

CITY OF BELLEVUE ANNEX TO KING COUNTY REGIONAL HAZARD MITIGATION PLAN

Plan Administration

As a City Council/City Manager form of government, the City of Bellevue's emergency management activities are administered by the Emergency Preparedness Manager under the direction of the Director of Emergency Services (City Manager). The Emergency Preparedness Manager or staff from the Emergency Preparedness Division represents the City at Zone 1 and regional emergency management planning and coordination meetings and events.

Planning Process

The City established a Hazard Mitigation Planning Committee, chaired by Lisa Scott, Emergency Preparedness Division, Bellevue Fire Department¹. The city retained consultant Michael Montgomery of Montgomery & Associates, and appointed representatives from every City department to staff the committee. The chair and consultant managed the committee using Incident Command System protocol, scheduling Action Planning meetings (and Operational Periods) approximately every 30 days. The consultant proposed operational objectives for each Operational Period, and reviewed accomplishments at each subsequent Planning Meeting.

Committee members researched and provided information as needed to address Mitigation Plan requirements, e.g. city's history of mitigation efforts, list of critical facilities, mitigation goals, etc. Committee members gathered information and data from their corporate knowledge; department and city records; National Weather Service archives; City, King County, and Washington State emergency declarations; U.S. Census; University of Washington and U.S. Geologic Survey data.

Adopting and Maintaining the Plan

Prior to FEMA approval of the City's plan, Bellevue City Council passed a resolution on 1 October, 2007 expressing its intent to adopt the King County Regional Hazard Mitigation Plan (RHMP) and Bellevue's Annex to the RHMP. This process of adoption included a City Council Agenda Memorandum from staff to City Council with policy considerations, project background and recommendation for adoption. City Council meetings are open to the public and televised to the community (on Bellevue TV, Channel 21) to better inform the public. The process also included three public meetings and posting of the plan on the City's web-site (www.cityofbellevue.org) to allow for public comment and input prior to adopting the plan.

The City of Bellevue will maintain and update its plan through periodic meetings with its King County Hazard Mitigation Plan partners, and participation in future revisions of the RHMP. The Bellevue Hazard Mitigation Planning Committee will also revisit the plan (and

¹ Lisa Scott, 425-452-7923, LScott@ci.bellevue.wa

update, as required) after each significant disaster event (for which the City EOC was activated) but not less frequently than every five years.

We intend to coordinate with King County as we approach different hazards in coming years. The process will provide the opportunity for comments from Bellevue's citizens, as before.

The City Clerk's office posts to the City's web-site, notices for the public meetings and Council meetings, the meeting minutes, and sends such notices to local newspapers. Public comment is accepted at most meetings.

Community Profile

The City of Bellevue, encompassing 31.5 square miles, incorporated on March 31, 1953. Current population estimate: 114,000 (2005 estimate)² The City operates under the City Council/City Manager form of government. A city council comprised of seven elected members governs the City of Bellevue. The mayor and deputy mayor are both council members, elected by the others to serve four-year terms. The City Manager is chief executive of the city.

The City Council also interacts with the East Bellevue Community Council, an entity with limited authority over land-use actions in its jurisdiction and advisory responsibility regarding East Bellevue.

City elected leadership and its department managers take disaster mitigation seriously. For more than 30 years, City ordinances and policies have regularly and continuously sought to reduce the City's vulnerabilities to windstorms, earthquakes, flooding, landslides and other common hazards. The City expects that its remarkably low disaster-related damage experience over the years speaks to the success of these ongoing mitigation efforts.

Bellevue provides essential services to a number of nearby communities, as follows:

- Fire Services to the City of Medina, and communities of Beaux Arts, Clyde Hill, Hunts Point, Newcastle, and Yarrow Point.
- Sewer Services to Beaux Arts, Clyde Hill, Hunts Point, Issaquah, King County, Medina, Redmond, Yarrow Point
- Water Services to the city of Medina, and communities of Clyde Hill, Hunts Point, Yarrow Point, Cor-Sun Ranch in Kirkland, Greenwood Point & South Cove in Issaquah, and several areas of unincorporated King Co. south of I-90 (including Eastgate).

Bellevue is served by three major freeways: I-90, I-405, and SR-520 and is bordered by Lake Washington, Lake Sammamish, several other cities, and Cougar Mountain Regional Park.

² www.factfinder.census.gov. Bellevue City, Washington. General Demographic Characteristics: 2005 Data Set: 2005 American Community Survey.

More than 90 percent of Bellevue’s jobs are located in the following four locations:

- Downtown (28,000 jobs³ + regional mall drawing 15 million visitors per year.)
- Bel-Red/ SR-520 (includes Overlake Hospital + proximity to Microsoft Redmond campus)
- 116th/ Bellefield
- Eastgate/ Factoria (Warehouse, Communication, Transportation, Utilities sector represent a growing source of employment here).

Bellevue has an unusually diverse and comparatively affluent population. Languages other than English are spoken in 26.9% of its 46,000 households, and only 5.7% of Bellevue citizens live below the poverty line.

The BP/Olympic Pipe Line Company manages two fuel pipelines that traverse Bellevue from north to south (approximately 11 miles.) Privately owned, the company works with federal, state, and local jurisdictions to help ensure public safety and security of the pipeline, pump stations, and terminals. No pump stations or terminals are located in Bellevue City limits.

Although the city’s authority in pipeline regulation is limited, city officials and staff work cooperatively with other government agencies, pipeline experts and the Olympic Pipe Line Company to support increased pipeline safety measures.

Statement of Consistency

The City of Bellevue concurs with the King County Regional Hazard Mitigation Goals, with the addition of “Protect the Economic Vitality of the Community” as a new, third priority goal for Bellevue.

Goals and Objectives⁴

These goals and objectives, listed in the order of planning priority, are based on the mission and vision statements of the King County Regional Hazard Mitigation Plan. The City of Bellevue will base its mitigation strategies and activities on the following goals:

- 1) Protect Life and Property
- 2) Support Emergency Services
- 3) Protect Economic Vitality of the Community
- 4) Increase Public Awareness
- 5) Preserve Natural Systems and Resources
- 6) Encourage Partnerships
- 7) Enhance Planning Activities

³ Jobs referenced in this section are those covered by unemployment insurance, for which information is readily available. Total jobs figures are estimated to be 10 to 15 percent higher). Bellevue Comprehensive Plan.

⁴ King County Hazard Mitigation Plan: Introduction Page 1-8

- 1. Protect Life and Property**
 - Implement activities that assist in protecting lives and property by making homes, businesses, infrastructures, critical facilities, and other community assets more resistant to losses from natural hazards.
 - Maintain essential services, facilities and infrastructures during disasters.
 - Identify populations with special needs or those who may be more vulnerable to the impacts of disasters or hazard events.
 - Reduce losses and repetitive damages from chronic hazard events.
 - Provide and/or improve emergency warning systems.

- 2. Support Emergency Services**
 - Strengthen and support countywide disaster and emergency response efforts.
 - Protect and maintain critical facilities, infrastructures and services essential to emergency service and disaster response activities.

- 3. Protect the Economic Vitality of the Community**
 - Improve private sector and private-non-profit sector capabilities and self-reliance.
 - Identify and prioritize the city's core commercial centers based on tax revenue stream and economic flow (e.g. banking and ATMs.)
 - Identify and engage key personnel in the commercial centers in planning activities.
 - Review and coordinate commercial center emergency plans to reduce vulnerabilities.
 - Assist commercial centers as appropriate to harden vulnerabilities.

- 4. Increase Public Awareness**
 - Enhance the public's knowledge about hazards that occur in the region and how they can be impacted.
 - Support education and outreach programs to increase the public's awareness about disaster preparedness, mitigation, emergency response, and recovery activities.
 - Develop education strategies, programs and materials to reach populations with special needs.
 - Provide and support comprehensive education activities that address all sectors of the community.

- 5. Preserve Natural Systems and Resources**
 - Insure protection of agriculture, fish, wildlife, and natural resources.
 - Balance watershed planning, natural resource management, and land use planning with natural hazard mitigation to protect life, property and the environment.

- 6. Encourage Partnerships**
 - Strengthen communication and participation among public agencies, citizens, non-profit organizations, businesses and industry.

- Coordinate hazard mitigation planning efforts with other local and regional organizations involved in disaster preparedness, response, and recovery activities.

7. Enhance Planning Activities

- Improve data collection and evaluation processes for identifying critical facilities, infrastructures, essential services, and populations at risk.
- Improve hazard assessment information and resources.
- Enhance and increase participation and representation on the Regional Hazard Mitigation Plan Taskforce and Partners Committee.
- Facilitate ongoing review and implementation of the plan.
- Actively monitor and evaluate the status, implementation and completion of mitigation action items.
- Routinely review, update and enhance all aspects of the plan.

History of Mitigation Efforts

City elected leadership and its department directors take disaster mitigation seriously. For more than 30 years, City ordinances and policies have regularly and continuously sought to reduce the City's vulnerabilities to windstorms, earthquakes, flooding, landslides and other common hazards. The City's Utility Department is accredited by the American Public Works Association (APWA) and is ranked by the National Flood Insurance Program's Community Rating System in the top 3% of communities nationwide. The City expects that its remarkably low disaster-related damage experience over the years speaks to the success of these ongoing mitigation efforts.

Civic Services

The City of Bellevue relies heavily (and daily) on two key structures: City Hall and the Bellevue Service Center (BSC). Therefore each of the structures has undergone both structural and non-structural seismic mitigation efforts, as follows:

Bellevue Service Center (BSC)

The BSC is a concrete tilt up structure with a plywood roof supported by glulam timber beams and girders supported by steel columns at about 40 feet on center. The building relies on the exterior concrete walls and some internal steel bracing for lateral support.

Structural upgrades included brackets and bolts to tie the concrete panels to each other at selected locations. The roof diaphragm was tied at the perimeter to the top of the concrete tilt up panel walls. Drag struts to shear concrete shear walls were added at selected locations. The ends of the timber beams and girders were tied to the perimeter walls. The shear strength of the roof structure was upgraded by adding plywood to the lower side of the roof joists in certain locations along with the addition of a large drag strut in the fleet area. The shear strength of the concrete panels at the larger openings was increased by the application of struts across to tops of the larger openings.

Non structural upgrades included bracing systems to all larger water, gas, fire suppression and electrical conduit to meet the SMACNA⁵ standards of the time.

City Hall

The City Hall building is constructed of reinforced concrete columns, girders, pan joist and shear walls supported on standard spread footings bearing on firm soil. Post-tension reinforcing was used in the longer spanning concrete joist spanning over about forty feet. The building's exterior cladding consists of terra cotta veneer as well as metal panel and curtain wall systems.

Structural upgrades include the addition of new concrete reinforced shear walls at the center core of the building as well as at the two triangular stair wells at the far wings of the building. The reinforced core and end wings were then tied to the existing perimeter post tension beams using steel drag struts. The lower portions of the building and existing parking garage also were strengthened with additional shear walls in several locations. The main entry concourse was extensively renovated and uses steel moment frames in the roof structure.

Emergency Preparedness Division

Established and maintains City Emergency Operations Center with self-sufficient electric power, water, and communications.

The Eastside Amateur Radio Support (EARS) group consists of amateur radio operators in the greater Eastside area. The group was organized to provide auxiliary communications support to the City of Bellevue and agencies served by Bellevue's 911 Communications Center during a disaster or emergency. EARS is a very active group of about 60 members. Activities include communications drills three or four times a year, tours and training in the Incident Command System, first aid, cardiopulmonary resuscitation (CPR), radio protocol and other safety-related activities.

The Emergency Preparedness Division provides Disaster Preparedness educational programs to Bellevue citizens and businesses.

Fire Department

Enforces fire codes, and Title III – Right to Know. Reviews / approves development plans to include suitable access, fire and smoke detection systems, defensible space, use of fire-resistive building materials, etc.

Provides Fire Prevention education programs to citizens and businesses.

⁵ Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)

Information Technology Department (ITD) Hazard Mitigation Efforts

As business, government, and emergency management increasingly relies on computers and electronic communications, protecting Information Technology (IT) assets and systems from damage, intrusion, and compromise takes on a critical dimension.

The City of Bellevue Information Technology Department (ITD) established and implemented the following from its “Information Technology Guiding Principles”:

- “Information will be secured from loss or corruption by routine back-up of all mission-critical databases.”
- “A disaster recovery plan for all mission-critical information will be implemented and managed.”

ITD mitigation efforts currently in place:

- Data backups
 - Full Backups every weekend
 - Incremental backups every night
 - Off Site tape storage in secure bunker-like facility
- Hot site at Bellevue Service Center (BSC)
 - Can run critical applications
 - File and print
 - Maximo
 - Exchange
 - Data replication
 - Exchange every 30 minutes
 - File and print every 2 hours
 - Maximo twice per day
- Most critical systems reside on clustered servers for redundancy and automatic failover
- Redundant power supplies
- Very few single points of failure

Planning and Community Development Department (PCD)

To obtain better information on the geologic conditions in Bellevue, PCD contracted with the University of Washington and the United States Geological Survey to update geologic mapping for the entire city. At completion of project, city will have highly detailed mapping and analysis of soil and subsurface conditions in the city. This information will assist in completing site specific and regional risk assessment for landslide hazards and liquefaction during seismic events. City will use this information and analysis to guide mitigation efforts for those risks.

In general terms, the City is adapting regulatory standards to meet the EPA’s National Pollutant Discharge Elimination System (NPDES) permit conditions addressing all point sources of pollutants discharging into water systems – storm drains, construction sites, etc.

Police Department

The City of Bellevue believes its police department must be prepared to address global terrorism and domestic terrorism threats to the city or its citizens. From a terrorist threat perspective, the Police Department's mitigation efforts include the following:

- Provide intelligence gathering re: terrorist activities.
- Identify and minimize key facilities' vulnerabilities to terrorist attack.
- Identify and provide appropriate training and equipment. – counter-terrorism, bomb-squad, WMD disasters.
- Establish and maintain a federally accredited bomb squad, trained and equipped to mitigate terrorist attacks.

Transportation

Traffic congestion is a region-wide and persistent problem that affects not only the Bellevue economy and quality of life, but hampers rapid emergency response. Power failure attendant to disasters greatly exacerbates the problem.

The City's Department of Transportation (Traffic Signals Operations) recently implemented a mitigating measure with the purchase of ten (10) generators to power key traffic signals (as required) in the event of utility power failure.

The Bridge Division conducted seismic retrofit of the NE 12th St. bridge over the Burlington Northern Railroad tracks in 1995. The bulk of the work on this project was to construct new seismic bearing pads at the bridge abutments and at the piers. Seismic retrofit work was also done on the 148th Ave SE pedestrian over-crossing near SE 22nd St. in 1994. In addition, each City-owned and maintained bridge is inspected every two years for safety and programmed for capital improvements as needed.

The City completed (in 2005) Capital Investment Program (CIP) # 102 - Kamber Road Roadway Improvements. A significant part of this improvement involved replacing the undersized culvert for Richards Creek (flows under Kamber Rd), thus successfully mitigating recurring local flooding during heavy rains.

The department's overlay program has also recently paved a steep stretch of 142nd Ave SE with an asphalt mix that has some de-icing agents mixed into the pavement. This is a test location and will be monitored for performance during ice and snow events in the coming winters.

The Streets Division assembled a trailer several years ago, outfitted with signs and barricades to expedite response to road closures and detours caused by recurring local flooding. While most of the flooding can be characterized as nuisance flooding, there are a few places where structural flooding is at risk due to street flooding. These locations are among several projects in the City's on-going Flood Control CIP program. (See Utilities Department.)

Utilities Department

A 1992 study by Kennedy & Jenks provided guidance to the Utilities Department for making structural and non-structural seismic improvements to pump stations and reservoirs. Utilities crews completed non-structural upgrades to water and wastewater pump stations shortly after the study. Structural upgrades were programmed. Pipelines in areas of soil liquefaction and landslides were marked for special attention in future pipeline projects.

Study Overview:

Item	Outcome
Pump Station Seismic Vulnerability	Non-structural recommendations implemented by Utilities crews. Work detailed below.
Reservoirs Seismic Vulnerability Pipelines Seismic Vulnerability	Identified areas subject to liquefaction and landslides, to be considered in future pipeline projects.

Completed Water Reservoir Seismic Vulnerability Upgrades:

Reservoir	Project
Clyde Hill 465	added seismic anchors
Cherry Crest	replaced reservoir
Parksite	added flexible pipe connections
Crossroads North	added seismic anchors
Crossroads South	added seismic anchors
Woodridge	added seismic anchors
Meydenbauer	replaced reservoir
Factoria	structural analysis noted only need to modify operating level in reservoir

Projects currently slated for retrofit or replacement:

Reservoir	Project
Somerset 1	study to eliminate: in pre-design
Somerset 3	study to eliminate: in pre-design
Pikes Peak	add flexible connections: in pre-design
Horizon View No 1	replace reservoir - future design
Horizon View No 2	replace reservoir - future design

Other Considerations:

Pump stations and reservoirs identified at low risk of failure or low consequence of failure in the study will be assessed after the high to moderate risk projects are completed.

Conducted vulnerability analyses of water and wastewater systems. Based on analyses, developed security measures for water & wastewater systems.

The Utilities Department spends approximately 25% of a \$2.6 million storm Capital Investment Program (CIP) on rectifying flooding problems in the city. Included in the mitigation efforts: year-round storm drain cleaning, drainage maintenance, and a storm pipe renewal and replacement program.

Prioritized Mitigation Initiatives (Funded / in process)

1. Implement Utilities Department Capital Investment Program (CIP) # D-94 involving construction of improvements to public drainage system to alleviate flooding.
2. CIP # PS-53: Install Automatic Fire Sprinkler Retrofit at Fire Stations 1, 3, 5, 6, and 7.
3. CIP # W-85: Conduct Structural/ Seismic Reservoir Rehabilitation to mitigate water system earthquake damage.
4. Update geologic mapping of soils and subsurface conditions to assist in completing site specific and regional risk assessment for landslide hazards and liquefaction during seismic events.
5. Provide disaster preparedness public education programs for Bellevue's residential, school and business communities. Provide CERT-like skills training classes to groups that have already formed disaster response teams (i.e., schools, organized neighborhoods, large businesses).

Prioritized Non-Funded Mitigation Efforts

The City of Bellevue is currently working to mitigate natural and man-made disasters. As additional funding becomes available (from either grants or increased revenue) the city expects to pursue the following, prioritized mitigation efforts:

1. Install emergency generators in all city-owned critical facilities;
2. Seismic upgrades to water/ sewer distribution system.
3. Acquire / develop redundant (IT) pathway to Bellevue Service Center (BSC)
4. Acquire/ install redundant Internet and phone line connections at BSC.

Prioritization Process

Prioritization Criteria

The city department directors used the following criteria in prioritizing mitigation efforts:

1. Life/ Safety issue – is it a life / safety issue?
2. Benefit/ cost review – is the solution/ strategy cost effective based on costs, probability, frequency, and savings?
3. Maintain/ enhance public safety emergency response – will it help assure swift response?
4. Maintain essential city services to its citizens – will it help assure continuity of government and delivery of government / public services?
5. Support/ enable post-disaster business and commerce – will it protect/ enable the local economy?
6. Provide preparedness/ recovery public education – will it enable citizens to better prepare and become self-reliant?
7. Availability of funding: operating budget/ grants – current or future.

Benefit / Cost Review

As part of their annual Capital Investment Program (CIP) budgeting work, department directors determine a cost benefit ratio for their preferred projects to evaluate if the initiative is feasible and to help rank it under the prioritization criteria. While preventing loss of life is a guiding principle, the availability of funding also plays a key role in setting priorities.

The Benefit / Cost review included replacement costs for critical facilities, retro-fitting existing structures to current seismic standards. Cost/ benefit analyses involved techniques outlined in FEMA's "BCA Tool Kit": credible data, cost of initiative, project useful life, FEMA Standard/ default values and discount rate, historic/ forecast cost per occurrence, frequency of occurrence, forecast cost per occurrence if implemented, and level of protection/ residual damage.

The materials, manpower and building supplies listed in the Capital Investment Program sheets (CIPs) are based on city experience with contract services and pricing.

Where life-saving initiatives will be involved, the cost/ benefit analysis will use the recommended figure of \$2.3 million/ per life saved – a figure suggested by King County.

In pledging to participate in the King County Regional Hazard Mitigation Plan, the Bellevue City Council will commit to at least one Mitigation Strategy/ Initiative. The HMP committee decided to incorporate several on-going initiatives previously identified, evaluated, and approved by the City Council.

Incorporating the Mitigation Plan Annex into Regular City Planning.

Bellevue's elected leadership and department directors take disaster mitigation seriously. For more than 30 years, city ordinances and policies have regularly and continuously sought to reduce the city's vulnerabilities to windstorms, earthquakes, flooding, landslides and other common hazards. The city expects that its remarkably low disaster-related damage experience over the years speaks to the success of these ongoing mitigation efforts.

The City intends and expects that directors will continue to identify and incorporate approved mitigation strategies into their annual Capital Improvements and Operations budgets.

The City of Bellevue consistently evaluates mitigation initiatives and routinely implements them through the following mechanisms:

1. Adopting and enforcing Building and Fire Codes;
2. Adopting Fire Prevention Policies, Procedures, and Administrative Rulings;
3. Enacting and implementing its Comprehensive Plan;
4. Adopting and enforcing Zoning Regulations, Land Use Plan and Ordinances;
5. Adopting and maintaining its Emergency Operations Plan;
6. Installing emergency back-up power at all fire stations;
7. Conducting soils and subsurface mapping for landslide and liquefaction hazards;
8. Maintaining and enhancing city-wide public education programs in disaster preparedness and fire prevention.

The above eight mitigation programs/ mechanisms are already in place and part of daily routine for the appropriate city departments, and integral to their annual budgeting practice.

The Capital Investment Projects (CIPs) identified as ongoing have varying life cycles, most extending through 2013. Each CIP details funding by year.

Jurisdiction Agency: City of Bellevue, Utilities. POC: Randy Holmes, Manager

Type of Hazard: Flooding

Category: Storm Drainage

Priority: 1

Plan Adoption No.: Utilities Dept CIP D-94 FY 2006

Brief description of project: Construct improvements to public drainage systems to alleviate flooding where the Utilities goal for protection from flooding is not met. Currently, seven sites have been identified (listed below.) Improvements could involve increasing conveyance capacity, re-routing drainage, or adding detention, infiltration, or other runoff control mechanisms. Sites: Sturdevant Cr. at SE 6th St.; SE 30th St./ Sunset Cr. flood control; Valley Cr. Bypass Extension; 153rd Av SE & SE 22nd St. Storm Drainage Improvements; 156th Av SE & SE 4th Storm Drainage Improvements; SE 9th St. Storm Drainage Improvements; and Phantom/ Larson Channel re-grading.

Rationale for the project: Flooding at selected sites exceeds targeted level of protection due to insufficient drainage system capacity. Currently, flooding includes residential and/ or commercial structural flooding or flooding that limits access to businesses. Project improves public safety; reduces exposure to health risks; reduces the risk of failure and associated liability.

- | | |
|--|---|
| <ul style="list-style-type: none"> • <u>RHMP Goals:</u> • <u>Protect Life & Property</u> • <u>Protect Economic Vitality</u> | <p>RHMP Objectives:</p> <p>Implement activities that assist in protecting lives and property by making homes, businesses, infrastructures, critical facilities, and other community assets more resistant to losses from natural hazards.</p> <p>Assist commercial centers as appropriate to harden vulnerabilities.</p> |
|--|---|

Lead Jurisdiction/ Agency: Bellevue Utilities

Participating Jurisdictions: none

Cost of Project: \$4,212,000

Estimated time period implemented: 2006 thru 2013

Funding Sources:	Matching % Primary	Matching % Secondary	Matching % Tertiary	Source/ Date
Utility Rates/ fees	100%			CIP D-94 2007

Adoptive date and/ or Ordinance No.: _____

Status: On-going

Total priority score: _____

Benefit/ Cost Ratio: _____