



***2008-2013  
FLOODPLAIN  
MANAGEMENT  
&  
NATURAL HAZARD  
MITIGATION PLAN***



## ***2008-2013 FLOODPLAIN MANAGEMENT AND NATURAL HAZARD MITIGATION PLAN***

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## INTRODUCTION

This document adds 2008 amendments to the plan and provides an overall update. Updates are for the most part identified in Italics and Underlined for ease of reference to the changes except for the updated statistics; these changes are not underlined.

Burlington is a Community Rating System (CRS) community with a No Adverse Impact Floodplain Management focus. Public education and outreach are taking a new direction in 2008 with Neighbor to Neighbor Plans coming together around the city. The Levee Certification project for the Urban Area is a critical component of the program, with current plans for private Professional Engineering Certification and FEMA Accreditation. The Countywide All-Natural Hazard Mitigation Plan is in place and 2008 is the five-year update cycle. Operation and Maintenance programs are in compliance with PL 84-99.

The objective of the combined floodplain management plan and hazard mitigation plan is to produce an on-going program of activities that will best tackle the community's vulnerability to each natural hazard and meet other community needs. All possible activities have been reviewed and implemented so that the most appropriate solutions are used to address each hazard. The activities are coordinated with each other and with other community goals, objectives, and activities, preventing conflicts and reducing the costs of implementing individual activities. Residents are involved in continuing public education about the hazards, loss reduction measures, and the natural and beneficial functions of floodplains. Public and political support is strong for projects that prevent new problems, reduce losses and protect the natural and beneficial functions of floodplains. The community and associated special districts and other jurisdictions in the area want to see the plan's recommendations implemented.

The City of Burlington is actively involved in Flood Hazard Reduction Planning and the 2008 update is focused on setting a new course towards 100-year certified Levees in Burlington's reach of Dike District #12 with applicable companion projects and recommendations. The goal is to coordinate with all of the diking districts to plan for levee setbacks through the bridge corridor, certified levees in urban areas and 80-year protection in rural areas to prevent inappropriate development outside of urban areas. Dike District #12 and the Skagit County Department of Emergency Management work closely with the City of Burlington and the Burlington Fire Department to plan and prepare for an integrated emergency management response to flooding. The City of Burlington has a detailed plan that integrates the detailed guidelines now followed by Dike District #12 and the City of Burlington and makes additional specific recommendations for the community as needed.

2002 brought the implementation of a Flood Evacuation Plan, with permanently signed Evacuation Routes throughout the City. 2008 and beyond will focus on development and implementation of a Certified Burlington Emergency Volunteer to provide an available group of Citizens who are certified flaggers with specific training on evacuating Burlington, posted at the signed routes. Participants in the Neighbor-to-Neighbor Plan get very early evacuation notice.

This plan is part of the countywide plan to address all natural hazards in coordination with all of the jurisdictions of Skagit County. Hazards that are identified for Burlington include Flood,

Earthquake, Land Movement (on Burlington Hill), Severe Storms (wind in particular), Volcanic Eruption, Fire and Drought. The other natural hazards are Avalanche and Tsunami/Seiche.

The City of Burlington is located primarily in the 100-year floodplain, defined as a Special Flood Hazard Area by the Federal Emergency Management Agency. On December 15, 1993, the City of Burlington applied for participation in the Community Rating System. This program is designed to encourage a proactive program to address the issues of flood hazard reduction. There is a substantial benefit to the community for successful participation in the program. Not only is public awareness and preparedness enhanced, but each property owner benefits from a reduction in Federal Flood Hazard Insurance rates. Many other property owners have received substantial additional rate reductions by having an Elevation Certificate issued by a licensed civil engineer. All the elevation benchmarks in Burlington have been surveyed and are available for use. The City participated in an exhaustive planning process as part of the Multi-Jurisdictional effort, leading to the adoption of the countywide plan in 2003.

Because of the critical nature of the changes that are proposed to the Plan, the City of Burlington utilized the detailed process identified in the Community Rating System Handbook in 2007 and also participated in the mandatory update for 2008 with a regional outreach focus.

The process includes the following steps:

1. The planning process is organized under the direction of a professional planner and conducted through a committee composed of staff from those community departments that implement the majority of the plan recommendations. The City has a planning committee in addition to the Multi-jurisdictional All Natural Hazards Planning Committee to focus on the unique elements in Burlington.

The planning process and the committee were formally created by adoption of a Resolution by the City of Burlington. The 2007 update process was created by City Council Resolution #04-2007 and #03-2008 for the Multi-Jurisdictional update. The City of Burlington's Planning Committee includes the Planning Director, the Fire Chief, the Police Chief, the Building Official, the City Administrator, the Public Works Director/ Engineer, the Skagit County Department of Emergency Management and Dike District #12.

2. Involving the public includes several steps.

A public meeting was held at the beginning of the process to obtain public input on the natural hazards, problems, and possible solutions. In 2007, the Burlington Chamber of Commerce sponsored a Town Meeting on May 24, 2007 that was attended by nearly 250 people and many elected officials from the region, because of regional concerns about proposed major increases in the 100-year Base Flood Elevations on the Flood Insurance Rate Maps and the threat of requiring establishment of a Regulatory Floodway through the Skagit River Delta area.

The process for 2007 Public Notice was very similar to the original plan adoption, and participation is high because of the immediacy of the threat of increases in base flood elevations of as high as one story and broad concern and awareness about serious questions on the accuracy of the work done by the Corps of Engineers in terms of hydrology and other

assumptions in the computer modeling work, and the substantive unresolved questions about dam storage behind Lower Baker Dam.

The 2007 five meeting series was conducted by the Burlington Planning Commission, all of whom reside in the 100-year floodplain in the City of Burlington, with presentations by the Natural Hazard Mitigation Planning Committee. The 2008 five meeting series was conducted by the Skagit County Natural Hazard Mitigation Planning Committee. Public notice included issuing a press release to every media outlet. In addition, every Burlington citizen receiving the monthly Land Use Bulletin was invited to the five meeting series. Each meeting specifically provided for general public input on the issues to insure broad discussion and opportunity for participation beyond the committees. Residents in the Burlington Floodplain also received a questionnaire. A countywide flood survey was completed in the fall of 2006, focusing on flood insurance issues.

A series of five public meetings were held with the Planning Committee, other Stakeholders, and Citizen representatives comprising at least one-half of the committee primarily from floodprone areas. The following topics were the major agenda item at each meeting:

Meeting #1: Assess the hazard. 2007: Overview of hydrology and hazard assessment.

2008: Review of Natural Hazards.

Meeting #2: Assess the problem. 2007: Opportunity for dam storage enhancement.

2008: Risk Assessment.

Meeting #3: Set goals. 2007: Evaluation of alternatives and impacts. 2008: Review

Mitigation Goals.

Meeting #4: Review possible activities 2007: Overview of process for 100 year levee

certification. 2008: Review possible activities.

Meeting #5: Draft an action plan. 2007: Proposed action plan and presentation of Annual

Report on progress implementing the Hazard Mitigation Plan. 2008: Review proposed

Multi-Jurisdictional Plan.

A public meeting and public hearing was held to obtain input on the draft plan prior to adoption at the end of the planning process.

3. The floodplain management and all natural hazard mitigation plan is required to be developed using a standard planning process, outlined as follows:
  - A. Review of existing studies, reports, and technical information and of the community's needs, goals and plans for the area.
  - B. Risk Assessment
    - 1) Map of known flood hazard
    - 2) Description of known flood hazards
    - 3) Discussion of past floods
    - 4) Map, description and history of other natural hazards that affect the community
  - C. Assessment of the problem
    - 1) Overall summary of each hazard identified and its impact on the community

- 2) Description of the impact that the hazards identified have on life, safety, and health and the need and procedures for warning and evacuating residents and visitors.
- 3) Number and types of buildings subject to the hazards identified
- 4) Review of properties with flood insurance claims, and repetitive loss, or an estimate of potential dollar losses to vulnerable structures
- 5) Description of areas that provide natural and beneficial functions, such as wetlands, habitat, riparian areas.
- 6) Description of development, redevelopment and population trends and what the future brings for the area
- 7) Summary of the impact of each hazard on the community's economy and tax base
- 8) Critical Facilities

D. Mitigation Strategy

- 1) Statement of the goals of the community's floodplain management or hazard mitigation program.
- 2) Review of possible activities:
- 3) Preventive activities, such as zoning, stormwater management regulations, building codes and preservation of open space and the effectiveness of the programs
- 4) Property protection activities, such as acquisition, retrofitting, and insurance
- 5) Protection of natural and beneficial functions of floodplains, such as wetlands protection
- 6) Emergency services activities, such as warning and sandbagging;
- 7) Structural projects, such as dike setbacks
- 8) Public information activities, such as outreach projects and environmental education programs
- 9) Draft action plan; must have action items from at least two of six categories above

E. Plan Maintenance

- 1) The plan and later amendments will be officially adopted by the City Council.
- 2) Implement, evaluate and revise.
  - a. The community has procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan in an annual evaluation report, submitted to the City Council, released to the media and made available to the public.
  - b. The evaluation report should be prepared by the same planning committee that prepared the plan.
  - c. The plan is updated every five years. The 2007 update is beginning in the fourth year because of the immediacy of the threat to the community. It will be finished in 2008 because of the complexity of the issues, but work will be needed on a constant update basis.

## PLANNING PROCESS

### *Introduction*

Uniquely located nearly 100 percent in the 100-year floodplain, residents of the City of Burlington are very aware of the possibility of flooding. The key goals of the 2008 update to the flood hazard mitigation plan component are to set 100-year Certified Levees as the goal for the City of Burlington in partnership with Dike District #12, evaluate related alternative components of the program such as options for the regulatory floodway including farmland preservation to protect overbank flow paths, Gages Slough role in mitigation, and the need for ring dike elements and coordination with Skagit County on components that affect both jurisdictions.

The rationale for this plan of action is that the urban area should have the best possible flood hazard mitigation. The community does not generally object to paying flood insurance premiums although there is considerable concern about the insurance industry and FEMA's track record of inconsistent handling of flood insurance issues that further demonstrates the need for getting credit for levees.

The worst case may be realized here because the proposed increase by FEMA of base flood elevations was initially identified at 6 feet and higher in some areas. This will devastate future economic development in the community and preclude the revitalization of historic Downtown Burlington.

In 1991, the City of Burlington made a commitment to on-going Neighborhood Planning Meetings, held in the spring and fall with each neighborhood. Issues relating to flood hazard reduction planning were identified early in the process and have been incorporated into the City of Burlington's adopted Comprehensive Plan, through an extended public involvement process. With the adoption of the 2003 all natural hazards mitigation plan, the focus is expanded to look at other hazards including earthquake, volcano, severe storms, fire, drought, tsunami/seiche, and land movement.

This plan was first adopted in 1995 and a major update of the plan was adopted in 1999. The purpose of the plan is to take the goals and objectives specified in the Comprehensive Plan and refine them into an action plan that will be implemented over time. There has been substantial progress in implementing the 1999 action plan, and it is now timely to add new projects and to update the status of ongoing projects and programs. Another element of the 2003 update of the plan was to incorporate the Burlington Evacuation Plan into the flood disaster preparedness plans that exist including the Skagit County Disaster Plan and the Dike District #12 guidelines with specifics that are tailored to the conditions of the City of Burlington.

This plan also identifies the potential hazard to Burlington of each of the other natural hazards, makes a determination about the vulnerability of the community, and recommends additional actions to mitigate those identified.

### ***Plan Review Process***

Because Burlington is a participant in a multi-jurisdictional approach to developing the All Natural Hazards Mitigation Plan, the city has been actively involved in designing and implementing the process, as outlined in the Introduction.

The Multi-jurisdictional plan that includes the City of Burlington's plan element was developed through an exhaustive process. The draft plan is circulated to all agencies with jurisdiction and agencies located in the area, along with all special purpose districts. Of particular concern to Burlington are the Skagit Department of Emergency Management, Corps of Engineers, the State Department of Ecology, the Federal Emergency Management Agency, Skagit County, Mount Vernon, Sedro-Woolley, Drainage Districts #14 and #19, and Dike District #12, and Fire District #6.

The plan is reviewed by the City's Flood and Natural Hazard Mitigation Technical Committee, consisting of Skagit County's flood engineer, Dike District #12 Commissioners, the Department of Emergency Management, Search and Rescue, the Fire Chief, the Police Chief, the Building Official, the City Engineer and the Planning Director. This committee is responsible for development of the early warning, preparedness and evacuation plan specifically tailored to the City of Burlington. See Appendix C. Each year, the committee reviews the Action Plan and evaluates progress as part of the reporting process, both to the community and to the Community Rating System program. In 2002, the Flood Emergency Plan was updated to add the Evacuation Plan. This work will continue, even if the process for annual reporting on the Multi-Jurisdictional Plan remains with the Planning Committee established for the program, due to the unique needs and issues in the community.

Availability of the document for public review is published in the local papers and the city's monthly Planning and Land Use Bulletin, posted in the Library and City Hall. The plan is reviewed by the on going precinct based Neighborhood Planning Committees.

Following revision of the plan to incorporate comments received during the review period; there are two public hearings, one before the Planning Commission and one before the City Council.

### ***Plan Implementation Process***

Funding for plan implementation is integrated in city's overall Capital Improvement Plan and in the individual budgets of each participating department. It is an integral part of the city's work program and separate funding is not necessary. Today, diverse responsibilities are managed by each responsible department. Examples include management of the Drainage Utility, development and implementation of the Gages Slough Management Plan, maintenance of the city's drainage system, planning for street closures and evacuation routes and acquiring equipment needed for the operation.

### ***Prioritization of Action Items***

The City of Burlington operates under the requirements of the Washington State Growth Management Act. City government format is a strong mayor with council. City staff evaluates actions based on community needs as expressed in the Growth Management Act and the various comprehensive plans adopted by the city council. Staff prepares recommendations for specific actions to the council for consideration. Council weighs the input from staff and citizens before making any decision.

Before an action may proceed there must be a demonstrated need and funding must be secured. When funding is available and approval of council is given, the project is included in the annual budget. Need for an action to proceed may be determined in a variety of ways including but not limited to: action items identified in adopted plans, cost benefit analysis, necessary service, emergency, directive from state or federal agency, safety or other benefit to the community. For planning purposes projects are evaluated and included in the annual update of the 6-year capital improvement plan. Many projects in the capital facilities plan are dependent on outside funding. Possible sources of funding are the general fund, capital improvement funds, utility reserves, local improvement districts, grant funding from a variety of sources including but not limited to private agencies, economic development organizations, state agencies, federal agencies and philanthropic sources. Other sources of funding may, from time to time, become available for specified actions that may or may not be included in the community planning process.

**REVIEW OF EXISTING STUDIES, REPORTS AND TECHNICAL INFORMATION  
AND OF THE COMMUNITY'S NEEDS, GOALS AND PLANS FOR THE AREA**

<b>HAZARD MITIGATION PLANNING MAPS</b> <i>SEE APPENDIX B</i>	<b>DATE</b>
Critical Areas Map	2002
Parks Plan Map	2003 <del>4</del>
Sewer Plan Map	2003 <del>5</del>
Storm Sewer Plan Map	<del>1994</del> 2005
Street/Bridge Map	2003
Evacuation Route Map	2002
Critical Facilities Map	2003

<b>BUILDING AND FIRE DEPARTMENT RATINGS</b>	<b>UPDATE SCHEDULE</b>	<b>RATING INFORMATION</b>
ISO Rating – Fire	Nov 2002	5 for all properties in City Limits; 8 in Fire District #6
BCEG Rating – Building	<u>9/28/98-2003 and 2008</u>	3 for all properties

<b>REPETITIVE LOSS DATA</b>	<b>UPDATE</b>	<b>STATUS</b>
Repetitive Loss Properties And Address	<u>1/2003</u> <u>9/2007</u>	None in the City Limits of Burlington

**MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS**

<b>POLICY TYPE AND APPLICATION TO HAZARD</b>	<b>CITATION</b>	<b>MITIGATION-RELATED POLICY STATEMENT</b>
<b><u>1999 2005</u> COMPREHENSIVE PLAN</b> • Land Use • Flooding, Landslides	Chapter 2, Section 6	<p>➤ Protect and restore critical areas including Gages Slough; plan for flood hazard mitigation, surface water management and pollution control, establishment and maintenance of greenbelts and conservation areas and coordinate with adjoining jurisdictions.</p> <p>➤ Provide on going public education at all levels, from the renter to the homeowner, regarding residential, commercial and industrial best management practice issues, flood hazard mitigation, water quality, and related local issues. Update annually.</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>	<del>Chapter 9,</del> <del>Section 5</del> <u>Chapter 11,</u> <u>Sections</u> <u>6,7,11,12</u>	➤ Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks. Integrate the concepts with natural functions such as drainage (Gages Slough), agriculture (surrounding farmland), and topographic features (Burlington Hill).
<b><u>1999 2005</u> COMPREHENSIVE PLAN</b> • Environmental and Critical Area Policies • Flooding, Landslides, Fire, Volcano, Earthquake, Severe Storms	Chapter <del>10,12</del> General, Section 1, 2	➤ Integrate environmental considerations into applicable ordinances, standards and regulations, as well as into the design of projects. ➤ To the extent practicable, fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
<b><u>1999 2005</u> COMPREHENSIVE PLAN</b> • Environmental and Critical Area Policies • Landslide, Erosion	Chapter <del>10,12</del> Earth, Section 3-2	➤ Provide protection of steep slopes according to standards in the Critical Areas Ordinance, as generally identified in these policies.
<b><u>1999 2005</u> COMPREHENSIVE PLAN</b> • Environmental and Critical Area Policies • Flooding, Severe Storm	Chapter <del>10</del> <u>12</u> , Water, Section 1 A	➤ Manage stormwater runoff to improve drainage, control stormwater quality, prevent localized flooding of streets and private property during high water table and rainy conditions, and protect and enhance water quality.
<b><u>1999 2005</u> COMPREHENSIVE PLAN</b> • Environmental and Critical Area Policies • Flooding	Chapter <del>10</del> <u>12</u> , Water, Sections 3, 4, 5	➤ The Floodway, the Special Flood Risk Zone and the 100 year Floodplain shall be regulated to protect human life, property and the public health and safety of the citizens of Burlington; minimize the expenditure of public money; and maintain the city's flood insurance eligibility while avoiding regulations which are unnecessarily restrictive or difficult to administer.  ➤ The City shall provide on going public education about flooding and shall adopt a flood hazard reduction plan, consistent and compatible with any countywide efforts and plans, using the community newsletter, special targeted mailings to Realtors, insurance agents and lenders, training sessions at neighborhood meetings, the public library, and other means that may be identified.

**MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued***

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p>➤ The City shall participate in the Community Rating System to obtain the maximum possible reduction in Flood Insurance Rates from the Federal Emergency Management Agency.</p>
<p><b>1999 2005</b>  <b>COMPREHENSIVE PLAN</b>            • Environmental and Critical Area Policies            • Flooding</p>	<p>Chapter 10 <u>12</u>,            Land and Shoreline Use Implementation Policies, Section 1, Economic Development</p>	<p>➤ Land and Shoreline use patterns shall provide for the location of existing and future transportation facilities, utilities, and recreation activities that are dependent on access to the water.</p> <p>➤ Because of the unique floodway and floodplain limitations on the use of the Skagit River shorelines, particularly the dike system, the majority of the shoreline shall be identified and reserved for recreational and open space uses.</p>
<p><b>1999 2005</b>  <b>COMPREHENSIVE PLAN</b>            • Environmental and Critical Area Policies            • Flooding</p>	<p>Chapter 10 <u>12</u>,            Land and Shoreline Use Implementation Policies, Section 5, Use</p>	<p>➤ To protect and restore the wetlands to optimize water quality, habitat, best management practices and ensure that adjacent land use patterns are compatible with the protection and enhancement of the wetlands and take advantage of the unique attributes of the site, allowing no net loss of wetlands, and for Gages Slough, to also increase the size of culverts, remove obstructions and generally improve the flow characteristics to provide for efficient conveyance of water through the city during flood events.</p> <p>➤ To allow limited use of the Skagit River and its shoreline compatible with the Dike system and with the regulatory constraints of the Floodway and Special Flood Risk Zone, including transportation, levee improvement, utilities and outfall structures, public access and recreation, open space and agriculture and similar uses.</p> <p>➤ To select and establish standards for the uses that enhance the existing environment, while ensuring that proposed uses do not infringe upon the rights of others or upon the rights of private ownership.</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p>➤ The Skagit River, as a shoreline of state-wide significance, shall be managed in order of the following priorities: recognizing and protecting the state-wide interest over local interests, preserving natural character, realizing long term over short term benefit, protecting resources and ecology, increasing public access to publicly owned areas, increasing recreational opportunities, providing for any other element that is appropriate or necessary.</p> <p>➤ Establish and implement master program policies and regulations to insure the public's health, safety, and welfare. If there is an apparent conflict among regulations, the city shall consult with the agencies involved.</p>
<p><b><u>1999-2005</u></b>  <b>COMPREHENSIVE PLAN</b></p> <ul style="list-style-type: none"> <li>• Environmental and Critical Area Policies</li> <li>• Flooding</li> </ul>	<p>Chapter <del>10</del> <u>12</u>,  Land and Shoreline Use Implementation Policies,  Section 8,  Flood Damage Minimization Element</p>	<p>➤ Establish and implement master program policies and regulations based on applicable comprehensive management plans for the watershed's geohydrological system that reduce the risk of flood damage.</p> <p>➤ Consider other regulations and programs associated with flood hazard management. Where there is a conflict, the more stringent in terms of long-term management of the ecological resource and natural geohydrological systems shall take precedence.</p> <p>➤ Restrict development in the 100-year floodplain that potentially increases flood hazard unless it complies with the Flood Hazard management plan, and the critical areas code. The impacts of floodplain shall be addressed by one of the following means:</p> <p style="margin-left: 40px;">A. The master program shall prohibit structural flood control measures for new development that would potentially increase the risk of flooding, significantly alter the course, speed or flow of the waterway, significantly reduce flood storage capacity, or increase flood heights on unprotected property; or</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p>B. The master program shall set standards for flood control measures for new development based on recommendations from the comprehensive Flood Hazard Management Plan.</p> <p>➤ Master program policies and regulations shall be established and implemented to retain or restore natural conditions of shorelands associated with frequently flooded areas.</p> <p>➤ The master program shall reflect the existing dikes along the Skagit River in its regulations and policies. Nonstructural solutions to flood hazards shall be encouraged including restricting development in flood-prone areas, storm water runoff management, setback levels, and up-stream watershed vegetation management.</p> <p>➤ Insure that master program standards for flood control measures protect and enhance the biological systems and public access opportunities of the shoreline and adjacent uplands.</p> <p>➤ Master program standards for flood control measures shall be consistent with policies under the Conservation element.</p>
<b>1999 COMPREHENSIVE TRANSPORTATION PLAN</b> • Flooding, Volcano, Fire, Earthquake	Goals and Objectives 1 & 7	<p>➤ The transportation plan is designed to ensure the continued ability of the transportation system to function at a reasonable level of service throughout the urban service area and coordinate the links to the regional transportation system along with Mount Vernon.</p> <p>➤ The Six Year Road Plan and the transportation element of the annually updated City of Burlington Capital Improvement Plan shall be coordinated with the Land Use, Utilities and other relevant plan elements to ensure a balanced program that is adequately funded and responsive to community interests.</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<p><b>1994 &amp; 2005 SURFACE WATER MANAGEMENT PLAN</b></p> <ul style="list-style-type: none"> <li>• Flooding</li> </ul>	<p>Appendix A, Policies in 1994 plan; reproduced in the 2005 Comprehensive Plan in Chapter 12 , Water, Section 1</p>	<ul style="list-style-type: none"> <li>➤ Manage stormwater runoff to improve drainage, control stormwater quantity, prevent localized flooding of streets and private property during high water table and rainy conditions, and protect and enhance water quality.</li> <li>➤ Plan the stormwater management system to be consistent with policies regarding flooding, wetlands, land use and water quality.</li> <li>➤ Develop an integrated program for quantity and quality control that recognizes the unique situation faced by the City with its location in the 100-year flood plain and needs for flood control in larger storm events, while at the same time needing to control the effects of smaller storms in terms of both quantity and quality of runoff.</li> <li>➤ Apply best management practices to reduce pollutant loading and minimize the effects of contaminated sediments on Gages Slough and the Skagit River.</li> <li>➤ Provide for ongoing public education aimed at residents, businesses, and industries in the urban area. The education programs are to inform citizens about stormwater and its effects on water quality, flooding, and fish/wildlife habitat, and to discourage dumping of waste material or pollutants into storm drains.</li> <li>➤ Make investigations and corrective actions of problem storm drains, including sampling.</li> <li>➤ Develop a program for operation and maintenance of storm drains, detention systems, ditches, and culverts.</li> <li>➤ Coordinate with Skagit County through arrangements such as interlocal agreements, joint programs, consistent standards, or regional boards or committees.</li> </ul>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<b>1991 <u>2005</u></b> <b>COMPREHENSIVE WASTEWATER PLAN</b> • Flood, Earthquake, Severe Storm	Wastewater Facilities Plan and Environmental Review for Treatment Plant Upgrade	► Provide 100-year flood protection for wastewater treatment plant ( <i>Work completed</i> ) ► Provide Emergency Generator capability for all pump stations ► Upgrade construction to latest seismic and wind standards ( <i>Work completed</i> )
<b>2003-2008 <u>2004-2009</u> PARKS AND RECREATION, COMPREHENSIVE PLAN</b> • Flood, Volcano	Urban Wildlife Habitat Plan Element	► Provide habitat for wildlife species, foodfish, and freshwater fish in close proximity to an urban area, including the Skagit River Shoreline, the Gages Slough Corridor and Burlington Hill
<b>2003-2008 <u>2008 – 2013</u></b> <b>CAPITAL IMPROVEMENT PLAN</b> • Fire, Earthquake, Severe Storms	Level of Service Standards and Individual Department Submittals	► Urban Level of Service Standards are established to ensure protection of public health, safety and welfare by meeting relevant standards ► Six-year list of projects including specific actions targeted towards natural hazard mitigation
<b>1999-2002 <u>2007</u></b> <b>FLOODPLAIN MANAGEMENT FLOOD HAZARD REDUCTION AND DISASTER PREPAREDNESS PLAN</b> • Flood	Action Plan for Flood Hazard Reduction – Selection of Appropriate Activities	► The Building Official will continue to maintain elevation certificates using the automated system. Each elevation certificate is maintained by address and copies are sent annually to FEMA on disk. <i>Action:</i> Require, review, enter data in computer, and file certificates for all new development in the floodplain development project. Continue to work towards establishing a complete file of pre-FIRM certificates, using local incentive program. Timeline is on going. ► The Planning Director and the Building Official will continue to make flood map determinations in response to public inquiry, along with an annual mailing to real estate agents, lenders and insurance agents. <i>Action:</i> Make map determinations, provide annual mailing to users, and maintain accurate records and logs. Timeline is on going. ► The Planning Director will continue to mail out a flood bulletin twice annually, including elements for map determinations, availability of library

**MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued***

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p><b>Action:</b> Research material and prepare flood bulletins, mail to all citizens in floodplain and entire community. Continue to participate in Flood Awareness Week and to keep citizens up to date and involved by bringing timely topics to regular Neighborhood meetings. Timeline is spring and fall of each year.</p> <p>➤ Realtors will continue to provide disclosure of flood hazard on a voluntary basis and the Planning Department will work to modify the disclosure to identify the requirement for flood insurance purchase. Action by the state legislature to make this mandatory failed in 1995, but it is expected to be revisited.</p> <p><b>Action:</b> Improve flood hazard disclosure by adding requirement for flood insurance purchase. City will support legislation at state level. Timeline is unpredictable.</p> <p>➤ The City Librarian will continue to maintain the Flood Protection Library and add updated materials. There is a reference on the Floodplain Management Resource Center and instructions on how people can use it. Documents regarding the natural and beneficial functions of floodplains and updated local, state and federal materials are added as they become available.</p> <p><b>Action:</b> Maintain and improve the Flood Protection Library. Additional local documents continue to be added as they become available, including updates to the Flood Plan and local early warning and evacuation plan.</p> <p>➤ The Planning Director and the Building Official will continue to provide technical advice to property owners, contractors and design professionals.</p> <p><b>Action:</b> Provide technical advice and update materials to include latest documents.</p>

		Timeline is on going.
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### MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<ul style="list-style-type: none"> <li>▪ Implement a long range Gages Slough Management Plan, adopt and administer a Shoreline Master Program for Gages Slough and the Skagit River Shorelines in Burlington.</li> <li>▪ Increased preservation of the open space and drainage corridor through easements, deeding land to city</li> <li>▪ Improve water quality; eliminate failed septic systems; fence out livestock;</li> <li>▪ Improve wildlife habitat; do restoration planting projects</li> <li>▪ Increase regulations such as greater setbacks where applicable</li> <li>▪ Implement specialized best management practices to minimize problems in the long run. <i>Action:</i> Add voluntary and regulatory protection to the Gages Slough Special Flood Risk Zone, the major drainage course in the city.</li> </ul> <p>➤ Public Works will implement drainage utility including improved maintenance and operations, a rate structure and public education element. Drainage Utility rate structure adopted in early 1997; annual inspection and maintenance requirements for all private facilities implemented; previous annual inspections limited to public facilities. Public education on best management practices is focused on Gages Slough property owners and the businesses that dump storm water into the Slough through a piped system.</p> <p><i>Action:</i> Annual inspections and maintenance of all public and private drainage facilities; identified pollution problems will be tracked down and best management practices implemented to control source pollutants. Continue to implement Capital Improvements to stormwater system.</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p>➤ Maintain updated maps and continue to work on automated base maps and overlays, leading to a planning level geographic information system; data collection and data entry to continue as new information and data sources become accessible.</p> <p><i>Action:</i> Planning Department to continue maintenance and updating of existing land use and topographic maps and continue data entry and development of mapping layers in automated system, including parcel and overlay data. Required flood elevations are entered for individual parcels.</p> <p>➤ Implement the adopted Surface Water Management Title that provides far more extensive regulation than the adoption by reference of the Department of Ecology Technical Manual, by Public Works. Capital Improvement plan is implemented including a new pump station at the end of Gages Slough, a new storm drainage trunk on the west side. Each development is regulated and stormwater quality is also regulated. Long-term storm water quality issues are a major focus in the Gages Slough Management Plan.</p> <p><i>Action:</i> Continue and improve surface water management through more in depth review, regulation and training. The first two major capital projects are scheduled and funded.</p> <p>➤ Using improved citizen involvement, public education and establishing a solid work program to improve maintenance of the drainage system. Plan to increase city maintenance of Gages Slough as drainage easements or public ownership becomes available, or a public/private partnership can be developed. Acquire land in the Gages Slough Corridor through land donation in exchange for Park Impact Fee Credit. Public education is a key focus of the drainage program and specialized best management practices brochures are designed for the residential, agricultural and business issues</p>

		specific to Burlington.
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### MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p><b>Action:</b> Enhance maintenance of the system, including ability to maintain more of Gages Slough, by working with the property owners and business community.</p> <p>➤ Develop and maintain a specific flood warning and evacuation program for the City of Burlington. The City of Burlington Flood Emergency Plan was developed in 1995 and updated in 1998 and 2002 to reflect the best approach possible.</p> <p><b>Action:</b> Fire, Police, Planning, Department of Emergency Management and other agencies have developed and refined a specific community based plan. The plan will be exercised and tested annually and revised as needed.</p> <p>➤ Dike District #12 will continue to maintain and upgrade the levee system to the 25-year storm. Major improvements have been made to the dike system since the 1990 flood, including the installation of keyways and backsloping the landward toe of the dikes. Land for the work has been made available through an Interlocal Agreement between Dike District #12 and the City of Burlington. The protection of the Wastewater Treatment Plant was improved to 100-year.</p> <p><b>Action:</b> Continue to keep the dikes in excellent condition. Annual inspections are done; maintenance is on going.</p>
<b>1997 UNIFORM 2006 INTERNATIONAL BUILDING CODE</b> • Earthquake, Severe Storm, Fire, Landslide	Seismic and Wind Loads, Construction Standards	<p>➤ Seismic Zone 3-D</p> <p>➤ Wind Exposure C</p> <p>➤ Fire Resistive Construction Standards</p> <p>➤ Grading Standards</p>
<b>1997 UNIFORM 2006 INTERNATIONAL FIRE CODE</b> • Fire	Fire protection and building maintenance standards	<p>➤ Fire flow</p> <p>➤ Annual Inspection of Commercial Structures</p> <p>➤ Plan Review</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<b>TITLE 14 SURFACE WATER MANAGEMENT</b> • Flood, Landslide, Severe Storm	14.800.020 Purpose	<p>► The provisions of this title shall be liberally construed to accomplish its remedial purposes, which are:</p> <ol style="list-style-type: none"> <li>1. To protect, to the greatest extent practical, life, property and the environment from loss, injury and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity;</li> <li>2. To protect the public interest in drainage and related functions of drainage basins, watercourses and shoreline areas;</li> <li>3. To protect surface waters and receiving waters from pollution, mechanical damage, excessive flows and other conditions in their drainage basins which will increase the rate of downcutting, streambank erosion, and/or the degree of turbidity, siltation and other forms of pollution, or which will reduce their low flows or low levels to levels which degrade the environment, reduce recharging and ground water, or endanger aquatic and benthic life within these surface waters and receiving water of the state;</li> <li>4. To meet the requirements of state and federal law and comply with regulatory standards for the city's municipal storm water, and</li> <li>5. To fulfill the responsibilities of the city as trustee of the environment for future generations.</li> </ol> <p>► It is expressly the purpose of this title to provide for and promote the health, safety and welfare of the general public. This title is not intended to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by its</p>

**MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued***

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<b>2002 CRITICAL AREAS CODE</b> • Flooding, Landslide	Section 15.15.020 Application-Purpose	<p>➤ Frequently flooded areas; It is the purpose of this Chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in the floodplain and the floodway according to the provisions established under this code;</p> <p>➤ Geologically hazardous areas; Geologically hazardous areas include areas susceptible to the effects of erosion, sliding, earthquake, or other geologic events. They pose a threat to the health and safety of citizens when incompatible residential, commercial, industrial, or infrastructure development is sited in areas of a hazard. Geologic hazards pose a risk to life, property, and resources when steep slopes are destabilized by inappropriate activities and development or when structures or facilities are sited in areas susceptible to natural or human caused geologic events. Some geologic hazards can be reduced or mitigated by engineering, design, or modified construction practices so that risks to health and safety are acceptable. When technology cannot reduce risks to acceptable levels, building and other construction within identified geologically hazardous areas shall be prohibited.</p>
<b>ZONING CODE</b> • Flood, Fire, Landslide, Earthquake	Section 17.03.020 Purpose	<p>➤ The purpose of this title is to implement the city of Burlington's comprehensive plan. This title will be used to further the growth and development of the city of Burlington consistent with the adopted comprehensive plan and its implementing elements. This title will also further the purpose of promoting the health, safety, morals, convenience, comfort, prosperity, and general welfare of the city's population.</p> <p>➤ The specific zones and regulations herein are designed to facilitate adequate provisions of utilities, schools, parks and housing with essential light, air, privacy, and open space; to lessen congestion on streets and facilitate the safe movement of traffic thereon; to stabilize and enhance property values; to prevent the overcrowding of land; to facilitate adequate</p>

## MITIGATION-RELATED POLICY STATEMENTS AND CITATIONS - *continued*

POLICY TYPE AND APPLICATION TO HAZARD	CITATION	MITIGATION-RELATED POLICY STATEMENT
<i>continued from previous page</i>		<p>provisions for doing public and private business and thereby safeguard the community's economic structure upon which the prosperity and welfare of all depends and through such achievements help ensure the safety and security of home life, foster good citizenship, create and preserve a more healthful, serviceable and attractive municipality and environment in which to live.</p> <p>➤ To most effectively accomplish these purposes, this title divides the city into zones wherein the location, height and use of buildings, the use of land, the size of yards and other open space, and the provision of off-street parking and loading are regulated and restricted in accordance with the comprehensive plan for the city of Burlington. These zones and regulations are hereby deemed necessary and are made with reasonable consideration, among other things, as to the character of each zone and its particular suitability for specific uses, the need for such uses, the common rights and interests of all within the zone as well as those of the general public, and with the view of conserving and encouraging the most appropriate use of land throughout the city.</p>

## RISK ASSESSMENT - ASSESSMENT OF THE HAZARDS

**PLAN REQUIREMENT:** *Using available data and studies, provide a map of the known flood hazards, a description of the known flood hazards including source of water, depth of flooding, velocities, and warning time, a discussion of past floods, and a map, description and history of other natural hazards, including all natural hazards that affect the community.*

See Appendix B, Maps for known flood hazard areas.

### ***The Cause of Flooding***

Throughout the years, major flooding has occurred in the Skagit River Basin. Because of its geographic location, the Skagit River Basin is subject to winter rain floods and an increase in discharge during spring due to snowmelt runoff. Rain-type floods occur usually in November or December, but may occur as early as October or as late as February. Antecedent precipitation serves to build up ground water reserves. Frequently, a light snow pack is then formed over most of the entire basin. A heavy rainfall accompanied by warm winds completes the sequence, which produces major floods. The heavy rainfall and accompanying snow melt result in a high rate of runoff, as the ground is already nearly saturated from earlier precipitation. Two or more crests may be experienced within a period of a week or two as a series of storms move across the basin from the west. The winter floods have a considerably higher magnitude than the average annual spring high water.

The snow melt peak is expected during the spring or early summer, caused by the seasonal rise in temperatures with resultant melting of the accumulated snow pack. These high discharges may have a minor contribution from warm rains, but are caused predominantly by snowmelt. The spring snowmelt is characterized by relatively slow rise and long duration. While this high water occurs annually, it seldom reaches a damaging stage. During the annual spring or early summer high water, power reservoirs are filling, and as a result, the spring discharges are frequently reduced. 1997 was an exceptional year, with several minor floods occurring during the summer months after the reservoirs were full. 2007 was also interesting with high water until nearly the end of July.

The magnitude and intensity of a storm cannot always be used as an index of the resultant river discharge. Other factors, such as the temperature sequence, degree of soil saturation, and moisture content of the snow pack largely influence the rate of and total runoff produced by a particular storm. Conditions preceding a storm may be such that even a moderate storm could set in motion the related factors that, collectively, result in a flood. Conversely, conditions in the drainage basin may be such that a severe storm results in only minor high water.

### ***Flooding in Burlington***

There are four flood zones in the City Limits of Burlington, the Floodway (river side of the dike), the 100 Year Flood Zone, the 500 Year Flood Zone, and the Special Flood Risk Zone. If property is located in the vicinity of Gages Slough and the land is three feet or more below the 100-year flood elevation, the risk of flooding is somewhat greater than in the surrounding area.

This is because of the potential for floodwaters to be diverted into the Slough, in the event of flooding between here and Sedro Woolley, as occurred in the winter of 1990 and 1995. However, the likelihood of flooding in the event of a 100-year flood is pretty much the same throughout the City Limits. There are a few spots of relatively high ground classified as 500-year floodplain.

The term "100 year flood plain" is used to describe the land which has a 1% or greater chance of flooding in any year. Floods that have broken through or overtopped the levee system are generally much smaller.

The 2003 flood event had an estimated flow at Concrete of 166,000 cfs, a 32-year frequency, while at Mount Vernon, the flow was 135,000 cfs, a 19-year frequency. In Burlington, critical facilities were evacuated. Many important lessons were learned through this process and a much improved state of readiness and awareness is the result. However, citywide evacuation was not necessary, and the sandbagging operation along the railroad tracks from Lafayette Road towards Sterling was successful in preventing overtopping.

The 2006 flood event had the potential for disaster and was in fact a disaster upriver. The estimated flow at Concrete was 145,000 cfs, a 17-year frequency, and 122,000 cfs at Mount Vernon, a 12-year frequency. The storm shifted direction and the Skagit River delta area was flooded through the Nookachamps and Sterling areas, but the water did not overtop the railroad tracks in Sterling. Notice of potential evacuation of critical facilities was provided, but the evacuation was cancelled.

The 1995 flood event was very comparable to the 1990 event with a river elevation of 37.36 feet. Evacuation was required along Whitmarsh Road. The flood fight was well planned and well executed. Damage was limited to a road that was underwater on the water side of the dike and flood boils at the Wastewater Treatment Plant. Since that flood, major work has taken place to strengthen the dike system, including installing keyways and widening the dikes, along with substantially increasing the backslope of the dikes to provide better protection in the event of overtopping. The city and the Dike District are jointly managing a 132-acre site along the River to improve flood hazard mitigation while providing public open space. One hundred acres were acquired by the City in April 1997 to prevent additional construction near the Dike.

The 1990 storm is classified as a 35-year storm, elevation 37.37 feet. Intense flood fighting redirected the water coming over Highway 20 into Gages Slough and kept the town dry. The major damage in the city was underground; an old sanitary sewer line broke under a city street. The ground washed away from around the pipe, which had a long history of problems with infiltration of water. One of the points of discussion was the District Line Road/Highway 20 problem. The water was redirected in the 1990 flood event over the highway and into Gages Slough. This was a very controversial issue. At that meeting, the County indicated that there is a dip of several feet in the grade between road crossings, and that they will, therefore, support the placing of sandbags up to the perceived original height of the railroad tracks.

Before then, there was a 12 year flood in December of 1975 that was essentially a levee full flood with little or no freeboard and, because of extensive flood fighting, the flood was contained.

Earlier floods occurred in 1910, 1917 and 1921 that sent floodwaters throughout Burlington. Extensive structure and property damage occurred in many areas of Skagit County in each of these flood events. Photographs show water down the main street, but there are no reports available in the community regarding damage estimates.

There are no repetitive loss areas in the City of Burlington.

### ***Earthquake***

The City of Burlington is located in Seismic Zone 3 and there are extensive seismic requirements in the adopted building code. However, much of the City of Burlington lies in the Skagit River Floodplain and that is the type of soil that is known for liquefaction in a major earthquake. There are large areas of Burlington with soil problems.

After the Nisqually Earthquake of 2001, one complaint of damage was received by the City and that was structural damage to the concrete tilt-up building occupied by Cascade Clear, a local water bottling company. There were cracks in numerous locations, and a structural engineer was retained to investigate and repair. There is no other historical data on file in the City.

### ***Fire***

The City of Burlington also provides service to Fire District #6 through a long-term contractual relationship, so the overall service area is about 26 square miles. The only wooded area in Burlington is located on Burlington Hill. It only had a few homes until the year 2000 when the east side was cleared and subdivided. *There was a brush fire after the 4<sup>th</sup> of July in about 2005 from fireworks that could have threatened homes but it was extinguished quickly.*

### ***Volcanic Event***

The City of Burlington is located in an area where volcanic events have occurred in the past. When the dikes were recently excavated for the purpose of installing a clay keyway, volcanic material was excavated from the site. The material has the consistency of silly putty.

### ***Severe Storm***

The City of Burlington experiences severe windstorms on an occasional basis. The area is located in Wind Exposure C for new construction standards. There are also relatively rare snow storms. Heavy rain storms are more related to flood events for Burlington.

There have been numerous serious wind events in Burlington including the collapse of two full height walls of the new Hollywood Video Building while under construction, with gusts of 70 mph plus.

The trusses on the new Fire Station collapsed while the building was under construction from high winds.

The most recent event was March 12, 2003, where one older industrial building lost its second story roof, many trees and power lines were down. The winter of 2006-2007 was a year of multiple power outages in the area from a number of storms, but no significant building damage.

### **Land Movement**

The rock on Burlington Hill is very old and due to the steep slopes, must be carefully handled during construction. The road constructed on Burlington Hill in 1998 has two areas of land movement, each in the steepest sloped portion of the road. Reconstruction of the north side was completed in May of 2007 and repairs to the south side completed in the spring of 2008.

### **Other Natural Hazards Minimal in Burlington**

The likelihood of Avalanche, Drought or Tsunami/Seiche is very low.

<b>NATURAL HAZARD EVENTS (1975-PRESENT) THAT HAVE RESULTED IN DECLARED EMERGENCIES BY THE BURLINGTON CITY COUNCIL</b>		
<b>Type of Event</b>	<b>Date</b>	<b>Total Public Damage</b>
<b>Flood:</b> Section St. Sewer Collapse, holes in line filled with water from Gages Slough	1990	\$500,000 to rebuild street and sewer
<b>Flood:</b> Sand boils @ Sewer Plant, Whitmarsh Road pavement lifted	1995	\$10,000 @ Plant \$50,000 for road repair

## **RISK ASSESSMENT – ASSESS THE PROBLEM**

**PLAN REQUIREMENT:** *The assessment of the vulnerability of the community to the hazards identified includes the following elements:*

- 1. An overall summary of each hazard identified in the hazard assessment and its impact on the community.*
- 2. A description of the impact that the hazards identified in the hazard assessment have on life, safety, and health and the need and procedures for warning and evacuating residents and visitors;*
- 3. A description of the impact that the hazards identified in the hazard assessment have on critical facilities and infrastructure;*
- 4. The number and types of buildings subject to the hazards identified in the hazard assessment;*
- 5. A review of all properties that have received flood insurance claims or an estimate of the potential dollar losses to vulnerable structures;*
- 6. A description of areas that provide natural and beneficial functions, such as wetlands, riparian areas, sensitive areas, and habitat for rare or endangered species;*

7. *A description of development, redevelopment, and population trends and a discussion of what the future brings for development and redevelopment in the community, the watershed, and natural resource areas;*
8. *A summary of the impact of each hazard on the community's economy and tax base.*

**1. An overall summary of each hazard identified in the hazard assessment and its impact on the community.**

***The Flood Hazard Analysis***

**General**

All areas in Burlington and the surrounding area are subject to flooding with the exception of Burlington Hill.

Levee protection is at approximately the 50-year storm event, with a 25-year profile. This is approximately river elevation thirty-eight (38) feet.

Normal high water is 24-26 feet at the Railroad Bridge. Elevation 22 represents the vegetation line. The dike is 14 - 16 feet above that point. The top of the levee is from 39-40 feet. Whitmarsh Road is blocked at 23.5'. The elevation of the bottom of the bridge is 28.3'.

The basic rule of thumb is that the level of the river decreases at the rate of about 1.5 feet per mile.

Possible water height in a 100-year flood in Burlington is approximately five (5) feet of water. Most of the Skagit River valley will require evacuation in that scenario.

The 1990 flood reached 37.37 and 1995 flood reached 37.36', very close to overtopping the levees. In an event larger than that, or a similar event with a levee failure, more extensive evacuation will be required.

*In 2007, a major dispute is in process with respect to how much water will reach the Skagit River Delta area in a 100-year flood event, how high the 100-year base flood elevations should be, what options there are for establishing something comparable to a regulatory floodway, and how the computer modeling process should be handled with respect to policy changes in assumptions about levee failures. In addition, homeowners are getting their flood insurance policies rerated and substantially increased based on changing interpretations of crawl spaces and basements, in spite of lip service being given to "grandfathering" in at the time of issuance of the original elevation certificate for the home.*

*In order to provide for certainty for property owners and to maximize flood hazard mitigation in Burlington, the City of Burlington and Dike District #12 are working aggressively towards Levee Certification. This means that the levee enlargement program that has been in process since the 1995 flood event will be reviewed as a map revision, so the levees will be counted as providing flood protection in the computer modeling that is done to determine flood levels.*

## **Areas Subject to Inundation if Dike is Overtopped or if Storm Exceeds Levee Design Capacity and Dikes are Widely Overtopped (theoretical case)**

1. Historical overtopping has occurred along SR 20 east of District Line Road. This occurred in the flood in the winter of 1990. Path is across the Railroad tracks and down SR 20 into town unless diverted to Gages Slough, which also occurred in 1990.
  - In the flood of November 29 and 30, 1995, the flood fight for SR 20 was well planned in advance by Assistant Fire Chief Roger Tjeerdsma. The night before the crest was expected, 12,000 sandbags were stacked along the river side (south) of the railroad tracks, brought in on flatcars by the railroad from the Dike District #12 EOC, also located next to the railroad. These were then carefully placed to the correct height to fill in the low spot in the railroad grade and provide for controlled overtopping. See Photographs. It was previously agreed that the levy would not be built higher than the District Line Road elevation at the Railroad Crossing.
  - Overtopping can also be expected at Whitmarsh Road at the crossdike, at the point east of Burlington Boulevard where the underpass takes off, and at points east along the dike (Natagani estate property). Photographs of the flood fight at those locations are shown in the Photographs.
2. If the levee overtops at District Line Road and water is directed both north of Burlington Hill and into Gages Slough, homes north of SR 20 and west of Vista View Drive (where the water crosses the road), and along Gages Slough will be evacuated. Depending on the severity of the situation, the Northeast, North/Central and South Sectors may also require evacuation. See Evacuation Plan for Evacuation Routes by Sector.
3. If the storm exceeds the 50-year design of the levee system, citywide evacuation is likely required when the river elevation reaches 38 feet. There will be widespread overtopping at a minimum.
4. Levee certification along the main stem of the Skagit River – This program includes design and construction of a control structure to direct floodwaters north of Burlington Hill to the preserved farmland, once the railroad tracks are overtopped in the Sterling area. Whether this also requires construction of a ring dike around the urban area is a subject for further study as the analysis of the levee certification continues.

## **Areas subject to Inundation if Dike Fails – See Evacuation Route Map for Sector Listings**

1. Numerous levee breaks have occurred east of town in the vicinity of District Line Road with the old levees. The potential is always present and must be anticipated in the planning process.
  - Path is across the Railroad tracks and down SR 20 into town unless diverted to Gages Slough.
  - If water is diverted to Gages Slough area along the slough is subject to inundation.

- If not diverted, it will go down the road and inundate the Northeast and North /Central Sectors, at a minimum.
  - If extent of flooding has water going north of Burlington Hill, the Burlington Hill Industrial Park will be inundated (North/Central Sector).
2. Potential levee failure near the Wastewater Treatment Plant at the bend in the river.
    - At this location, the Northeast and South Evacuation Sectors will be inundated.
  3. Potential levee failure between the railroad bridge and Burlington Boulevard or between Burlington Boulevard / I-5.
    - At this location, inundation will occur in the South Sector, a major commercial and industrial area.
  4. Potential levee failure west of I-5 near I-5 Auto World
    - At this location, there are few residences, primary use is auto dealership; the Southwest Sector west of I-5 will be inundated. It is not likely that this will extend north of SR 20.
  5. Potential levee failure at or near Avon - Not in City Limits
    - This is west of the Urban Growth Area; however, numerous residences are located adjacent to the levee.

Because flooding occurs fairly often, the Community has a high level of awareness of flooding and preventive structural and non-structural measures to mitigate the impact.

In a 100-year flood event, most of the city will be inundated with water up to three feet in depth. Water depths will exceed eight feet in some areas in the Gages Slough corridor, but the velocity is minimal.

The height of floodwater in Burlington is the critical issue in the proposed FEMA changes to the Base Flood Elevations on the Flood Insurance Rate Maps. The Federal Emergency Management Agency proposal is being restudied and water depths revisited. Timelines have been moved forward and are not certain. Burlington is working toward the goal of having the Levee System Certified for 100-year Flood Protection. That is the goal and the Dike District is building levees with wide tops, clay keyways and long backslopes for overtopping. The next step is to prepare the required engineering reports and come up with a detailed scope of work for the purpose of budgeting, consultant selection, final design and construction.

Burlington is fronted by a well constructed and maintained levee that extends approximately one mile upstream of the city, but the levee will not protect the city from a 100-year flood on the Skagit River. Each year, the levees are inspected by the Army Corps of Engineers. The levees

are in excellent condition and exceptionally well maintained. Dike District #12 has been very busy with levee improvements following the 1990 flood.

The danger of flooding in Burlington is imminent when the river reaches the stage 38.1 feet. Maximum flood fighting using expedient flood works are employed and evacuation is necessary, according to Skagit County's Emergency Management Department. Upstream of the Burlington Northern Railroad Bridge, the water is 3 to 4 feet higher because of debris and logjams and the effect of the bridge structure itself. Compare this with the earliest flooding, which occurs at stage 25.5 feet with backwater in Nookachamps Creek, flooding of low-lying farmland and no damage, and you can easily see that the flood hazard in Burlington is severe when it happens.

It is very difficult to visualize this without having seen a flood, but considering the fact that the 100 year elevation for protecting structures is 27 feet at Interstate 5 and 40 feet at Gardner Road, one can see how frightening this situation would be when the river reaches the stage 38.1 feet.

### ***Earthquake***

With many earthquake faults in the region and the potential for a wide variety of seismic events, there is very little additional mitigation possible beyond compliance with the latest Building Codes.

There is no doubt that there will be widespread damage in a major earthquake in Burlington, such as chimney collapses, buildings off foundations, foundation cracking, utility line failures, and structural damage of various types.

The majority of the unreinforced masonry buildings in Burlington are located in old Downtown, and none exceed two stories in height. These have the potential to collapse.

### ***Fire***

There is limited potential for urban wildland interface fire except for Burlington Hill. In the recently subdivided area, most of the trees have been cleared, but the potential does exist. Otherwise, there are some structure fires.

### ***Volcanic Event***

If there is a volcanic event, Burlington lies in its path and would have to evacuate.

### ***Severe Storm***

The impact of severe storms is mitigated for new construction by current code standards for wind and snow loads. Impacts range from structure failures to down trees and power lines.

## ***Land Movement***

Land movement on Burlington Hill appears to be the result of improper construction techniques, and if adequate testing, engineering and inspection are done on all roads and structures, minimal impacts are expected over time.

## ***Other Natural Hazards Minimal in Burlington***

The likelihood and thus the impact of Avalanche, Drought or Tsunami/Seiche are very low.

### **1. A description of the impact that the hazards identified have on life, safety, and health and the need and procedures for warning and evacuating residents and visitors;**

The location of the City of Burlington primarily in the 100-year floodplain results in such a high flood hazard that the City has developed a detailed disaster preparedness plan and procedures for warning and evacuating residents and visitors. This plan is reviewed, tested and updated annually. See Appendix A Maps for Evacuation Routes. There are permanent Evacuation Route signs posted as mapped. The Evacuation procedure can be easily adapted to address any hazard. There is a detailed early warning system in the Burlington Disaster Preparedness Plan.

### **2. A description of the impact that the hazards identified in the hazard assessment have on critical facilities and infrastructure;**

Critical facilities are defined in the Community Rating System Manual as follows:

- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic and/or water-reactive materials;
- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a flood;
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for flood response activities before, during, and after a flood; and
- Public and private utility facilities that are vital to maintaining or restoring normal services to flooded areas before, during, and after a flood.

### Infrastructure and Critical Facilities Summary

ELEMENT	MEASUREMENT	APPROXIMATE VALUE
Streets/Road	41.5 Miles	\$40,000,000
Storm Drains	43.5 Miles	\$7,000,000
Storm Drain Pump Stations	5 stations	\$5,000,000
Bridges	2 new bridges	\$13,000,000
Sanitary Sewer	51 miles	\$14,000,000
Sanitary Pump Stations	20 stations	\$5,750,000
Wastewater Treatment Plant	3.79 mgd	\$25,000,000
Fire Station	N/A	\$3,600,000
Police Station	N /A	\$3,200,000

## **Critical Facilities and other Uses to be Evacuated including status of Emergency Planning:**

Flood Fight Headquarters (Dike District #12 EOC) will determine the need and notify the appropriate parties of required evacuation.

The Burlington Police Chief is in charge of evacuation. This list includes the names and telephone numbers of the operators of the facilities that require early notice. Early notification at river elevation 36' is provided to Burlington RV Park; they are required to evacuate at 37'. This facility is closely monitored and receives annual inspections to ensure that units are ready to move.

Other facilities are required to evacuate when so directed by the appropriate authority via the Emergency Alert System, mobile speaker units and sirens or door-to-door notification, or citywide evacuation when notified by the fixed siren on the Fire Station (this siren is planned to be updated and replaced with up to 4 sirens to improve citywide alert).

### **Uses to be evacuated:**

- Country Court Mobile Home Park is located in Urban Growth Area at intersection of Lafayette and Peter Anderson Road. 45 units. Manager's telephone number is not listed.
- Burton's Nursing Home at 1036 E. Victoria - Population is 47. Telephone number is 360-755-0711.
- Wee Care Day Care at 210 N. Skagit. Telephone number is 360-755-0264.
- Homeplace Alzheimer's facility at 210 N. Skagit. Telephone number is 360-755-7000.
- Ovenell Nursing Home at 625 Washington - Population is 31. Telephone number is 360-755-9100.
- Burlington Little School in Urban Growth Area at 207 S. Gardner Road. Telephone number is 360-757-8257.
- Lucille Umbarger School at 820 South Skagit Street. Burlington Edison School District Administration coordinates evacuation at 360-757-3387 and 360-757-3311
- Burlington Edison School District Administration located at 927 E. Fairhaven Avenue coordinates evacuation at 360-757-3387 and 360-757-3311.
- Westview School located at 501 West Victoria. Telephone number is 360-757-3391.
- Burlington-Edison High School located at 301 North Burlington Boulevard. Telephone number is 360-757-4074.
- Where the Heart Is – Assisted Living at 410 Norris Place. Population is growing. Telephone number is 360-755-8007.
- Burlington RV Park at 275 E. Whitmarsh Road. Telephone number at site is 360-757-4229. Owner's home phone is 360-766-4000. They have an evacuation plan and contracts with towing companies. 50 units.
- Creekside Retirement Community at 1150 South Spruce. Population is growing. Telephone number is 360-755-5550.
- Cedars at 1001 Sinclair Way & Cedar Point at 1155 Sinclair Way. Cedars telephone number is Boyd Omdal at 757-2151.

## CRITICAL FACILITY VULNERABILITY ASSESSMENT

The Burlington Fire Station and the Burlington Police Station are new and constructed to the 1997 Uniform Building Code. Each facility has standby power.

The Burlington Wastewater Treatment Plant was substantially upgraded and expanded in 2000 and meets all current codes. The Chlorine disinfection was replaced by ultraviolet, lowering the hazard presented by the facility, in addition to increasing the 100-year flood protection for the facility. Standby power is available for the plant and the pump stations.

### 3. The number and types of buildings subject to the hazards identified in the hazard assessment;

## COMMUNITY PROFILE

LAND USE INFORMATION	ACRES	PERCENTAGE OF JURISDICTION
<b>Total Land Area within jurisdiction</b>	<b>2822</b>	<b>100</b>
Residential land area	1027	36
Commercial land area	653	23
Industrial land area	696	25
Agricultural land area	0	0
Open Space/Parks/ Resource land area	222	8
Other designation – Freeway, River & Rail Yard	224	8
<b>TOTAL LAND (includes R-O-W)</b>	<b>2822</b>	
Transportation or utility right-of-way		20-30%
Waterway or wetland		10%
TOTAL Transportation, utility, waterway or wetland		30-40%

## NUMBER, TYPES AND IF AVAILABLE, ELEVATIONS OF BUILDINGS

This information was first presented in the 1999 City of Burlington Floodplain Management Plan and is updated here:

Single Family and Duplex Dwellings		Multi-family Structures (more than two dwelling units)		
1998 & Prior Total =	990 Units	1998 & Prior Total =	684	Units
1999 Total =	34 Units	1999 Total =	11	Units
2000 Total =	98 Units	2000 Total =	11	Units
2001 Total =	109 Units	2001 Total =	96	Units
2002 Total =	41 Units	2002 Total =	0	Units
2003 Total =	82 Units	2003 Total =	0	Units
2004 Total =	97 Units	2004 Total =	0	Units
2005 Total =	146 Units	2005 Total =	8	Units
2006 Total =	28 Units	2006 Total =	14	Units
2007 Total =	34 Units	2007 Total =	4	Units
<b>TOTAL</b>	<b>1658 Units</b>	<b>TOTAL</b>	<b>828</b>	<b>Units</b>

Commercial Structures (includes churches & public buildings)		Industrial Structures		
1998 & Prior Total =	332 Structures	1998 & Prior Total =	94	Structures
1999 Total =	15 Structures	1999 Total =	10	Structures
2000 Total =	12 Structures	2000 Total =	4	Structures
2001 Total =	8 Structures	2001 Total =	4	Structures
2002 Total =	5 Structures	2002 Total =	4	Structures
2003 Total =	10 Structures	2003 Total =	6	Structures
2004 Total =	10 Structures	2004 Total =	8	Structures
2005 Total =	7 Structures	2005 Total =	12	Structures
2006 Total =	16 Structures	2006 Total =	9	Structures
2007 Total =	4 Structures	2007 Total =	7	6Structures
<b>TOTAL</b>	<b>419 Structures</b>	<b>TOTAL</b>	<b>158</b>	<b>Structures</b>

This inventory was compiled from the regularly updated existing Land Use Maps, and supplemented with building permit records. Buildings constructed since 1985 are elevated to one foot above the 100-year flood elevation. Some industrial buildings have opted for floodproofing when elevating the structure interfered with operations, such as truck access. Elevation Certificates are available on all buildings constructed since the building department was opened in 1989. Prior to that time, inspection was handled by Skagit County and the records are not accessible.

Beginning in 1996, the City of Burlington had all the elevation benchmarks in the City Limits surveyed and mapped in AutoCAD. Since then, over 211 homeowners have requested and obtained courtesy Elevation Certificates for structures built prior to 1989, and of them, all but about 10 have met or exceeded the elevation requirements and were able to obtain a substantial reduction in flood insurance rates. 1999 was the last year that the Elevation Certificate form was able to be completed by the city. Subsequent Certificates require a license surveyor to complete a number of elevations, and to document the condition of the crawlspace.

The 100-year flood elevation ranges from 23 feet at Pulver Road to the west, to 40 feet at Gardner Road to the east.

## **NEIGHBORHOOD CHARACTERIZATION**

### **1. Residential Neighborhood**

1,658 single family and duplex units  
828 multi-family units

Estimated value of each structure  
Median value of single family structures is \$216,200

Predominant structure type  
Wood frame (all residential including multi family)

Estimated neighborhood population: 8,400

### **2. Commercial/Industrial Neighborhood**

419 Commercial Structures  
158 Industrial Structures

Estimated value of each structure  
Average Value = \$976,910

Predominant structure type  
Concrete tilt-up

Estimated neighborhood population during workday:  
10,000 employees  
50,000 visitors

### **4. A review of all properties that have received flood insurance claims or an estimate of the potential dollar losses to vulnerable structures;**

Flood insurance claims in Burlington since 1975 were limited to elevating one house after the 1990 Flood, replacing the sanitary sewer in Section Street that collapsed, and repairing Whitmarsh Road that is underwater in flood events.

Estimate of potential dollar losses to vulnerable structures:

- Vulnerable structures in Burlington are typically older structures that do not meet current codes. In a major flood event, millions of dollars in losses is possible.
- Structures built in the last 20 years that comply with current codes for flood, seismic, wind and snow loads are less vulnerable to hazards.

The Flood Insurance rate structure has been substantially modified through the application of Technical Bulletin 11-0-1. Homeowners are getting their flood insurance policies rerated and substantially increased based on changing interpretations of crawl spaces and basements, in spite of statements by state and federal agencies that the rate structure is “grandfathered” in at the time of issuance of the original elevation certificate for the home. There is no new information that would imply an increased flood threat in the City Limits of Burlington, particularly in light of the levee enlargement program that is underway by Dike District #12.

##### **5. A description of areas that provide natural and beneficial functions, such as wetlands, riparian areas, sensitive areas, and habitat for rare or endangered species.**

The City of Burlington is committed to encourage the enhancement and improvement of water quality, fish and wildlife habitat along Gages Slough and the Skagit River shoreline with an approved element of the plan that addresses habitat and wildlife issues and protects local fish and wildlife species that are identified at the federal, state and local level, including the species of local significance listed in the Burlington Critical Areas Code.

The Urban Wildlife Habitat Plan element of the Parks and Recreation Comprehensive Plan is designed to focus on providing habitat for wildlife species, foodfish, and freshwater fish in close proximity to a metropolitan area. This is the Skagit River shoreline specifically relative to salmon and bull trout and the need for riparian habitat along the diked riverfront. The Gages Slough corridor contains species of local significance as identified in the new Critical Areas Ordinance. The third area is Burlington Hill, where development is in process on approximately half of the hill, and there is some remaining forested land forming a habitat corridor and also bald eagle habitat, although the closest nest site is in the Gages Slough area.

Burlington Hill provides a significant greenbelt and habitat area, and because of its steep slopes, it is also environmentally sensitive relative to geologic hazards in the form of falling rock, erosion and drainage. It has a public street that crosses the hill and this is one of the Evacuation Routes where everyone is basically directed to the north in the event of a major flood event.

Gages Slough is the major wetland that travels through the City of Burlington. It is also the major storm drainage outfall and provides a backup flood control channel in a flood event. It provides a significant wildlife habitat and suffers from poor water quality at this time. It is the subject of a series of planned actions, beginning with a survey of property owners in the fall of 1995, followed by establishing a Citizen’s Advisory Committee, and then development and adoption of the Gages Slough Management Plan that provides both regulatory and non-regulatory elements designed to work together to enhance the natural wetland functions, while

improving the water holding and flow-through capacity of the system. A wetland functional assessment, water quality and water level monitoring study were completed in 1998 and a Storm Water Quality Comprehensive Plan Element is in development in 2003 to focus on water quality in Gages Slough. A new Critical Areas Ordinance that applies Best Available Science was adopted in 2002. In 2007, the Gages Slough Habitat Management Plan was updated with the identification of 15 potential wetland mitigation sites. Upgrading habitat in areas adjacent to the Skagit River also helps improve the overall habitat qualities of the river corridor.

The Skagit River is also included in the planning process for development of a Master Program that will enhance any available opportunities for improving the Chinook salmon habitat, an Evolutionarily Significant Unit that was listed in 1999.

### ***General Development trends***

The City of Burlington annexed 863 acres between 1989 and 2007. Between 1989 and 2007 over 5.1 million square feet of new commercial and industrial space has been occupied; 545 apartment units and 908 single family/duplex residences have been constructed.

The county as a whole is growing rapidly, and Burlington is the commercial hub of Skagit County. About 287 acres of commercial and industrial land were built on between 1995-2007.

Because there is a finite supply of available land for development in Burlington, and it is located in the Interstate 5 corridor, development and redevelopment is expected to proceed at a steady pace.

**6. A description of development, redevelopment, and population trends and a discussion of what the future brings for development and redevelopment in the community, the watershed, and natural resource areas;**

Development in Commercial and Industrial Areas

***New Construction 1989 – 2007***

<b>Year</b>	<b>Commercial &amp; Industrial</b>	<b>Single Family</b>	<b>Multi Family</b>
<b>1989</b>	733,029 sq. ft.	7 units	126 units
<b>1990</b>	188,228 sq. ft.	23 units	169 units
<b>1991</b>	287,680 sq. ft.	8 units	6 units
<b>1992</b>	91,091 sq. ft.	6 units	0 units
<b>1993</b>	287,455 sq. ft.	66 units	40 units
<b>1994</b>	169,196 sq. ft.	45 units	4 units
<b>1995</b>	70,229 sq. ft.	44 units	53 units
<b>1996</b>	140,402 sq. ft.	9 units	0 units
<b>1997</b>	244,701 sq. ft.	15 units	0 units
<b>1998</b>	438,873 sq. ft.	17 units	3 units
<b>1999</b>	334,356 sq. ft.	34 units	11 units
<b>2000</b>	269,726 sq. ft.	98 units	11 units
<b>2001</b>	170,061 sq. ft.	109 units	96 units
<b>2002</b>	208,098 sq. ft.	41 units	0 units
<b>2003</b>	88,027 sq. ft.	82 units	0 units
<b>2004</b>	348,337 sq. ft.	97 units	0 units
<b>2005</b>	503,663 sq. ft.	146 units	8 units
<b>2006</b>	483,963 sq. ft.	28 units	14 units
<b>*2007</b>	81,140 sq. ft.	33 units	4 units
<b>TOTAL</b>	<b>5,138,255 sq. ft.</b>	<b>908 units</b>	<b>545 units</b>

*\*Stats as of 12/31/07*

## COMMERCIAL AND INDUSTRIAL LAND CAPACITY

### Industrial Development Activity from 1995-2007

Structures = 1,358,267 Square Feet  
Total Acreage of Developed Area = 161.65 Acres

### Commercial Development Activity from 1995-2007

Structures = 2,019,724 Square Feet  
Total Acreage of Developed Area = 125.44 Acres

Land Allocation	Commercial	Industrial	Total
1. Total zoned acreage	653	696	1,349
2. Acreage unbuildable*	71	76	147
3. Undeveloped acreage - <i>vacant</i>	100	161	261
4. Existing developed land (acres)	482	459	941
5. Acreage for infrastructure (15%)	15	24	39
6. Available supply (acres) = (#3 – #5)	85	137	222

\*unbuildable = open space, drainage, wetlands, dike setback in C-1, C-2 & M-1 properties.

## ASSESSED VALUE

Number of **Residential** Parcels (*incl. multi-family*) = 1,870  
Assessed Value Residential = \$433,033,500

Number of **Commercial/Industrial** Parcels = 528  
(*excludes. city, churches, apartment & school parcels*)  
Assessed Value Commercial = \$854,865,500

## Population Trends

### 2025 POPULATION FORECAST

City Limits 2007 = 8,400 Population  
City Limits Forecast for the Year 2025 = 964 New Population

**Total 20-year Forecast for the City Limits = 9,364**

## NEW DWELLING UNIT FORECAST FOR THE YEAR 2025

- Vacant Residential Land available for development is 80 acres.
- This will accommodate 352 units at about 4.4 units/acre for a total forecast growth of 964 populations at the 2000 census rate of 2.74 dwelling units per acre.

## **7. A summary of the impact of each hazard on the community's economy and tax base.**

There appears to be virtually no impact of any of the identified hazards on the economy and tax base except for Flooding.

However, an overriding factor is the location of the City at the intersection of the major regional and interstate transportation corridors has led to rapid development and a healthy economy and tax base, even though nearly every site pays Flood Insurance.

*The Federal Emergency Management Agency is releasing new draft Flood Insurance Rate Maps in 2008, triggering an appeal period. The City of Burlington has no alternative but to file a formal technical appeal of the maps, because the assumptions used in the new computer model are incorrect and the impact on the economy and tax base of the city is devastating. Additionally, the City of Burlington is required to comply with both SEPA and NEPA in order to qualify for levee certification, the only long term program that will afford stability to the community.*

## MITIGATION STRATEGY

***Set Goals – a statement of the goals of the community’s floodplain management and hazard mitigation program.***

The goals of the community’s floodplain management and hazard mitigation program are integrated into the city’s planning and regulatory framework in a variety of ways, and they are sorted here by category with identification of the hazards they address.

*Because flood hazard mitigation is so key to Burlington, there is a multitude of goals and objectives sprinkled throughout existing adopted planning documents. To the extent that the existing plan is out of date or clearly inaccurate changes are identified.*

*The 2008 edition of the Natural Hazard Mitigation Plan goals and strategy for flood hazard mitigation is intended to ensure predictability for the future of the community. Key components include the following elements:*

- 1. Complete the upgrade of the levee system along the main stem of the Skagit River to provide 100-year flood protection with certified levees through the FEMA map revision process.*
- 2. Make related levee system improvements that may include a ring dike around a portion of the city if needed based on engineering studies, and a control structure to provide an overbank flow path north of Burlington Hill to the preserved farmland open space that lies north and west of Burlington.*
- 3. Work to ensure that the hydrologic and hydraulic assumptions about how much water reaches Burlington are correct and accurate based on the best available science.*
- 4. Document the regulatory floodway as consisting of Special Flood Risk Zones that extend from the river to a point three hundred feet landward of the landward toe of the levee, the Gages Slough wetland corridor with a fifty foot buffer, and the Nookachamps and Sterling overbank flow areas combined with the overbank flow path to the farmland north and west of Burlington Hill.*
- 5. Work closely with cities, towns, Skagit County and the Diking Districts for a balanced program that meets the requirements for maintaining existing rural areas in the floodplain.*
- 6. Keep the commitment of the City of Burlington for no net increase in the amount of land in the Urban Growth Area.*

## 1. Preventive Goals

### *Earthquake, Severe Storm, Fire, Land Movement*

- Utilize the latest adopted state building code to insure adequate protection in construction against Earthquakes in Seismic Zone 3, Severe storms with Wind Exposure C, Fire with Fire Resistive Construction Standards, and Land Movement with Grading Standards
- Utilize the latest adopted state fire code to insure adequate protection against Fire in construction with standards for Fire flow and through the annual Inspection of Commercial Structures

### *Flood*

- The Floodway, the Special Flood Risk Zone and the 100 year Floodplain shall be regulated to protect human life, property and the public health and safety of the citizens of Burlington; minimize the expenditure of public money; and maintain the city's flood insurance eligibility while avoiding regulations which are unnecessarily restrictive or difficult to administer.
- Complete design and development of the strategy to provide 100-year flood protection for the Burlington Urban Area, including levee certification along the main stem of the Skagit River and related components that may include a ring dike around a portion of the urban area and will include a control structure to provide for the overbank flow of floodwaters north and west of Burlington Hill to farmland open space.
- Document the regulatory floodway as consisting of Special Flood Risk Zones that extend from the river to a point three hundred feet landward of the landward toe of the levee, the Gages Slough wetland corridor with a fifty foot buffer, and the Nookachamps and Sterling overbank flow areas combined with the overbank flow path to the farmland north and west of Burlington Hill.
- Frequently flooded areas; It is the purpose of this Chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in the floodplain and the floodway according to the provisions established under this code;
- Manage stormwater runoff to improve drainage, control stormwater quantity, prevent localized flooding of streets and private property during high water table and rainy conditions, and protect and enhance water quality.
- The City shall participate in the Community Rating System to obtain the maximum possible reduction in Flood Insurance Rates from the Federal Emergency Management Agency.
- Because of the unique floodway and floodplain limitations on the use of the Skagit River shorelines, particularly the dike system, the majority of the shoreline shall be identified and reserved for recreational and open space uses.
- Establish and implement master program policies and regulations based on applicable comprehensive management plans for the watershed's geohydrological system that reduce the risk of flood damage.

- Consider other regulations and programs associated with flood hazard management. Where there is a conflict, the more stringent in terms of long-term management of the ecological resource and natural geohydrological systems shall take precedence.
- Restrict development in the 100-year floodplain that potentially increases flood hazard unless it complies with the Flood Hazard management plan, and the critical areas code. The impacts of floodplain shall be addressed by one of the following means:
  - The master program shall prohibit structural flood control measures for new development that would potentially increase the risk of flooding, significantly alter the course, speed or flow of the waterway, significantly reduce flood storage capacity, or increase flood heights on unprotected property; or
  - The master program shall set standards for flood control measures for new development based on recommendations from the comprehensive Flood Hazard Management Plan.
  - Master program policies and regulations shall be established and implemented to retain or restore natural conditions of shorelands associated with frequently flooded areas.
  - Make investigations and corrective actions of problem storm drains, including sampling.
  - Develop a program for operation and maintenance of storm drains, detention systems, ditches, and culverts.

### ***Flood, Landslide, Earthquake***

- Utilizing Best Available Science to develop the Critical Areas title, the provisions of this title shall be liberally construed to accomplish its remedial purposes, which are: To protect, to the greatest extent practical, life, property and the environment from loss, injury and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity; To protect the public interest in drainage and related functions of drainage basins, watercourses and shoreline areas; To protect surface waters and receiving waters from pollution, mechanical damage, excessive flows and other conditions in their drainage basins which will increase the rate of downcutting, streambank erosion, and/or the degree of turbidity, siltation and other forms of pollution, or which will reduce their low flows or low levels to levels which degrade the environment, reduce recharging and ground water, or endanger aquatic and benthic life within these surface waters and receiving water of the state; To meet the requirements of state and federal law and comply with regulatory standards for the city's municipal storm water, and To fulfill the responsibilities of the city as trustee of the environment for future generations.
- Geologically hazardous areas; Geologically hazardous areas include areas susceptible to the effects of erosion, sliding, earthquake, or other geologic events. They pose a threat to the health and safety of citizens when incompatible residential, commercial, industrial, or infrastructure development is sited in areas of a hazard. Geologic hazards pose a risk to life, property, and resources when steep slopes are destabilized by inappropriate activities and development or when structures or facilities are sited in areas susceptible to natural or human caused geologic events. Some geologic hazards

can be reduced or mitigated by engineering, design, or modified construction practices so that risks to health and safety are acceptable. When technology cannot reduce risks to acceptable levels, building and other construction within identified geologically hazardous areas shall be prohibited.

- Coordinate with Skagit County through arrangements such as interlocal agreements, joint programs, consistent standards, or regional boards or committees.
- Urban Level of Service Standards are established to ensure protection of public health, safety and welfare by meeting relevant standards
- Public Works will implement drainage utility including improved maintenance and operations, a rate structure and public education element. Drainage Utility rate structure adopted in early 1997; annual inspection and maintenance requirements for all private facilities implemented; previous annual inspections limited to public facilities. Public education on best management practices is focused on Gages Slough property owners and the businesses that dump storm water into the Slough through a piped system.  
*Action:* Annual inspections and maintenance of all public and private drainage facilities; identified pollution problems will be tracked down and best management practices implemented to control source pollutants. Continue to implement Capital Improvements to stormwater system.
- Burlington is subject to a state municipal stormwater permit program, called NPDES Phase II. This program includes a number of components such as water quality monitoring, annual drainage inspections, and public education, all of which the city is already engaged in to some extent.

## **2. Property Protection Goals**

### ***Landslide***

- Provide protection of steep slopes according to standards in the Critical Areas Ordinance, as generally identified in these policies.

### ***Flooding***

- Regulations and policies shall reflect the existing dikes along the Skagit River. Nonstructural solutions to flood hazards shall be encouraged including restricting development in flood-prone areas, storm water runoff management, setback levees, and up-stream watershed vegetation management.
- Levee enlargement to provide 100-year flood protection in the Urban Areas and a maximum of 80-year flood protection in Rural Areas shall be constructed and approved pursuant to FEMA guidelines that includes application for a Conditional Letter of Map Revision (CLOMR), then completion of any additional levee construction and analysis, followed by a Letter of Map Revision (LOMR) that certifies the levees for 100-year flood protection.
- Insure that standards for flood control measures protect and enhance the biological systems and public access opportunities of the shoreline and adjacent uplands.
- The Building Official will continue to maintain elevation certificates using the automated system. Each elevation certificate is maintained by address and copies are sent annually to FEMA on disk. *Action:* Require, review, enter data in computer, and

file certificates for all new development in the floodplain development project. Continue to work towards establishing a complete file of pre-FIRM certificates, using local incentive program. Timeline is on going.

- The Planning Director and the Building Official will continue to provide technical advice to property owners, contractors and design professionals. *Action:* Provide technical advice and update materials to include latest documents. Timeline is on going.

### ***Earthquake, Severe Storm, Flooding***

- Provide 100-year flood protection for Wastewater Treatment Plant; provide Emergency Generator capability for all pump stations; upgrade construction to latest seismic and wind standards.
- Provide 100-year flood protection for the City Limits.

## **3. Natural Resource Protection Goals**

### ***All Hazards***

- To the extent practicable, fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

### ***Flooding***

- Protect and restore critical areas including Gages Slough; plan for flood hazard mitigation, surface water management and pollution control, establishment and maintenance of greenbelts and conservation areas and coordinate with adjoining jurisdictions.
- Provide habitat for wildlife species, foodfish, and freshwater fish in close proximity to an urban area, including the Skagit River Shoreline, the Gages Slough Corridor and Burlington Hill.
- To protect and restore the wetlands to optimize water quality, habitat, best management practices and ensure that adjacent land use patterns are compatible with the protection and enhancement of the wetlands and take advantage of the unique attributes of the site, allowing no net loss of wetlands, and for Gages Slough, to also increase the size of culverts, remove obstructions and generally improve the flow characteristics to provide for efficient conveyance of water through the city during flood events.
- To allow limited use of the Skagit River and its shoreline compatible with the Dike system and with the regulatory constraints of the Floodway and Special Flood Risk Zone, including transportation, levee improvement, utilities and outfall structures, public access and recreation, open space and agriculture and similar uses.
- Plan the stormwater management system to be consistent with policies regarding flooding, wetlands, land use and water quality.
- Develop an integrated program for quantity and quality control that recognizes the unique situation faced by the City with its location in the 100-year flood plain and

needs for flood control in larger storm events, while at the same time needing to control the effects of smaller storms in terms of both quantity and quality of runoff.

- Apply best management practices to reduce pollutant loading and minimize the effects of contaminated sediments on Gages Slough and the Skagit River.
- Implement a long range Gages Slough Management Plan, adopt and administer a Shoreline Master Program for Gages Slough and the Skagit River Shorelines in Burlington; increased preservation of the open space and drainage corridor through easements, deeding land to city; improve water quality; eliminate failed septic systems; fence out livestock; improve wildlife habitat; do restoration planting projects; increase regulations such as greater setbacks where applicable; implement specialized best management practices to minimize problems in the long run. Gages Slough is considered a corridor to remove floodwaters after a major flood event. It only has the capacity for about 6,000 cfs of water, which is minimal in a flood event. *Action:* Add voluntary and regulatory protection to the Gages Slough Special Flood Risk Zone, the major drainage course in the city.
- Implement the Gages Slough habitat management plan including the restoration projects, developing an on-going maintenance program, and acquiring land for public open space in the wetland corridor.

#### ***Flooding, Earthquake, Landslide, Fire, Severe Storms***

- Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks. Integrate the concepts with natural functions such as drainage (Gages Slough), agriculture (surrounding farmland), and topographic features (Burlington Hill).

#### **4. Emergency Services Goals**

##### ***Flooding, Earthquake, Volcano***

- Develop and maintain a specific flood warning and evacuation program for the City of Burlington. The City of Burlington Flood Emergency Plan was developed in 1995 and updated in 1998 and 2002 to reflect the best approach possible. *Action:* Fire, Police, Planning, Department of Emergency Management and other agencies have developed and refined a specific community based plan. The plan will be exercised and tested annually and revised as needed.
- The transportation plan is designed to ensure the continued ability of the transportation system to function at a reasonable level of service throughout the urban service area and coordinate the links to the regional transportation system along with Mount Vernon.
- Maintain Police, Fire, Wastewater Treatment Critical Facilities up to date with most current technology and standards to ensure operation during hazard events.
- Annual maintenance of the Emergency Plan to insure that all Critical Facilities including Nursing Homes, chemical storage facilities, schools, electric and telephone substations have a working emergency plan in place and that contacts are up to date.

- Upgrade Flood Emergency Plan to include Earthquakes, Volcanoes, and Severe Storms as the major natural hazards. Fire is covered by the Fire Department and construction standards and Landslide is covered by the Grading and Critical Areas Codes; only potential landslide site is on Burlington Hill. Droughts, Avalanche, Tsunami/Seiche are unlikely to impact Burlington.

## 5. Structural Projects Goals

### *Flooding*

- Structural Measures – Complete environmental review, design and construct 100-year certified levees through the three bridge corridor along the south City Limits. These will be setback levees on both the Burlington and Mount Vernon sides of the Skagit River. Set the levees back along a portion of the Skagit River. The river is constrained by levees and three bridges, limiting the ability of the Skagit River to handle flood flows, starting at the Railroad Bridge and heading west. Only 150,000 cfs of water can pass under the bridge and the capacity is needed for over 200,000+ cfs. Options include retaining the existing levees, or excavating the bank and reestablishing shoreline vegetation along the riverbank and providing opportunities for public access at times other than high water. ~~With this alternative, it is possible to reestablish shoreline vegetation along the riverbank, since the federal constraints on levee vegetation management will no longer apply. Detailed environmental studies are in process on the two major alternatives recommended by the working group, and at the 10% design level, a 500' levee setback, with bank excavation, is required through the three bridge corridor.~~
- Structural Measures - The second major element of the Burlington Plan is to enlarge the levees, primarily on the landward side from the easterly end of the levee system at Lafayette Road south to the Gardner Road Bar; then continuing along the River past the Wastewater Treatment Plant to the Whitmarsh Road crossdike to a point that connects with the three-bridge corridor setback levee. Design components include installation of clay keyways to prevent water seeping through the levees, widening of the levee top and a backslope of 1:7-8 to allow for overtopping. ~~—develop a secondary levee system along the easterly city limits and reconstruct the existing levees to allow for overtopping. Removal of floodwaters in a way that minimizes impact on fish after a flood is an issue that is on the table for discussion with any of the alternatives, because fish stranding happens in fields as well as Gages Slough. This element requires the acquisition of land and/or development rights for the area extending south from the end of the dike at Lafayette Road along the river to the Gardner Road Bar.~~
- Dike District #12 will continue to maintain and upgrade the levee system to the 100-year 25-year storm. Major improvements have been made to the dike system since the 1990 flood, including the installation of keyways and backsloping the landward toe of the dikes. Land for the work has been made available through an Interlocal Agreement between Dike District #12 and the City of Burlington. The protection of the Wastewater Treatment Plant was improved to 100-year. *Action:* Continue to keep the

dikes in excellent condition. Annual inspections are done; maintenance is on going.  
Document all work completed on the levee system to date and

### ***All Hazards***

- The Six Year Road Plan and the transportation element of the annually updated City of Burlington Capital Improvement Plan shall be coordinated with the Land Use, Utilities and other relevant plan elements to ensure a balanced program that is adequately funded and responsive to community interests.
- Six-year list of capital projects including specific actions targeted towards natural hazard mitigation. Implement the adopted Surface Water Management Title that provides far more extensive regulation than the adoption by reference of the Department of Ecology Technical Manual, by Public Works. Capital Improvement plan is implemented including a new pump station at the end of Gages Slough, a new storm drainage trunk on the west side. Each development is regulated and stormwater quality is also regulated. Long-term storm water quality issues are a major focus in the Gages Slough Management Plan. *Action:* Continue and improve surface water management through more in depth review, regulation and training. The first two major capital projects are scheduled and funded.
- Upgrade all city-owned critical facilities. Construction is completed of both the new Fire Station and Police Station, and the major upgrade of the Wastewater Treatment Plant.

## **6. Public Information Goals**

### ***Flooding***

- Provide on going public education at all levels, from the renter to the homeowner, regarding residential, commercial and industrial best management practice issues, flood hazard mitigation, water quality, and related local issues. Update annually.
- The City shall provide on going public education about flooding and shall adopt a flood hazard reduction plan, consistent and compatible with any countywide efforts and plans, using the community newsletter, special targeted mailings to Realtors, insurance agents and lenders, training sessions at neighborhood meetings, the public library, and other means that may be identified.
- Provide for ongoing public education aimed at residents, businesses, and industries in the urban area. The education programs are to inform citizens about stormwater and its effects on water quality, flooding, and fish/wildlife habitat, and to discourage dumping of waste material or pollutants into storm drains.
- The Planning Director and the Building Official will continue to make flood map determinations in response to public inquiry, along with an annual mailing to real estate agents, lenders and insurance agents. *Action:* Make map determinations, provide annual mailing to users, and maintain accurate records and logs. Timeline is on going.
- The Planning Director will continue to mail out a flood bulletin twice annually, including elements for map determinations, availability of library materials, and natural and beneficial functions. *Action:* Research material and prepare flood bulletins, mail to all citizens in floodplain and entire community. Continue to participate in Flood

Awareness Week and to keep citizens up to date and involved by bringing timely topics to regular Neighborhood meetings. Timeline is spring and fall of each year.

- Realtors will continue to provide disclosure of flood hazard on a voluntary basis and the Planning Department will work to modify the disclosure to identify the requirement for flood insurance purchase. Action by the state legislature to make this mandatory failed in 1995, but it is expected to be revisited. *Action:* Improve flood hazard disclosure by adding requirement for flood insurance purchase. City will support legislation at state level. Timeline is unpredictable.
- The City Librarian will continue to maintain the Flood Protection Library and add updated materials. There is a reference on the Floodplain Management Resource Center and instructions on how people can use it. Documents regarding the natural and beneficial functions of floodplains and updated local, state and federal materials are added as they become available. *Action:* Maintain and improve the Flood Protection Library. Additional local documents continue to be added as they become available, including updates to the Flood Plan and local early warning and evacuation plan.
- Maintain updated maps and continue to work on automated base maps and overlays, leading to a planning level geographic information system; data collection and data entry to continue as new information and data sources become accessible. *Action:* Planning Department to continue maintenance and updating of existing land use and topographic maps and continue data entry and development of mapping layers in automated system, including parcel and overlay data. Required flood elevations are entered for individual parcels.
- Using improved citizen involvement, public education and establishing a solid work program to improve maintenance of the drainage system. Plan to increase city maintenance of Gages Slough as drainage easements or public ownership becomes available, or a public/private partnership can be developed. Acquire land in the Gages Slough Corridor through land donation in exchange for Park Impact Fee Credit. Public education is a key focus of the drainage program and specialized best management practices brochures are designed for the residential, agricultural and business issues specific to Burlington. *Action:* Enhance maintenance of the system, including ability to maintain more of Gages Slough, by working with the property owners and business community.

### ***All Hazards***

- Expand the Public Information program to address other natural hazards where additional public information will be helpful, such as seismic retrofits for homes, how to make your home firewise, and other topics.

***Review of Possible Activities:*** The plan must describe those activities that were considered and note why they were or were not recommended. If the activity is currently being implemented, the plan must note whether it should be modified. The discussion needs to be detailed enough to be useful to the lay reader.

1. *The plan reviews preventive activities, such as zoning, stormwater management regulations, building codes, and preservation of open space and the effectiveness of current regulatory and preventive standards and programs;*
2. *The plan reviews property protection actions, such as acquisition, retrofitting, and insurance;*
3. *The plan reviews activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection;*
4. *The plan reviews emergency services activities, such as warning and sandbagging;*
5. *The plan reviews structural projects, such as reservoirs and channel modifications.*
6. *The plan reviews public information activities, such as outreach projects and environmental education programs.*

1. The plan reviews preventive activities, such as zoning, stormwater management regulations, building codes, and preservation of open space and the effectiveness of current regulatory and preventive standards and programs;

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Earthquake, Severe Storm, Fire, Land Movement</i></b>		
Utilize the latest adopted state building code to insure adequate protection in construction against Earthquakes in Seismic Zone 3, Severe storms with Wind Exposure C, Fire with Fire Resistive Construction Standards, and Land Movement with Grading Standards	<del>1997 Uniform Building Code</del> <u>2006 International Building Code &amp; 2006 International Existing Buildings Code</u>	State Legislature <del>considering</del> adoption of the International Codes
Utilize the latest adopted state fire code to insure adequate protection against Fire in construction with standards for Fire flow and through the annual Inspection of Commercial Structures	<del>1997 Uniform Fire Code</del> <u>2006 International Fire Code</u>	State Legislature <del>considering</del> adoption of the International Codes
<b><i>Flood</i></b>		
The Floodway, the Special Flood Risk Zone and the 100 year Floodplain shall be regulated to protect human life, property and the public health and safety of the citizens of Burlington; minimize the expenditure of public money; and maintain the city's flood insurance eligibility while avoiding regulations which are unnecessarily restrictive or difficult to administer.	2002 Critical Areas Code	Up to date meeting state requirements for use of Best Available Science
Frequently flooded areas; It is the purpose of this Chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in the floodplain and the floodway according to the provisions established under this code;	2002 Critical Areas Code Land Acquisition program along River and Slough	Continue Land Acquisition program
Manage stormwater runoff to improve drainage, control stormwater quantity, prevent localized flooding of streets and private property during high water table and rainy conditions, and protect and enhance water quality.	Surface Water Management Code is up to date; NPDES II permit application filed; program is staffed and funded	Increase focus on storm water quality; consultant study pending <u>Additional funding in place by state for program development</u>
The City shall participate in the Community Rating System to obtain the maximum possible reduction in Flood Insurance Rates from the Federal Emergency Management Agency.	Program is up to date	Review program for new activities

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flood – continued</i></b>		
Because of the unique floodway and floodplain limitations on the use of the Skagit River shorelines, particularly the dike system, the majority of the shoreline shall be identified and reserved for recreational and open space uses.	Interim Controls in place in three bridge corridor; park land and other land acquisition in process <u>NEPA review of project underway in 2007</u>	Continue land acquisition program; establish a new dike setback line and make progress towards setting dikes back in three-bridge corridor.
Restrict development in the 100-year floodplain that potentially increases flood hazard unless it complies with the Flood Hazard management plan, and the critical areas code.	Coordinating with Skagit County on Flood Hazard Mitigation Feasibility Study <u>Levee certification needed</u>	Continue program <u>Major issues with FEMA proposal to increase Base Flood Elevations</u>
Make investigations and corrective actions of problem storm drains, including sampling. Develop a program for operation and maintenance of storm drains, detention systems, ditches, and culverts.	Program is in place	Expand activities gradually as the program gains experience over time. <u>Additional focus due to NPDES Phase II permit requirements</u>
<b><i>Flood, Landslide, Earthquake</i></b>		
Utilizing Best Available Science to develop the Critical Areas title to protect, to the greatest extent practical, life, property and the environment from loss, injury and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity and related goals.	Program and regulations are in place.	
Coordinate with Skagit County through arrangements such as interlocal agreements, joint programs, consistent standards, or regional boards or committees.	Multi-jurisdictional All Natural Hazards Mitigation Planning project	Annual maintenance with five year update required
Urban Level of Service Standards are established to ensure protection of public health, safety and welfare by meeting relevant standards	Standards are reviewed annually	Annual review and update

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flood, Landslide, Earthquake – continued</i></b>		
Public Works will implement drainage utility including improved maintenance and operations, a rate structure and public education element. Drainage Utility rate structure adopted in early 1997; annual inspection and maintenance requirements for all private facilities implemented; previous annual inspections limited to public facilities. Public education on best management practices is focused on Gages Slough property owners and the businesses that dump storm water into the Slough through a piped system.	<b>Action:</b> Annual inspections and maintenance of all public and private drainage facilities; identified pollution problems will be tracked down and best management practices implemented to control source pollutants. Continue to implement Capital Improvements to stormwater system.	On-going program

**2. The plan reviews property protection actions, such as acquisition, retrofitting, and insurance;**

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Landslide</i></b>		
Provide protection of steep slopes according to standards in the Critical Areas Ordinance.	2002 Critical Areas Ordinance update	None
<b><i>Flooding</i></b>		
Regulations and policies shall reflect the existing dikes along the Skagit River. Nonstructural solutions to flood hazards shall be encouraged including restricting development in flood-prone areas, storm water runoff management, setback levees, and up-stream watershed vegetation management.	Innovative approaches to long term flood hazard mitigation are being developed	Program is a work in progress.
<u>Levee enlargement to provide 100-year flood protection in the Urban Areas and a maximum of 80-year flood protection in Rural Areas shall be constructed and approved pursuant to FEMA guidelines that includes application for a Conditional Letter of Map Revision (CLOMR), then completion of any additional levee construction and analysis, followed by a Letter of Map Revision (LOMR) that certifies the levees for 100-year flood protection.</u>		

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding – continued</i></b>		
Insure that standards for flood control measures protect and enhance the biological systems and public access opportunities of the shoreline and adjacent uplands.	Innovative approaches to long term flood hazard mitigation are being developed	Program is a work in progress.
The Building Official will continue to maintain elevation certificates using the automated system. Each elevation certificate is maintained by address and copies are sent annually to FEMA on disk.	<b>Action:</b> Require, review, enter data in computer, and file certificates for all new development in the floodplain development project. Continue to work towards establishing a complete file of pre-FIRM certificates, using local incentive program. Timeline is on going.	Annual Report
The Planning Director and the Building Official will continue to provide technical advice to property owners, contractors and design professionals.	<b>Action:</b> Provide technical advice and update materials to include latest documents. Timeline is on going.	Annual Report
<b><i>Earthquake, Severe Storm, Flooding</i></b>		
Provide 100-year flood protection for Wastewater Treatment Plant; provide Emergency Generator capability for all pump stations; upgrade construction to latest seismic and wind standards	Project completed in 2001	Maintenance

**3. The plan reviews activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection;**

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding</i></b>		
Protect and restore critical areas including Gages Slough; plan for flood hazard mitigation, surface water management and pollution control, establishment and maintenance of greenbelts and conservation areas and coordinate with adjoining jurisdictions.	Gages Slough Management Plan is adopted	Work in progress

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding - continued</i></b>		
Provide habitat for wildlife species, foodfish, and freshwater fish in close proximity to an urban area, including the Skagit River Shoreline, the Gages Slough Corridor and Burlington Hill.	Land acquisition and restoration projects on going	Monitoring program needed
To protect and restore the wetlands to optimize water quality, habitat, best management practices and ensure that adjacent land use patterns are compatible with the protection and enhancement of the wetlands and take advantage of the unique attributes of the site, allowing no net loss of wetlands, and for Gages Slough, to also increase the size of culverts, remove obstructions and generally improve the flow characteristics to provide for efficient conveyance of water through the city during flood events.	On-going program	Monitoring program needed
To allow limited use of the Skagit River and its shoreline compatible with the Dike system and with the regulatory constraints of the Floodway and Special Flood Risk Zone, including transportation, levee improvement, utilities and outfall structures, public access and recreation, open space and agriculture and similar uses.	Regulations in place	Review based on individual permits
Plan the stormwater management system to be consistent with policies regarding flooding, wetlands, land use and water quality.	Water Quality Element being added in 2003	Monitoring program needed
Apply best management practices to reduce pollutant loading and minimize the effects of contaminated sediments on Gages Slough and the Skagit River.	On-going program	Annual review for additional opportunities

ACTIVITY	CURRENT STATUS	NEED FOR MODIFICATION
<b>Flooding – continued</b>		
Implement a long range Gages Slough Management Plan, adopt and administer a Shoreline Master Program for Gages Slough and the Skagit River Shorelines in Burlington; increased preservation of the open space and drainage corridor through easements, deeding land to city; improve water quality; eliminate failed septic systems; fence out livestock; improve wildlife habitat; do restoration planting projects; increase regulations such as greater setbacks where applicable; implement specialized best management practices to minimize problems in the long run. Gages Slough is considered a corridor to remove floodwaters after a major flood event. It only has the capacity for about 6,000 cfs of water, which is minimal in a flood event.	<b>Action:</b> Add voluntary and regulatory protection to the Gages Slough Special Flood Risk Zone, the major drainage course in the city.	Work in process, annual report. <u>Opportunity to donate land for open space without the need to subdivide is now available, along with tax incentives.</u>
<b>Flooding, Earthquake, Landslide, Fire, Severe Storms</b>		
Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks. Integrate the concepts with natural functions such as drainage (Gages Slough), agriculture (surrounding farmland), and topographic features (Burlington Hill).	New Urban Wildlife Habitat Element added to Parks and Recreation Comprehensive Plan in 2003	Annual review

**4. The plan reviews emergency services activities, such as warning and sandbagging;**

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<b>Flooding, Earthquake, Volcano</b>		
Develop and maintain a specific flood warning and evacuation program for the City of Burlington. The City of Burlington Flood Emergency Plan was developed in 1995 and updated in 1998 and 2002 to reflect the best approach possible. <u>Annual update is a requirement of the Community Rating System Program; changes are tracked</u>	<b>Action:</b> Fire, Police, Planning, Department of Emergency Management and other agencies have developed and refined a specific community based plan. The plan will be exercised and tested annually and revised as needed.	Annual Review <u>The 2007 annual review identified the need for additional clarification of the evacuation routes and more public involvement; program is being expanded accordingly.</u>

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding, Earthquake, Volcano – continued</i></b>		
The transportation plan is designed to ensure the continued ability of the transportation system to function at a reasonable level of service throughout the urban service area and coordinate the links to the regional transportation system along with Mount Vernon.	The transportation system is a critical facility in a community where evacuation is likely to be necessary	Annual Review
Maintain Police, Fire, Wastewater Treatment Critical Facilities up to date with most current technology and standards to ensure operation during hazard events.	Facilities are new and up to date	On-going
Annual maintenance of the Emergency Plan to insure that all Critical Facilities including Nursing Homes, chemical storage facilities, schools, electric and telephone substations have a working emergency plan in place and that contacts are up to date.	Emergency Plan updated in 2002 to add Evacuation Plan and Routes	Annual Review
Upgrade Flood Emergency Plan to include Earthquakes, Volcanoes, and Severe Storms as the major natural hazards. Fire is covered by the Fire Department and construction standards and Landslide is covered by the Grading and Critical Areas Codes; only potential landslide site is on Burlington Hill. Droughts, Avalanche, Tsunami/Seiche are unlikely to impact Burlington.	Emergency Plan is currently focused on Flooding	Emergency Plan to be upgraded for other hazards

**5. The plan reviews structural projects, such as reservoirs and channel modifications.**

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding</i></b>		
Structural Measures - Set the levees back along a portion of the Skagit River. The river is constrained by levees and three bridges, limiting the ability of the Skagit River to handle flood flows, starting at the Railroad Bridge and heading west. Only 150,000 cfs of water can pass under the bridge and the capacity is needed for over 200,000+ cfs. With this alternative, it is possible to reestablish shoreline vegetation along the riverbank, since the federal constraints on levee vegetation management will no longer apply. Detailed environmental studies are in process on the two major alternatives recommended by the working group, and at the 10% design level, a 500' levee setback, with bank excavation, is required through the three-bridge corridor.	Planning in process; final setback location in 2003; land acquisition in process <u>NEPA review of the proposal is in process and additional funding will be sought once environmental review is complete. There is funding for some land acquisition.</u>	Project is underway
Structural Measures - The second major element of the Burlington Plan is to develop a secondary levee system along the easterly city limits and reconstruct the existing levees to allow for overtopping.	Land Acquisition is underway and dike improvements are being made	On-going
Dike District #12 will continue to maintain and upgrade the levee system to the <u>100-year</u> <del>25-year</del> storm. Major improvements have been made to the dike system since the 1990 flood, including the installation of keyways and backsloping the landward toe of the dikes. Land for the work has been made available through an Interlocal Agreement between Dike District #12 and the City of Burlington. The protection of the Wastewater Treatment Plant was improved to 100-year.	<b>Action:</b> Continue to keep the dikes in excellent condition. Annual inspections are done; maintenance is on going.	On-going <u>The proposed plan of action is to upgrade the levees to provide 100-year flood protection. Substantial progress has been made and the goal is to get the framework for levee certification in place and complete the work once a final decision is made on base flood elevations.</u>

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>All Hazards</i></b>		
The Six Year Road Plan and the transportation element of the annually updated City of Burlington Capital Improvement Plan shall be coordinated with the Land Use, Utilities and other relevant plan elements to ensure a balanced program that is adequately funded and responsive to community interests.	Transportation plan to be updated in 2003	Annual Review
Six-year list of capital projects including specific actions targeted towards natural hazard mitigation. Implement the adopted Surface Water Management Title that provides far more extensive regulation than the adoption by reference of the Department of Ecology Technical Manual, by Public Works. Capital Improvement plan is implemented including a new pump station at the end of Gages Slough, a new storm drainage trunk on the west side. Each development is regulated and stormwater quality is also regulated. Long-term storm water quality issues are a major focus in the Gages Slough Management Plan. <i>Action:</i> Continue and improve surface water management through more in depth review, regulation and training. The first two major capital projects are scheduled and funded.	Annual update	Annual update
Upgrade all city-owned critical facilities. Construction is completed of both the new Fire Station and Police Station, and the major upgrade of the Wastewater Treatment Plant.	Completed	Completed

6. The plan reviews public information activities, such as outreach projects and environmental education programs.

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<i>Flooding</i>		
Provide on going public education at all levels, from the renter to the homeowner, regarding residential, commercial and industrial best management practice issues, flood hazard mitigation, water quality, and related local issues. Update annually.	On-going	Additional ideas to reach the public always needed
The City shall provide on going public education about flooding and shall adopt a flood hazard reduction plan, consistent and compatible with any countywide efforts and plans, using the community newsletter, special targeted mailings to Realtors, insurance agents and lenders, training sessions at neighborhood meetings, the public library, and other means that may be identified.	On-going	Annual report
Provide for ongoing public education aimed at residents, businesses, and industries in the urban area. The education programs are to inform citizens about stormwater and its effects on water quality, flooding, and fish/wildlife habitat, and to discourage dumping of waste material or pollutants into storm drains.	On-going	Annual report
The Planning Director and the Building Official will continue to make flood map determinations in response to public inquiry, along with an annual mailing to real estate agents, lenders and insurance agents.	<i>Action:</i> Make map determinations, provide annual mailing to users, and maintain accurate records and logs. Timeline is on going.	Annual Report

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding - continued</i></b>		
The Planning Director will continue to mail out a flood bulletin twice annually, including elements for map determinations, availability of library materials, and natural and beneficial functions.	<b><i>Action:</i></b> Research material and prepare flood bulletins, mail to all citizens in floodplain and entire community. Continue to participate in Flood Awareness Week and to keep citizens up to date and involved by bringing timely topics to regular Neighborhood meetings. Timeline is spring and fall of each year.	Annual Report <u><i>More targeted public involvement on evacuation planning including meetings, working with apartment managers, condominium associations and others is the focus for 2007.</i></u>
Realtors will continue to provide disclosure of flood hazard on a voluntary basis and the Planning Department will work to modify the disclosure to identify the requirement for flood insurance purchase. Action by the state legislature to make this mandatory failed in 1995, but it is expected to be revisited.	<b><i>Action:</i></b> Improve flood hazard disclosure by adding requirement for flood insurance purchase. City will support legislation at state level. Timeline is unpredictable.	Annual Report
The City Librarian will continue to maintain the Flood Protection Library and add updated materials. There is a reference on the Floodplain Management Resource Center and instructions on how people can use it. Documents regarding the natural and beneficial functions of floodplains and updated local, state and federal materials are added as they become available.	<b><i>Action:</i></b> Maintain and improve the Flood Protection Library. Additional local documents continue to be added as they become available, including updates to the Flood Plan and local early warning and evacuation plan.	Annual Report

ACTION	CURRENT STATUS	NEED FOR MODIFICATION
<b><i>Flooding – continued</i></b>		
Maintain updated maps and continue to work on automated base maps and overlays, leading to a planning level geographic information system; data collection and data entry to continue as new information and data sources become accessible.	<b>Action:</b> Planning Department to continue maintenance and updating of existing land use and topographic maps and continue data entry and development of mapping layers in automated system, including parcel and overlay data. Required flood elevations are entered for individual parcels.	Annual Report
Using improved citizen involvement, public education and establishing a solid work program to improve maintenance of the drainage system. Plan to increase city maintenance of Gages Slough as drainage easements or public ownership becomes available, or a public/private partnership can be developed. Acquire land in the Gages Slough Corridor through land donation in exchange for Park Impact Fee Credit. Public education is a key focus of the drainage program and specialized best management practices brochures are designed for the residential, agricultural and business issues specific to Burlington.	<b>Action:</b> Enhance maintenance of the system, including ability to maintain more of Gages Slough, by working with the property owners and business community.	Annual Report
<b><i>All Hazards</i></b>		
Expand the Public Information program to address other natural hazards where additional public information will be helpful, such as seismic retrofits for homes, how to make your home firewise, and other topics.	Hazards identified through Multi-jurisdictional Planning process	Plan needed

## ACTION PLAN FOR FLOOD HAZARD AND NATURAL HAZARD REDUCTION - SELECTION OF APPROPRIATE ACTIVITIES

**2003 & 2008:** *The action plan specifies those activities appropriate to the community's resources, hazards, and vulnerable properties. For each recommendation, the action plan must identify who does what, when it will be done, and how it will be financed.*

*Regulatory improvements exceeding NFIP minimum requirements are credited.*

*Post-disaster mitigation policies and procedures*

*Action items to mitigate the effects of the other natural hazards identified.*

**\*\*\****At least two of these six categories must be included in the multi-jurisdictional plan for each CRS community*

- 1. Preventive activities, such as zoning, stormwater management regulations, building codes, and preservation of open space and the effectiveness of current regulatory and preventive standards and programs;**

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Earthquake, Severe Storm, Fire, Land Movement</i></b>		
Utilize the latest adopted state building code to insure adequate protection in construction against Earthquakes in Seismic Zone 3, Severe storms with Wind Exposure C, Fire with Fire Resistive Construction Standards, and Land Movement with Grading Standards	<b>State Legislature</b> to adopt International Codes – <b>City Council</b> to adopt new state code – <b>SHORT TERM 2004 or later</b> <u>2006 International Codes adopted in 2007</u>	No financial impact
Utilize the latest adopted state fire code to insure adequate protection against Fire in construction with standards for Fire flow and through the annual Inspection of Commercial Structures	<b>State Legislature</b> to adopt International Codes – <b>City Council</b> to adopt new state code – <b>SHORT TERM 2004 or later</b> <u>2006 International Codes adopted in 2007</u>	No financial impact
<b><i>Flood</i></b>		
The Floodway, the Special Flood Risk Zone and the 100 year Floodplain shall be regulated to protect human life, property and the public health and safety of the citizens of Burlington; minimize the expenditure of public money; and maintain the city's flood insurance eligibility while avoiding regulations which are unnecessarily restrictive or difficult to administer.	<b>Planning and Building Department</b> – <b>ON-GOING</b> Administration of 2002 Critical Areas Code that includes the Flood Code	No financial impact

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b>Flood – continued</b>		
Manage stormwater runoff to improve drainage, control stormwater quantity, prevent localized flooding of streets and private property during high water table and rainy conditions, and protect and enhance water quality. NPDES II permit application filed; Increase focus on storm water quality.	<b>Public Works &amp; Street Department</b> – Administer Surface Water Management Code; 2003 consultant study; <b>SHORT TERM</b> - Update Comprehensive Plan and Code <b>2004 &amp; Annual Report</b> <i>Comprehensive Plan updated in 2005; code updates planned for 2008</i>	Funded by Surface Water Utility fees, both new construction and monthly rates
The City shall participate in the Community Rating System to obtain the maximum possible reduction in Flood Insurance Rates from the Federal Emergency Management Agency.	<b>Planning Department – ON-GOING</b> with Annual Report and Recertification process every 5 years	Funding integrated into each department's budget
Because of the unique floodway and floodplain limitations on the use of the Skagit River shorelines, particularly the dike system, the majority of the shoreline shall be identified and reserved for recreational and open space uses. Interim Controls in place in three bridge corridor; park land and other land acquisition in process; Urban Wildlife Habitat Element being added to Parks Comprehensive Plan	<b>Planning and Parks Department - SHORT TERM</b> - Update Parks Comprehensive Plan <b>2004; Dike District #12 – LONG TERM</b> -Complete land acquisition <b>2008</b> ; construction to follow as funded. <i>Land acquisition still in process; NEPA review in coordination with Skagit County and Mount Vernon in process 2007,2008.</i>	Grant funding actively being sought for land acquisition, as well as Dike District #12 property tax funding
Restrict development in the 100-year floodplain that potentially increases flood hazard unless it complies with the Flood Hazard management plan, and the Critical Areas Code.	<b>Skagit County – SHORT TERM</b> - Flood Hazard Mitigation Feasibility Study <b>2005</b> <b>Federal Emergency Management Agency – SHORT TERM</b> - new floodplain maps <b>2005</b> <i>Floodplain maps are not issued in 2008, continued research in process.</i>	Federal, State and Local funds combined
Make investigations and corrective actions of problem storm drains, including sampling. Develop a program for operation and maintenance of storm drains, detention systems, ditches, and culverts.	<b>Public Works &amp; Street Departments – ON-GOING</b> Administer Surface Water Management Code	Funded by Surface Water Utility fees, both new construction and monthly rates

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flood, Landslide, Earthquake</i></b>		
Utilizing Best Available Science to develop the Critical Areas title to protect, to the greatest extent practical, life, property and the environment from loss, injury and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity and related goals.	<b>Planning, Building and Public Works Departments – ON-GOING-</b> Program and regulations are in place.	Funding integrated into each department's budget
Coordinate with Skagit County through arrangements such as interlocal agreements, joint programs, consistent standards, or regional boards or committees.	<b>Planning, Building and Public Works Departments Multi-jurisdictional All Natural Hazards Mitigation Planning project – SHORT TERM - 2003</b> first plan with annual maintenance <u>and 5-yr updated in 2008</u> <b>LONG TERM – annual maintenance and five year update required</b>	Initial development funded by State/Federal Grant; follow-up funded locally or with additional grants if available.
Urban Level of Service Standards are established to ensure protection of public health, safety and welfare by meeting relevant standards	<b>All City Departments SHORT TERM – annual review through Capital Facilities Plan process</b>	Funding integrated into each department's budget
Public Works will implement drainage utility including improved maintenance and operations, a rate structure and public education element. Drainage Utility rate structure adopted in early 1997; annual inspection and maintenance requirements for all private facilities implemented; previous annual inspections limited to public facilities. Public education on best management practices is focused on Gages Slough property owners and the businesses that dump storm water into the Slough through a piped system.	<b>Public Works Department; Planning Department; ON-GOING</b>	Funded by Surface Water Utility fees, both new construction and monthly rates

**2. The plan reviews property protection actions, such as acquisition, retrofitting, and insurance;**

<b>ACTIVITY</b>	<b>STAFF ASSIGNMENT &amp; SCHEDULE</b>	<b>FINANCING PLAN</b>
<b><i>Landslide</i></b>		
Provide protection of steep slopes according to standards in the Critical Areas Ordinance.	<b>Planning, Building &amp; Public Works Departments –ON-GOING</b>	Funding integrated into each department's budget
<b><i>Flooding</i></b>		
Regulations and policies shall reflect the existing dikes along the Skagit River. Nonstructural solutions to flood hazards shall be encouraged including restricting development in flood-prone areas, storm water runoff management, setback levees, and up-stream watershed vegetation management. <u>Levee Certification is the goal for urban areas to provide certainty to the community over the long term.</u>	<b>Planning Department, Public Works Department, and Dike District #12 – ON-GOING; Dike District #12 – LONG TERM - Complete land acquisition 2008; construction to follow as funded.</b>	Grant funding actively being sought for land acquisition, as well as Dike District #12 property tax funding
Insure that standards for flood control measures protect and enhance the biological systems and public access opportunities of the shoreline and adjacent uplands. Process permits, develop shoreline master program and update overall Comprehensive Plan	<b>Planning Department – SHORT TERM - 2005 for update of Comprehensive Plans – other dates not set</b>	Funding integrated into department budget
The Building Official will continue to maintain elevation certificates using the automated system. Each elevation certificate is maintained by address and copies are sent annually to FEMA on disk. <i>Action:</i> Require, review, enter data in computer, and file certificates for all new development in the floodplain development project. Continue to work towards establishing a complete file of pre-FIRM certificates, using local incentive program.	<b>Building Department - ON-GOING</b>	Funding integrated into department budget
The Planning Director and the Building Official will continue to provide technical advice to property owners, contractors and design professionals.	<b>Planning and Building Departments – ON-GOING</b>	Funding integrated into department budgets

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Earthquake, Severe Storm, Flooding</i></b>		
Provide 100-year flood protection for Wastewater Treatment Plant; provide Emergency Generator capability for all pump stations; upgrade construction to latest seismic and wind standards	<b>Sewer Department – ON-GOING</b>	Sewer Utility Fund

**3. The plan reviews activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection;**

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding</i></b>		
Protect and restore critical areas including Gages Slough; plan for flood hazard mitigation, surface water management and pollution control, establishment and maintenance of greenbelts and conservation areas and coordinate with adjoining jurisdictions. Gages Slough Management Plan is adopted and being implement over time	<b>Planning, Public Works, Dike District #12 – ON-GOING</b> as funding is available	Combination of funding including department budgets, grant funds, surface water utility
Provide habitat for wildlife species, foodfish, and freshwater fish in close proximity to an urban area, including the Skagit River Shoreline, the Gages Slough Corridor and Burlington Hill. Monitoring program needed	<b>Planning and Parks Department, Dike District #12, Public Works Department - SHORT TERM - 2004</b> for Gages Slough monitoring program <b>LONG TERM – as funded</b>	Combination of funding including department budgets, grant funds, surface water utility
To protect and restore the wetlands to optimize water quality, habitat, best management practices and ensure that adjacent land use patterns are compatible with the protection and enhancement of the wetlands and take advantage of the unique attributes of the site, allowing no net loss of wetlands, and for Gages Slough, to also increase the size of culverts, remove obstructions and generally improve the flow characteristics to provide for efficient conveyance of water through the city during flood events.	<b>Planning, Parks, Public Works Departments – ON-GOING</b> with individual dates for specific capital projects; schedule updated annually	Combination of funding including department budgets, grant funds, surface water utility

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding – continued</i></b>		
To allow limited use of the Skagit River and its shoreline compatible with the Dike system and with the regulatory constraints of the Floodway and Special Flood Risk Zone, including transportation, levee improvement, utilities and outfall structures, public access and recreation, open space and agriculture and similar uses. Review based on individual permits.	<b>Planning Department and Public Works Department – ONGOING</b>	Combination of funding including department budgets, grant funds,
Plan the stormwater management system to be consistent with policies regarding flooding, wetlands, land use and water quality. Water Quality Element being added.	<b>Public Works Department SHORT TERM – 2004</b> for plan update.	Surface Water Utility funds and department budgets
Apply best management practices to reduce pollutant loading and minimize the effects of contaminated sediments on Gages Slough and the Skagit River.	<b>Planning, Parks, Public Works – ON-GOING</b> with annual review for additional opportunities	Funding integrated into department budgets
Implement a long range Gages Slough Management Plan, adopt and administer a Shoreline Master Program for Gages Slough and the Skagit River Shorelines in Burlington; increased preservation of the open space and drainage corridor through easements, deeding land to city; improve water quality; eliminate failed septic systems; fence out livestock; improve wildlife habitat; do restoration planting projects; increase regulations such as greater setbacks where applicable; implement specialized best management practices to minimize problems in the long run. Gages Slough is considered a corridor to remove floodwaters after a major flood event. It only has the capacity for about 6,000 cfs of water, which is minimal in a flood event. <b>Action:</b> Add voluntary and regulatory protection to the Gages Slough Special Flood Risk Zone, the major drainage course in the city.	<b>Planning, Parks &amp; Public Works Departments – ON-GOING</b> with Annual Report	Shoreline Master program is unfunded; waiting for state funding. Other work is combination of funding from general budget, to grant funds, to surface water utility and parks capital funds

ACTIVITY	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding, Earthquake, Landslide, Fire, Severe Storms</i></b>		
Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks. Integrate the concepts with natural functions such as drainage (Gages Slough), agriculture (surrounding farmland), and topographic features (Burlington Hill). Urban Wildlife Habitat Element added to Parks and Recreation Comprehensive Plan	<b>Planning, Parks Departments –ON-GOING</b> plus 2004 for Parks Plan	Parks Fund, general budgets

**4. The plan reviews emergency services activities, such as warning and sandbagging;**

ACTION	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding, Earthquake, Volcano</i></b>		
Develop and maintain a specific flood warning and evacuation program for the City of Burlington. The City of Burlington Flood Emergency Plan was developed in 1995 and updated in 1998 and 2002 to reflect the best approach possible. <i>Action:</i> Fire, Police, Planning, Department of Emergency Management and other agencies have developed and refined a specific community based plan. <i>Plan is updated annually.</i>	<b>City Emergency Plan Committee – ON-GOING</b> with Annual Review and exercise.	Funding integrated into department budgets
The transportation plan is designed to ensure the continued ability of the transportation system to function at a reasonable level of service throughout the urban service area and coordinate the links to the regional transportation system along with Mount Vernon. Critical for evacuation	<b>Planning and Public Works Departments – SHORT TERM - 2004</b> plan update	Funding integrated into department budgets
Maintain Police, Fire, Wastewater Treatment Critical Facilities up to date with most current technology and standards to ensure operation during hazard events.	<b>City of Burlington – ON-GOING</b>	Funding integrated into department budgets

ACTION	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding, Earthquake, Volcano – continued</i></b>		
Annual maintenance of the Emergency Plan to insure that all Critical Facilities including Nursing Homes, chemical storage facilities, schools, electric and telephone substations have a working emergency plan in place and that contacts are up to date. Emergency Plan updated in 2002 to add Evacuation Plan and Routes. <u>Plan is reviewed and updated annually.</u>	<b>City Emergency Plan Committee – ON-GOING</b> - Annual Review and exercise.	Funding integrated into department budgets
Upgrade Flood Emergency Plan to include Earthquakes, Volcanoes, and Severe Storms as the major natural hazards. Fire is covered by the Fire Department and construction standards and Landslide is covered by the Grading and Critical Areas Codes; only potential landslide site is on Burlington Hill. Droughts, Avalanche, Tsunami/Seiche are unlikely to impact Burlington.	<b>City Emergency Plan Committee – SHORT TERM - 2004</b> with Annual Review	Funding integrated into department budgets

**5. The plan reviews structural projects, such as reservoirs and channel modifications.**

ACTION	STAFF ASSIGNMENT AND SCHEDULE	FINANCING PLAN
<b><i>Flooding</i></b>		
Structural Measures - Set the levees back along a portion of the Skagit River. The river is constrained by levees and three bridges, limiting the ability of the Skagit River to handle flood flows, starting at the Railroad Bridge and heading west. Only 150,000 cfs of water can pass under the bridge and the capacity is needed for over 200,000+ cfs. With this alternative, it is possible to reestablish shoreline vegetation along the riverbank, since the federal constraints on levee vegetation management will no longer apply. Detailed environmental studies are in process on the two major alternatives recommended by the working group, and at the 10% design level, a 500' levee setback, with bank excavation, is required through the three-bridge corridor.	<b>Planning, Public Works, Dike District #12</b> <b>SHORT TERM</b> - Planning in process; final setback location in <b>2003</b> ; <b>LONG TERM</b> - land acquisition in process through <b>2008</b>	Variety of funding sources including grant funds, federal, state and local funds

ACTION	STAFF ASSIGNMENT AND SCHEDULE	FINANCING PLAN
<b><i>Flooding – continued</i></b>		
Structural Measures - The second major element of the Burlington Plan is to develop a secondary levee system along the easterly city limits and reconstruct the existing levees to allow for overtopping. Land Acquisition is underway and dike improvements are being made	<b>Dike District #12 – LONG TERM</b>	Grant Funds, property tax funds
Dike District #12 will continue to maintain and upgrade the levee system to the <u>100-year 25-year</u> storm. Major improvements have been made to the dike system since the 1990 flood, including the installation of keyways and backsloping the landward toe of the dikes. Land for the work has been made available through an Interlocal Agreement between Dike District #12 and the City of Burlington. The protection of the Wastewater Treatment Plant was improved to 100-year. <i>Action:</i> Continue to keep the dikes in excellent condition. Annual inspections are done; maintenance is on going.	<b>Dike District #12, City of Burlington – ON-GOING</b>	Property tax funds, Sewer Utility Funds, City funds
<b><i>All Hazards</i></b>		
The Six Year Road Plan and the transportation element of the annually updated City of Burlington Capital Improvement Plan shall be coordinated with the Land Use, Utilities and other relevant plan elements to ensure a balanced program that is adequately funded and responsive to community interests.	<b>Planning &amp; Public Works Department – SHORT TERM - 2004</b> for plan update; <b>ON-GOING -</b> Annual review and update of project list	General City Funds

ACTION	STAFF ASSIGNMENT AND SCHEDULE	FINANCING PLAN
<b><i>All Hazards - continued</i></b>		
Six-year list of capital projects including specific actions targeted towards natural hazard mitigation. Implement the adopted Surface Water Management Title that provides far more extensive regulation than the adoption by reference of the Department of Ecology Technical Manual, by Public Works. Capital Improvement plan is implemented including a new pump station at the end of Gages Slough, a new storm drainage trunk on the west side. Each development is regulated and stormwater quality is also regulated. Long-term storm water quality issues are a major focus in the Gages Slough Management Plan. <i>Action:</i> Continue and improve surface water management through more in depth review, regulation and training. The first two major capital projects are scheduled and funded.	<b>All City Departments – SHORT TERM</b> -Annual update	General City Funds, Utility Funds, grant funds
Upgrade all city-owned critical facilities. Construction is completed of both the new Fire Station and Police Station, and the major upgrade of the Wastewater Treatment Plant.	<b>City of Burlington –ON-GOING</b> –All facilities updated over past 5 years	General City Funds, Utility Funds, Grant funds

**6. The plan reviews public information activities, such as outreach projects and environmental education programs.**

ACTION	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding</i></b>		
Provide on going public education at all levels, from the renter to the homeowner, regarding residential, commercial and industrial best management practice issues, flood hazard mitigation, water quality, and related local issues. Update annually.	<b>Planning Department ON-GOING</b> -with Annual Report	Integrated in Department Budget.

ACTION	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding – continued</i></b>		
The City shall provide on going public education about flooding and shall adopt a flood hazard reduction plan, consistent and compatible with any countywide efforts and plans, using the community newsletter, special targeted mailings to Realtors, insurance agents and lenders, training sessions at neighborhood meetings, the public library, and other means that may be identified.	<b>Planning Department ON-GOING</b> with Annual Report	Integrated in Department Budget.
Provide for ongoing public education aimed at residents, businesses, and industries in the urban area. The education programs are to inform citizens about stormwater and its effects on water quality, flooding, and fish/wildlife habitat, and to discourage dumping of waste material or pollutants into storm drains.	<b>Planning Department ON-GOING</b> with Annual Report	Integrated in Department Budget.
The Planning Director and the Building Official will continue to make flood map determinations in response to public inquiry, along with an annual mailing to real estate agents, lenders and insurance agents. <b>Action:</b> Make map determinations, provide annual mailing to users, and maintain accurate records and logs. Timeline is on going.	<b>Planning Department ON-GOING</b> with Annual Report	Integrated in Department Budget.
The Planning Director will continue to mail out a flood bulletin twice annually, including elements for map determinations, availability of library materials, and natural and beneficial functions. <b>Action:</b> Research material and prepare flood bulletins, mail to all citizens in floodplain and entire community. Continue to participate in Flood Awareness Week and to keep citizens up to date and involved by bringing timely topics to regular Neighborhood meetings. Timeline is spring and fall of each year.	<b>Planning Department ON-GOING</b> with Annual Report	Integrated in Department Budget.

ACTION	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding – continued</i></b>		
<p>Realtors will continue to provide disclosure of flood hazard on a voluntary basis and the Planning Department will work to modify the disclosure to identify the requirement for flood insurance purchase. Action by the state legislature to make this mandatory failed in 1995, but it is expected to be revisited. <b>Action:</b> Improve flood hazard disclosure by adding requirement for flood insurance purchase. City will support legislation at state level. Timeline is unpredictable.</p>	<p><b>Planning Department ON-GOING</b> with Annual Report</p>	<p>Integrated in Department Budget.</p>
<p>The City Librarian will continue to maintain the Flood Protection Library and add updated materials. There is a reference on the Floodplain Management Resource Center and instructions on how people can use it. Documents regarding the natural and beneficial functions of floodplains and updated local, state and federal materials are added as they become available. <b>Action:</b> Maintain and improve the Flood Protection Library. Additional local documents continue to be added as they become available, including updates to the Flood Plan and local early warning and evacuation plan.</p>	<p><b>Planning Department ON-GOING</b> with Annual Report</p>	<p>Integrated in Department Budget.</p>
<p>Maintain updated maps and continue to work on automated base maps and overlays, leading to a planning level geographic information system; data collection and data entry to continue as new information and data sources become accessible. <b>Action:</b> Planning Department to continue maintenance and updating of existing land use and topographic maps and continue data entry and development of mapping layers in automated system, including parcel and overlay data. Required flood elevations are entered for individual parcels.</p>	<p><b>Planning Department ON-GOING</b> with Annual Report</p>	<p>Integrated in Department Budget.</p>

ACTION	STAFF ASSIGNMENT & SCHEDULE	FINANCING PLAN
<b><i>Flooding – continued</i></b>		
<p>Using improved citizen involvement, public education and establishing a solid work program to improve maintenance of the drainage system. Plan to increase city maintenance of Gages Slough as drainage easements or public ownership becomes available, or a public/private partnership can be developed. Acquire land in the Gages Slough Corridor through land donation in exchange for Park Impact Fee Credit. Public education is a key focus of the drainage program and specialized best management practices brochures are designed for the residential, agricultural and business issues specific to Burlington. <b>Action:</b> Enhance maintenance of the system, including ability to maintain more of Gages Slough, by working with the property owners and business community.</p>	<p><b>Planning Department ON-GOING</b> with Annual Report</p>	<p>Integrated in Department Budget</p>
<b><i>All Hazards</i></b>		
<p>Expand the Public Information program to address other natural hazards where additional public information will be helpful, such as seismic retrofits for homes, how to make your home firewise, and other topics. Hazards identified through Multi-jurisdictional Planning process.</p>	<p><b>Planning Department ON-GOING</b> with Annual Report</p>	<p>Integrated in Department Budget.</p>

## **APPENDIX A**

### ***EXAMPLE OF RECENT FLOOD HAZARD REDUCTION PUBLIC INFORMATION BULLETIN***



## **FLOOD & NATURAL HAZARD REDUCTION PUBLIC INFORMATION BULLETIN #32**

**Fall 2008**



***This Bulletin is being sent to you because your property has been determined to be in the floodplain.***

This Fall, you are invited to participate in the Neighbor-to-Neighbor program so that you and your neighbors will be on board for the very earliest notification of any flood emergency, or other natural disaster. Meetings will be held with every group that has now signed up for the program and community wide meetings will also be held if you want to get involved. A simple Telephone Tree is all you need for your neighborhood!

The scientists and engineers continue to work diligently on getting the most accurate information together to figure out how much water gets to the Skagit River delta in a 100-year flood event, and it is likely that there is a difficult time ahead when technical disagreements are not resolved. The long anticipated revisions to the Flood Insurance Rate Maps are still not published, but it is still very likely that there will be proposed increase in the Base Flood Elevations. Burlington and Dike District #12 are moving forward with a proposal to get the levees certified for 100-year flood protection and at the same time, putting together excellent data from the field to support a technical appeal of the map revisions when they are published. The goal is to work together with the agencies, cities, towns and the county to mitigation flood hazard and protect public safety and property.

The Federal Emergency Management Agency's position on establishing a regulatory floodway in the Skagit River delta area is that the issue is significant and that efforts at least comparable to the actions taken with adoption of the Flood Insurance Rate Maps in the mid-1980's are needed. With this in mind, Burlington would keep Gages Slough as a Special Flood Risk Zone and keep an area of 300 feet behind the levees designated as Special Flood Risk Zone. Burlington will also take action to protect overbank flow paths across farmland around the city through supporting farmland preservation efforts. The existing floodway path for the River is through the Nookachamps and Sterling area, and once the railroad is overtopped, the water moves north to the farmland.

In order to protect the long term public interest, the City is amending the Natural Hazard Mitigation Plan to add the goal and implementation strategy of upgrading the levees and adding components as needed to certify the levees for one hundred year flood protection so that the levees will count in the computer modeling for determining the Base Flood Elevations in the Burlington urban area. This is expected to take a number of years to accomplish. Only 100-year Certified Levees qualify for credit in the mapping process.

### **PLANNING DEPARTMENT**

833 S. SPRUCE STREET ■ BURLINGTON WA 98233  
(360) 755-9717 ■ Email: [bplanning@ci.burlington.wa.us](mailto:bplanning@ci.burlington.wa.us)

## Property Protection Measures

Let's get started on improving flood protection in your home! Staff is available to provide site specific flood and flood-related data, make site visits to review flood, drainage and sewer problems and to advise and assist on retrofitting techniques.

Stop by the Permit Center or give the Building Department a call at 755-0077 and let the city provide you with technical assistance on improving flood protection in your home. A site visit will be scheduled at your convenience to put a checklist together for home flood protection improvements. Staff is also available from the Public Works Department if additional assistance is needed to assist with drainage and sewer problems.

If you want to do your own research, here are some of the recommended FEMA technical bulletins that you will find at the Burlington Public Library and the Building Department for your use:

- Homeowner's Guide to Retrofitting, FEMA-312
- Design Manual for Retrofitting Flood-prone Residential Structures, FEMA-114
- Protecting Building Utilities from Flood Damage, FEMA-348

Take a few minutes to look over the possible areas where you may need to floodproof important parts of your home. A good example is protecting utility systems. This is one of the easiest and least expensive retrofitting methods to accomplish. Whether it is elevating, relocating, or anchoring; items such as electrical panel boxes, furnaces, water heaters, washers/dryers and heating fuel tanks are typically very cost effective items to upgrade. There are also recommendations for drainage and crawl space improvements.

If you have a newer (post 1985) home, check to be sure these items have been taken care of when the home was constructed. Identify the potential for moving essential items and furniture to upper floors or the attic of your home. Materials like sandbags, plywood, plastic sheeting, and lumber handy for emergency waterproofing can already be on hand. This action will help minimize the amount of damage caused by floodwaters and requires minimal storage space.

## Flood Safety & Disaster Preparedness

Every home needs to be prepared and STAY PREPARED! Review your Flood procedure at home with your household and take the time to put your Emergency Preparedness Kit together, or check your flashlight batteries in your existing kit. Remember, a supply of drinking water, emergency food and first aid kit are the bare minimums, along with flashlights. In addition to the basic three day supply of food and water, consider having supplies for sheltering for up to two weeks. Keep a small "grab and go" kit for your place of work with food, water, first aid supplies. For the emergency kit in the car, add flares, jumper cables and seasonal supplies.

There is an excellent FEMA publication entitled "Are You Ready? An In-depth Guide to Citizen Preparedness" available. This publication offers disaster information for natural hazards, technological hazards and terrorism. It will guide you for preparation in advance and recovery from a disaster. If you want to order a free copy for your home, call 1-800-480-2520. On the internet, <http://www.fema.gov/areyouready/> is the website link. A copy is available in the Burlington Public Library. **THIS COVERS THE BASIC DISASTER SUPPLIES KIT IN DETAIL.**

***Earthquakes are an example of a disaster that cannot be predicted and that is not seasonal. Be prepared at all times!***

## Flood Insurance

Any property owner in the City of Burlington is eligible to obtain Flood Hazard Insurance, since the city participates in the National Flood Insurance Program. Purchasing or refinancing a home will trigger a requirement for flood insurance by the lender. Coverage in the event of flooding is not included in typical homeowner's insurance policies. Flood insurance is available through your own agency or broker and includes flooding from ponding/drainage problems, snowmelt flooding, runoff on hillsides, or any flooding involving surface water. Contents of the building are a separate addition to the policy. There is limited coverage available for flood-related erosion and mudslide. Replacement cost coverage is available for principal residences. *Concerned about high Flood Insurance Rates?* You may qualify for a substantial reduction if you have an Elevation Certificate that shows your home or business is located at or above the 100 year flood elevation. You will have to retain the services of a Licensed Engineer to complete the paperwork, unless an Elevation Certificate is on file already with the Building Department, so please check here first.

Flood insurance rates are higher for buildings with crawl spaces that are two feet or more below the lowest adjacent exterior grade, which is a common construction practice in the northwest. *A number of local homeowners may be paying too much for flood insurance. There are a lot of details that may be misinterpreted or overlooked, so look carefully at your flood insurance policy when it comes up for renewal this year..* If you are concerned, contact the Building Department and review your Elevation Certificate to make sure that all the information is correct. *In addition, there are ways to retrofit your vents and crawlspace if needed to improve your rating.*

## Flood Warning System

Each and every citizen has a role to play in the event of a flood. BE PREPARED!!! The Burlington Flood Emergency Team prepares and coordinates activities needed to be ready for any flood event with the involvement of all the responsible agencies. A new siren system is in the works that will have several locations for better coverage; meanwhile the existing siren is ready if needed.

The procedure for warning the public is coordinated through the Skagit County Department of Emergency Management. The Emergency Alert System is activated when necessary and includes the following local radio stations:

**KBRC 1430 AM • KLKI 1340 AM  
KAPS 660 AM**

If evacuation is necessary, there will also be door-to-door notification and loudspeakers broadcasting from public safety vehicles in the neighborhood. Flaggers will be stationed at key intersections along the Evacuation Route to direct traffic.

Today, there are three neighborhoods in the Neighbor-to-Neighbor notification plan for very early warning. Contact your neighbors to ask if they want to be part of taking responsibility for each other and call the Planning Department to get on the list. We will be contacting every group and meeting this fall to get prepared for flood season; now is the perfect time to identify your block captains and work together to BE PREPARED.

### **DO NOT DRIVE THROUGH FLOODED AREAS**

## Natural & Beneficial Functions of Floodplains

Filling property to increase elevation in the floodplain is allowed today, but the long term goal is to minimize fill to protect fish and wildlife habitat. Burlington supports habitat improvements in the floodplain, and the Gages Slough restoration projects are a major effort in the city. Storm water quality monitoring in Burlington clearly shows that better water quality treatment systems are needed and this is a major focus of the surface water utility.

The Gages Slough habitat management plan has identified locations for restoration and water quality improvement projects, so mitigation projects will be ready to build when the opportunity arises. Wetland buffer restoration and maintenance projects are in process to improve habitat and several more are in the planning stages, so stay tuned!

Protecting agricultural lands is part of protecting the Natural and Beneficial Functions of Floodplains. The city is working towards implementing the Burlington Agricultural Heritage Credit program which will raise funds for farmland preservation in exchange for increased residential density in Downtown and the Retail Core. An area of 5,628 acres has been identified as the target area for purchase of development rights.

Key elements of the Skagit County Natural Hazard Mitigation Plan include giving the Skagit River more room by setting the dikes back in Burlington and to the mouth of the Skagit River, carefully coordinating and managing the hydroelectric power dams in the river system during a flood event (a goal not yet achieved), permanently moving homes and development rights out of the floodway, improving the environment for wildlife, and creating new public access opportunities to improve everyone's quality of life.

## Local Flood Hazard Areas

There are three flood zones in the City Limits of Burlington, the Floodway (river side of the dike), the 100 Year Flood Zone and the Special Flood Risk Zone. Most of Burlington is in the 100 Year Flood Zone.

The Special Flood Risk Zone includes all land within 300 feet of the landward toe of the Dike. All structures must be designed so that floodwaters can pass underneath and there is no occupied space below one foot above the 100 year flood elevation, unless the site is within 100 feet of the Dike where nothing can be built. All property in Gages Slough that is three feet or more below the 100 year flood elevation was designated as Special Flood Risk in the mid-1980's as part of a negotiating process over the uniquely complex Skagit River delta area when the Flood Insurance Rate Maps were finalized. The status of Gages Slough will be revisited when the new base flood elevation maps are unveiled by the Federal Emergency Management Agency.

YES, work is happening! Burlington and Dike District #12 have signed an Interlocal Agreement to move ahead with plans for Levee Certification, to get 100-year flood protection for Burlington. Engineering analysis will be done systematically to document the levee design. The levee enlargement work started in 1990 and earthwork is still underway. Land acquisition and environmental review are also moving ahead for setting the levees back through the three-bridge corridor (Railroad bridge, Old 99 bridge, and Interstate 5 bridge) to make enough room for the Skagit River to accommodate a 100-year flood event within the banks.

## Map Determination & Library Information

A map determination is figuring out where the 100 year flood elevation is located relative to the first occupied floor of your home or business. This information is used to prepare an Elevation Certificate. A citywide system of elevation benchmarks is maintained in the Building Department. An average of an additional \$200 in savings is possible on your flood insurance policy if you have an elevation certificate, in addition to the 20% rate reduction already available in Burlington, as a result of community participation in the federal Community Rating System program. There are issues with flood insurance providers, and if you feel that you are not getting good information, please contact the city and we will try to help.

Information on other flood improvements, such as elevating your building, filling the crawl space, or floodproofing the lower portion, is available from the City and in the Burlington Public Library. There is a flood reference area in the library and staff will assist in directing you to the information you need.

Every land use newsletter includes a flood and natural hazard mitigation topic. Call the Planning Department at 755-9717 to get on the mailing list! Take the time to participate because your ideas will be taken seriously and you will have a say in the future of your community. There will be several Neighborhood Planning meetings scheduled for this fall where you can get the latest updates.

## Substantial Improvement/Damage Requirements

The National Flood Insurance Program requires that if the cost of reconstruction, rehabilitation, addition, or other improvements to a building equals or exceeds 50% of the building's market value, then the building must meet the construction requirements for a new building. Substantially damaged buildings must also be brought up to the same standard. The major issue is elevating the structure one foot above the 100 year flood elevation, along with all mechanical equipment, ductwork and electrical equipment, and installing properly located and sized vents, unless you are located in the Gages Slough Special Flood Risk Zone where "breakaway walls" are required below the 100 year flood elevation.

## Drainage System Maintenance

This is the fifth year of water quality studies in Gages Slough and wetland restoration projects to improve water quality are in the works this year. The commitment to long term maintenance, monitoring and habitat improvement is beginning to show, with the upgrading of the very first wetland buffer planting, and now the removal of the ropes over the Goldenrod Bridge project, letting the ducks fly in for the first time. Clean water, efficient flow of water when needed, and a quality environment are the goals. Gages Slough and the Skagit River are important amenities for the community.

The drainage maintenance and inspection program is part of flood hazard mitigation. Every year, all detention ponds, pipes, catch basins and other drainage control structures are inspected and corrections required as needed to ensure that the capacity of the ponds is maintained and that the ability of the system to clean the storm water is retained, in addition to inspection and maintenance of the city street system. The public drainage system, including culverts, pipes and ditches is well maintained. Gages Slough is maintained at each street intersection and culvert location. A well maintained drainage system that functions in small storms will provide the best assistance possible in large storms and floods, by quickly and efficiently carrying the excess water out of town.

Thank you for respecting the signs that state "No Dumping – thank you" at public access points to Gages Slough! Each property owner along the Slough is responsible for cleaning up any litter or trash that is on their property. The problem of illegal dumping of yard waste in Gages Slough and the problem of trash dumped at points of public access to the River can only be solved if everyone helps out. It is illegal to dump or to fill along Gages Slough or the Skagit River. You may report illegal dumping (this includes yard waste) in the Slough, by calling the Code Enforcement Officer at either 755-9717 or 755-2307, or in writing.

## Floodplain Development Permit Requirements

Before you build, add fill, or make changes to your property and structures, be sure to contact the Planning and Building Departments to determine if any permits or approvals are necessary. The Federal Emergency Management Agency and the Insurance Industry make frequent changes in the interpretation of floodplain standards, and you need to be sure you are using the most current information for any construction project.

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Information on other flood improvements, such as elevating your building, filling the crawl space, or floodproofing the lower portion, is available from the City and in the Burlington Public Library. There is a catalogue reference that will direct you to the information you need. Spring is a great time for upgrading your home to meet flood standards, even on a small scale, and the latest techniques are on file in the library.

Every land use newsletter includes a flood and natural hazard mitigation topic. There is also a series of special meetings this year to discuss the 5 year update of the Skagit County Natural Hazard Mitigation Plan, on the third Thursday of every month, May 15, June 19, July 17, and August 21 at 5:00 p.m. in the City Council Chambers at 833 South Spruce. Call the Planning Department at 755-9717 to get on the mailing list! Take the time to participate because your ideas will be taken seriously and you will have a say in the future of your community.

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## CITY OF BURLINGTON Planning Department

833 S. Spruce Street  
Burlington WA 98233

Phone: (360) 755-9717

[bpplanning@ci.burlington.wa.us](mailto:bpplanning@ci.burlington.wa.us)



## FLOOD & NATURAL HAZARD REDUCTION PUBLIC INFORMATION BULLETIN #31

Spring 2008



*This Bulletin is being sent to you because your property has been determined to be in the floodplain.*

*With the snow still visible on Culkus Mountain at the end of April, many are hoping for a slow melt with no spring flooding, and others are wondering when to plant the vegetable garden! Not only is the weather uncertain and unseasonably cold, but so is the future of the floodplain.*

Burlington has relied on the Flood Insurance Rate Maps issued in 1985 for all new construction and there is a grave concern that changes are going to be made without adequate justification. The City must have predictable federal standards that are not changed in order to serve the public fairly.

Following identification of computer software problems, the Flood Insurance Rate Maps (FIRM) are in revision once again and the release date is tentatively set for late summer, 2008. There may be a significant adverse impact on Burlington from increases in Base Flood Elevations. An appeal will probably be filed because it is the position of Burlington and Mount Vernon that the Federal Emergency Management Agency is using incorrect assumptions about how much water will actually reach Burlington in a 100-year flood. The City of Burlington and Mount Vernon are preparing an independent proposal utilizing newly acquired technical data and will request this independent analysis be considered by the Federal Emergency Management Agency. It is the position of the Federal Emergency Management Agency that the cities proposal will only be considered through a request for a Letter of Map Revision or a formal appeal that provides data that show the proposed base flood elevations to be scientifically or technically incorrect.

The Federal Emergency Management Agency's position on establishing a regulatory floodway in the Skagit River delta area is that the issue is significant and that efforts at least comparable to the actions taken with adoption of the Flood Insurance Rate Maps in the mid-1980's are needed. With this in mind, Burlington would keep Gages Slough as a Special Flood Risk Zone and keep an area of 300 feet behind the levees designated as Special Flood Risk Zone. Burlington will also take action to protect overbank flow paths across farmland around the city through supporting farmland preservation efforts. The existing floodway path for the River is through the Nookachamps and Sterling area, and once the railroad is overtopped, the water moves north to the farmland.

In order to protect the long term public interest, the City is proceeding to amend the Natural Hazard Mitigation Plan to add the goal and implementation strategy of upgrading the levees and adding components as needed to certify the levees for one hundred year flood protection so that the levees will count in the computer modeling for determining the Base Flood Elevations in the Burlington urban area. This is expected to take a number of years to accomplish. Only 100-year Certified Levees qualify for credit in the mapping process.

## Flood Safety & Disaster Preparedness

Every home needs to be prepared and **STAY PREPARED!** Review your Flood procedure at home with your household and take the time to put your Emergency Preparedness Kit together, or check your flashlight batteries in your existing kit. Remember, a supply of drinking water, emergency food and first aid kit are the bare minimums, along with flashlights. In addition to the basic three day supply of food and water, consider having supplies for sheltering for up to two weeks. Keep a small "grab and go" kit for your place of work with food, water and first aid supplies. For the emergency kit in the car, add flares, jumper cables and seasonal supplies.

There is an excellent FEMA publication available entitled **"Are You Ready? An In-Depth Guide to Citizen Preparedness"**. This publication offers disaster information for natural hazards, technological hazards and terrorism. It will guide you for preparation in advance and recovery from a disaster. If you want to order a free copy for your home, call 1-800-480-2520. On the internet, <http://www.fema.gov/ateyourready/> is the website link. A copy is available in the Burlington Public Library. **THIS COVERS THE BASIC DISASTER SUPPLIES KIT IN DETAIL.**

**Earthquakes are an example of a disaster that cannot be predicted and that is not seasonal. Be prepared at all times!**

## Property Protection Measures

No time like the present to get started on improving flood protection in your home. Take a few minutes to look over the possible areas where you may need to floodproof important parts of your home. Electrical panel boxes, furnaces, water heaters, and washers/dryers should be elevated or relocated to a location less likely to be flooded. If you heat with propane, pour a slab and anchor the tanks to the ground with straps or bolts or they will become floating bombs. Basement floor drains and interior and exterior backwater valves can be installed, and interior floodwalls can be placed around utilities. If you have a newer (post 1985) home, check to be sure these items have been taken care of when the home was constructed. Identify the potential for moving essential items and furniture to upper floors or the attic of your home. Materials like sandbags, plywood, plastic sheeting, and lumber handy for emergency waterproofing can already be on hand. This action will help minimize the amount of damage caused by floodwaters and requires minimal storage space.

If you would like information on ways to floodproof your home or parts of it, the Building Department and the Library have lots of resource materials.

## Flood Insurance

Any property owner in the City of Burlington is eligible to obtain Flood Hazard Insurance, since the city participates in the National Flood Insurance Program. Purchasing or refinancing a home will trigger a requirement for flood insurance by the lender. Coverage in the event of flooding is not included in typical homeowner's insurance policies. Flood insurance is available through your own agency or broker and includes flooding from ponding/drainage problems, snowmelt flooding, runoff on hillsides, or any flooding involving surface water. Contents of the building are a separate addition to the policy. There is limited coverage available for flood-related erosion and mudslide. Replacement cost coverage is available for principal residences. *Concerned about high Flood Insurance Rates?* You may qualify for a substantial reduction if you have an Elevation Certificate that shows your home or business is located at or above the 100 year flood elevation. You will have to retain the services of a Licensed Engineer to complete the paperwork, unless an Elevation Certificate is on file already with the Building Department, so please check here first.

Flood insurance rates are higher for buildings with crawl spaces that are two feet or more below the lowest adjacent exterior grade, which is a common construction practice in the northwest. *A number of local homeowners may be paying too much for flood insurance. There are a lot of details that may be misinterpreted or overlooked, so look carefully at your flood insurance policy when it comes up for renewal this year.* If you are concerned, contact the Building Department and review your Elevation Certificate to make sure that all the information is correct.

## Floodplain Development Permit Requirements

Before you build, add fill, or make changes to your property and structures, be sure to contact the Planning and Building Departments to determine if any permits or approvals are necessary. The Federal Emergency Management Agency and the Insurance Industry make frequent changes in the interpretation of floodplain standards, and you need to be sure you are using the most current information for any construction project.

## Local Flood Hazard Areas

There are three flood zones in the City Limits of Burlington, the Floodway (river side of the dike), the 100 Year Flood Zone and the Special Flood Risk Zone. Most of Burlington is in the 100 Year Flood Zone.

The Special Flood Risk Zone includes all land within 300 feet of the landward toe of the Dike. All structures must be designed so that floodwaters can pass underneath and there is no occupied space below one foot above the 100 year flood elevation, unless the site is within 100 feet of the Dike where nothing can be built. All property in Gages Slough that is three feet or more below the 100 year flood elevation was designated as Special Flood Risk in the mid-1980's as part of a negotiating process over the uniquely complex Skagit River delta area when the Flood Insurance Rate Maps were finalized. The status of Gages Slough will be revisited when the new base flood elevation maps are unveiled by the Federal Emergency Management Agency.

YES, work is happening! Burlington and Dike District #12 have signed an Interlocal Agreement to move ahead with plans for Levee Certification, to get 100-year flood protection for Burlington. Engineering analysis will be done systematically to document the levee design. The levee enlargement work started in 1990 and earthwork is still underway. Land acquisition and environmental review are also moving ahead for setting the levees back through the three-bridge corridor (Railroad Bridge, Old 99 Bridge, and Interstate 5 Bridge) to make enough room for the Skagit River to accommodate a 100-year flood event within the banks.

## Natural & Beneficial Functions of Floodplains

Filling property to increase elevation in the floodplain is allowed today, but the long term goal is to minimize fill to protect fish and wildlife habitat. Burlington supports habitat improvements in the floodplain, and the Gages Slough restoration projects are a major effort in the city. The Gages Slough habitat management plan has identified locations for restoration and water quality improvement projects, so mitigation projects will be ready to build when the opportunity arises. Storm water quality monitoring in Burlington clearly shows that better water quality treatment systems are needed and this is a major focus of the surface water utility.

Several hundred students from Lucille Umbarger School actively participated in adding the layer of plants that cleans the storm water runoff, as well as trees for habitat, in the wetland buffer along Gages Slough at

Jack Doyle Memorial Park on Arbor Day 2008, one more step to a healthy environment!

Protecting agricultural lands is part of protecting the Natural and Beneficial Functions of Floodplains. The city is working towards implementing the Burlington Agricultural Heritage Credit program which will raise funds for farmland preservation in exchange for increased residential density in Downtown and the Retail Core. An area of 5,628 acres has been identified as the target area for purchase of development rights.

Key elements of the Skagit County Natural Hazard Mitigation Plan include giving the Skagit River more room by setting the dikes back in Burlington and to the mouth of the Skagit River, carefully coordinating and managing the hydroelectric power dams in the river system during a flood event (a goal not yet achieved), permanently moving homes and development rights out of the floodway, improving the environment for wildlife, and creating new public access opportunities to improve everyone's quality of life.

## Flood Warning System

Each and every citizen has a role to play in the event of a flood. **BE PREPARED!!!** The Burlington Flood Emergency Team prepares and coordinates activities needed to be ready for any flood event with the involvement of all the responsible agencies. A new siren system is in the works that will have several locations for better coverage; meanwhile the existing siren is ready if needed.

The procedure for warning the public is coordinated through the Skagit County Department of Emergency Management. The Emergency Alert System is activated when necessary and includes the following local radio stations:

**KBRC 1430 AM ♦ KLKI 1340 AM ♦ KAPS 660 AM**

If evacuation is necessary, there will also be door-to-door notification and loudspeakers broadcasting from public safety vehicles in the neighborhood. Flaggers will be stationed at key intersections along the Evacuation Route to direct traffic.

Today, there are three neighborhoods in the Neighbor-to-Neighbor notification plan for very early warning. Contact your neighbors to ask if they want to be part of taking responsibility for each other and call the Planning Department to get on the list. We will be contacting every group and meeting this fall to get prepared for flood season; now is the perfect time to identify your block captains and work together to **BE PREPARED**.

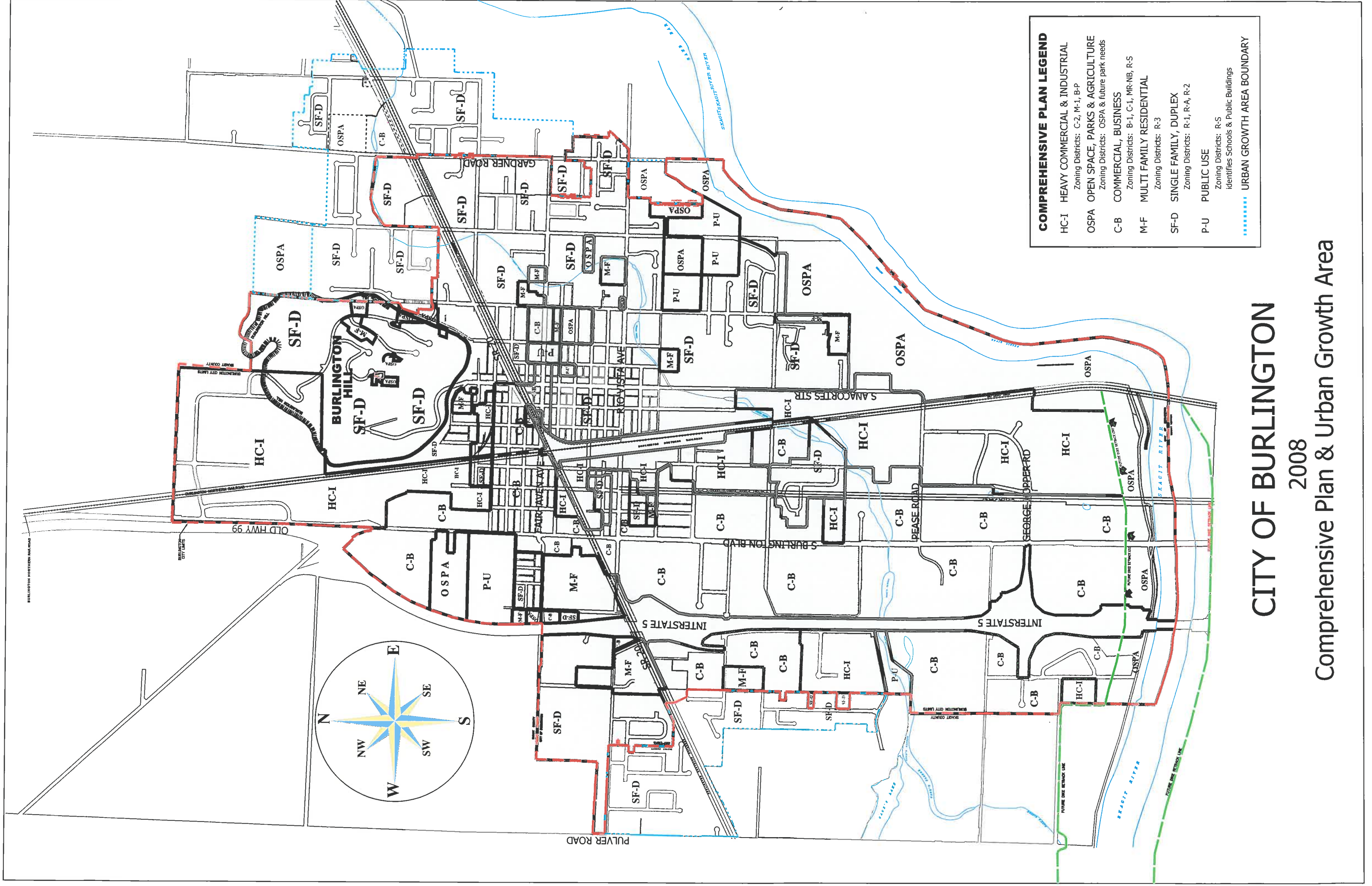
**DO NOT DRIVE THROUGH FLOODED AREAS.**

## **APPENDIX B**

### ***MAPS OF CITY OF BURLINGTON FLOODPLAIN***

#### ***SPECIAL FLOOD RISK ZONE***

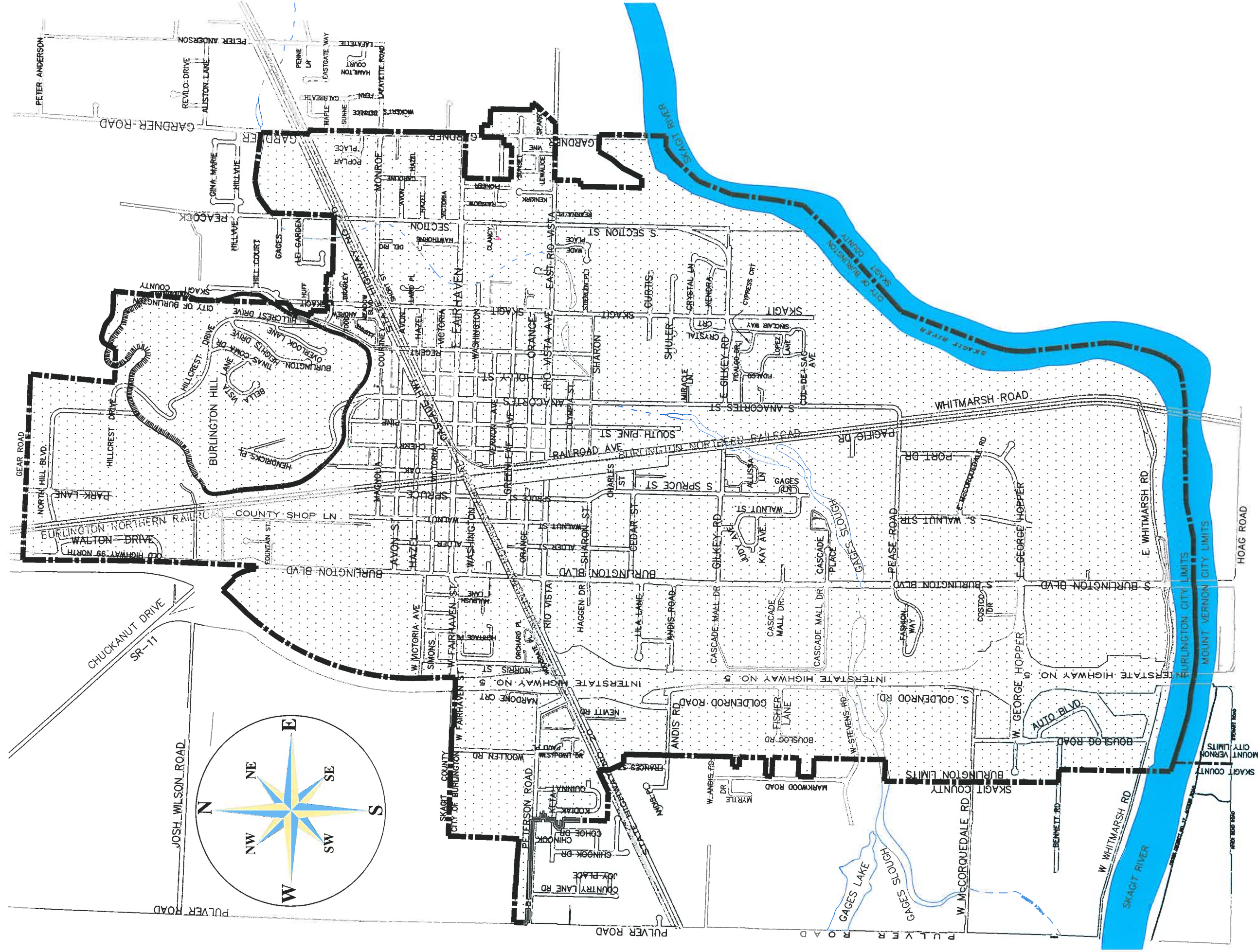
#### ***EVACUATION PLAN AND ROUTE***



# CITY OF BURLINGTON

2008

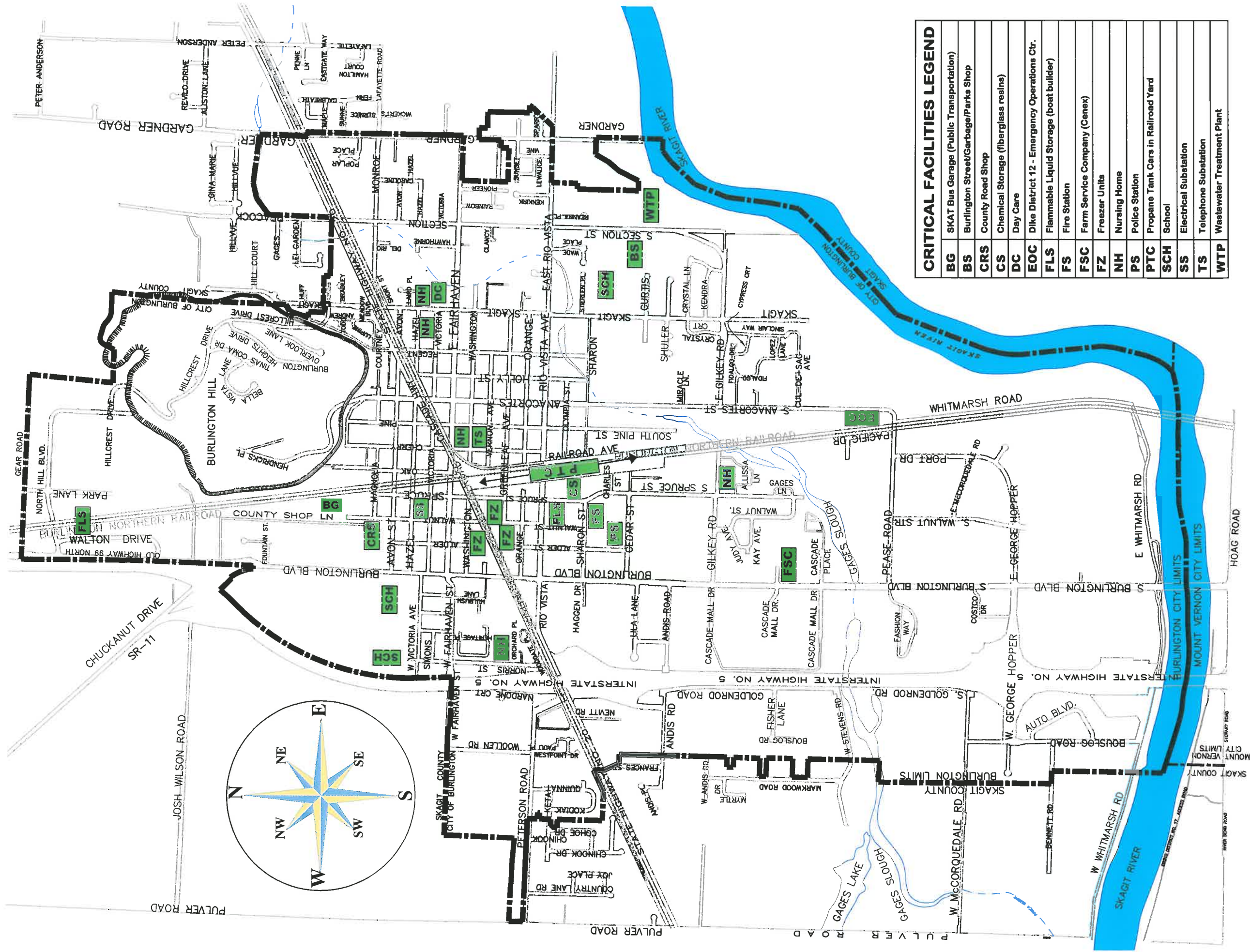
Comprehensive Plan & Urban Growth Area



# City of Burlington

## VICINITY MAP

2008



# City of Burlington

## CRITICAL FACILITIES MAP

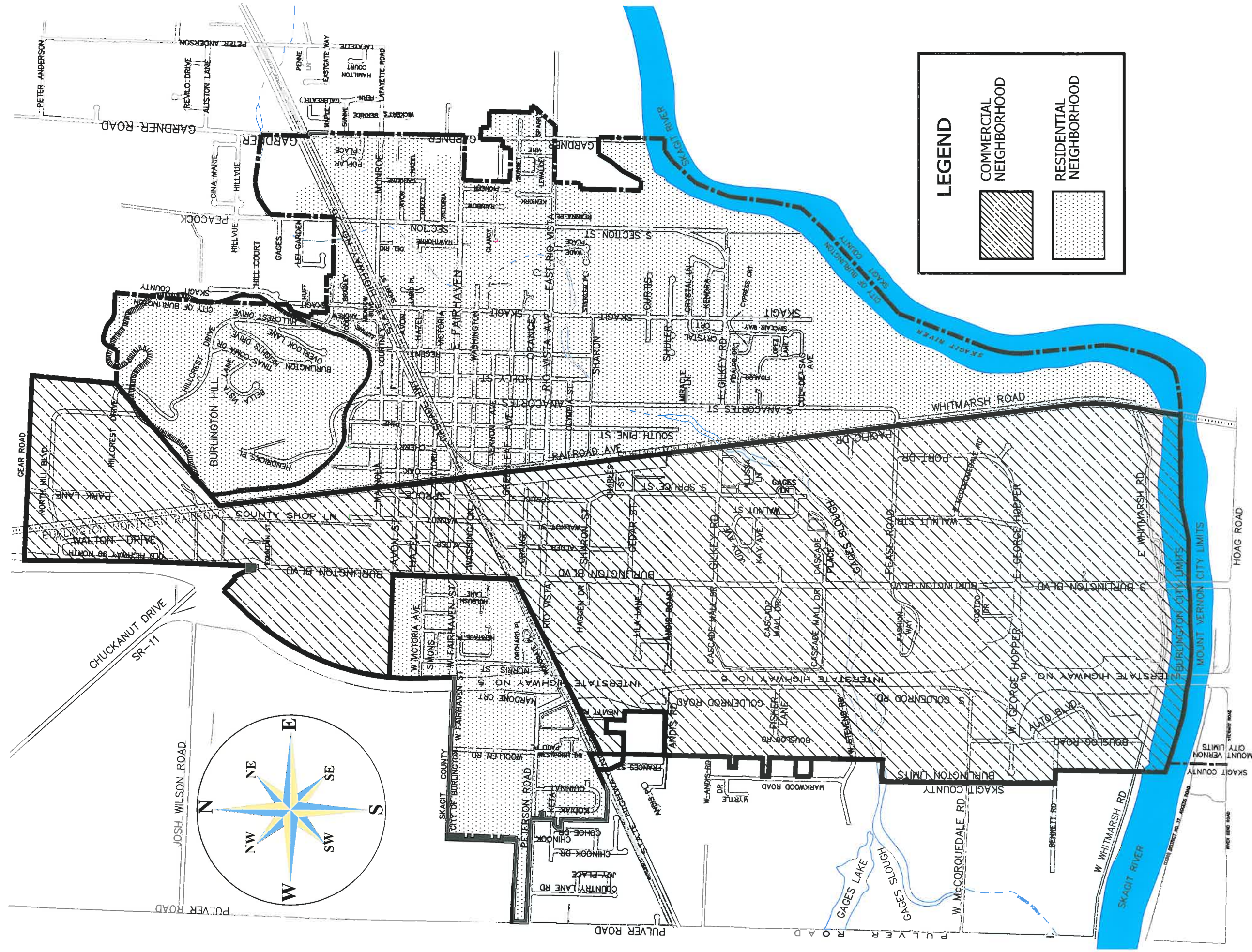
### 2008



# City of Burlington

## 100-YEAR FLOOD ELEVATIONS MAP

2008



# City of Burlington NEIGHBORHOOD MAP 2008



## **APPENDIX C**

### ***CITY OF BURLINGTON FLOOD EMERGENCY PLAN 2008-2013***

#### ***INCLUDING SKAGIT COUNTY DIKE DISTRICT #12 STANDARD OPERATING PROCEDURE***



# FLOOD EMERGENCY PLAN

*And Public Information Program Strategy for All Natural Hazards*

2008-2013

Edward J. Brunz, Mayor  
Mark Anderson, Fire Chief  
Bill VanWieringen, Police Chief  
Chal Martin, Public Works Director  
Jerry Windsor, Street Supervisor  
Margaret Fleek, Community Rating System Coordinator  
John Leander, Burlington-Edison School District  
Chuck Bennett, Dike District #12 Commissioner  
John Burt, Dike District #12 Commissioner  
Marv Cannon, Dike District #12 Commissioner

Rick Boge, Surface Water Manager  
Skagit County Director of Emergency Services  
Mark Watkinson, Emergency Services Coordinator  
Skagit County Search and Rescue

## City of Burlington

### Flood Emergency Plan

### RECORD OF CHANGES

CHANGE NO. ENTERED BY	PAGE NO.	SUBJECT	DATE
1. MF	1	10/03 flood update	11/24/04
2. CB	2	Add variable of river level, stage & feet	11/24/04
3. Team	2	Clarify flood hazard analysis & road closures	11/24/04
4. CB	3	Long term plan for SR 20 & Railroad	11/24/04
5. CB	3	Levee improvements east side	11/24/04
6. Team	5,6	Clarify evacuation process & update list	11/24/04
7. MF	7	Update inventory list	11/24/04
8. Team	9	Clarify evacuation notification	11/24/04
9. MF	10	Add Oct. 2003 flood information	11/24/04
10. Team	12	Delegation of responsibility	11/24/04
11. JA	13,14	Add City Administrator Role and Clarify others	11/24/04
12. CB	14	Add elevation of flood fight phases	11/24/04
13. JW	15	Clarify road closures	11/24/04
14. Team	16	Clarify responsibilities	11/24/04
15. Team	17	Clarify representatives at 24 hour meeting	11/24/04
16. Team	Appendices	Update phone numbers and contact information	11/24/04
17. MF	Cover Page	Update staff	11/15/06
18. Team	Exhibit 1 page 23	Update phone numbers and contact information	2/22/07
19. MF	1	Add reference to 2006 flood	2/22/07
20. MF	Exhibit V page 24	Skagit Grid System & Flood Progression – Corps	2/23/07
21. MF	Exhibit VI page 25	Hyperlinks for computer data	?
22. MF	2	Early notification of BESD	2/23/07
23. JA	Throughout	Clarify Incident/Area Command System	2/23/07
24. MF	2	X-Reference to Exh. V	2/23/07
25. MF	2.	Change reference from bridge to road under Old 99	2/23/07

26.	3	Clarify Road Closures, Valves	2/23/07
27.	5	X-Reference Exhibit V	2/23/07
28.	5	Critical Facilities Evacuation Update	2/23/07
29.	6	Task Force on Burlington CERT needed	2/23/07
30.	6	Siren to be moved	2/23/07
31.	7	Add Cedars & Cedar Point to evacuation list	2/23/07
32.	8	Add Cedars & Cedar Point to inventory of critical facilities	2/23/07
33.	9 (and other references)	Delete Riverside; add Old 99	2/23/07
34.	11	Add 2006 flood update	2/23/07
35.	15	Add Parks & Rec., Buildings & Grounds	2/23/07
36.	15,16	Change Riverside Gauge to Old 99 Bridge	2/23/07
37.	18	Clarify School District rep is Auxiliary Services Director	2/23/07
38.	18	Expand Public Information as PIPS	6/28/08

# **FLOOD EMERGENCY PLAN 2008-2013**

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## **Purpose and Background of Flood Warning Program**

The Burlington Flood Emergency Plan is one component of a complex and interactive process for flood fighting and emergency management. There is a need to plan at the local level in advance of a flood emergency, in order to maintain a Flood Warning Program that is immediately operational in a flood emergency situation.

Major components of this plan have been tested, with a significant flood event (river elevation 37.36) occurring on November 29-30, 1995, very comparable in terms of river elevation to the 1990 flood. Evacuation was required along Whitmarsh Road, and residents were leafleted on the afternoon of the 29th and ordered to evacuate at 6:30 on the morning of the 30th, door to door by the Burlington Police Department. The flood fight was extremely well planned and executed and it was a 100% success. Damage was limited to a road that was underwater on the waterside of the dike and some minor flood boils at the wastewater treatment plant, which is located immediately adjacent to the Dike. Photographs in this plan were all taken during the 1995 flood event. The most recent element added to the Emergency Plan is the Evacuation Plan that was implemented in the Fall of 2002. Permanent Evacuation Route signs are installed throughout the area, and a copy of the Evacuation Plan has been mailed to every site. The October 2003 flood event did not overtop the dikes, but because it was not able to be predicted, uses were evacuated per plan. *The November 2006 flood appeared to be headed for a major regional evacuation; however the storm shifted to the south and the planned evacuation was cancelled. This update of the plan takes into account the experience of the October 2003 and November 2006 floods.*

This program includes the following elements.

### **Flood Threat Recognition System**

The City of Burlington is prepared to receive and react to flood warnings on a 24-hour basis.

The Skagit County Flood Control Engineer receives automated precipitation and river gauge information directly by satellite. The United States Geologic Survey (USGS) and Skagit County jointly fund the system. Skagit County is the keeper of the gauges and responsible for maintenance. Data is transmitted directly by satellite to Skagit County and USGS. There is a system of 8 gauges, located as follows:

Riverside	Newhalem
Concrete	Sauk
Rockport	White Chuck
Marblemount	Shriber's Meadows

The Skagit County Flood Control Engineer confers with Dike District #12 and Dike District #12 determines when to open the Emergency Operations Center/*Area Command Center*, as Dike District #12 is monitoring the weather and flood levels as well.

Dike District #12 notifies the Burlington Fire Department (Fire Chief is lead for city).

The Burlington Fire Chief is responsible for notifying the City Administration (Mayor and City Administrator), the Police Department and the Department of Public Works (City Engineer and Street Supervisor). *The City Administrator is responsible for notifying the Burlington Edison School District Auxiliary Services.* Dike District #12 will notify the Street Supervisor directly when needed for street closures (Whitmarsh Road in particular frequently needs to be closed), when they see something that requires city attention.

The system is able to forecast specific flood conditions in the future. Floodwaters take approximately 12 hours to reach Burlington, predicted from a specific gauge height in Concrete. The data received is required to be reevaluated manually by local experts, because of the number of variables as the river moves down the valley. These variables include but are not limited to the following:

- Current River level, stage and feet
- Amount of precipitation in lower valley and amount of runoff from feeder streams.
- Status of Nookachamps and low lying water storage areas.
- Retention of water from recent storms in water storage areas (dam levels versus dam drawdown level and the date)
- Snow pack
- Freezing level
- Precipitation in the upper watershed
- Ground saturation level

Data provided to the Burlington Fire Chief includes flood elevations and arrival time, and computer data. *See Exhibit VI, page 23 for hyperlinks.*

The data collection and gauge system is continuously monitored and tested per the joint contract between Skagit County and USGS on a regular basis. Testing is done at least annually.

The system of coordination among local agencies is tested at least annually and the plan is updated and refined as a result of the testing procedure.

### **The Flood Hazard Analysis**

#### **General**

All areas in Burlington and the surrounding area are subject to flooding with the exception of Burlington Hill.

Levee protection is at approximately the 50-year storm event, with a 25-year profile. This is approximately river elevation thirty-eight (38) feet.

Elevation 22 represents the vegetation line, the area where fishing occurs. The dike is 14 - 16 feet above that point. The top of the levee is 44' upstream and 37' at the Anacortes Water Treatment Plant. Whitmarsh Road is blocked at 23.5'. The elevation of the road under the Old 99 bridge is 28.3'.

West Whitmarsh Road is closed at 35'. It is blocked at Burlington Boulevard, the Home Depot entrance, and Bouslog Road by the city street department. A coordinating call of the Dike Commissioner in consultation with the County Sector person is made for closing the road at Pulver/Bennett. It is planned to place a "road closed ahead" sign at that location and provide a U-turn at the Whitmarsh/Pulver road intersection.

*The "mother of all valves" is located on the east side of Burlington Blvd. near the southwest corner of the Discount Tire property. It is 196 ft. north of the pond outlet manhole on the east side of the Blvd at the Whitmarsh connector. Elevation of the manhole outlet is 27.00. Elevation at the valve is 24.23. So at elevation 27.00 (at the pond outlet manhole, not the river gauge) the water should start flowing back upstream in to our system, north on the Blvd., east to Whitmarsh pump station and get recycled back in to the river. The water level must reach 34 feet on the river gauge before the valves have to be closed. The pond outfall is lower than that but the water has to overtop the dike around the detention pond to cause problems. At that point the street department will have people on duty with other flooding problems so they would not have to call anyone out.*

*The Street Department is identified as responsible for the "duck bills". Each pump station discharge pipe (2 at Whitmarsh Road, 2 at Pulver Road) has a duckbill to keep river water from flowing backwards into the city's pipe. The Street Department staff check and clean these once per year or after each high water event- removing sand and sticks so they can work freely. So far they have been trouble free.*

*The flap gate is in a manhole just north and east of the Wastewater Treatment Plant (WWTP). This is checked every fall, they grease the hinge pin and make sure it has no damage. So far this has proven to be all the maintenance necessary and it is working fine. The street department does not have to do anything with it during high water events, although they do check it to make sure the water is not flowing backwards into the pipe.*

The basic rule of thumb is that the level of the river decreases at the rate of about 1.5 feet per mile.

Possible water height in a 100-year flood in Burlington is approximately five (5) feet of water. Most of the Skagit River valley will require evacuation in that scenario.

The 1990 flood reached 37.37 and 1995 flood reached 37.36', very close to overtopping the levees. In an event larger than that, or a similar event with a levee failure, more extensive evacuation will be required.

#### **Areas Subject to Inundation if Levee is Overtopped or if Storm Exceeds Levee Design Capacity and Levees are Widely Overtopped (theoretical case)**

1. Historical overtopping has occurred along SR 20 east of District Line Road. This occurred in the flood in the winter of 1990. Path is across the Railroad tracks and down SR 20 into town unless diverted to Gages Slough, which also occurred in 1990.

- In the flood of November 29 and 30, 1995, the flood fight for SR 20 was well planned in advance by Assistant Fire Chief Roger Tjeerdsma. The night before the crest was expected, 12,000 sandbags were stacked along the river side (south) of the railroad tracks, brought in on flatcars by the railroad from the Dike District #12 EOC, also located next to the railroad. These were then carefully placed to the correct height to fill in the low spot in the railroad grade and provide for controlled overtopping. See Photographs. It was previously agreed that the levy would not be built higher than the District Line Road elevation at the Railroad Crossing. Long term plan is to develop a permanent structure so there is no further need for sandbagging.
  - Overtopping can also be expected at Whitmarsh Road at the crossdike, at the point east of Burlington Boulevard where the underpass takes off, and at points east along the dike (Natagani estate property).
2. If the levee overtops at District Line Road and water is directed both north of Burlington Hill and into Gages Slough, homes north of SR 20 and west of Vista View Drive (where the water crosses the road), and along Gages Slough will be evacuated. Depending on the severity of the situation, the Northeast, North/Central and South Sectors may also require evacuation. See Evacuation Plan for Evacuation Routes by Sector.
  3. If the storm exceeds the 50-year design of the levee system, citywide evacuation is likely required when the river elevation reaches 38 feet. There will be widespread overtopping at a minimum.

**Areas subject to Inundation if Levee Fails– See Evacuation Route Map for Sector Listings**

1. Numerous levee breaks have occurred east of town in the vicinity of District Line Road with the old levees. The potential is always present and must be anticipated in the planning process. The dike profile is being reinforced and backsloped to facilitate sheet flow overtopping in the area from the railroad to Gardner Road, so the likelihood of an end run is more probable.
  - Path is across the Railroad tracks and down SR 20 into town unless diverted to Gages Slough.
  - If water is diverted to Gages Slough area along the slough is subject to inundation.
  - If not diverted, it will go down the road and inundate the Northeast and North /Central Sectors, at a minimum.
  - If extent of flooding has water going north of Burlington Hill, the Burlington Hill Industrial Park will be inundated (North/Central Sector).
2. Potential levee failure/overtopping near the Wastewater Treatment Plant at the bend in the river.
  - At this location, the Northeast and South Evacuation Sectors will be inundated.
3. Potential levee failure between the railroad bridge and Burlington Boulevard or between Burlington Boulevard / I-5.

- At this location, inundation will occur in the South Sector, a major commercial and industrial area.

#### 4. Potential levee failure west of I-5 near I-5 Auto World

- At this location, there are few residences, primary use is auto dealership; the Southwest Sector west of I-5 will be inundated. It is not likely that this will extend north of SR 20.

#### 5. Potential levee failure at or near Avon - Not in City Limits

- This is west of the Urban Growth Area; however, numerous residences are located adjacent to the levee.

Because flooding occurs fairly often, the Community has a high level of awareness of flooding and preventive structural and non-structural measures to mitigate the impact. In a 100-year flood event, most of the city will be inundated with water up to three feet in depth. Water depths will exceed eight feet in some areas in the Gages Slough corridor, but the velocity is minimal.

Burlington is fronted by a well constructed and maintained levee that extends approximately one mile upstream of the city, but the levee will not protect the city from a 100-year flood on the Skagit River. Each year, the levees are inspected by the Army Corps of Engineers. The levees are in excellent condition and exceptionally well maintained. Dike District #12 has made substantial levee improvements following the 1990 flood, including placing clay keyways in the dikes, widening the top and extending the landward toe to create a design that should not fail if overtopped.

The danger of flooding in Burlington is imminent when the river reaches the stage 38.1 feet. Maximum flood fighting using expedient flood works are employed and evacuation is necessary, according to Skagit County's Emergency Management Department. Upstream of the Burlington Northern Railroad Bridge, the water is 3 to 4 feet higher because of debris and logjams and the effect of the bridge structure itself. Compare this with the earliest flooding, which occurs at stage 25.5 feet with backwater in Nookachamps Creek, flooding of low-lying farmland and no damage, and you can easily see that the flood hazard in Burlington is severe when it happens. *See Flood Inundation Maps Exhibit V provided by the Corps of Engineers computer model.*

It is very difficult to visualize this without having seen a flood, but considering the fact that the 100 year elevation for protecting structures is 27 feet at Interstate 5 and 40 feet at Gardner Road, one can see how frightening this situation would be when the river reaches the stage 38.1 feet.

#### ***Incident Command: Critical Facilities and other Uses to be Evacuated including status of Emergency Planning:***

Uses to be evacuated include nursing care facilities, educational facilities, and other high life risk properties. *The method for keeping these facilities on task is an annual letter sent by the Planning Department advising them to be prepared and have their evacuation plans in place. Experience with the 2003 and 2006 flood events clearly demonstrate that most of the facilities are lucky to get*

*organized with a place to take their people. The Burlington-Edison School District Auxiliary Services has stepped in and activates their bus system that includes several handicapped accessible units when needed to assist with evacuation of critical facilities. Bringing along a delivery style truck to carry equipment has proved to be very useful.*

The Police Department in coordination with Flood Fight Headquarters (Dike District #12 EOC) will determine the need and notify the appropriate parties of required evacuation. *The Planning Department works for the Police Department in emergency events and provides assistance with notification and coordination.*

The Evacuation Plan for Burlington is divided into seven Sectors. Each key intersection will be staffed by a trained volunteer to direct traffic, such as Volunteer Fire Fighters. If needed, volunteers will be augmented by CERT (Community Emergency Response Team), Search and Rescue and City Staff. If not enough CERT representatives are available other volunteers will be utilized. Training in flagging will be made available regularly and a roster made available. Operations will be headquartered in the Dike District #12 EOC so that Evacuation Volunteers can be provided with backup and other assistance as needed. The Evacuation Routes have permanent Evacuation Route signs installed at key intersections. *Developing a registered citizen volunteer program to handle the key traffic flagging at signed intersections during evacuations is a major program goal for 2007 that was identified after the November 2006 flood event. A task force will be formed to coordinate this program. This may be the CERT program tailored for Burlington.*

The list of uses to be evacuated below includes the names and telephone numbers of the operators of facilities with priority for early evacuation as necessary. Early notification at river elevation 32' is provided to Burlington RV Park; they are required to evacuate at 34'. This facility is closely monitored and receives annual inspections to ensure that units are ready to move.

Other facilities are required to evacuate when so directed by the appropriate authority via the Emergency Alert System, mobile speaker units and sirens or door-to-door notification, or citywide evacuation when notified by the fixed siren on the Fire Station. *A new siren is planned to be acquired and installed at the Dike District #12 building.*

Evacuation is ordered when the river gage at Riverside is at 38'. At this height, it is at 36.8 at Memorial Highway, 37 at the Anacortes Water Treatment Plant, and 39.73 at Pulver Road and Whitmarsh. Levee heights in close proximity are as follows: 40 at Bouslog Road, 41.6 east of Burlington Boulevard, 41.7 at the Railroad bridge and 39.7 at the crossdike along Whitmarsh Road.

Each of the uses to be evacuated, with the exception of Villa Kathleen at 535 N. Pine, is asked to produce and maintain their own evacuation plan and to file it with the City. *Most uses are able to find a location to place people once they evacuate, but transportation needs require the assistance of the emergency team, specifically the School District and possibly Emergency Medical Service Ambulances in specific cases.*

### Uses to be evacuated:

- Country Court Mobile Home Park is located in Urban Growth Area at intersection of Lafayette and Peter Anderson Road. 45 units. Manager's telephone number is not listed.
- Burton's Nursing Home at 1036 E. Victoria - Population is 47. Telephone number is 360-755-0711.
- Wee Care Day Care at 210 N. Skagit. Telephone number is 360-755-0264.
- Homeplace Alzheimer's facility at 210 N. Skagit. Telephone number is 360-755-7000.
- Ovenell Nursing Home at 625 Washington - Population is 31. Telephone number is 360-755-9100.
- Villa Kathleen Apartments occupied by disabled and elderly at 535 North Pine. Telephone number is 755-9591.
- Burlington Little School in Urban Growth Area at 207 S. Gardner Road. Telephone number is 360-757-8257.
- The Berry Good School in Urban Growth Area at Methodist Church 20237 Lafayette Road. Telephone number is 757-6463.
- Lucille Umbarger School at 820 South Skagit Street. Burlington Edison School District Administration coordinates evacuation at 360-757-3387 and 360-757-3311
- Burlington Edison School District Administration located at 927 E. Fairhaven Avenue coordinates evacuation at 360-757-3387 and 360-757-3311.
- Westview School located at 501 West Victoria. Telephone number is 360-757-3391.
- Burlington-Edison High School located at 301 North Burlington Boulevard. Telephone number is 360-757-4074.
- Where the Heart Is – Assisted Living at 410 Norris Place. Population is growing. Telephone number is 360-755-8007.
- Burlington RV Park at 275 E. Whitmarsh Road. Telephone number at site is 360-757-4229. Owner's home phone is 360-766-4000. They have an evacuation plan and contracts with towing companies. 50 units.
- Creekside Retirement Community at 400 East Gilkey. Population is full. Telephone number is 360-755-5550.
- *Cedars at 1001 Sinclair Way & Cedar Point @ 1155 Sinclair Way. Telephone numbers to be identified.*

### Effectiveness of Existing Flood Control Works and Systems.

Levees are properly maintained.

- Annual Levee inspection report is available each year.

All weak points identified in previous floods have been strengthened by Dike District #12. This levee is the best constructed and maintained levee system in Skagit County. The levees have been substantially rebuilt to include clay Keyways, a wide top and a gentle backslope designed for overtopping. The dike system surrounding the Wastewater Treatment Plant has been substantially upgraded to provide 100-year flood protection.

The Dike District #12 emergency flood fight program is well planned and coordinated evidenced by a very successful flood fight in 1995 that took all the lessons learned in the 1990 flood and applied the best possible techniques to the situation at hand. See also Dike District #12 guidelines and the

## City of Burlington Floodplain Management, Flood Hazard Reduction and Disaster Preparedness Plan.

The Burlington Wastewater Treatment Plant has a specially designed system for high water.

The system is designed to come on line at an approximate river elevation of 25'. There is a large concrete structure on the dike. At normal river levels, the treated sewage is discharged by gravity. There is a center wall dividing the concrete tank vertically into two chambers. There is one big valve at the bottom. The effluent comes in on the bottom of one side and flows through the center and out the other side into the downstream chamber, where it flows into four lines. The bottom of the outfall diversion structure is 14.4'. When the river reaches elevation 25', the effluent backs up through the chamber and into the discharge box in the Wastewater Treatment Plant. There are two big gates in the plant that are electrically operated and pumps start automatically. At the same time, the center wall valve closes automatically. This fills the upstream chamber to the top and it flows over the center wall into the river. The height of the structure provides the head to get it discharged.

The Gages Slough Pump Station outfall works below elevation 19' as a gravity feed, then pump station will come on and is able to pump against any river height (head).

### **Inventory of Critical Facilities**

The nursing facilities require a longer lead time to evacuate. Each facility needs to have a plan in place to use ambulance service or the transit system and to make arrangements for a location to take the people. This work program item is reviewed annually.

#### **Burlington**

- Ovenell Nursing Home
- Burton's Nursing home
- Homeplace Alzheimer's facility
- Lucille Umbarger School
- Westview School
- Burlington-Edison High School
- Wee Care Day Care
- Where the Heart Is
- Creekside Retirement Community
- Villa Kathleen
- Cedars and Cedar Point*
- Burlington Little School
- Day Care on Peterson Road
- Lafayette Road Day Care in Methodist Church
- Wastewater Treatment Plant
- Puget Power Substation
- GTE Substation - alley between Vernon and Washington
- City Hall
- Police Department
- Fire Department
- Dike District #12 Building

## **Sedro-Woolley**

United General Hospital

Skagit Valley Convalescent Center

Country Meadows Retirement Home

### **Inventory of Hazardous Materials**

Hazardous materials listed here are materials or facilities that something will be done about in a flood situation. This work program item is reviewed annually.

- Fibrex - Fiberglass pipe production at corner of Spruce and Sharon
- Propane tankers - BNR rail yard
- Smaller Propane tanks at Propane distribution areas – further investigation into a means for securing small empty tanks, perhaps anchoring on a pad is needed to minimize floating tanks.
- Terminal Freezers - anhydrous ammonia in refrigeration system
- Northwest Farm Food Coop – anhydrous ammonia in refrigeration system

### **Inventory and Evaluation of Drainage System**

#### **Backup flood control channel**

- Gages Slough culvert maintenance program - every fall, accumulated silt is removed from in front of the culverts and culverts are cleaned.
- Gages Slough pump station was replaced in 1998 with a very large capacity pump that is able to pump at any river elevation.
- A wetland functional assessment and management plan was developed in 1998, adopted in 1999.

#### **Culvert and pipe system maintenance program**

- The street maintenance has an on-going scheduled program for the city.

#### **On-site storm water detention system maintenance program**

- This program started in mid-1997, with assignment and training of an inspector. Each on-site system in the City is inspected and a notice sent for any remedial work required each year.

#### **Maintenance of Skagit River Channel**

- Continual evaluation and/or removal of logs as needed against the ~~Riverside~~ Old 99 bridge
- Continual evaluation and contact the Railroad for removal of logs as needed against the Railroad bridge

### Area Command: Early Warning Dissemination

#### **Area Command - City policy for Early Warning Dissemination is as follows:**

- Fire Chief notifies Police, Public Works and Administration of a Flood Watch. Fire Chief participates in the 24 Hour Meeting at the Emergency Operations Center (Dike District #12).
- Fire Chief notifies Police, Public Works and Administration when a Flood Fight is initiated.
- The need for evacuation occurs under the scenarios identified in the Flood Hazard Analysis.
- Public information messages will be broadcast through the Emergency Alert System. Each Burlington resident receives the Flood Hazard Public Information Bulletin twice a year, with information about flood safety and flood warning. A copy of the Evacuation Route Plan with instructions was mailed to each Burlington residence in the fall of 2002 that is specific for each neighborhood, and permanent Evacuation Route signs have been installed along all routes. Burlington residents are also invited to attend regularly held (four meetings a year) Neighborhood Planning Committee meetings to discuss and update flood hazard planning and mitigation strategies.
- When specific areas are to be evacuated, key evacuation route intersections will have Volunteers on duty to flag traffic in the correct direction along the Sector-based Evacuation Routes. Police vehicles shall drive through the neighborhood to be evacuated using the high/low police siren and the mobile public address system. Patrol cars will be used; Skagit County also has a portable siren tower. They will broadcast the following message: Evacuate ***the area immediately. Follow the posted evacuation route. Flood water will inundate the area at approximately \_\_\_\_\_(time).***
- At night or in heavy storms, uniformed Fire or Police or Staff with appropriate identification will also go door to door in the area to be evacuated.
- In the event of a large scale evacuation, the fixed siren on top of the Fire Station shall be activated. The signal is tested on the first Monday of each month. The siren may need to be upgraded or an additional siren placed on the east side of the City to get coverage, and this would need to be funded. *A new siren is planned to be located on the Dike District #12 building.*
- A standard sound signal will be used. The Emergency Alert System will give the message that the City of Burlington is being evacuated and state the evacuation route(s) to be followed.
- The total Flood Threat Recognition and Emergency Warning Dissemination procedure shall be tested annually during Flood Awareness Week in October. Public education information will be mailed to all Burlington residents prior to the test; notices will be posted and placed in local newspapers and over local radio stations.
- The procedure will also be advertised in the twice a year public outreach mailings to all Burlington citizens, and reviewed annually at the fall series of Neighborhood Planning meetings held by precinct.

### *Evaluation of Various Flood Crests*

Historic flood activity viewed in light of the two back to back 30-35 year (depending on whether Corps or USGS point of view) storms in 1990 is as follows:

- In 1990, the railroad track (recognized as a natural barrier) overtopped at the District Line Road location and was routed into Gages Slough. Small culverts and lack of maintenance resulted in Public Works using pumps to move the water from area to area over a three day period.
  - Old alignment dike breaks in this location occurred in 1909, 1917, 1921, 1932, 1935
- There were water boils in the old borrow pit area behind the dike just south of the Wastewater Treatment Plant.
- The water backed up behind the railroad bridge due in part to a massive log jam.

Dike breaks occurred in this location in 1917, 1921, and 1932

- High water tables throughout Burlington resulted in small scale flooding
  - Northwest Precinct
  - North of Burlington Hill
  - Southwest Precinct west of I-5 Auto World and along Gages Slough
- Major water boils and localized flooding occurred just west of I-5, south of I-5 Auto World, flooding Mr. Sager's place.
  - A dike break occurred here in 1917, creating Gages Lake.
- Dike District #12 did extensive repairs to the Avon Dike after signs of weakness in 1990.
  - In the Avon area, there were dike breaks in 1917 and 1894.
  - The 1990 flood occurred during a month with 17 inches of rainfall.

The 1995 flood occurred during a month of normal rainfall, about 8 inches. This was a product of the pineapple express winds and rain from the jet stream pointing this direction from Hawaii, or thereabouts. There was a smaller flood about three weeks prior to the flood event on November 29 and 30, 1995.

During the event earlier in the month, a huge log jam built up behind the railroad bridge and took out one of the bridge supports. This jam was cleared before the late November flood, or worse damage could have occurred with likely widespread flooding east of the railroad tracks. **The bridge holds all 911 lines north and east of Mount Vernon to upriver area.**

The 1990 event resulted in excellent preparation and establishing the flood fight strategy well in advance of the 1995 flood, a strategy that was successful.

A flood in October 2003 was a disaster upriver, but it did not overtop the railroad tracks at Sterling. However, because the effects were unpredictable, evacuations were ordered in Burlington. This provided the experience needed to finetune the evacuation procedures and those changes are reflected in this update of the emergency plan.

*The November 2006 flood event was about three feet lower than 2003; until the storm moved south, it appeared that a major disaster was in the works. The evacuation process was put in place in Burlington; all were advised to be prepared and wait for further instructions; the evacuation was cancelled the next morning and all facilities were notified..*

### **Organization and Responsibilities – Incident Command**

#### **Federal Level**

**The Corps of Engineers provides technical expertise and resource assistance as needed.**

#### **County Level**

**The County Commissioners are responsible for:**

- They are the “Flood Boss” for the county, with the role delegated to Public Works for coordination county wide.
- Declaration of Emergency/Disaster

**The Department of Emergency Management is responsible for:**

- Maintaining the countywide emergency plan
- Preparing evacuation order for signature by elected officials, county commissioners and mayors
- Declaring an Emergency and getting an assigned Mission number from Olympia Emergency Management
  - This provides liability insurance for all registered volunteers.
- Coordinating availability of resources outside the county, such as Corps of Engineers, National Guard, and Red Cross (setting up shelters).
- Transportation for evacuation using school buses and SKAT public transit buses
- Maintain register of volunteers in search and rescue groups only.
- Providing training for CERT Volunteers (Community Emergency Response Team)
- Coordinating with the news media and the Emergency Alert System.
- Notification of schools, emergency management council (commissioners and mayors), the news media, industry and utilities.
- Establishing staging areas for major activities, such as Bayview, Port of entry, and the Northbound I-5 rest area. Resources from outside Skagit County will be staged at these locations prior to receiving a duty assignment.

**The Skagit County Public Works Department is responsible for:**

- Notifying Dike District #12 of potential flood threat.
- Tracking weather service reports and river gauges to determine when there is a potential flood threat.
- Overall flood fight emergency coordination.
- Assigns staff to each sector of the county each of whom is in charge of handling weather data, elevation predictions and coordination of elements that go beyond city limits, such as barricading SR 20.

**The Sheriff's Department is responsible for:**

- Search and Rescue outside City Limits (and inside the city as requested under mutual aid).
- Evacuation outside City Limits and assist the city as needed.

**District Level**

**Dike District #12 is responsible for:**

- Notifying the City Fire Department (Fire Chief) of potential flood threat.
- Levee maintenance and upgrade during the dry seasons and emergency repairs all year around.
- Contracts with equipment firms for equipment rental during emergencies (also done by Corps of Engineers and Skagit County).
- Maintain and manage the Dike District #12 Emergency Operations Center.
- Preplanning for flood fighting including sand, bags, training of volunteer fire fighters to patrol dikes, use radios, know what their responsibilities are.
- In charge of the flood fight itself including identifying the need for expedient flood fight activities (sandbagging low spots in levees or other vulnerable areas such as sand boils, using heavy equipment for access, other measures).
- Registering and monitoring all volunteers activities.

**City Level**

**NOTE: IN THE ABSENCE OF THE DESIGNATED DEPARTMENT HEAD, THE NEXT IN COMMAND WILL BE RESPONSIBLE FOR THE DUTIES AS SPECIFIED IN THIS PLAN**

**The Mayor is responsible for:**

- The Mayor is the official "Flood Boss".
- Declaration of Emergency/Disaster.
- Provides standing authorization for Fire Chief and Police Chief to be the Directors of Emergency Services.
- This includes authority to order evacuations. (Specific chain of command is to be clarified by updating Burlington Municipal Code Chapter 2.64, Emergency Services.)

**Fire Chief is responsible for:**

- Notifying the City Administrator, Mayor, Police Chief and City Engineer of the flood emergency.
- Attending the meetings in the Dike District #12 Emergency Operation Center to plan and coordinate the overall approach to the Flood Emergency.
- Ensuring that the fire fighters are trained in flood fighting procedures with Dike District #12 and that they are fully prepared for a flood emergency well in advance.
- Coordinating role of Fire Department in a flood fight with Dike District #12.
- Working as a member of a team to coordinate preflood planning with a particular emphasis on identification of hazardous materials and facilities that may require special precautions to be taken during a flood emergency.
- Working as a member of a team to plan early warning and evacuation measures that may need to be implemented.
- Coordinate orders to evacuate with Police Chief (joint issuance of evacuation orders with police).

**Area Command: Police Chief is responsible for:**

- Attending the meetings in the Dike District #12 Emergency Operation Center to plan and coordinate the overall approach to the Flood Emergency.
- Order any necessary road closures during a Flood Emergency and coordinate with Public Works.
- Coordinate orders to evacuate with Fire Chief (joint issuance of evacuation orders with Police); conduct evacuation.
- Working as a member of a team to coordinate preflood planning with a particular emphasis on establishing evacuation routes.
- Search and Rescue in the city, including all Search and Rescue Volunteers and actions taken.
- Coordinate evacuation of listed uses in this plan with the County Emergency Management Department and the Burlington Planning Department.

**Street Supervisor (working with city Public Works Director) is responsible for:**

- Order preparation and availability of signage and barricades for detours, road closures and evacuation routes.
- Preflood emergency planning for drainage maintenance, clearing of debris in Gages Slough.
- Maintaining emergency routes.
- Dike District will notify street supervisor directly for street closures (Whitmarsh in particular), or when they see something that requires city attention.

**Public Works Director/ City Engineer is responsible for:**

- Attending the meetings in the Dike District #12 Emergency Operations Center to plan and coordinate the overall approach to the Flood Emergency.

- Evaluating capacity of Gages Slough for holding flood waters.
- Coordinating personnel and equipment needed to ensure an adequate response team available to handle storm water system backup, pumping, street closures, street failures, sewage system problems and handling small scale floods related to high water tables to keep streets open, sewers operational, traffic moving reasonably.
- Contracts for removal of log jams at old Highway 99 bridge and coordinates with railroad removal of log jams at railroad bridge.

**City Administrator is responsible for:**

- Providing feedback to the media either directly or through a public information officer, typically one of the Directors of Emergency Services.
- Locate at County Emergency Operation Center at work station with access to connect laptop computer.
- Send e-mail to appropriate city staff in various locations who are answering telephones and working directly with the public to insure accurate communication.
- Assign city staff person or persons to be at the County Emergency Operation Center on other shifts as needed.
- Keep the County Public Information Officer accurately informed with appropriate press releases regarding Burlington flood issues such as the status of Gages Slough.

**Planning Department is responsible for:**

- Prepare and implement public education training and information bulletins, plan updating, maps and records; preparation of maps or other background materials.
- Notify individual uses of their need to prepare and maintain evacuation plans. Assist uses in coordinating their evacuation plans with the overall emergency plan.
- Assist the Police Chief and Department of Emergency Management when asked to do so by calling the individual uses and informing them of the need to get prepared to evacuate.

**Other City Department heads are responsible for:**

- Being available on call to handle any necessary activities related to the functions of the department.
- Building - Post flood inspections of buildings.
- Sewer - Pre flood planning and maintenance activities for sanitary sewer system; insuring that all automatic valves are operational when river exceeds 25' in elevation.
- Finance - Purchase orders for equipment or other necessary supplies during flood emergency. Provide backup to the City Administrator at the County Emergency Operation Center.
- Administration - Liaison with Mayor, City Council
- Parks & Recreation – *Remove equipment from Whitmarsh fields; install dry floodproofing at restroom entrance; other measures to protect parks.*
- Buildings & Grounds – *Assist in preparation of city facilities for potential flooding; other measures as needed.*

### **Relationship of River Elevation to Flooding**

A River Height of 28' at the Old 99 bridge signals the beginning of the Flood Fight. Phase II is from a River Height of 32-37 feet and Phase III is from 37-38 feet. See Exhibit III for additional information throughout the river basin. See Exhibit VI for flood gauge readings during the 1995 flood event.

River Height at Riverside Bridge Gauge =	24.3	Possible water over road at Whitmarsh at Bridge
River Height at Concrete Gauge =	28.5	Trigger for "24 hour meeting" if predicted in Mount Vernon within 24 hours - okay on a slow rising river; if fast, timelines will be shortened appropriately.
River Height at Old 99 Bridge =	30.4	Possible water over road at Lafayette Road east of District Line Road
River Height at Old 99 Bridge =	36-37	Sandbag low areas; overtopping RR tracks and flooding SR 20 west of Vista View Road. Diversion of water into Gages Slough at Lafayette Road. Sandbag Whitmarsh Road at Nagatani Dike and east of RR at Cross Dike.
River Height at Old 99 Bridge =	38-39	Overtopping becomes more widespread. Evacuate large areas of Burlington.

### **Road Closures and Traffic Handling**

Road closure notification shall be made to the Skagit County Emergency Operation Center for inclusion in the County data base. As a general policy, roads shall be completely closed to the nearest through street or intersection, to preclude the temptation of the casual flood observer to use the road anyway. Barricades and road closed signs shall be available for immediate use at the Burlington Shop. Unmanned road closure locations shall use Type III barricades.

The Police Chief shall decide when a road closure is necessary and coordinate with Public Works.

The Street Supervisor shall provide signs and heavy duty barricades to prevent traffic.

### **City Divided into Sectors for Purpose of Evacuation Planning**

The seven Evacuation Sectors were designed based on the existing street and road network and routes of travel that lead generally to the North of Burlington. Targeted public information and Neighborhood meetings to discuss flood issues work together to keep the public educated and informed in event of emergency.

- See Exhibit IV.

## **Phased Response Plan**

### **Increased Readiness Phase**

This phase is generally called when there are strong indicators of future flood threat. In this area, these indicators include an early deep snowpack, approach of heavy winter rains and the shift of the jet stream to bring on the “Pineapple Express”, which is a rapid melt of the snowpack that may occur in November, December, January or February, accompanied by heavy rain storms.

1. Review all planning documents and update them as necessary –responsibility of Community Rating System Coordinator/Planning Department.
  - a. Check call up lists
  - b. Verify resource inventories
  - c. Update telephone numbers
  - d. Review coordination links with Skagit County and remind DEM to review links with disaster relief agencies.
2. Initial and refresher training for key personnel.
  - a. EOC training and exercise sessions-responsibility of Department of Emergency Management
    - Review of Incident Command System
    - Review of EOC guidelines during a flood emergency
  - b. Personnel training – responsibility of Dike District #12
    - Flood fight training on use of sandbags and other expedient flood fight efforts.
    - Training for Volunteer Firefighters on dike patrols and what to look for
  - c. Volunteer recruitment and tracking during flood event- responsibility of Dike District #12
3. Check and repair essential equipment
  - Inspect and test sewer valves and pumps
  - Inspect and test generators, pumps, emergency lighting equipment
  - Inspect and restock as needed flood fight supplies, including sand, sandbags, shovels
4. Conduct a Public Information program
  - Emphasize individual preparedness efforts.
  - Use local media to conduct tests of Emergency Alert System
  - Test the early warning signal system in cooperation with local media
  - Consider sending flyers with elementary school children, distribute at various locations
  - Try to get the newspapers to print articles on potential flood threat, flood insurance, emergency response programs.
  - Send out public information showing evacuation routes and how to determine when to leave.

5. Skagit County informs designated Dike District #12 who in turn informs the Fire Chief on a daily basis of local weather service reports including increased reporting of river gauges, precipitation reports and snowpack depths.
6. Skagit County updates liaison with Corps of Engineers and supporting state and local agencies, including Red Cross and verification of shelter locations.
7. Police Department contacts local nursing homes, day care centers, school district officials, and RV parks to ensure that they are prepared for possible evacuation with assistance of Planning Department.
8. City reviews Evacuation Plan and availability of trained CERT Volunteers.
9. Verify procedures for procurement of equipment and materials if needed in flood fight.
10. Operate and test all equipment.

### **Flood Stand-by Phase -THE 24 HOUR MEETING**

When the river gage at Concrete reads 31 and the Riverside Bridge reads 28.5, a 24 hour meeting is called at the Dike District #12 EOC. With a fast rising river, next meeting will be called much sooner than on a slow rising river.

The following representatives should attend:

- Dike District #12 Commissioners
- Fire Chief
- Police Chief
- City Engineer
- Street Supervisor (not critical if City Engineer communicates)
- Department of Emergency Management (may not be available)
- Sector representative of Skagit County Public Works
- City Administrator
- School District *Auxillary Services Director*
- Army Corps of Engineers
- Burlington Northern Railroad

Others who could attend if there are jobs for them to do:

- Planning
- Administration (representing Mayor - or Mayor)

Agenda for 24 hour meeting should include:

- Possibility of and plans for evacuation
- Road closures and signage
- Details on where sand is to be delivered

- Ensure adequate supply of sand bags
- Determine who will take responsibility for each element
- Evaluate rainfall, storm patterns and decide when to meet again.

Contact local media to review Burlington Early Warning signal system and Evacuation Plan over the air and in print.

Minor flooding of low lying areas will already have begun, with road closures, etc.

Dike District #12 guidelines for dike patrol and expedient flood fight efforts are on line.

Public information programs should be ready to deal with increasing requests for information. The City Administrator is the designated public information officer for Burlington.

### **Full Response - Flood Fight**

Regular broadcast of evacuation routes and location of shelters. Encourage moving personal property to higher elevation to reduce flood losses.

If evacuation is necessary:

- Check in with Department of Emergency Management to ensure that shelters are ready to accept evacuees.
- Use early warning signal and send assigned volunteers/staff door to door.
- Post Volunteers at key intersections in evacuation route sectors.

### **Public Education Program Current Flood-related Public Information Outreach Activities**

This program consists of the following major elements:

1. Twice annual Flood Hazard Public Information Bulletin with detailed public outreach information.
2. Annual review of program and flood preparation, early warning and evacuation procedures.
3. Flood Awareness Week annual system test and news media outreach. This is part of the Skagit County coordinated annual event. There is also a meeting with the Sector people, the Burlington Emergency Team, and the Corps of Engineers to keep coordination and communication clear and open.

The Burlington-Edison School District encourages students to participate in the annual Sandbag filling training. Those same students provide help during flood events.

4. Monthly Land Use Bulletin to all desiring to be on the mailing list that includes a regular column on Gages Slough and the Skagit River Corridor.
5. Promotion of the Neighbor to Neighbor Plan for early notice to make sure that anyone who wants to evacuate early gets a phone call and contact by their neighbors, with assistance

provided to special needs residents. This is part of the program that includes early notice to all critical facilities, and coordinates special needs evacuation with the Burlington-Edison School District. If it is a Homeowner's or Condominium Association, they are contacted at the beginning of each flood season, and staff conducts meetings as requested on the program. Promotion is in the regular twice a year Citywide Newsletter.

6. Promotion of Flood Insurance.

The city held its first workshop in June for all residents regarding the importance of flood insurance, whether in the A or B zone, with a FEMA flood insurance representative and local insurance agent, along with the Public Works Director and the Building Official. The council chambers were packed with standing room only.

This year, the city will also start an annual mailing to all postal patrons on the importance of flood insurance.

7. Workshops are planned on specific flood topics as FEMA moves ahead with revising FIRM's and as Burlington continues to make progress with levee certification.

The Public Works Director conducts on-going flood hazard mitigation presentations throughout the area, including a recent presentation to the Mount Vernon City Council.

8. TCI cable airs the video titled *The Skagit River – Will it Flood Again?*, at the beginning of the flood season. It was aired five times in September 2007.

9. Skagit County and the Skagit Valley Herald publish an annual flood insert page in the newspaper that contains articles on flood preparedness, flood insurance, an evacuation map, and the names of contractors able to retrofit structures.

10. Burlington provides planning services to the Town of Hamilton Relocation project and the Town of Hamilton has an exhaustive public information program, including door-to-door surveys, a quarterly newsletter *The Hamilton Current*, and many local workshops.

11. Burlington and Skagit County provide extensive public information on their websites and they are maintained up to date.

**Goals for the Public Information Program**

1. Encourage all property owners to purchase flood insurance, particularly homeowners.
2. Encourage all residents and property owners to be prepared for a natural hazard emergency at all times, with flood and earthquake the two most likely in Burlington, and to protect their own property.
3. Get every block, every homeowner's association, in addition to all critical facilities, in Burlington to participate in the Neighbor to Neighbor Plan to facilitate early and effective public notice and encourage residents to help their neighbors.
4. Develop innovative approaches to public outreach, such as specific topic workshops, speaking at organizations, and working with individuals at the Public Information Counter to educate the community on the hazards, opportunities, and preparedness.

5. Coordinate with the County's regional outreach programs to make sure the Burlington issues are represented.
6. Design projects to address all of the priority natural hazards affecting the community.

**Projects planned that will be done each year to reach the goals.**

2008 is a critical year for flood hazard outreach, because revised FIRM maps are expected to be published in late summer. In addition to the regular programs in place, the most important components that have been prioritized for 2008-2013 are the following:

1. Promotion of Flood Insurance. The city held its first workshop in June for all residents regarding the importance of flood insurance, whether in the A or B zone, with a FEMA flood insurance representative and local insurance agent, along with the Public Works Director and the Building Official. The council chambers were packed with standing room only.
2. This year, the city will also start an annual mailing to all postal patrons on the importance of flood insurance.
3. Workshops are planned on specific flood topics as FEMA moves ahead with revising FIRM's and as Burlington continues to make progress with levee certification.
4. The Public Works Director conducts on-going flood hazard mitigation presentations throughout the area, including a recent presentation to the Mount Vernon City Council.
5. Promotion of the Neighbor to Neighbor Plan for early notice to make sure that anyone who wants to evacuate early gets a phone call and contact by their neighbors, with assistance provided to special needs residents. This is part of the program that includes early notice to all critical facilities, and coordinates special needs evacuation with the Burlington-Edison School District. If it is a Homeowner's or Condominium Association, they are contacted at the beginning of each flood season, and staff conducts meetings as requested on the program. Promotion is in the regular twice a year Citywide Newsletter.
6. This program is also an extension of the Skagit County Natural Hazard Mitigation Plan, and a copy is attached to this report where all the natural hazards affecting this area are detailed along with the appropriate safety and property protection measures, and at least one hazard is covered in each of Burlington Flood and Natural Hazard Mitigation Bulletins. Projects being considered for the future include a workshop on the International Existing Buildings Code, with a focus on seismic retrofit.

**Documentation**

See attached letter from the Mayor documenting that the strategy will be implemented.

### **Annual Evaluation**

This report will be included in the Annual Report to the community on the Natural Hazard Mitigation Plan, that is also submitted as part of the CRS annual recertification. The regular meetings of the Team and annual update of the plan are very much institutionalized, because of the specific high flood risk in the community.

The following points will be covered:

- The goals of the community's public information strategy.
- A list of the projects implemented to meet those goals and their objectives.
- A list of those projects that were not implemented or that did not reach their objectives.
- Revisions to the current projects and new projects to be implemented during the coming year, if they are different from the original strategy.

## **EXHIBIT I.**

### **City Phone Number Lists and Emergency Notification Tree**

# City of Burlington Emergency Notification Tree

Emergency Event



## Public Safety

9-1-1

755-0921

**Burlington Police Department**

On-Duty Officers and Supervisors  
Notified by Dispatchers IAW call  
back procedures.

**Burlington Fire Department** 755-0261

All Fire Department members notified  
by pager through Cascade Dispatch/  
Skagit Emergency Communications.



## Emergency Operations Center/ Area Command Center

**Director(s) of Emergency Services**

Senior Police and Fire Officer notify their respective Chief and insure that the other public safety agency has been notified.

**Police Chief** Bill VanWierengen Home: 445-5012  
Cell: 661-6359

**Asst. Chief** Dave Stafford Home: 757-7086  
Cell: 661-6360

**Fire Chief** Mark Anderson Office: 755-0261  
Cell: 661-6361

### Community Development:

**Building** (755-0077): Jim Sherwood (C-9) Home: (360) 691-5457  
**Plng.** (755-9717): Margaret Fleek Home: 826-6423 Cell: 770-9128

*Additional Community Development Personnel as required.*

**Administration: (360) 755-0531**

**Mayor:** Ed Brunz Home: 755-1406 Cell: 708-0370

**Admin.:** Jon T. Aarstad Home: 757-6638 Cell: 661-6379

*Additional Administration Personnel as required.*

### Outside Support Agencies: (office #)

Skagit Co. Dept. of Emergency Management: 428-3250 or 911  
336-9400  
Skagit County Public Works Department:  
Dike District #12: 757-3484  
424-5291  
Red Cross: 661-1154  
B-E School District (John Leander – cell #)

*Additional outside support as required.*

### Public Works:

**Engineering** (755-9715):

**Streets** (757-4214):

**Sewer** (757-4085):

**Parks** (755-9649):  
**Bldg/Grounds** (757-3450)

Chal Martin (C-1)

Jerry Windsor (C-20)

Bob VanSickle(C-14)

Don Erickson (C-16)

Craig Bloodgood (C-50)

Paul Tingley

Home: 424-0414

Home: 424-4522

Cell: 630-4323

Home: 757-0379

Home: 755-9894

Home: 757-3049

*Additional Public Works personnel as required.*

# FLOOD EMERGENCY TEAM

FLOOD EMERGENCY TEAM	CONTACT	PHONE NUMBER	CELL PHONE #	PAGER #	FAX NUMBER	ADDRESS
Dike District #12	Charles Bennett	424-7643 hm. 757-3484 ofc.	708-1593	416-1197	757-1214	17691 Bennett Road Mt. Vernon WA 98273
Dike District #12	Marv Cannon	757-0555 hm. 757-3484 ofc.	708-1594		757-1214	120 Rainbow Drive Burlington WA 98233
Dike District #12	John Burt	757-1627 hm. 757-3484 ofc.	661-7936		757-1214	
Dike District #12	Dan LeFeber	855-0774 hm. 757-3484 ofc.	708-1595		757-1214	521 Talcott Sedro-Woolley WA 98284
Burlington Flood Fight Headquarters (DD #12)		757-3484 ofc.			757-1214	1317 S. Anacortes Street Burlington WA 98233
Mayor	Ed Brunz	755-1406 hm.	708-0370	840-4776 city cell phone	755-1297	1259 E. Fairhaven Avenue Burlington WA 98233
City Administrator	Jon Aarstad	757-6638 hm. 755-0531 ofc.	661-6379		755-1297	833 S. Spruce Burlington WA 98233
Public Works Director	Chal Martin	424-0414 hm	708-7089		755-0783	833 S. Spruce Burlington WA 98233
City Engineer	Brian Dempsey					
Fire Chief	Mark Anderson	755-0261 ofc.	661-6361		755-9181	350 Sharon Ave. Burlington WA 98233
Fire Marshal	Glen Staheli		661-6362			
Police Chief	Bill VanWierengen	445-5012 hm. 755-2305 ofc.	661-6359		755-2392	311 Cedar Avenue Burlington WA 98233
Asst. Police Chief	Dave Stafford	757-7086 hm. 755-2304 ofc	661-6360			
Planning Director	Margaret Fleek	826-6423 hm. 755-9717 ofc.	770-9128		755-9309	833 S. Spruce Burlington WA 98233
BESD Auxiliary Services	John Leander	757-3387 ofc.	661-1154		757-2946	
Street Supervisor	Jerry Windsor	424-4522 hm. 757-4214 ofc.	661-6584	336-1113	757-0935	951 S. Section Street Burlington WA 98233
Sewer Supervisor	Bob VanSickle Don Erickson	757-4085 ofc. 757-0379 hm. 757-4085 ofc.	630-4323 630-4393	336-4102	757-2704	900 S. Section Street Burlington WA 98233

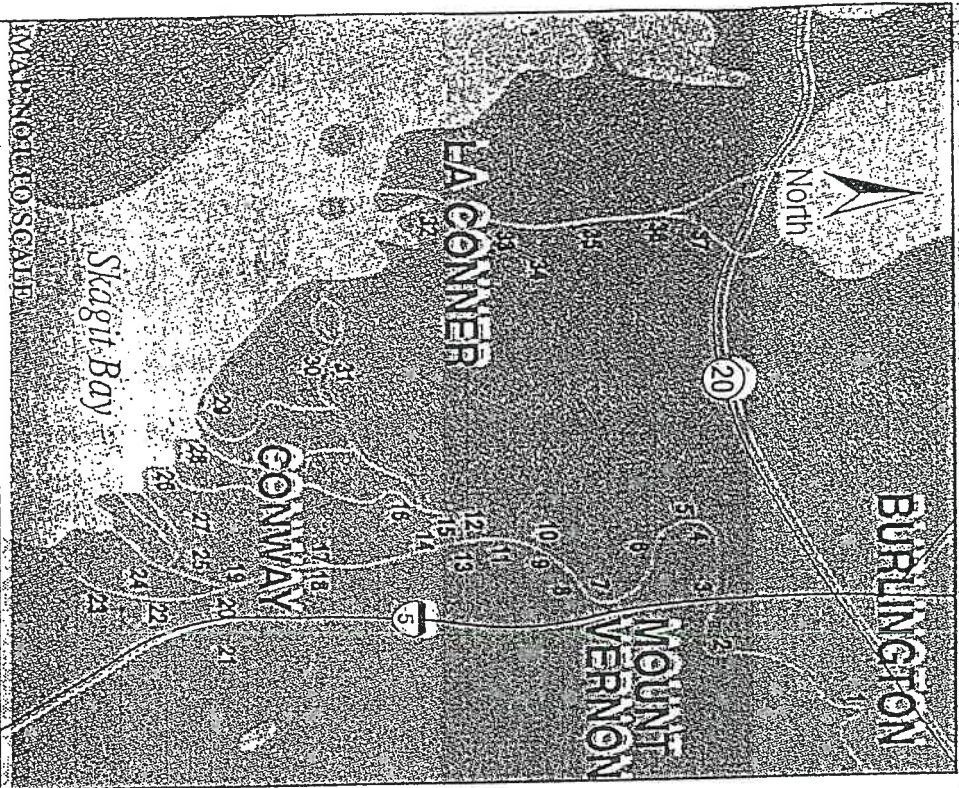
## EMERGENCY CONTACT LIST DEPARTMENT PERSONNEL

DEPARTMENT & NAME	OFFICE PHONE	CELL PHONE	PAGER #	HOME PHONE	FAX #	RADIO CALL #'s
<b>ADMINISTRATION</b>						C-2
Ed Brunz, Mayor	360-755-0531	360-708-0370 --or- 360-840-7446		360-755-1406	360-755-1297	
Jon Aarstad, City Admin.	360-755-0531	360-661-6379		360-757-6638	"	
Scott Thomas	360-755-9473				"	
Greg Thrumer, Finance Dir.	360-755-0531	333-0227			360-755-9565	
<b>BUILDING</b>						
Jim Sherwood, Bldg. Official	360-755-0077	360-201-0297		360-691-5457	360-755-9309	C-9
Dennis Yadon, Bldg. Inspector	360-755-0077	360-201 5068			"	C-8
<b>BUILDINGS &amp; GROUNDS</b>						
Paul Tingley, Supervisor	360-757-3450	360-630-4515		360-757-3049	360-755-9565	
Simeon Brown	360-757-3450	360-630-4516				
Gary Guirl	360-757-3450	360-391-6083				
Basilio Cuellar	360-757-3450	360-630-4517				
<b>ENGINEERING/PUBLIC WORKS</b>						
Chal Martin, Director	360-755-9715	360-708-7089		360-424-0414	"	C-1
Brian Dempsey, Asst. Engineer	360-755-9715	TBD			"	C-5
Scott Kidder, Engineering Tech.	360-755-9715	360-770-9535			"	C-4
<b>FIRE DEPARTMENT</b>						
Mark Anderson, Chief	360-755-0261	360-661-6361			360-755-9181	601
Glen Staheli, Fire Marshal	360-755-0261	360-661-6362			"	602
Duty Chief		360-661-6364			"	610
Jerry Butterfield, Firefighter	360-755-0261	360-708-4387			"	
Rob Toth, Firefighter	360-755-0261	360-661-6363			"	
Brian Bond, Firefighter	360-755-0261				"	
Brad Judy, Firefighter	360-755-0261	360-421-1305			"	
<b>PARKS</b>						
Loren Cavanaugh, Director	360-755-9649	360-661-4397	360-336-4988	360-724-3413	360-755-1017	
Craig Bloodgood	360-707-2492	360-661-4394		360-755-9894	"	C-50
Jim Rabenstein	360-707-2492	360-661-4395		360-757-3559	"	C-51
Dean Hamilton	360-707-2492	360-333-3188	360-333-3168		"	C-52
John Burt	360-707-2492	360-333-3187			"	C-54
<b>PLANNING</b>						
Margaret Fleek, Director	360-755-9717	360-770-9128		360-826-6423	360-755-9309	C-3
<b>POLICE</b>						BASE
Bill VanWierengen, Chief	360-755-2305	360-661-6359		360-445-5012	360-755-2392	H-1
Dave Stafford, Assistant Chief	360-755-2304	360-661-6360		360-757-7086	"	H-2
Guy Hanson, Officer	360-755-2306	360-661-6374			360-755-2393	H-3
Scott Butler, Officer	360-755-2314	360-661-6376			"	H-4
Tom Moser, Officer	360-755-2313	360-661-6375			"	H-5
Bob Wischhusen, Officer	360-755-2315	360-661-6356			"	H-6
<b>SEWER DEPARTMENT</b>						
Bob VanSickle } Leads	360-757-4085	360-630-4323	360-336-4102		360-757-2704	C-14
Don Erickson }	360-757-4085	360-630-4393	360-336-4102	360-757-0379	360-757-2704	C-16
On-Call Duty			360-336-4103			
Pager Service			360-848-3510			
Ed Smith		360-630-4311				C-13
Jahn Hughes						C-15
Joe Blanford						C-17
Kathleen Fagan						C-18
Gareth Moore		360-630-4519				C-19
<b>STREET DEPARTMENT</b>						
Jerry Windsor, Supervisor	360-757-4214	360-661-6584		360-424-4522	360-757-0935	C-20
Aaron Bradshaw		360-630-4402		360-424-1633		C-24
Chris Jewett		360-661-6764				C-23
Robert Carrol		360-630-4414				C-27
Mike Schols		360-630-4415				C-26
Jessie Howell		360-630-4416				C-25

## **EXHIBIT II.**

### **Historic Dike Breaks of the Skagit River Valley**

# HISTORIC DIKE BREAKS OF THE SKAGIT RIVER VALLEY



1. Old alignment dike breaks: 1909, 1917, 1921, 1932, 1935 (5 Dikes)	21. Hill Ditch Dike: 1933
2. 1917, 1921, 1932 (3 Dikes)	22. 1951
3. 1917	23. 1949
4. 1917	24. 1917
5. 1894	25. 1951
6. 1909	26. Saltwater Dike: 1932, 1990
7. 1897, 1909 (3 Dikes)	27. 1932 (2 Dikes)
8. 1894, 1897 (4 Dikes)	28. Saltwater Dikes (4), 1951, 1990
9. 1897, 1909 (2 Dikes)	29. Saltwater Dikes (2), 1951
10. 1894	30. 1949, 1951 (2 Dikes)
11. 1921 (3 Dikes)	31. 1935, 1951
12. 1917	32. Sullivan Slough Dikes (2), 1909, 1917
13. 1892, 1894, 1897 (2 Dikes)	33. Swinomish Slough Dike: 1917
14. 1894, 1906 (2 Dikes)	34. Sullivan Slough Dike: 1917
15. 1894, 1951, 1990 (3 Dikes)	35. Swinomish Slough Dike: 1909
16. 1897, 1917, 1921, 1923, 1932 (4 Dikes)	36. Telegraph Slough Dike: 1917
17. 1932	37. Telegraph Slough Dike: 1894
18. 1892, 1909 (2 Dikes)	
19. 1932	
20. 1906, 1909, 1921, 1951	

## **EXHIBIT III.**

### **Skagit River Flood Stage Road Warning and Closures**

# **SKAGIT RIVER FLOOD STAGE ROAD WARNINGS AND CLOSURES**

<u>River Height</u>	<u>Location</u>
24.0 C	Possible water over roadway - Shore Lane, N. @ Cape Horn Rd.
24.0 MV	Possible water over roadway - Whitmarsh Rd. @ Pease Rd.
24.9 MV	Possible road closing - Whitmarsh Rd. @ BN RR Crossing
24.9 MV	Possible water over roadway - Whitmarsh Rd. @ BN RR Crossing
25.2 MV	Possible water over roadway - Debay's Isle Rd. @ Francis Rd.
26.7 MV	Possible road closing - Swan Rd. @ Glenwood Rd.
26.7 MV	Possible road closing - Swan Rd. @ Babcock Rd.
27.3 MV	Possible water over roadway - Sterling Rd. @ Lafayette Rd.
27.9 MV	Possible road closing - Francis Rd. @ SR 9
27.9 MV	Possible road closing - Third Street, S. @ River Rd.
27.9 MV	Possible road closing - Francis Rd. @ Nookachamps Creek
27.9 MV	Possible road closing - Francis Rd. @ Thillberg Rd.
27.9 MV	Possible road closing - Francis Rd. @ Debay's Isle Rd.
28.2 C	Possible road wash out - Cabin Creek Rd. @ Lyman Hamilton Hwy.
28.2 C	Possible road wash out - Lyman Hamilton Hwy. @ Cabin Creek Rd.
28.5 MV	Possible road closing - Sterling Rd. @ Lafayette Rd.
28.9 MV	Possible road closing - Francis Rd. @ Swan Rd.
29.2 MV	Possible water over roadway - Lafayette Rd. @ Collins Rd.
29.4 C	Possible road closing - Cabin Creek Rd. @ Lyman Hamilton Hwy.
29.4 C	Possible water over roadway - Lyman Hamilton Hwy. @ Cabin Creek Rd.
30.0 MV	Possible road closing - Howey Rd. Access @ S. Skagit Hwy.
31.1 MV	Possible road closing - Behren Millett Rd. @ Lyman Hamilton Hwy.
31.1 MV	Possible road closing - Lafayette Rd. @ Sterling Rd.
31.1 MV	Possible road closing - Lafayette Rd. @ Anderson Rd.

31.1 MV	Possible road closing - Behren Millet Rd. @ MV City Limits
31.6 MV	Possible road closing - Babcock Rd. @ SR 9
34.2 C	Possible water over roadway - Martin Ranch Rd. @ Barnaby slough
34.2 C	Possible water over roadway - Cockreham Island Rd. @ Lyman
34.8 C	Possible water level with road - Utopia Rd. @ Atwell Rd.
34.8 C	Possible water over roadway - Lyman Hamilton Hwy. @ Cockreham Rd.
35.4 C	Possible road closing - Utopia Rd. @ Atwell Rd.
36.5 C	Possible water over roadway - Healy Rd. @ Lyman Hamilton Hwy.
36.5 C	Possible water over roadway - Lyman Hamilton Hwy. @ Healy Rd.
36.8 C	Possible water over roadway - S. Skagit Hwy. @ Cumberland Creek
36.8 C	Possible road closing - cockreham Island Rd. @ Lyman Hamilton Hwy.
36.8 C	Possible water over roadway - S. Skagit Hwy. @ Cumberland Creek
37.5 C	Possible water over roadway - Cape Horn Rd. @ Shangri-La Dr.
37.5 C	Possible road closing - S. Skagit Hwy. @ Savage Rd.
37.5 C	Possible road closing - S. Skagit Hwy. @ Elwick Rd.
38.5 C	Possible road closing - Gilligan Creek Rd. @ S. Skagit Hwy.
38.6 C	Possible water over roadway - Dalles Rd. @ Grassmere Rd.
38.6 C	Possible road closing - Dalles Rd. @ Grassmere Rd.
39.0 C	Possible road closing - Thunderbird Ln. @ Moen Rd.
39.0 C	Possible road closing - Pressentin Rd. @ Cape Horn Rd.
39.0 C	Possible road closing - S. Skagit Hwy. @ Cumberland Creek
39.3 C	Possible road closing - Cape Horn Rd. @ Shangri-La Dr.
39.3 C	Possible road closing - Lyman Hamilton Hwy. @ Cape Horn Rd.
39.3 C	Possible road closing - Healy Rd. @ SR 20
39.3 C	Possible road closing - Cape Horn Rd. @ Alder Creek
39.3 C	Possible road closing - Cape Horn Rd. @ BN RR Crossing
39.3 C	Possible road closing - Shangri-La Dr. @ Cape Horn Hwy.

## **EXHIBIT IV.**

### **Map of Evacuation Routes and Evacuation Plan**





# EVACUATION PLAN

**Keep this Map in case of Emergency**

The City of Burlington Evacuation Map is on the back of this plan. In case of evacuation, please *follow the arrows on the Evacuation Route Signs*. *Members of the Emergency Response Team MAY BE stationed at each critical corner as Flaggers to provide direction, if available.* There are basically three routes out of Burlington, all leading to the NORTH, and every route on the Plan will lead you to Gardner Road, Old Highway 99, and Interstate 5.

This Evacuation Plan is for **ALL HAZARDS**. The order of Evacuation may change based on the type of Emergency. A suggestion is to keep this plan and map in your Emergency Preparedness Kit.

Every effort will be made to notify people in dangerous areas door-to-door, but this may not be possible. When an emergency is pending **turn on your radio and listen for instructions** on one of the following local **Emergency Alert System** or call (360) 428-3250:

**KBRC 1430 AM ♦ KLKI 1340 AM ♦ KAPS 660 AM**

**SECURE YOUR HOME BEFORE LEAVING:** turn off electricity, gas and water if possible.

**WHERE TO GO:** If you do not have a relative or friend to go to, plans have been made for you to stay in a designated shelter. The exact location of shelters will be designated on the Emergency Broadcast Stations or by calling (360) 428-3250.

**WHAT TO TAKE WITH YOU:** If there is time, take a brief moment to gather a few important items you may need. **DO NOT DELAY, *do this quickly and leave as soon as you can.***

1. **CLOTHING** – plan to be away at least 24 hours
2. **PERSONAL ITEMS** – such as toilet articles, documents, photo albums, etc.
3. **PRESCRIPTION DRUGS** – insulin, nitroglycerin, antihistamine, etc.
4. **BEDDING** – sleeping bags, pillows, blankets, etc.
5. **EYEGGLASSES**
6. **FOOD** – if a special diet is required
7. **BABY OR CHILD SUPPLIES** – food, diapers, toys, etc.
8. **PROPER IDENTIFICATION** – important for small children, adults.
9. **PETS** – provisions will be made for pets, they will stay in separate housing, bring food if readily available, and *dogs must be leashed.*
10. **MONEY, CREDIT CARDS, CHECKS, ETC.**
11. **VEHICLE SUPPLIES** – flashlight, first aid kit.

**HOW TO MAINTAIN CONTACT WITH FRIENDS OR RELATIVES AFTER YOU HAVE LEFT:** A registration center has been set up at all the shelters. You may go there in person or contact them by telephone (listen to the radio for instructions).

## **EXHIBIT V.**

### **Skagit Grid System & Flood Progression Maps**

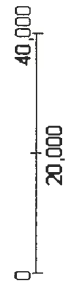
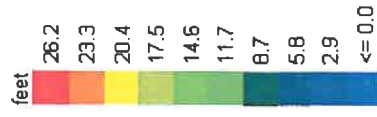
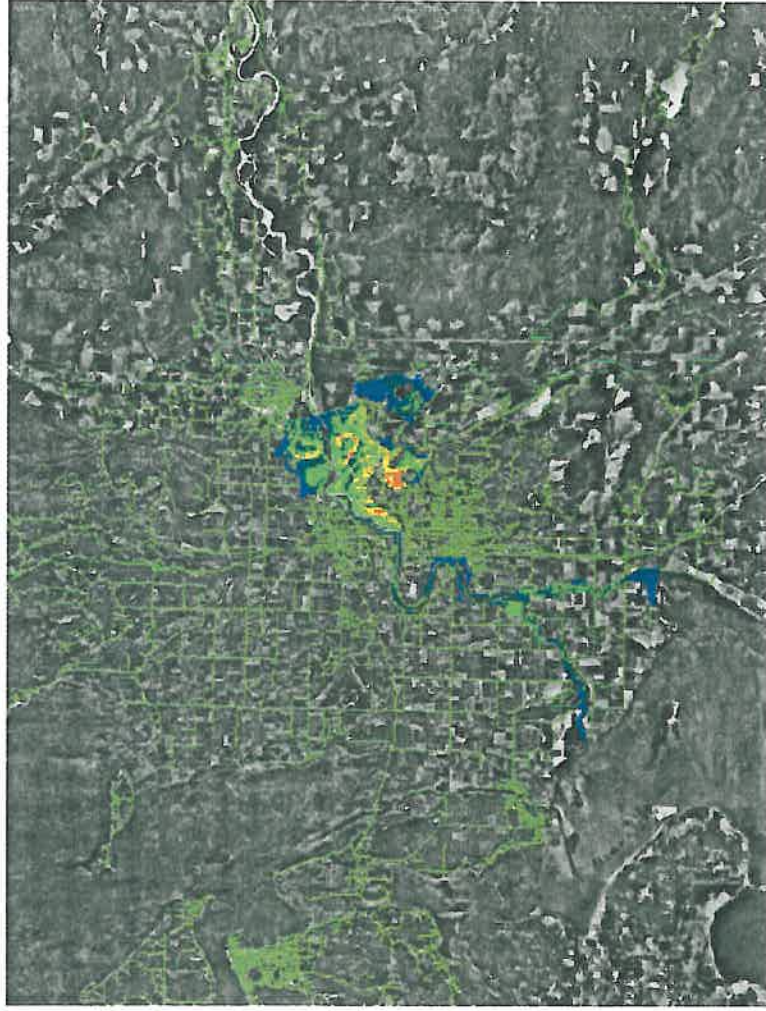
**prepared by Corps of Engineers**



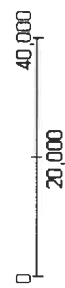
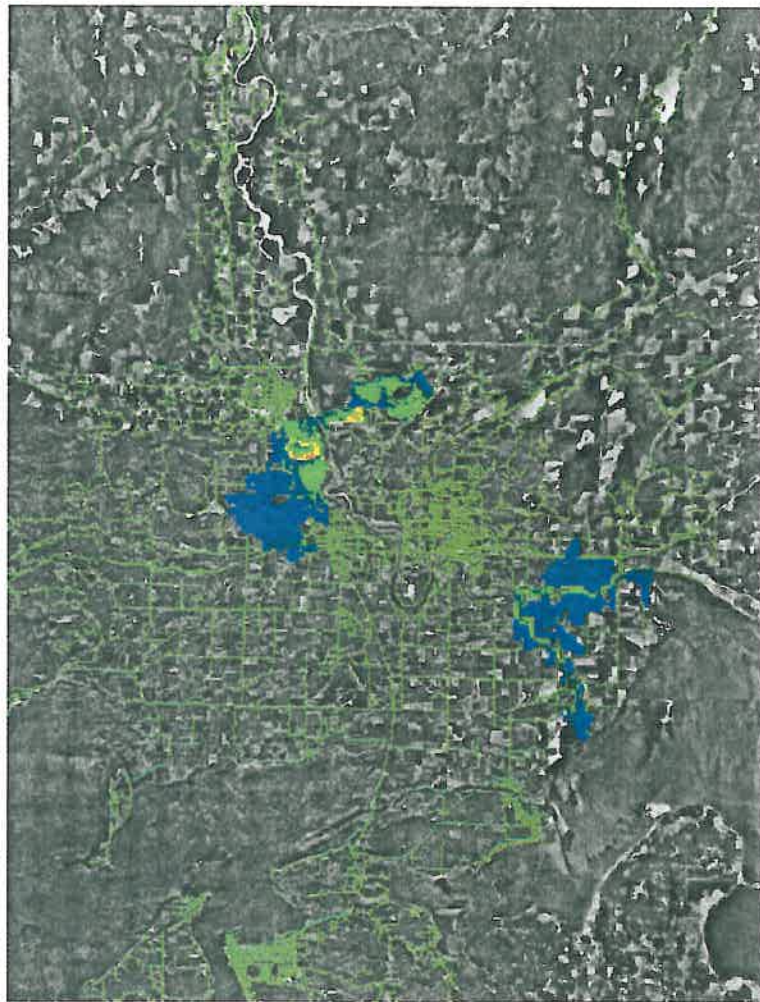
Skagit Grid System



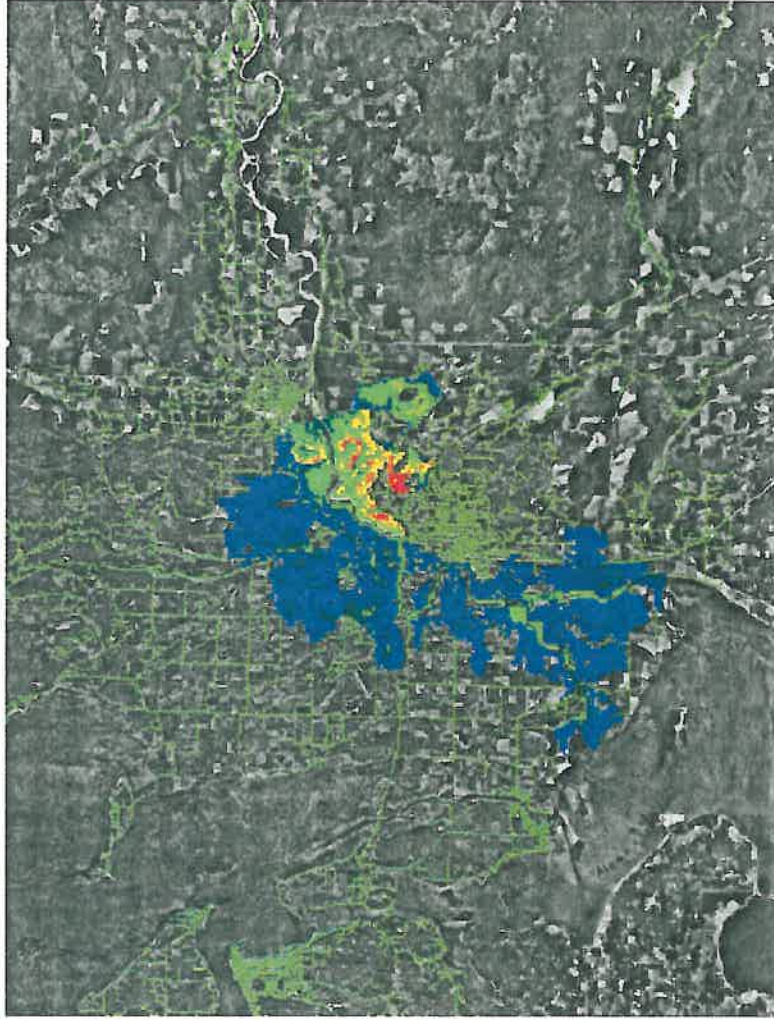
Grid Element Flow Depth. (216000 sec.) [60:0:0]



Grid Element Flow Depth. (252000 sec.). [70:0:0]

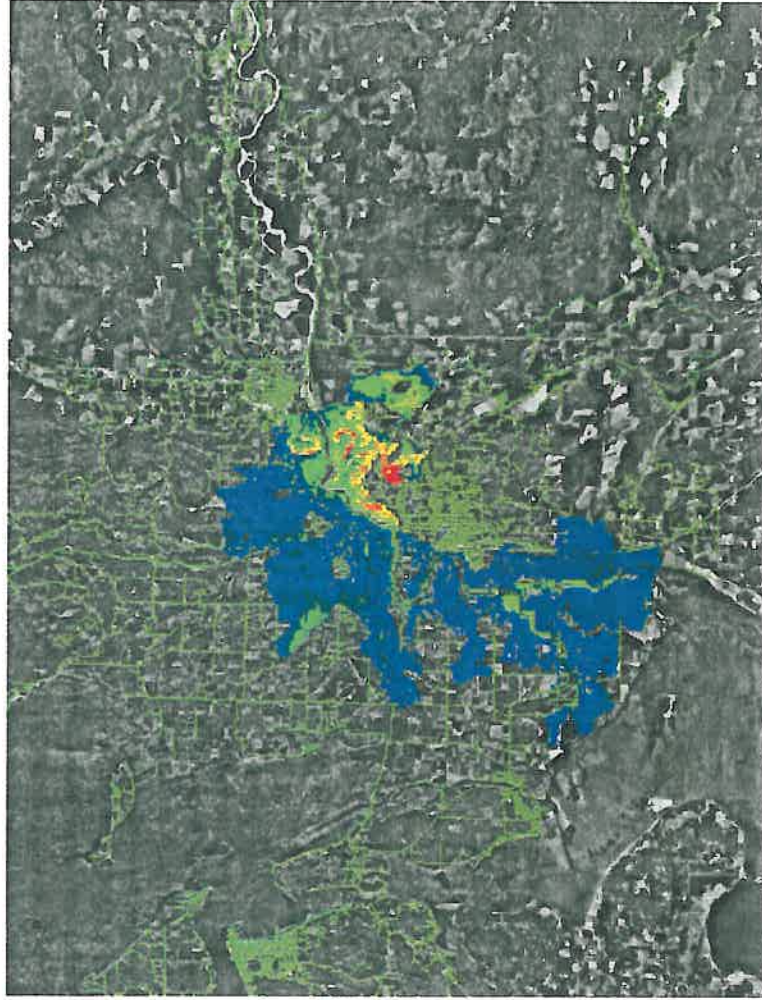


Grid Element Flow Depth. (288000 sec.) [80:0:0]



80<sup>th</sup> hour – Water moves through towns

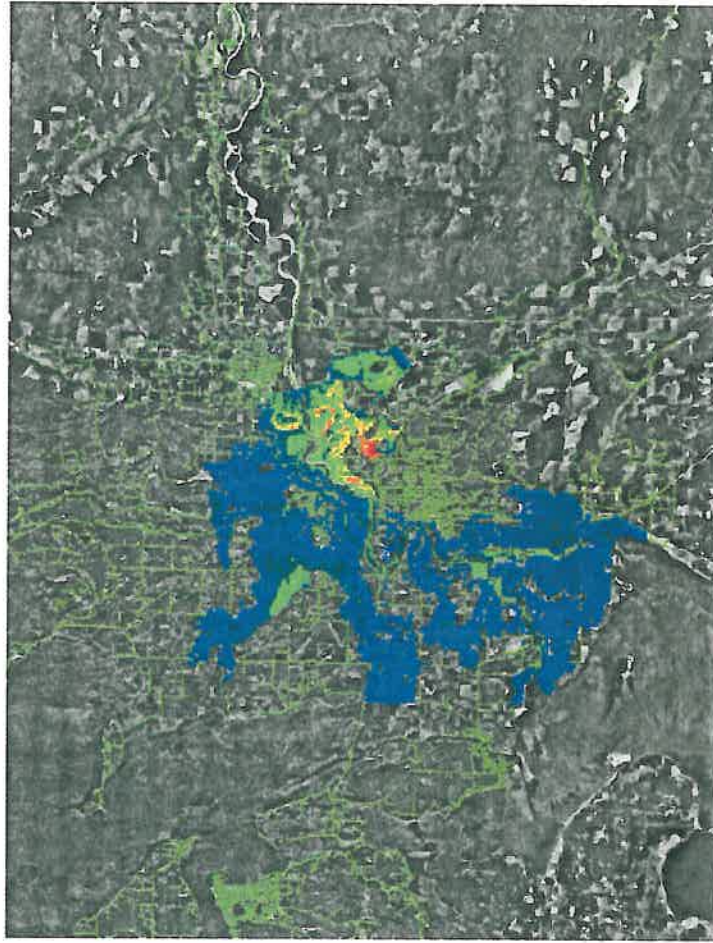
Grid Element Flow Depth (309600 sec.) [86:0:0]



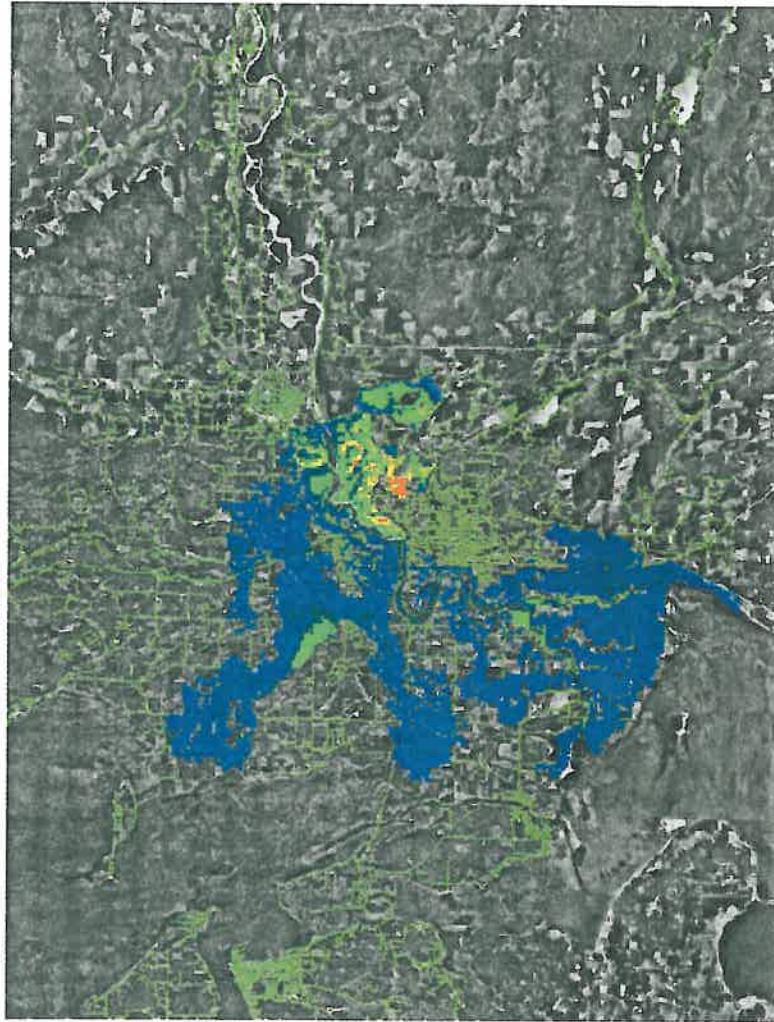
feet  
26.2  
23.3  
20.4  
17.5  
14.6  
11.7  
8.7  
5.8  
2.9  
<= 0.0

0 20,000 40,000

Grid Element Flow Depth, (360000 sec.) [100:0:0]



Grid Element Flow Depth (414000 sec.) [115:0:0]



feet

26.2
23.3
20.4
17.5
14.6
11.7
8.7
5.8
2.9
<= 0.0

0 20,000 40,000

115<sup>th</sup> Hour

## **EXHIBIT VI.**

### **Hyperlinks for Computer Data**

## **Flood Related Links:**

1. **National Weather Service** (warnings, forecasts for Skagit County) <http://www.wrh.noaa.gov/sew/>

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2. **National Oceanic and Atmospheric Administration (NOAA)** <http://www.noaa.gov/>  
Hundreds of topics and indices to help you find NOAA products, data and information.
  - Satellite imagery
  - Weather
  - Emergency information

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3. **Federal Emergency Management Agency (FEMA)** <http://www.fema.gov/>
  - Flood Preparedness
  - Flood Insurance Questions and Answers
  - What to do after a flood
  - Disaster assistance available

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4. **U.S. Geological Survey** <http://wa.water.usgs.gov/realtime/htmls/skagit.html>
  - Current river gauge information
  - List of Skagit County river gauges

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5. **U.S. Army Corps of Engineers** <http://www.nws.usace.army.mil/>
  - Skagit River Flood Damage Reduction Feasibility and Salmon Recovery Study

---
6. **Washington State Dept. of Ecology Water Resources** <http://www.ecy.wa.gov/programs/wr/wrhome.html>
  - Water quality information
  - Surface and ground water information
  - Dam safety information

---
7. **Dike District #12** [site under construction](#)
  - Local information on Dike District #12 with other Skagit River information

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8. **Skagit 911 Center** <http://www.skagit911.com/>
  - Web site for the Skagit 911 Center

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9. **American Red Cross on the Internet**
  - [American National Red Cross website](http://www.redcross.org/)
  - [Skagit Valley Chapter of the Red Cross](http://www.mtbakerredcross.org/)

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10. **National Weather Service Flood Warnings**  
<http://www.weather.gov/view/prodsByState.php?state=wa&prodtype=flood>

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## **EXHIBIT VII.**

### **Dike District #12 Standard Operating Guidelines**

**SKAGIT COUNTY DIKE DISTRICT #12**

**STANDARD OPERATING GUIDELINES**

**REVISED 7/ 2006**

**COMMISSIONERS**

**CHARLES H. BENNETT - Sec.**

**MARVIN B. CANNON**

**JOHN E. BURT**



# **INDEX**

## **A. FLOOD PREPARATIONS** CHECK LISTS

## **B. SAFETY**

## **C. OPERATIONS** COMMAND CENTERS

## **D. LOGISTICS** SANDBAGGING KITCHEN FUEL

## **E. PATROLS / FLOOD FIGHTING** PATROLS BURLINGTON F. D. Mc LEAN RD F. D. DUTIES AND RESPONSIBILITIES

## **F. MUTUAL AID** POLICY STATEMENT PROCEEDURE RECIPIENTS SAMISH RIVER SKAGIT RIVER AUTHORIZED AGENT CLEAN UP

## **A. FLOOD PREPARATIONS**

If it is certain there will be a high river and a flood, Dike District 12 will first have a meeting with Dike Dist. Commissioners, Fire Chiefs, Asst. Chiefs, Burlington Police Chief, Sheriff, Burlington Mayor, Planning Director, City Administrator, BE Public Schools Auxillary Services Director, Public Works Director, Street Supervisor, DEM and BNSF to go over procedures, plans, responsibilities, and assignments **24 hrs.** in advance. In 12/95 Dike District #12 began operating under the Incident Command System (ICS). As of 7/06 in compliance the (HSPD-5) the District will be operating under the more formally structured National Incident Management (NIMS), Incident Command System. See attached Exhibit "A".

We will use volunteer Firefighters for manpower, as available. Some can get away from their jobs and some cannot. In our pre-flood meeting we will discuss this, and co ordinate the hours to fit the firefighters work schedules. It usually works out fine, but under the circumstances some will put in more flood hours than others.

Firefighter schedules shall be adjusted, and filled with trained community volunteers, as needed, to continue to provide adequate fire response personnel, within the fire departments response area. Well trained community volunteers, will be used to supplement operations, at the discretion of the Dike District #12 Commissioners, in conjunction with the fire department operations officers.

### **CHECK LISTS**

After the preparatory meeting, a check of the following items will be conducted by Dike Commissioners.

1. Equipment - supplies. Shovels, sandbags, mega baggers, one man baggers, gloves, visqueen, flashlights, batteries (get additional batteries at least 24 hrs before patrols start).
2. Order sand. Bunker has 50,000 bag capacity.
3. Radios, batteries, chargers, base units, cell phones, MCV

4. Trucks, boats. Contact owners to let them know a flood fight is 24 hrs. away and check availability of equipment. Order all rental equip. needed.
5. Pallets- Fork lifts - ATV's - Gators
6. Check with superintendent of schools and Auxillary Services Director so they can develop a list of volunteers. If notice of flood comes earlier, notify schools earlier.
7. Set up Command Centers at DD12 and at McLean FD.
8. Have list of local radio stations phone / fax numbers for public help with sandbagging. Work with the County PIO staff.
9. Gates - unlock padlocks.
10. Porta-Potti's ordered, placed.
11. Contact Burl. Northern R.R. of possible Hwy 20 R.R. line closure for sandbagging.
12. Coordinate with BNSF / Cities / DOT for bridge log jam problems
13. Trucks and equipment are fully fueled and extra fuel and propane is on hand or on order for immediate delivery.

## **B. SAFETY**

### **Safety is of the utmost importance.**

All flood fight volunteers, will be tracked by utilizing the passport accountability system. Each volunteer will be signed in at the operations centers, and assigned to a personnel staging pool, under a staging officer. When assigned to a detail, by the operations center, the volunteer will be placed on an operations list at the operations center by the staging officer, and a duplicate copy will be given to the person assigned as team leader, in immediate charge of that detail. All assigned volunteers will remain with that assigned team leader, until released by the team leader, and until checked out at the operations center. The volunteer will then be placed in a staging pool, reassigned, or released by the operations center.

### **Safety around water.**

**As of 5/1/99 Pursuant to WAC. 296-24-086 (see attached) the District will equip the ATV dike patrol personnel with approved personal flotation devices.**

**This will consist of flotation jackets and in addition life rings 30" size with 100' of line.**

**ATV / GATOR SAFETY  
TRUCK / EQUIPMENT SAFETY**

**C. OPERATIONS**

The Fire Departments will have a firefighter, or well trained community volunteer , in charge of each operation, who is under the direction of the Fire Chief or Asst. Chief (Operations officer), who in turn is under the authority and direction of, the Dike District 12 Commissioners (Incident Commanders). See attached Appendix "A."

**COMMAND CENTERS**

The Dike District #12 command centers are the Burlington Flood Fight Headquarters (1317 S. Anacortes St.) and the McLean Rd. Fire Station.

- A.** We will dispatch all materials, manpower, etc. out of the command centers and try to keep a log of everything done, and requested along with the date and time. We will set up radio communications to be in contact with Dike District 12 Commissioners, Sheriff's office, Dept. of Emerg. Management, Burlington Fire Dept., and its personnel, and McLean Rd. Fire Dept., and its personnel. Communications with the County Flood Fight Engineer – goes through our County sector personnel.
- B.** We keep a working fire crew at the centers at all times to make first run on fire calls. Water rescues are done by Skagit County Sheriff and Search and Rescue. Sheriff will be notified if water rescues are needed. City of Burlington Mayor, and Fire District #2 and #6 Commissioners are responsible for making Fire Dept. Personnel available to Dike District 12, with Fire Chief, or his designee in charge of firefighters. All personnel will work under the direction of Dike Dist. 12 Commissioners, following standard NIMS procedures.

- C. The District in turn works with Skagit Co., the Army Corps of Engineers, and other Dike Districts.
- D. The Fire Chief or his designee, is responsible for Field Operations, in their assigned sectors.
- E. We will set up food service in each area, with one of the spouses of a fireman, or community volunteer, assigned as, Coordinator in charge, and community volunteers will assist with food preparation, and service. This kitchen will be set up to run 24 hrs. a day as long as we have an emergency. District will coordinate with American Red Cross as well.
- F. **ALL NON-FLOOD FIGHT AGENCIES** will be stationed at the Burlington Fire Station. (Search and Rescue, Navy, etc.) .

## D. LOGISTICS

### SANDBAGGING

1. Sandbagging is done at the Command Centers (Burl. Flood Fight H.Q. and McLean Rd. Fire Hall) by volunteers, with one firefighter, or a well trained community service volunteer in charge - we find it works a lot better to have the sandbagging operation in one area away from the levee, it cuts down on the confusion for the volunteers and makes it easier to keep track of people and dispatch help to areas when needed.
- A. ALL volunteers must sign in on the sign up sheets prior to helping, and will work within the NIMS ICS system, and passport accountability system.
  - B. Sandbags are loaded onto pallets for ease in handling and loading. Pallets are loaded onto trucks and then dispatched as needed.
  - C. Extra pallets full of bags are put to one side for future use as needed.
  - D. We will fill a minimum of 20,000 bags to start and fill additional bags as needed. If river levels are predicted to be the same as or higher than the 1995 levels 40,000 bags will need to be filled to start with.
  - E. **ALL** requests for sand and sandbags made to the County **MUST** be made through the County Sector person. The County Sector

person will have a radio and will be unit No. 12-7. The COE Sector person will be 12-8.

## 2. SANDBAGGING ON DIKE DISTRICT 12'S LEVEE

We use sandbags on or near the levee for several reasons:

A. Boils.

B. To fill in low areas on the top of levee.

C. To prevent overtopping and washouts of levee.

D. To shore up and provide extra ballast (weight) on back slope of levee where areas of sloughing are occurring.

Levee patrols watch for these problems and alert the Command Center, who relays the information to Operations, who in turn relays the information to the Dike Dist. Commissioners.

The Firefighter, or well trained community volunteer, in charge of a section will call the Command Center for sandbags and manpower for a developing problem area, or to reinforce an existing problem. A "special operation" will then be established with a technical expert (Dike Dist. Commissioner, COE, or Firefighter) in charge.

After trucks with sandbags have been dispatched and arrive at the section where the problems are located, the person in charge will direct the truck and personnel to where they are to unload and place bags. Safety – keep eye on personnel, equipment and monitor the levee condition.

## II. KITCHEN

**We set up the kitchen with one Coordinator in charge and the spouses of our firemen and some volunteers usually help with the kitchen work. This kitchen is set up 24 hrs. a day for as long as we have an emergency.**

**As of 12/ 93:**

1. Any food or kitchen supplies that are purchased during a flood fight will be bought at one of the following establishments:

**A. COST CUTTERS**

**B. FOOD PAVILION**

**C. THRIFTY FOODS**

**D. FRED MEYER**

**E. Food Service – (Mc Lean Rd.)**

**F. Costco**

**G. Haggen Food**

2. Any purchases must have authorization from a Dike District Commissioner or Operations.
3. Coordinator in charge of kitchen will make list of the items needed on the "Food Purchase Form."
4. Call store before leaving.
5. The Required signatures on forms must be obtained.
6. Food Purchase Form and Purchase Order must accompany person to the store.
7. Register receipts must be attached to the Food Purchase Form, and turned into the office and put in the box marked "Flood Fight Bills".
8. Notify and work with Burlington Eagles club for donations, preparations, and delivery of food. A number of local restaurants and business' will donate burgers, pizza, water etc.

#### **SAFETY**

9. There are some foods that are NOT wanted due to the risk of food poisoning.
  - A. Chili.
  - B. Potato salad
  - C. Foods made with eggs
  - D. Cream pies
  - E.
  - F.
  - G.
  - H.
  - I.
  - J.

### **E. PATROLS / FLOOD FIGHTING**

#### **LEVEE PATROLLING -**

Levee patrolling will start with limited patrols at around 28' by the (DIKE COMMISSIONERS). 24 hour patrols will start at 32' (Riverside gage). Anything over 35' is real dangerous.

**Patrolling will continue until water has receded enough that there is no longer a threat to the levees, (below 28'). Limited patrols after that will be done by Dike Commissioners. In 1998 Dike District implemented the use of ATV's and John Deere Gators on levee patrols. See SOG's for ATV's and Gators, Appendix "B"**

### **LEVEE PATROLS**

### **(BURLINGTON)**

**A. The District has divided the levee into five sections.**

**Section 1. Consists of the Burlington Northern R.R. grade along Hwy. 20 between Burlington and Sedro- Woolley, from Collins Rd. west to Lafayette Rd. and Lafayette Rd. from the R.R. grade south to Jones' driveway.**

**Section 2. Starts at Jones' driveway at Lafayette Rd. downstream to Gardner Rd.**

**Section 3. From Gardner Rd. downstream to Burlington Northern R.R. Main Line track bridge.**

**Section 4. From BNSF R.R. Bridge #36 west on Whitmarsh Rd. downstream to Pulver Rd.**

### **LEVEE PATROLS**

### **(McLEAN RD)**

#### **SECTION 5**

**McLEAN Rd Fire Dept. patrols from Pulver Rd. downstream to where Dike Dist # 12 meets Dike Dist # 1 by the Memorial Hwy. For Motorized patrols the levee will be split into 2 sections. For walking patrols 4 sections.**

#### **DRIVING PATROLS**

**Section 5 a. Pulver RD. downstream to MAIN ST. off of BENNETT RD.**

**Section 5 b. MAIN ST. downstream to Dike Dist # 1 - Dike Dist #12 boundary near Memorial Hwy.**

**WALKING PATROLS - LONG DURATION FLOOD, SOFT LEVEE**

**Section A. Pulver RD downstream to RIVERS COURT.**

**Section B. River Court downstream to MAIN ST.**

**Section C. Main St. downstream to Access ramp by old Avon Cannery, now Crest Inc.**

**Section D. From Avon Cannery (Crest Inc.) downstream to Dike Dist #1 - Dike Dist # 12 boundary by Memorial Hwy.**

- B. 1. The firefighter(s), or well trained community volunteer, in charge of each section are under the authority of Operations who act under the authority of the Dike District Commissioners.**
- 2. Each section will be patrolled 24 hours a day until there is no longer any threat to the levee.**
- 3. Levee patrols will consist of 2-3 persons with a MINIMUM of One Radio Equipped Firefighter, or well trained community volunteer. The balance can be firefighters or volunteers. As of Jan 1, 1998 District 12 employed the use of ATV'S and Gators on patrols.**
- 4. Patrols will be equipped with radios, flags, and for night patrolling – spotlights and or flashlights. ATV'S will have generators, lights.**
- 5. Shifts will switch at the COMMAND CENTERS, with the off going patrols informing the oncoming patrols of any and all problem areas. Also off going patrols WILL check in with Operations before leaving the COMMAND CENTERS.**

**C. LEVEE PATROL DUTIES AND RESPONSIBILITIES**

- 1. SAFETY. For yourself, others and equipment.**
- 2. Patrol entire length of section.**
- A. "Outside" or riverward side. Top of levee to waters edge.**
- B. "Inside" or landward side. From top of levee to the toe and 40' away from the toe of the levee.**
- 3. Look for:**
- A. Boils - DIRTY or clean. Boils that are running DIRTY MUST be ring diked immediately!**
- B. Areas of sloughing, collapsing, or washed out levee. Notify Command Center (Operations) who will in turn**

notify Dike District Commissioners of these possible levee failure situations so immediate action can be taken. In addition authorities in charge of evacuations (Law Enforcement, DEM) may need to be notified of a potential evacuation situation. This will be done by Operations or Dike Commissioners.

4. Low spots where overtopping could occur.
5. Overtopping of levee.
6. Mark problem areas - put a flag 3'-4' from center of boil on two sides, and one flag on top of levee to mark area. Put a flag 3' from edges of areas where there is sloughing, or low spots on top of levee etc.
7. NEVER stick a flag or stick into the center of a boil, or sandbags on top of a boil.
8. Notify Command Center of problems.
9. DO NOT walk in areas where ground is "jello like" or where sod is "lifting".
10. On riverside watch for logs hitting the levee, log jams building on any of the bridges or up against the levee as this will redirect the river flow and can cause erosion and a levee failure. Bridge owners (BNSF, M.V. / Burl., DOT) need to be notified as well as the County and COE. Propane tanks, loose boats, occupied boats, and other debris that may threaten the levee.
11. Watch for suspicious activity, people, vehicles, boats and report same to Command Center in case possible Law Enforcement help is needed. Also if you encounter any hostile persons call Command Center immediately and request law enforcement right away.
12. Clear the area of non flood fight - emergency personnel and vehicles (sightseers, lookyloos). In the Avon bend area property owners will be checking on their fishing floats, fish shacks and keeping an eye on the river.
13. Call Command Center for sandbags and manpower.
14. Direct trucks and manpower to where needed.
15. Set up, supervise, and participate in sandbagging operations. If a supervisor arrives on site they may assume command and patrol personnel may be released back to patrol duties.

16. Road closures. If there is a need for a road closure notify Operations, who in turn will contact the proper authorities, (City, County, State DOT).
17. Patrols will report their status to Command Center at least every 30 mins., as well as when Emergency Information needs to be relayed.
18. In addition -Units shall respect the five reasons to communicate.
  1. The assignment is completed.
  2. You are unable to complete the assignment.
  3. Additional resources are required.
  4. An immediate safety hazard exists.
  5. You have information that has a direct bearing on the incident.
19. Dike District H.Q. Base Station (in Burlington) call sign is "Dike 12". McLEAN Rd Fire Dept. Base Station call sign is "McLEAN Rd".

## **F. MUTUAL AID**

It has long been Dike 12's policy to provide mutual aid when needed IF at all possible. When a request for sandbags comes in from outside Dike 12's District it must be okayed by the Dike District Commissioners, through Operations. Dike Dist will require a copy of Declaration of Emergency by the Board of County Commissioners to have in all its responding vehicles in case said vehicles are stopped by law enforcement for any reason.

**LIMITED SCALE.** Is providing empty bags or filled bags that others haul to site.

**FULL SCALE.** Is providing filled bags that others may haul or District may haul to site. Help with logistics in placement (use of equipment etc.)

**BEFORE** contacting operations - the firefighter in Command Center Communications must fill out a Mutual Aid Request Form (MARF).

- A. Get name of Entity and Person making request.
- B. Location.
- C. Type of problem and Degree of Emergency or need and number of bags needed.
- D. Transportation - will they pick up or do we have to deliver.
- E. Relay the information to Operations.
- F. Operations will contact the firefighter in charge of sand bagging for an accurate count of filled and empty bags on hand. Operations will then relay the information to the Dike District Commissioners. The Dike Commissioners will make the final determination of how many if any can be released at that time.
- G. Command Center Communications. Will log all request and disbursements of bags, both from within and from outside of Dike District 12. To whom/ How many/ When/ Where/ Why.

#### **MUTUAL AID RECIPIENTS**

- A. Other Dike Districts
- B. Cities, Municipal and Critical facilities
- C. Skagit Co. - Pub. Wrks. - Dept. of Emerg. Management.
- D. Other flood fight centers.
- E. U.S. Army Corps of Engineers.
- F. Business' if possible.
  
- G. Individuals - Skagit Co. has set up some sites for individuals (sand, bags) - District will pitch in IF flood situation allows.
  
- H. Samish River Area. - Skagit Co. provides some aid - usually dropped off at Fire Station. Some of the Samish River area is in Fire District 6's district. Therefore the District will provide some bags if flood situation allows. Samish River Trailer Park is especially hard hit.
  
- B. LIMITED/ FULL SCALE MUTUAL AID - SAMISH RIVER  
Full-scale mutual aid will only be given IF:
  - 1. There is no flooding on the Skagit River.

**2. There are NO FLOOD WATCHES OR WARNINGS posted for flooding on the Skagit River within next 24-48 hours.**

**3. Limited mutual aid will be given if it will not interfere with upcoming flood fight on Skagit River.**

**4. Dike Dist. 12 Commissioners agree that requested level of mutual aid will not deplete the Districts resources and personnel to levels that would jeopardize Dike 12's ability to respond to any Skagit River flooding that may occur during or after mutual aid to the Samish River has started or been completed.**

**Commissioners may agree to:**

- 1. Give a lower level of mutual aid than has been requested.**
- 2. Delay response for a given period of time. Hours, or day(s).**
- 2. Decline all together.**

**Before agreeing to give Full Scale Mutual Aid the following item SHALL be addressed.**

- 1. On site inspection by at least 1 Dike District 12 Commissioner. Upon examination of situation on site – Commissioner will relay information to the other 2 Commissioners for consensus on any action to be undertaken by Dike District 12.**
- 2. What will Dike 12's roll be EXACTLY.**
- 3. PLAN. Is there one, what is it. Estimated time – start to finish (hrs, day(s), week(s). Back up plan (B).**
- 4. Logistics, materials, personnel, equipment, other agencies – their roles and resources. Access to site.**
- 5. Risks, liabilities, and safety issues.**
- 6. Clear lines of authority – command. ICS and communications in place.**
- 7. Dike 12 will be given a copy of the Declaration of Emergency by the Board of County Commissioners to have in all its responding vehicles in case said vehicles are stopped for any reason by law enforcement.**
- 8. Costs. Has emergency been declared, can costs be recovered thru FEMA or other agencies.**

## **FULL SCALE MUTUAL AID - SKAGIT RIVER**

Although less likely needed due to COE being present, will be given IF:

1. Dike District 12 is NOT in FULL-SCALE flood fight on its own Skagit River levee.
2. Or if level of full-scale mutual aid will not deplete Dike 12's resources and personnel to levels that would jeopardize Dike 12's ability to respond to, or continue to do flood fighting on its own levee.

Commissioners may agree to:

1. Give lower level of mutual aid than has been requested.
2. Delay for a given period of time. Hours or day(s).
3. Decline all together.

Before agreeing to give Full-Scale Mutual Aid the following items **SHALL** be addressed.

1. On site inspection by at least 1 Dike District 12 Commissioner.

Upon examination of the situation on site – Commissioner will relay information to the other 2 Commissioners for consensus on any action to be undertaken by Dike District 12.

2. What will be Dike 12's roll EXACTLY.
3. **PLAN**. Is there one, what is it. Estimated time – start to finish (hrs, day(s), week(s). Back up plan (B).
4. Logistics, materials, personnel, equipment, other agencies – their roles and resources. Access to site.
5. Risks, liabilities, and safety issues.
6. Clear lines of authority – command. ICS and communications in place.
7. Dike 12 will be given a copy of the Declaration of Emergency to have in all its responding vehicles in case said vehicles are stopped for any reason by law enforcement.
8. Costs. Has emergency been declared, can costs be recovered thru FEMA or other agencies.

**AUTHORIZED AGENT**

**Dike District 12 has authorized SKAGIT COUNTY DEPARTMENT OF EMERGENCY MANAGEMENT (DEM) as the agency authorized to make request to Dike District 12 for LIMITED / FULL- SCALE MUTUAL AID.**

**CLEAN UP**

**When the flood threat is gone, if any filled bags remain and Dike 12 has determined it does not need them - they may be made available to others still in need of them. A call will be made by a Dike District Commissioner, to DEM, and by County sector personnel to the Skagit County Flood Fight Coordinator to see if the bags can be used elsewhere.**

**Appendix A:**  
Incident Command Chart

**(Printed separately)**

**Appendix B:**  
**SOG's for ATV's and Gators**

**APPENDIX "B"**

**ATV / GATOR OPERATOR QUALIFICATIONS**

- 1. 18 YRS OLD**
- 2. VALID WA. DRIVERS LICENCE**
- 3. TAKEN INITIAL ATV / GATOR TRAINING COURSE AND  
SUBSAQUENT REVIEW COURSES, TRAILER OPERATIONS**
- 4. PERSONAL PROTECTIVE EQUIPMENT.  
HELMIT, GLOVES, FLOAT COATS, HARD HATS**
- 5. CLASS ON SAFETY, USE OF THROW RINGS,  
GENERATORS & LIGHTING ON TRAILERS.**
- 6. 8 HOUR SHIFTS IF POSSIBLE – 12 IF NOT ENOUGH  
PEOPLE AVAIL. TO MAKE THREE SHIFTS.**
- 7. 10 MINUTE EQUIPMENT REVIEW PRIOR TO PATROLING  
FOR CONTROL FIMILUARIZATION**
- 8. ACCOUNTABLITIY SYSTEM SIMULAR TO FIRE DEPTS TO  
TRACK PERSONNEL. (FIRE DEPT. PASSPORT SYSTEM)?**
- 9.**

## **Appendix C:**

**WAC 296-800-16070**

# **Make sure your employees are protected from drowning.**

You must:

(1) Provide and make sure your employees wear personal flotation devices (PFD).

- When they work in areas where the danger of drowning exists, such as:

- On the water.

- Over the water.

- Alongside the water.

Note: Employees are not exposed to the danger of drowning when:

- Employees are working behind standard height and strength guardrails.

- Employees are working inside operating cabs or stations that eliminate the possibility of accidentally falling into the water.

- Employees are wearing an approved safety belt with a lifeline attached that prevents the possibility of accidentally falling into the water.

You must:

- Provide your employees with PFDs approved by the United States Coast Guard for use on commercial or merchant vessels. The following are appropriate or allowable United States Coast Guard-approved PFDs:

Type of PFD	General Description
Type I	Off-shore life jacket - effective for all waters or where rescue may be delayed.
Type II	Near-shore buoyant vest - intended for calm, inland water or where there is a good chance

Type III	of quick rescue. Flotation aid - good for calm, inland water, or where there is a good chance of rescue.
Type V	Flotation aids such as boardsailing vests, deck suits, work vests and inflatable PFDs marked for commercial use.

Note: • Commercially available PFDs are marked or imprinted with the type of PFD.  
• Type IV PFDs are throwable devices. They are used to aid persons who have fallen into the water.

You must:

- Inspect PFDs before and after each use for defects and make sure that defective PFDs are not used.

(2) Provide approved life rings with an attached line on all docks, walkways, and fixed installations on or adjacent to water more than five feet deep.

- Life rings must:

- Be United States Coast Guard approved 30 inch size.
- Have attached lines that are at least 90 feet in length.
- Have attached lines at least 1/4 inch in diameter.
- Have attached lines with a minimum breaking strength of 500 pounds.
- Be spaced no more than 200 feet apart.
- Be kept in easily visible and readily accessible locations.

- Life rings and attached lines must:

- Be maintained to retain at least 75 percent of their designed buoyancy and strength.
- Be provided in the immediate vicinity when employees are assigned work at other casual locations where the risk of drowning exists.

– Work assigned over water where the vertical drop from an accidental fall would be more than 50 feet, must be subject to specific procedures as approved by the department.

## **APPENDIX D**

### ***LEVEE CERTIFICATION CITY OF BURLINGTON***

1. BURLINGTON LEVEE CERTIFICATION PROJECT AGREEMENTS
2. OVERVIEW
3. 44 CFR CH. 1

## RESOLUTION NO. 01 - 2007

**A JOINT RESOLUTION OF THE CITY OF  
BURLINGTON, WASHINGTON, AND SKAGIT  
COUNTY DIKE AND DRAINAGE DISTRICT  
NO. 12 TO SET A GOAL TO ACHIEVE FEMA-  
CERTIFIED 100-YEAR FLOOD PROTECTION  
FOR THE CITY OF BURLINGTON,  
WASHINGTON.**

**WHEREAS**, the Federal Emergency Management Agency ("FEMA") is currently directing a flood plain study of the Skagit River, which affects the City of Burlington, and

**WHEREAS**, this study will likely result in a significant increase in the base flood elevation throughout the City of Burlington, and

**WHEREAS**, the Burlington City Council finds that increased base flood elevations in the City will, immediately and over time, negatively affect the character and quality of life for Burlington residents and work force due to reduced commercial and industrial growth; reduced residential, commercial and industrial redevelopment; and reduced ability of the City to invest in infrastructure and amenities necessary for a vibrant and thriving community, and

**WHEREAS**, the Burlington City Council further finds that such reduced residential development places the City at risk of failing to accommodate the population projections established by the state Office of Financial Management, thereby leading to the conversion of agricultural and natural resource lands, and a possible inefficient extension of City infrastructure and facilities, and

**WHEREAS**, Dike and Drainage District No. 12 has worked conscientiously over decades to improve the existing levee system, and the District believes that it can, in partnership with the City and other local, state, and federal entities, further improve its levee system to achieve certification by FEMA, with the goal that the system will withstand a 100-year Skagit River flood event, and

**WHEREAS**, obtaining such FEMA certification will likely proceed incrementally as sections of the levee system are studied, engineered, and further improved to meet FEMA certification standards, thereby over time removing sections of the City from the 100-year flood plain incrementally, and

**WHEREAS**, a certified levee system will provide additional protection from flood events to the constituents of Dike District 12 and the City of Burlington, and

**WHEREAS**, this levee improvement and certification program is expected to require many years to achieve;


**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF  
THE CITY OF BURLINGTON AND THE BOARD OF SKAGIT COUNTY  
DIKE AND DRAINAGE DISTRICT NO. 12 AS FOLLOWS:**

The City of Burlington and Skagit County Dike and Drainage District 12 hereby mutually agree to work together cooperatively and in partnership, and along with

other Local, State, and Federal entities and to formalize any necessary agreements, including Interlocal Agreements, to achieve FEMA-certified 100-year flood protection for the City of Burlington, with the goal of removing the City from the FEMA flood plain.

Adopted this 8<sup>th</sup> day of February, 2007


**CITY OF BURLINGTON:**

  
 Roger "Gus" Tjeerdma, Mayor

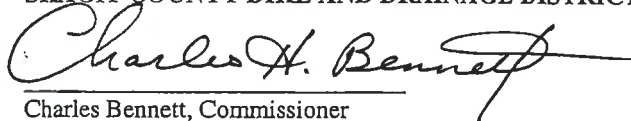
Attest:

  
 Rick Patrick, Finance Director

Approved as to form and legality:

  
 Scott G. Thomas, City Attorney

**SKAGIT COUNTY DIKE AND DRAINAGE DISTRICT #12:**

  
 Charles Bennett, Commissioner

  
 John Burt, Commissioner

  
 Marv Cannon, Commissioner

Published: Argus 02-14-2007

## **INTERLOCAL AGREEMENT**

### **BETWEEN CITY OF BURLINGTON AND DIKE AND DRAINAGE DISTRICT NO. 12 – PRELIMINARY WORK FOR LEVEE CERTIFICATION**

**THIS INTERLOCAL AGREEMENT ("Agreement") is entered into between the CITY OF BURLINGTON, a Washington municipal corporation ("City"), and SKAGIT COUNTY DIKE, DRAINAGE AND IRRIGATION IMPROVEMENT DISTRICT NO. 12, a Washington special purpose district, ("District") (collectively, "the Partners").**

#### **RECITALS**

1. The Partners are public agencies as defined by Ch. 39.34 of the Revised Code of Washington, and may enter into Interlocal agreements on the basis of mutual advantage to provide services and facilities in the manner and pursuant to forms of governmental organization that will accord best with geographic, economic, population, and other factors influencing the needs of local communities.

2. The Partners recognize that human life, transportation, infrastructure, natural resources, private property and the lives and safety of our community are at risk with each flood season.

3. The Partners are interested in finding cost-effective, long-term, and reasonable methods to reduce the risks from flood damage.

4. This Interlocal Agreement between the Partners will mutually benefit each Partner, by pursuing joint efforts to obtain engineering, geotechnical, and levee design work to form the basis of levee certification and ultimate accreditation by FEMA, for the protection of life and property in the jurisdictions of the Partners.

NOW THEREFORE, in consideration of the terms and provisions contained herein, the Partners agree as follows:

#### **BACKGROUND**

1. Skagit County Dike, Drainage, and Irrigation Improvement District No. 12 provides significant protection to areas in Skagit County, District boundaries, and the City of Burlington from Skagit River flood damage.

2. It is anticipated that Revised Flood Insurance Rate Maps (FIRMs) will soon be published by FEMA, indicating a substantially increased 1% flood surface water level estimates, therefore indicating a higher risk than previous analyses.

3. It is a joint goal of the City of Burlington and Dike, Drainage, and Irrigation Improvement District No. 12 to achieve accreditation for those sections of the levees which protect the City's urban growth areas, and to provide substantial (but not 1%) flood protection elsewhere within the District.

4. In order to achieve this goal, it is necessary to form a Partnership to conduct technical analysis of the existing levees, begin environmental permitting activities, commence preliminary engineering to design the levee improvements which will be necessary to achieve certification and ultimately, after the capital levee improvements are in place, accreditation by FEMA.

5. The City of Burlington has the staff expertise necessary to oversee this effort, in coordination with Dike, Drainage, and Irrigation Improvement District No. 12.

6. That the District has the staff, resources, and expertise necessary to coordinate flood control structure technical analysis, design, and repairs and improvements to the levees, for protection of life and property from flooding.

### **AGREEMENT**

1. Partnership Purpose. A Partnership is hereby formed between the City of Burlington and Skagit County Dike, Drainage and Irrigation Improvement District #12, hereinafter designated "Partners", for the purpose of initiating engineering, technical, and levee design analysis which will form the basis for levee modification, reconstruction, repairs, and improvements; and producing construction bid documents for initiating and constructing projects required to bring the City's Urban Growth Area, and other areas determined by the Partners, out of the 100-year flood plain, resulting in accreditation to the 100-year flood level, (or 1% flood) from FEMA.

2. Administration of Agreement. The City of Burlington will provide technical oversight and management of the engineering design efforts, in partnership and in consultation with the District. The City will administer this Agreement to carry out its purpose, in partnership with the District, and with the advice, consent, and approval of the District. The City, through independent contractors, after approval of District, will provide the engineering services addressed in this Agreement, and will be responsible for compliance with all laws, rules, and regulations.

3. Joint Cooperation and Approval. As this effort proceeds, all activities, milestones, intermediate steps, selection of consultants, key decisions, political advocacy, budgeting, public information, use of resources and any/all other decisions important to either Partner, will be agreed upon by both Partners prior to proceeding and initiating such activities or decisions. It is understood and agreed between the Partners that, as the owner of the levee system, the prior approval of District will be required before initiating all broad conceptual design approaches as well as specific design concepts and techniques. Further, District shall control all access to its levee system and other property; approve all exploratory investigation including the location of any and all exploratory drilling or digging; and approve the bidding and contract award of all individual construction projects prior to commencement of the same.

4. Process of Levee Improvement. As this effort proceeds to construction of levee system improvements, initial effort will be focused on achieving accreditation to the 1% flood; however, the Partners recognize it is in the public interest to continually improve the levee system beyond 1% flood protection, to the extent that such continual improvement does not adversely affect other entities for the sole benefit of the Partners.

5. Additional Partners. As this effort proceeds, the Partners may, from time to time, enter into additional partnership agreements with other government entities which will further the goals of this Agreement. Additional partners may be admitted to this Partnership in the future, after approval of the initial Partners named and specified herein.

6. Payment and Funding. For the preliminary engineering phase of this project, the City and Dike and Irrigation Improvement District No. 12 agree that the financial contribution to this effort shall be 2/3<sup>rd</sup>s City of Burlington and 1/3<sup>rd</sup> Dike and Drainage and Irrigation Improvement District No. 12, with any outside funding obtained by either Partner for this purpose to be credited 100% to the effort.

6.1 The initial budget, not to exceed \$750,000.00, without further approval between the Partners, shall be as follows: City of Burlington, Five Hundred Thousand Dollars (\$500,000); Skagit County Dike, Drainage and Irrigation Improvement District No. 12, Two Hundred Fifty Thousand Dollars (\$250,000).

7. Amendments. This Agreement is intended to be amended from time to time to address project funding and construction arrangements, subject to the mutual agreement of the Partners.

8. Indemnification and Hold Harmless. Each Partner hereto shall be liable for its own negligent acts, or omissions committed by its elected officials, officers, employees, agents, representatives, subcontractors, and assigns. Each Partner further agrees to indemnify, defend, and hold harmless the other Partners for any and all liability, claims, losses, demands, actions or causes of action arising from its act or omission in connection with this Agreement. This indemnification and hold harmless shall extend to any representatives and subcontractors of the Partners, and their elected officials, officers, employees, and agents. By virtue of this provision, the Partners shall not be deemed to have waived their immunity pursuant to Title 51 RCW, and nothing contained in this Agreement shall be construed so as to operate as a waiver.

9. Termination by Notice. Any participating Partner may terminate its participation in this Agreement by providing thirty (30) calendar days prior written notice to the other Partner, provided that termination shall not affect or impair any joint purchases of the Partners that are agreed to on or before the termination. The terminating Partner shall pay the full share of costs or participation in funding accruing up to and including the final date of termination.

10. Assignment. The Partners shall not assign this Agreement or any interest, obligation or duty therein without the express written consent of the other Party.

11. Insurance. Each Partner shall maintain, at all times during the term of this Agreement, at its cost and expense, general liability insurance coverage with limits of not less than One Million Dollars (\$1,000,000.00), per each occurrence, or a like amount of coverage available through any insurance pool. The policy or coverage of each Partner shall further name the other Partner's elected officials, officers, employees, and agents as additional named insureds on each said policy, or coverage through any insurance pool.

12. Attorney's Fees. If either Partner shall be required to bring any action to enforce any provision of this Agreement, or shall be required to defend any action brought by the other Partner with respect to this Agreement, and in the further event that one Partner shall substantially prevail in such action, the losing Partner shall, in addition to all other payments required therein, pay all of the prevailing Party's reasonable costs in connection with such action, including such sums as the court or courts may adjudge reasonable as attorney's fees in the trial court and in any appellate courts.

13. Notices. All notices and payments hereunder may be delivered or mailed. If mailed, they shall be sent to the following respective addresses:

To Dike District 12

To City of Burlington

1317 N Anacortes Street  
Burlington WA 98233  
Attn: District Attorney

833 S Spruce Street  
Burlington WA 98233  
Attn: City Attorney

or to such other respective addresses as either Partner hereto may hereafter from time to time designate in writing. All notices and payments mailed by regular post (including first class) shall be deemed to have been given on the second business day following the date of mailing, if properly mailed and addressed. Notices and payments sent by certified or registered mail shall be deemed to have been given on the day next following the date of mailing, if properly mailed and addressed. For all types of mail, the postmark affixed by the United States Postal Service shall be conclusive evidence of the date of mailing.

14. Severability. If any term or provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be held to be invalid or unenforceable by a final decision of any court having jurisdiction on the matter, the remainder of this Agreement or the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable shall not be affected thereby and shall continue in full force and effect, unless such court determines that such invalidity or unenforceability materially interferes with or defeats the purposes hereof, at which time either Partner shall have the right to terminate the Agreement.

15. Entire Agreement. This Agreement constitutes the entire Agreement between the Partners. There are no terms, obligations, covenants or conditions other than those contained herein. No modifications or amendments of this Agreement shall be valid or effective unless evidenced by an agreement in writing signed by both Partners. All items incorporated herein by reference, oral or otherwise, regarding the subject matter of this Agreement, shall be deemed to exist or to bind any of the Partners hereto.

### **MISCELLANEOUS**

A. All of the covenants, conditions and agreements in this Agreement shall extend to and bind the legal successors and assigns of the Partners hereto.

B. This Agreement shall be deemed to be made and construed in accordance with the laws of the State of Washington jurisdiction and venue for any action arising out of this Agreement shall be in Skagit County, Washington.

C. The captions in this Agreement are for convenience only and do not in any way limit or amplify the provisions of this Agreement.

D. Unless otherwise specifically provided herein, no separate legal entity is created hereby, as each of the Partners is contracting in its capacity as a municipal corporation of the State of Washington. The identities of the Partners hereto are as set forth hereinabove.

E. The purpose of this Agreement is to accomplish the objectives of this Agreement.

F. The funding of the respective obligations of the Partners shall be out of the respective general funds/current expenses of the Partners, except as otherwise specifically provided.

G. The performances of the duties of the Partners provided hereby shall be done in accordance with standard operating procedures and customary practices of the Partners.

H. No joint oversight and administration board is created hereby.

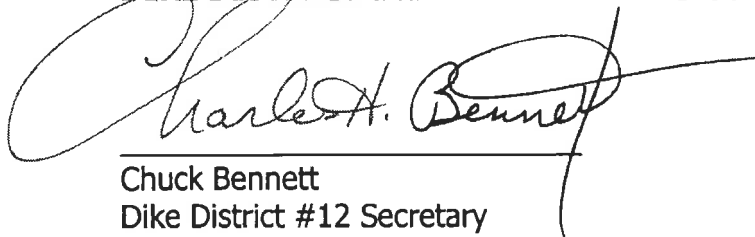
I. Copies of this Agreement shall be filed with the Skagit County Auditor's Office by Burlington.

ADOPTED by the City Council of the City of Burlington at a regular meeting held on the 13<sup>th</sup> day of March, 2008.

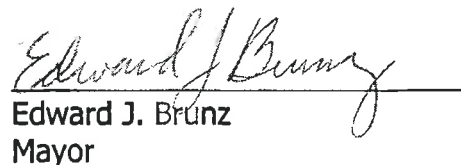
ADOPTED by the Board of Commissioners of Skagit County Dike, Drainage and Irrigation Improvement District No. 12, at a regular meeting held on the 13<sup>th</sup> day of March, 2008.

**IN WITNESS WHEREOF** the Partners hereto have executed this Agreement as of the day and year first above written.

**DIKE DISTRICT #12**

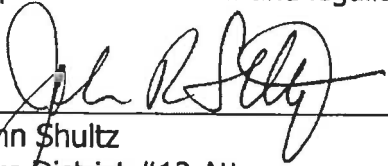
  
Chuck Bennett  
Dike District #12 Secretary

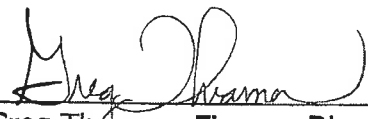
**CITY OF BURLINGTON**


  
Edward J. Brunz  
Mayor

Attest:

Approved as to form and legality:

  
\_\_\_\_\_  
John Shultz  
Dike District #12 Attorney

  
\_\_\_\_\_  
Greg Thrasher, Finance Director

  
\_\_\_\_\_  
Scott G. Thomas  
City Attorney

# ***BURLINGTON LEVEE CERTIFICATION PROJECT***

## **Overview**

The process the City is following in order to change the map to show 100-year protection along the Skagit River frontage involves submitting an application for a Conditional Letter of Map Revision (CLOMR) to FEMA. This must occur prior to any work starting on the project itself because it will be FEMA's detailed review of the engineering plans and specifications to determine whether or not the levee will meet their standards, found at 44 CFR 65.10 of the NFIP regulations. This process is FEMA's statement that, if a project is built as planned, it will meet all of their requirements. A Letter of Map Revision (LOMR) application must then be submitted by the City after the project is built in order to change the maps.

## **Testing and Engineering Reports and Requirements for Levees**

See also the FEMA March 2007 Fact Sheet, Requirements of 44 CFR Section 65.10: Mapping of Areas Protected by Levee Systems.

The objective of this report is to identify the testing and engineering reports and requirements for upgrading the existing levees to meet levee certification requirements, so that a Conditional Letter of Map Revision (CLOMR) may be applied for and issued through the Federal Emergency Management Agency (FEMA), setting the stage for completing the work to the satisfaction of the US Army Corps of Engineers with the final product being Certified Levees and a Letter of Map Revision (LOMR) issued by FEMA changing the BFEs accordingly.

This is a summary of the requirements from the US Army Corps of Engineer's Manual. Today, the City is required to hire a private engineering firm to prepare the design for submittal to FEMA. However, this information is still useful.

The US Army Corps of Engineers is the agency responsible for technical review of the design and construction of levees. The City of Burlington and Dike District #12 are working together to upgrade the existing levees so they will be certified as providing 100-year flood protection. By this means, the levees will be considered in computer models that may be used now and in the future to modify base flood elevations (BFEs). The goal is long term stability in the Base Flood Elevations that will specifically accommodate the revitalization of the historic Downtown Burlington that is designed with 30 foot wide lots, or the buildout and future redevelopment of both residential and commercial land over the long term. The historic small lot sizes cannot accommodate a significant increase in Base Flood Elevations.

The US Army Corps of Engineers Manual EM 1110-2-1913, 30 April 2000, Design and Construction of Levees is the framework document for the project. Looking at Table 1-1, Major and Minimum Requirements, a procedure is summarized for the design and construction of new levees, as follows:

Step	Procedure
1	Conduct geological study based on a thorough review of available data including Analysis of aerial photographs. Initiate preliminary subsurface explorations.
2.	Analyze preliminary exploration data and from this analysis establish preliminary soil profiles, borrow locations, and embankment sections.
3	Initiate final exploration to provide: <ul style="list-style-type: none"> <li>a. Additional information on soil profiles.</li> <li>b. Undisturbed strengths of foundation materials.</li> <li>c. More detailed information on borrow areas and other required excavations.</li> </ul>
4	Using the information obtained in Step 3: <ul style="list-style-type: none"> <li>a. Determine both embankment and foundation soil parameters and refine preliminary sections where needed, noting all possible problem areas.</li> <li>b. Compute rough quantities of suitable material and refine borrow area locations.</li> </ul>
5	Divide the entire levee into reaches of similar foundation conditions, embankment height, and fill material and assign a typical trial section to each reach.
6	Analyze each trial section as needed for: <ul style="list-style-type: none"> <li>a. Underseepage and through seepage.</li> <li>b. Slope stability.</li> <li>c. Settlement.</li> <li>d. Trafficability of the levee surface.</li> </ul>
7	Design special treatment to preclude any problems as determined from Step 6. Determine surfacing requirements for the levee based on future use.
8	Based on the results of Step 7, establish final sections for each reach.
9	Compute final quantities needed; determine final borrow area locations.
10	Design embankment slope protection.

In addition to determining the scope of work for Engineering studies to document existing conditions, identify any gaps in the work, establish final design parameters for each reach, and ensure that the levees now in place and any additional levee construction meets standards, there may be a need for Ring Levees and Setback Levees in the program. These will be new levees subject to the standards in the Design Manual. The height may exceed 3-4 feet, but that has not yet been determined. If so, a most rigorous engineering analysis is required.

Section 8-12, Earth-Levee Enlargement, sets out the engineering requirements for the Burlington main stem levees. Earth-Levee Enlargement is the technique being employed by Dike District #12 in constructing the addition to the existing mainline levees which raises the grade, widens the levee top, and extends the landside backslope to meet overtopping design standards. Riverside and Straddle levee enlargement is used as applicable in specific reaches.

**Engineering Scope for Levee Enlargement as stated in EM 1110-2-1913, Section III Levee Enlargements, 8-11 and 8-12.**

1. The modified levee section should be checked for through seepage and underseepage.

The two methods employed by Dike District #12 include cutoffs and landside seepage berms. Cutoffs in the form of clay keyways have been installed in stretches of the levee where landside boils have occurred in previous flood events. At other locations where major strengthening of the levee system was clearly prescribed because of previous flood event experience, landside berms have been installed as part of the long backslope.

A. Underseepage: Documentation of the work completed is required and further analysis may be required if the potential exists for underseepage. Principal seepage control measures for foundation underseepage are (a) cutoff trenches, (b) riverside impervious blankets, (c) landside

seepage berms, (d) pervious toe trenches, and (e) pressure relief wells. There are substantial literature references as needed in EM 1110-2-1913 and additional references utilizing seepage control methods as given in Turnbull and Mansur (1959), EM 1110-2-1901 and EM 1110-2-1914. If there is a determination of underseepage problems, as generally occurs most acutely where a pervious substratum underlies a levee and extends both landward and riverward of the levee and where a relatively thin top stratum exists on the landside of the levee.

B. Seepage through Embankments: This is unlikely to occur with long landside slopes that are adequately bermed, as constructed in the Dike District #12 levee upgrade program. Additional information on seepage control is presented in EM 1110-2-1913 and Chapter 8 of EM 1110-2-1901.

2. The modified levee section should be checked for foundation and embankment stability. Sufficient soil borings should be taken to determine the in situ soil properties of the existing levee embankment for design purposes.

Key features of the enlarged levees along the mainstem in Burlington are the long landside backslopes at 1V on 5-7H, and the extra wide crowns.

For existing levees, the minimum factors of safety for levee slope stability are 1.4 for Long-Term (Steady Seepage) and 1.0-1.2 for Rapid Drawdown. Detailed information on applicable shear strengths, methods of analysis and assumptions made for each case is referenced in EM 1110-2-1902.

3. An earth-levee enlargement should be made integral with the existing levee.

A. Enlargement shall have at least the same degree of compaction as the existing levee on which it is constructed.

B. Preparation of the interface along the existing levee surface and upon the foundation shall be made to ensure good bond between the enlargement and the surfaces on which it rests.

C. Foundation surface shall be cleared, grubbed, and stripped. Existing levee surface upon which the levee enlargement is placed shall also be stripped of all low-growing vegetation and organic topsoil. The stripped surfaces of the foundation and existing levee shall be scarified before the first lifts of the enlargement are placed.

occurred in the flood plain since the existing floodway was developed. If the original hydraulic computer model is not available, an alternate hydraulic computer model may be used provided the alternate model has been calibrated so as to reproduce the original water surface profile of the original hydraulic computer model. The alternate model must be then modified to include all encroachments that have occurred since the existing floodway was developed.

(ii) The floodway analysis must be performed with the modified computer model using the desired floodway limits.

(iii) The floodway limits must be set so that combined effects of the past encroachments and the new floodway limits do not increase the effective base flood elevations by more than the amount specified in § 60.3(d)(2). Copies of the input and output data from the original and modified computer models must be submitted.

(3) Delineation of the revised floodway on a copy of the effective NFIP map and a suitable topographic map.

(d) *Certification requirements.* All analyses submitted shall be certified by a registered professional engineer. All topographic data shall be certified by a registered professional engineer or licensed land surveyor. Certifications are subject to the definition given at § 65.2 of this subchapter.

(e) *Submission procedures.* All requests that involve changes to floodways shall be submitted to the appropriate FEMA Regional Office servicing the community's geographic area.

[51 FR 30315, Aug. 25, 1986]

#### § 65.8 Review of proposed projects.

A community, or an individual through the community, may request FEMA's comments on whether a proposed project, if built as proposed, would justify a map revision. FEMA's comments will be issued in the form of a letter, termed a Conditional Letter of Map Revision, in accordance with 44 CFR part 72. The data required to support such requests are the same as those required for final revisions under §§ 65.5, 65.6, and 65.7, except as-built certification is not required. All such re-

quests shall be submitted to the FEMA Headquarters Office in Washington, DC, and shall be accompanied by the appropriate payment, in accordance with 44 CFR part 72.

[62 FR 5736, Feb. 6, 1997]

#### § 65.9 Review and response by the Administrator.

If any questions or problems arise during review, FEMA will consult the Chief Executive Officer of the community (CEO), the community official designated by the CEO, and/or the requester for resolution. Upon receipt of a revision request, the Administrator shall mail an acknowledgment of receipt of such request to the CEO. Within 90 days of receiving the request with all necessary information, the Administrator shall notify the CEO of one or more of the following:

(a) The effective map(s) shall not be modified;

(b) The base flood elevations on the effective FIRM shall be modified and new base flood elevations shall be established under the provisions of part 67 of this subchapter;

(c) The changes requested are approved and the map(s) amended by Letter of Map Revision (LOMR);

(d) The changes requested are approved and a revised map(s) will be printed and distributed;

(e) The changes requested are not of such a significant nature as to warrant a reissuance or revision of the flood insurance study or maps and will be deferred until such time as a significant change occurs;

(f) An additional 90 days is required to evaluate the scientific or technical data submitted; or

(g) Additional data are required to support the revision request.

(h) The required payment has not been submitted in accordance with 44 CFR part 72, no review will be conducted and no determination will be issued until payment is received.

[51 FR 30315, Aug. 25, 1986; 61 FR 46331, Aug. 30, 1996, as amended at 62 FR 5736, Feb. 6, 1997]

#### § 65.10 Mapping of areas protected by levee systems.

(a) *General.* For purposes of the NFIP, FEMA will only recognize in its flood

hazard and risk mapping effort those levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with the level of protection sought through the comprehensive flood plain management criteria established by §60.3 of this subchapter. Accordingly, this section describes the types of information FEMA needs to recognize, on NFIP maps, that a levee system provides protection from the base flood. This information must be supplied to FEMA by the community or other party seeking recognition of such a levee system at the time a flood risk study or restudy is conducted, when a map revision under the provisions of part 65 of this subchapter is sought based on a ~~levee system~~, and upon request by the Administrator during the review of previously recognized structures. The FEMA review will be for the sole purpose of establishing appropriate risk zone determinations for NFIP maps and shall not constitute a determination by FEMA as to how a structure or system will perform in a flood event.

(b) *Design criteria.* For levees to be recognized by FEMA, evidence that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection from the base flood exists must be provided. The following requirements must be met:

(1) *Freeboard.* (i) Riverine levees must provide a minimum freeboard of three feet above the water-surface level of the base flood. An additional one foot above the minimum is required within 100 feet in either side of structures (such as bridges) riverward of the levee or wherever the flow is constricted. An additional one-half foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, is also required.

(ii) Occasionally, exceptions to the minimum riverine freeboard requirement described in paragraph (b)(1)(i) of this section, may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must

evaluate the uncertainty in the estimated base flood elevation profile and include, but not necessarily be limited to an assessment of statistical confidence limits of the 100-year discharge; changes in stage-discharge relationships; and the sources, potential, and magnitude of debris, sediment, and ice accumulation. It must be also shown that the levee will remain structurally stable during the base flood when such additional loading considerations are imposed. Under no circumstances will freeboard of less than two feet be accepted.

(iii) For coastal levees, the freeboard must be established at one foot above the height of the one percent wave or the maximum wave runup (whichever is greater) associated with the 100-year stillwater surge elevation at the site.

(iv) Occasionally, exceptions to the minimum coastal levee freeboard requirement described in paragraph (b)(1)(iii) of this section, may be approved. Appropriate engineering analyses demonstrating adequate protection with a lesser freeboard must be submitted to support a request for such an exception. The material presented must evaluate the uncertainty in the estimated base flood loading conditions. Particular emphasis must be placed on the effects of wave attack and overtopping on the stability of the levee. Under no circumstances, however, will a freeboard of less than two feet above the 100-year stillwater surge elevation be accepted.

(2) *Closures.* All openings must be provided with closure devices that are structural parts of the system during operation and design according to sound engineering practice.

(3) *Embankment protection.* Engineering analyses must be submitted that demonstrate that no appreciable erosion of the levee embankment can be expected during the base flood, as a result of either currents or waves, and that anticipated erosion will not result in failure of the levee embankment or foundation directly or indirectly through reduction of the seepage path and subsequent instability. The factors to be addressed in such analyses include, but are not limited to: Expected flow velocities (especially in constricted areas); expected wind and wave

action; ice loading; impact of debris; slope protection techniques; duration of flooding at various stages and velocities; embankment and foundation materials; levee alignment, bends, and transitions; and levee side slopes.

(4) Embankment and foundation stability. Engineering analyses that evaluate levee embankment stability must be submitted. The analyses provided shall evaluate expected seepage during loading conditions associated with the base flood and shall demonstrate that seepage into or through the levee foundation and embankment will not jeopardize embankment or foundation stability. An alternative analysis demonstrating that the levee is designed and constructed for stability against loading conditions for Case IV as defined in the U.S. Army Corps of Engineers (COE) manual, "Design and Construction of Levees" (EM 1110-2-1913, Chapter 6, Section II), may be used. The factors that shall be addressed in the analyses include: Depth of flooding, duration of flooding, embankment geometry and length of seepage path at critical locations, embankment and foundation materials, embankment compaction, penetrations, other design factors affecting seepage (such as drainage layers), and other design factors affecting embankment and foundation stability (such as berms).

(5) Settlement. Engineering analyses must be submitted that assess the potential and magnitude of future losses of freeboard as a result of levee settlement and demonstrate that freeboard will be maintained within the minimum standards set forth in paragraph (b)(1) of this section. This analysis must address embankment loads, compressibility of embankment soils, compressibility of foundation soils, age of the levee system, and construction compaction methods. In addition, detailed settlement analysis using procedures such as those described in the COE manual, "Soil Mechanics Design—Settlement Analysis" (EM 1100-2-1904) must be submitted.

(6) Interior drainage. An analysis must be submitted that identifies the source(s) of such flooding, the extent of the flooded area, and, if the average depth is greater than one foot, the water-surface elevation(s) of the base

flood. This analysis must be based on the joint probability of interior and exterior flooding and the capacity of facilities (such as drainage lines and pumps) for evacuating interior floodwaters.

(7) Other design criteria. In unique situations, such as those where the levee system has relatively high vulnerability, FEMA may require that other design criteria and analyses be submitted to show that the levees provide adequate protection. In such situations, sound engineering practice will be the standard on which FEMA will base its determinations. FEMA will also provide the rationale for requiring this additional information.

(c) Operation plans and criteria. For a levee system to be recognized, the operational criteria must be as described below. All closure devices or mechanical systems for internal drainage, whether manual or automatic, must be operated in accordance with an officially adopted operation manual, a copy of which must be provided to FEMA by the operator when levee or drainage system recognition is being sought or when the manual for a previously recognized system is revised in any manner. All operations must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP.

(1) Closures. Operation plans for closures must include the following:

(i) Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials, that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists for the completed operation of all closure structures, including necessary sealing, before floodwaters reach the base of the closure.

(ii) A formal plan of operation including specific actions and assignments of responsibility by individual name or title.

(iii) Provisions for periodic operation, at not less than one-year intervals, of the closure structure for testing and training purposes.

(2) Interior drainage systems. Interior drainage systems associated with levee systems usually include storage areas,

gravity outlets, pumping stations, or a combination thereof. These drainage systems will be recognized by FEMA on NFIP maps for flood protection purposes only if the following minimum criteria are included in the operation plan:

(i) Documentation of the flood warning system, under the jurisdiction of Federal, State, or community officials, that will be used to trigger emergency operation activities and demonstration that sufficient flood warning time exists to permit activation of mechanized portions of the drainage system.

(ii) A formal plan of operation including specific actions and assignments of responsibility by individual name or title.

(iii) Provision for manual backup for the activation of automatic systems.

(iv) Provisions for periodic inspection of interior drainage systems and periodic operation of any mechanized portions for testing and training purposes. No more than one year shall elapse between either the inspections or the operations.

(3) *Other operation plans and criteria.* Other operating plans and criteria may be required by FEMA to ensure that adequate protection is provided in specific situations. In such cases, sound emergency management practice will be the standard upon which FEMA determinations will be based.

(d) *Maintenance plans and criteria.* For levee systems to be recognized as providing protection from the base flood, the maintenance criteria must be as described herein. Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to FEMA by the owner of the levee system when recognition is being sought or when the plan for a previously recognized system is revised in any manner. All maintenance activities must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the NFIP that must assume ultimate responsibility for maintenance. This plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures

and systems are maintained. At a minimum, maintenance plans shall specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance.

(e) *Certification requirements.* Data submitted to support that a given levee system complies with the structural requirements set forth in paragraphs (b)(1) through (7) of this section must be certified by a registered professional engineer. Also, certified as-built plans of the levee must be submitted. Certifications are subject to the definition given at §65.2 of this subchapter. In lieu of these structural requirements, a Federal agency with responsibility for levee design may certify that the levee has been adequately designed and constructed to provide protection against the base flood.

[51 FR 30316, Aug. 25, 1986]

#### §65.11 Evaluation of sand dunes in mapping coastal flood hazard areas.

(a) *General conditions.* For purposes of the NFIP, FEMA will consider storm-induced dune erosion potential in its determination of coastal flood hazards and risk mapping efforts. The criterion to be used in the evaluation of dune erosion will apply to primary frontal dunes as defined in §59.1, but does not apply to artificially designed and constructed dunes that are not well-established with long-standing vegetative cover, such as the placement of sand materials in a dune-like formation.

(b) *Evaluation criterion.* Primary frontal dunes will not be considered as effective barriers to base flood storm surges and associated wave action where the cross-sectional area of the primary frontal dune, as measured perpendicular to the shoreline and above the 100-year stillwater flood elevation and seaward of the dune crest, is equal to, or less than, 540 square feet.

(c) *Exceptions.* Exceptions to the evaluation criterion may be granted where it can be demonstrated through authoritative historical documentation that the primary frontal dunes at a specific site withstood previous base flood storm surges and associated wave action.

[53 FR 16279, May 6, 1988]

## **APPENDIX E**

### ***RESOLUTIONS ESTABLISHING PROCESS AND ADOPTING PLAN***

RESOLUTION NO. 03 - 2008

A RESOLUTION OF THE CITY OF BURLINGTON authorizing the City of Burlington's participation in the five-year update of the multi-jurisdictional Skagit County Natural Hazard Mitigation Plan, formalizing the planning process, establishing a planning committee, providing for a public involvement process and setting a schedule for completion, pursuant to the Disaster Mitigation Act of 2000 (44 CFR 201.6) and consistent with the Federal Emergency Management Agency's National Flood Insurance Program Community Rating System.

WHEREAS, the Federal Disaster Mitigation Act of 2000 requires for all disasters declared on or after November 1, 2003, local and tribal government applicants for subgrants following any disaster, must have an approved local mitigation plan in accordance with 44CFR 201.6 prior to receipt of Hazard Mitigation Grant Program project funding, and

WHEREAS, the first edition of the Skagit County Natural Hazard Mitigation Plan was adopted on schedule in 2003, and

WHEREAS, the City of Burlington in partnership with other government entities including Dike District #12, the Town of Hamilton, the City of Mount Vernon, the City of Anacortes, the Town of La Conner, the City of Sedro-Woolley, Skagit County, the Town of Lyman, and the Town of Concrete, is participating in the first five-year update of the multi-jurisdictional All Hazard Mitigation Plan, and

WHEREAS, this process also complies with the Floodplain Management Planning requirements of the Federal Emergency Management Agency's Community Rating System Program (CRS 510) for the four agencies that presently participate including Skagit County, La Conner, Burlington and Mount Vernon, and

WHEREAS, the local mitigation plan is the representation of the county and all other local government jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards, and

WHEREAS, the plan will also serve as the basis for the State to provide technical assistance and to prioritize project funding, and

WHEREAS, an open public involvement process is essential to the development of an effective plan, and the process will be coordinated with all affected jurisdictions, agencies, businesses, academia and other private and non-profit interests in the county to insure a comprehensive approach to reducing the effects of natural disasters, and

WHEREAS, the plan shall include a documentation of the planning process, and an updated risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses, sufficient to enable the City to identify and prioritize appropriate mitigation actions, including each participating jurisdiction's risks where they may vary from the risks facing the entire planning area, and

WHEREAS, the plan shall include a detailed mitigation strategy that provides the blueprint for reducing the potential losses identified in the risk assessment, a five year cycle for plan maintenance, and documentation of formal adoption by each participating jurisdiction, and

WHEREAS, the City Council has determined that it is in the public interest to proceed with the multi-jurisdictional grant application and planning process in a timely manner, and

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Burlington, Washington as follows:

1) That Burlington authorizes city participation in a multi-jurisdictional all hazard mitigation plan development process.

2) That the planning process is organized to prepare the plan through a Planning Committee composed of public representatives and staff from those community departments that will be implementing the majority of the plan's recommendations, including the following representatives:

Building Dept/Code Enforcement represented by Building Officials  
 Land use planning/zoning represented by Planning Officials  
 Emergency management/public safety represented by Police, Fire and Emergency Management Chiefs/Officials  
 Environmental protection/public health represented by the County Health Department  
 Engineering represented by Engineers from the public and private sector  
 Public Works represented by Public Works staff  
 Public Information represented by the County Public Information Officer  
 Parks/Recreation represented by Parks and Recreation Director and Planner  
 Economic Development represented by the Port of Skagit County  
 Utilities represented by Public Utility District #1  
 Community Rating System representatives from each jurisdiction participating in the Community Rating System program or planning to participate in the future

3) That the public is involved through invitation to comment during the planning process using a variety of means such as public meetings, public information activities, distribution of a questionnaire, and written comments;

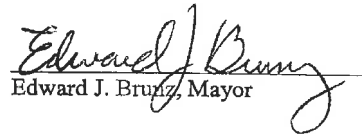
4) That a Citizen's Planning Committee be formed consisting of the Planning Committee identified above and the following: stakeholders located outside of flood hazard areas such as business leaders, civic groups, non-profit organizations, community college, and major employers; representatives of the general public in the known flood hazard areas comprising at least 50% of the committee overall; and an open invitation to representatives of each community;

4) That the Citizen's Planning Committee hold at least five well-advertised public meetings to review each step of the planning process;

5) That the process be concluded by October 1, 2008.

**INTRODUCED AND PASSED** at a regular meeting of the City Council of the City of Burlington this 28<sup>th</sup> day of February, 2008.

The City of Burlington

  
 Edward J. Brunz, Mayor

Attest:

  
 Marie I. Lambert, Interim Finance Director

Published: March 5, 2008

## CITY OF BURLINGTON

RESOLUTION NO. 04 - 2007

A RESOLUTION OF THE CITY OF BURLINGTON authorizing the City of Burlington's participation in the development of amendments to the Burlington section of the multi-jurisdictional All Hazard Mitigation Plan, formalizing the planning process, establishing a planning committee, providing for a public involvement process and setting a schedule for completion, pursuant to the Disaster Mitigation Act of 2000 (44 CFR 201.6) and consistent with the Federal Emergency Management Agency's National Flood Insurance Program Community Rating System.

WHEREAS, the Federal Disaster Mitigation Act of 2000 requires for all disasters declared on or after November 1, 2003, local and tribal government applicants for subgrants following any disaster, must have an approved local mitigation plan in accordance with 44CFR 201.6 prior to receipt of Hazard Mitigation Grant Program project funding, and

WHEREAS, the City of Burlington is establishing the planning process to update the Burlington chapter of the adopted a multi-jurisdictional Skagit County Natural Hazard Mitigation Plan effective September 18, 2003, and

WHEREAS, the process utilized for initial adoption and this Burlington amendment process also complies with the Floodplain Management Planning requirements of the Federal Emergency Management Agency's Community Rating System Program (CRS 510), and

WHEREAS, the local mitigation plan is the representation of the county and all other local government jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards, and

WHEREAS, the plan will also serve as the basis for the State to provide technical assistance and to prioritize project funding, and

WHEREAS, an open public involvement process is essential to the development and update of an effective plan, and the process will be coordinated with all affected jurisdictions, agencies, businesses, academia and other private and non-profit interests in the county to insure a comprehensive approach to reducing the effects of natural disasters, and

WHEREAS, the plan shall include a documentation of the planning process, and an updated risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses, sufficient to enable the City to identify and prioritize appropriate mitigation actions, including each participating jurisdiction's risks where they may vary from the risks facing the entire planning area, and

WHEREAS, the plan shall include a detailed mitigation strategy that provides the blueprint for reducing the potential losses identified in the risk assessment, a five year cycle for plan maintenance, and documentation of formal adoption by each participating jurisdiction, and

WHEREAS, the City Council has determined that it is in the public interest to proceed with the planning process to update the Burlington component of the Skagit County Natural Hazard Mitigation Plan in a timely manner, and

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Burlington, Washington as follows:

1) That Burlington authorizes city participation in updating the Burlington chapter of the Skagit County Natural Hazard Mitigation Plan and companion elements located in Skagit County through a multi-jurisdictional all hazard mitigation plan development process. Skagit County will be Co-Lead for Environmental Review under the State Environmental Policy Act and an Environmental Impact Statement will be prepared that will also serve as the basis for review under the National Environmental Policy Act;

2) That the planning process is organized to prepare the plan through a Planning Committee composed of public representatives and staff from those community departments that will be implementing the majority of the plan's recommendations, including the following representatives:

- Building Dept/Code Enforcement represented by the Building Official
- Land use planning/zoning represented by Planning and Community Development Director
- Emergency management/public safety represented by Police, Fire and Emergency Management Chiefs/Officials and Dike District #12
- Environmental protection/public health represented by the County Health Department
- Engineering represented by Engineers from the public and private sector
- Public Works represented by Public Works staff
- Public Information represented by the City Administrator
- Parks/Recreation represented by Parks and Recreation Director
- Economic Development represented by the Port of Skagit County
- Utilities represented by Public Utility District #1
- Community Rating System representative from Burlington

3) That the public is involved through invitation to comment during the planning process using a variety of means such as public meetings, public information activities, distribution of a questionnaire, and written comments;


4) That a Citizen's Planning Committee be formed consisting of the Planning Committee identified above and the following: stakeholders located outside of flood hazard areas such as business leaders, civic groups, non-profit organizations, community college, and major employers; representatives of the general public in the known flood hazard areas comprising at least 50% of the committee overall consisting of the Burlington Planning Commission; and an open invitation to the county and the community;

4) That the Citizen's Planning Committee hold at least five well-advertised public meetings to review each step of the planning process;

5) That the process be concluded by October 1, 2007.

**INTRODUCED AND PASSED** at a regular meeting of the City Council of the City of Burlington this 10<sup>th</sup> day of May, 2007.

The City of Burlington

  
Roger A. Tjeerdsma, Mayor

Published: Argus 5/16/2007