disaster events.
PS-2.06	Participate in regional emergency exercises and recovery planning processes.
PS-2.07	Convene recovery committees immediately after a disaster to prioritize restoration of vital public safety facilities and other essential community assets.
PS-2.08	Train personnel in best practices following lessons learned.
PS-2.09	Build residents' capacity to mitigate hazards. This includes urging residents: to install and maintain fire extinguishers and smoke and carbon monoxide detectors in every living space; to reduce fire fuels around living structures in wildland-urban interface areas; to perform seismic stabilization retrofits of older homes; and in remote, hard-to-reach areas to install fire sprinkler systems.
PS-2.10	Build residents' capacity to respond to and recover from hazards. This entails: broadly publicizing the locations and descriptions of community disaster shelters to all sectors of the community; encouraging residents to stock rations, medications, backup heating, and emergency supplies to maintain self-sufficiency for at least 72 hours, preferably seven to ten days; and, building relationships among neighbors to leverage skills and resources to assist those in need when public safety services are overextended during a disaster (e.g., build upon the successes of community education and outreach activities like Thurston County's Crime Watch and Map Your Neighborhood programs).
PS-2.11	Enhance local government awareness of the risks of transporting hazardous materials via pipeline, road, rail, marine, and air routes through the region.
PS-2.12	Increase support for hazardous materials inspection, planning, management, and disposal.
PS-2.13	Establish trusting relations with private utility companies to maintain awareness of community risks from major gas and electrical distribution systems.
PS-2.14	Ensure that adequate response contingencies are in place to swiftly address hazardous materials release.
PS-2.15	Jurisdictions with adopted hazard-mitigation plans should actively pursue funding opportunities to implement their highest-priority mitigation actions.
PS-2.16	Coordinate on strategies for containing urban wildfires.
PS-2.17	Expand the eligibility of Federal Emergency Management Agency (FEMA) mitigation grant programs to allow replacement of aging structures (i.e. facilities such as water reservoirs, fire stations, transportation facilities, emergency coordination shelters, and buildings used as emergency shelters that are better suited to serve communities in the future.)

## Thurston Climate Adaptation Plan

TRPC is using a National Estuary Program (NEP) grant to develop a watershed-based climate adaptation plan with steps that the region could take to prepare for and cope with climate change impacts such as flooding in the decades ahead. The Washington Department of Commerce is administering the U.S. Environmental Protection Agency funding over the project period, which concludes in early 2018. The planning area includes parts of three watersheds that overlay northern and eastern Thurston County and drain into Puget Sound [See *inset map*]. These watersheds — defined by Ecology as Watershed Resource Inventory Areas (WRIAs) — include Nisqually (WRIA 11), Deschutes (WRIA 13), and Kennedy/ Goldsborough (WRIA 14).

Southwestern Thurston County drains into Grays Harbor via the Chehalis River, so this area is not included in the NEP grant and Puget Sound spatial analysis of climate change impacts. However, many of the strategies developed for the project area will likely be applicable to all of Thurston County and neighboring communities.



The project entails: researching and summarizing climate change projections for the region; assessing climate change vulnerabilities, risks and impacts; developing adaptation strategies and actions; conducting benefit-cost analyses; and drafting a climate adaptation plan for TRPC policymaker adoption. Like TRPC's Sustainable Thurston plan, this climate plan will

include a menu of options for the region's diverse communities, and identify priorities, leads and partners. The project team has assessed climate change vulnerabilities, risks, and impacts. In early 2017, they will develop adaptation strategies and actions for inclusion in a draft plan for TRPC policymaker consideration in early 2018.

## 7.5 Local Flood Plans and Studies Review

Early in the planning process, the Plan Development Team coordinated with neighboring jurisdictions and partner agencies to review existing plans, studies, and reports on flood-related issues from around the Thurston Region (CRS Step 3). This section provides a summary of each document that was reviewed and its contributions in preparation of the FHMP.

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More information about Thurston County plans and ordinances is in:

***CHAPTER 3 The Mitigation Strategy: Goals, Objectives, and Initiatives***

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<b>Ecosystem Service Valuation of Thurston County</b>		<b>2012</b>
<b>Summary:</b>	This technical report estimates the dollar value of Thurston County's natural capital, also known as ecosystem services, including water storage capacity (flood storage) and erosion control of wetlands, forests and other areas. The document's author, Earth Economics, estimated the dollar-per-acre value of such ecosystem services based on market cost, cost avoidance, and replacement cost.	
<b>Contribution:</b>	This technical report's Flood Protection section (pg. 17) is incorporated in the FHMP in Chapter 2, section 2.8 Flood Impacts to the Environment. The section notes, in qualitative terms, the ecosystem services that floodplains provide. The technical report could supplement this information and help educate residents about how forests, wetlands and other areas help store water and mitigate flooding – services with quantifiable dollar values (tables starting on pg. 26). This technical report also notes historic floods and related damage costs.	
<b>Publication Link:</b>	<a href="https://pdfs.semanticscholar.org/840d/9f5814a8bf467a7e11535d5e711776a3a05e.pdf">https://pdfs.semanticscholar.org/840d/9f5814a8bf467a7e11535d5e711776a3a05e.pdf</a>	
<b>Publication Citation:</b>	Flores, L., Batker, D., Milliren, A., Harrison-Cox, J., The Natural Value of Thurston County. Tacoma, WA: Earth Economics, 2012. Print.	
<b>TRPC Climate Change Vulnerability Assessment</b>		<b>2016</b>
<b>Summary:</b>	This technical report identifies how climate change exacerbates coastal (Section 4.1) and inland flooding (Section 6.2) and affects the vulnerability of built and natural assets (estuaries, roads, bridges, buildings, farms, etc.) in Thurston County. The document uses FEMA modeling to show in maps projected sea-level rise impacts on coastal areas of the county. The document also uses University of Washington Climate Impacts Group modeling to show (in watershed maps and text) the projected increases in major rainfall event frequency and intensity, runoff, streamflow and other factors that affect flooding.	
<b>Contribution:</b>	This technical report's Section 4.1: Sea-Level Rise and Section 6.2: Floods & Landslides. Information about Thurston County's flood hazard vulnerability (sources [tidal, urban, riverine, etc.], locations and trends) is incorporated into the FHMP in Chapter 2, section 2.3 Effects of Climate Change.	
<b>Publication Link:</b>	<a href="http://www.trpc.org/DocumentCenter/View/3863">http://www.trpc.org/DocumentCenter/View/3863</a>	
<b>Publication Citation:</b>	TRPC, Thurston Climate Adaptation Plan Vulnerability Assessment. Olympia, WA: Thurston Regional Planning Council, 2016. Print.	

ALL Hazards Mitigation Plan for the Thurston Region		2017
<b>Summary:</b>	This multi-jurisdiction plan identifies and profiles Thurston County hazards for storms, earthquakes, floods, landslides, wildfires, volcanism, other hazards, including the effects of climate change. Hazard profiles (including historic events and related damage costs), identifies vulnerabilities, and estimates the cost of damages and the cost that can be avoided through mitigation. The plan also identifies mitigation goals, objectives and countywide mitigation initiatives.	
<b>Contribution:</b>	The all hazards plan's goals, objectives and countywide mitigation initiatives were referenced by the Flood Planning Committee during the review and development of the FHMP's Goals and Objectives and the development of the mitigation strategy in Chapter 3. The flood hazard profile formed the basis of the development of the FHMP's risk assessment in Chapter 2. The flood hazard exposure analysis and methodology were adapted from the all hazards mitigation plan.	
<b>Publication Link:</b>	<a href="http://www.trpc.org/DocumentCenter/View/4180">http://www.trpc.org/DocumentCenter/View/4180</a>	
<b>Publication Citation:</b>	TRPC. Hazards Mitigation Plan for the Thurston Region. Olympia, WA: Thurston Regional Planning Council, 2017. Print.	
Deschutes River Land Use Analysis: Current Conditions Report		2015
<b>Summary:</b>	This technical report, prepared by Thurston County and the Thurston Regional Planning Council, analyzes water quality risks for the Deschutes River Watershed (WRIA 13). The report's Section 2 discusses the watershed's geology, including the water infiltration rates of soils (pg. 16); this section also describes the characteristics (slope gradient, wetland type, lakes, frequently flooded areas) within the watershed's smaller basins. Section 3 includes detailed water flow assessments for each basin (starting on pg. 55). Each assessment includes a recommendation for the level of land development that should occur.	
<b>Contribution:</b>	The general information about the Deschutes Watershed further supports WRIA Planning. The Deschutes plan's basin-level assessments are a useful document for Thurston County, but have more detail than what is needed for the FHMP.	
<b>Publication Link:</b>	<a href="http://www.co.thurston.wa.us/planning/watershed/docs/deschutes-project-materials/deschutes-current-conditions-report.pdf">http://www.co.thurston.wa.us/planning/watershed/docs/deschutes-project-materials/deschutes-current-conditions-report.pdf</a>	
<b>Publication Citation:</b>	Levitt, M., et. al. Deschutes River Land Use Analysis: Current Conditions Report. Olympia, WA: Thurston County Resource Stewardship Department and Thurston Regional Planning Council, 2015. Print.	
Basin Evaluation and Management Strategies For Thurston County WRIAs 13 and 14		2013
<b>Summary:</b>	This technical report, prepared by Thurston County and the Thurston Regional Planning Council, identifies strategies that local jurisdictions could use to accommodate future population growth while protecting water quality and quantity in WRIAs 13 and 14. The report references previous studies that show urbanization leads to changes in the hydrological cycle, mainly as a result of increased runoff, more impervious surfaces, and less vegetative cover. Impacts of such changes include flooding (pgs. 9, 10, 32). The report also recommends broad strategies that can be used to help protect water quality and quantity, including clustering development, requiring tree-retention practices at development sites, and utilizing low-impact development (LID).	
<b>Contributions:</b>	The technical report's information about the links between flooding and land development (impervious surfaces and vegetation removal) while useful to water quality, does not new information to expand the FHMP's risk assessment or mitigation strategy.	
<b>Publication Link:</b>	<a href="http://www.co.thurston.wa.us/planning/watershed/docs/basin-evaluation-report-20130705.pdf">http://www.co.thurston.wa.us/planning/watershed/docs/basin-evaluation-report-20130705.pdf</a>	
<b>Publication Citation:</b>	Tabbutt, V., et al. Basin Evaluation and Management Strategies For Thurston County WRIAs 13 and 14. Olympia, WA: Thurston Regional Planning Council and Thurston County Resource Stewardship Department, 2013. Print.	



Washington State Department of Health -- Washington Tracking Network (WTN) website		2017
<b>Summary:</b>	This online data portal enables users to view tables and maps with environmental health data – including residents' flood exposure risk. In this case, a GIS map shows by Census tract the number of people within a flood zone (100-year or 500-year). The tool also enables users to enter in specific addresses.	
<b>Contributions:</b>	TRPC developed a standalone interactive online all-hazards assessment GIS story map. This tool uses local flood hazard exposure data and allows community members to enter their home address to determine if they are located within a special flood hazard area.	
<b>Publication Link:</b>	<a href="http://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/WashingtonTrackingNetworkWTN">www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/WashingtonTrackingNetworkWTN</a>	
<b>Publication Citation:</b>	(WDOH) Washington Department of Health (2017). Washington Tracking Network online database: Flood Exposure. Data retrieved on May 25, 2017, from WDOH website: <a href="http://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/WashingtonTrackingNetworkWTN">http://www.doh.wa.gov/DataandStatisticalReports/EnvironmentalHealth/WashingtonTrackingNetworkWTN</a>	
Thurston County Critical Areas Ordinance -- 2013 Update		2012
<b>Summary:</b>	Thurston County amended the Critical Areas Ordinance (CAO) in 2012; this document was referenced only briefly in the 2013 flood plan (on pages 2-3 and 4-7). Chapter 24.20 applies to frequently flooded areas and 100-year channel migration hazard areas. The purposes of this section include: Identify areas affected by natural flooding and stream channel migration and minimize the amount of development at risk in such areas in order to protect human life and safety; minimize damage to homes and places of business; minimize business interruptions; avoid or minimize damage to public facilities and utilities.  The chapter also defines technical terms such as base flood elevation, no-development zones, and high groundwater flood areas, and references several maps: high groundwater flood area; river, marine, lake and coastal flood hazards; channel migration hazard areas.	
<b>Contributions:</b>	A detailed review of the CAO is included in Chapter 3. It highlights Thurston County's development standards to protect public safety and environmentally sensitive areas.	
<b>Publication Link:</b>	<a href="http://www.co.thurston.wa.us/planning/critical_areas/criticalareas_home.htm">http://www.co.thurston.wa.us/planning/critical_areas/criticalareas_home.htm</a>	
<b>Publication Citation:</b>	Thurston County (2012). Thurston County Code, Title 24: Critical Areas Ordinance. Olympia, WA: Thurston County Resource Stewardship Department. Data retrieved on June 6, 2017, from Municode website: <a href="https://www.municode.com/library/wa/thurston_county/codes/code_of_ordinances">https://www.municode.com/library/wa/thurston_county/codes/code_of_ordinances</a>	
Thurston County Shoreline Master Program		1990
<b>Summary:</b>	This document was last updated in 1990, and briefly referenced in the 2013 Flood Plan (pages 2-3 and 4-8). Thurston County is updating the SMP to make it consistent with the latest state requirements. The amended document is still under review.	
<b>Contributions:</b>	The 2013 draft Shoreline Inventory and Characterization Report will serve as the scientific foundation for the updated SMP, has a chapter (pages 28-36) that describes Thurston County shorelines, topography, geology, climate and landcover (link: <a href="http://www.co.thurston.wa.us/planning/shoreline/documents/inventory/shoreline-inventory-and-characterization-report-20130630.pdf">http://www.co.thurston.wa.us/planning/shoreline/documents/inventory/shoreline-inventory-and-characterization-report-20130630.pdf</a> ).	
<b>Publication Link:</b>	<a href="http://www.co.thurston.wa.us/planning/shoreline/shoreline_home.htm">http://www.co.thurston.wa.us/planning/shoreline/shoreline_home.htm</a>	
<b>Publication Citation:</b>	Thurston County (1990). Shoreline Master Program. Olympia, WA: Thurston County. Retrieved from Thurston County website on June 6, 2017: <a href="http://www.co.thurston.wa.us/planning/critical_areas/criticalareas_home.htm">http://www.co.thurston.wa.us/planning/critical_areas/criticalareas_home.htm</a>	

**Lewis County/broader Chehalis Basin flood planning** **2016**

<b>Summary:</b>	<p>The Lewis County Multi-Jurisdictional Hazard Mitigation Plan, a countywide plan that identifies risks and ways to minimize damage by natural and manmade disasters, was adopted in 2016. The multihazard plan includes a flood hazard risk assessment (section 4.2.6), which lists flood causes and historical flood events, including the 2007 Chehalis River flood (dates, costs, etc.); several maps in this section show flood information for all of the state's counties (e.g. map on pg. 52 that shows the number of flood insurance policies by county). Section 7 includes a flood hazard map (section 7.2.5).  <a href="http://www.cityofcentralia.com/Page.asp?NavID=779">http://www.cityofcentralia.com/Page.asp?NavID=779</a></p> <p>Lewis County's interactive GIS-based flood mapping tool integrates FEMA flood layers  <a href="http://ims.lewiscountywa.gov/webmaps/fema/viewer.htm">http://ims.lewiscountywa.gov/webmaps/fema/viewer.htm</a></p> <p>The City of Centralia's static flood plain map:  <a href="http://www.cityofcentralia.com/files/Floodplain_Map_10_08.pdf">http://www.cityofcentralia.com/files/Floodplain_Map_10_08.pdf</a>.</p> <p>Neither map stretches into southern Thurston County.</p> <p>The Chehalis River Basin Authority' interactive web map shows near-real-time flood information at several sites throughout the basin, including the Chehalis River at Grand Mound and Skookumchuck River at Bucoda.  <a href="http://www.chehalisriverflood.org/">http://www.chehalisriverflood.org/</a></p>
<b>Contributions:</b>	Thurston County included staff and a representative from the Chehalis River Basin Authority on the Thurston County Flood Planning Committee.
<b>Publication Link:</b>	Lewis County Multi-Jurisdictional Hazard Mitigation Plan: <a href="http://www.cityofcentralia.com/Page.asp?NavID=779">http://www.cityofcentralia.com/Page.asp?NavID=779</a>
<b>Publication Citation:</b>	Lewis County (2016). Lewis County Multi-Jurisdictional Hazard Mitigation Plan. Centralia, WA. Lewis County. Retrieved from City of Centralia website on June 7, 2017: <a href="http://www.cityofcentralia.com/Page.asp?NavID=779">http://www.cityofcentralia.com/Page.asp?NavID=779</a>

**Pierce County Rivers Flood Hazard Management Plan** **2013**

<b>Summary:</b>	<p>The Pierce County Rivers Flood Hazard Management Plan outlines how Pierce County will address and manage flooding and channel migration hazards on the major rivers, large tributaries and associated floodplains. The most applicable part of the Pierce County plan to Thurston County is Section 5-9, which focuses on the Middle Nisqually River west and southwest of Yelm (River Mile 21.3 to River Mile 26). This section (starting on pg. 5-193) provides a good overarching description of the Nisqually River's geology and geomorphology, hydrology and hydraulics, ecological context, existing river-management facilities, and historical flood events/damages (5.9.5.1). Table 5.44 (pg. 5-200) lists the location and details of sources of flood and channel migration problems in the Middle Nisqually River. This section concludes with flood management strategies and capital projects.</p>
<b>Contributions:</b>	The Flood Planning Committee reviewed Pierce County plan's goals and objectives during the development of the mitigation strategy. Members of the Plan Development Team also held a meeting to discuss flood plan coordination within the Nisqually River Basin.
<b>Publication Link:</b>	<a href="https://www.piercecountywa.org/ArchiveCenter/ViewFile/Item/375">https://www.piercecountywa.org/ArchiveCenter/ViewFile/Item/375</a>
<b>Publication Citation:</b>	Pierce County (2013). Pierce County Rivers Flood Hazard Management Plan. Tacoma, WA: Pierce County. Retrieved from Pierce County website on June 7, 2017: <a href="https://www.piercecountywa.org/ArchiveCenter/ViewFile/Item/375">https://www.piercecountywa.org/ArchiveCenter/ViewFile/Item/375</a>

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