




King County
Office of Emergency Management

King County Regional Hazard Mitigation Plan Update

Volume 2: Planning Partner Annexes
Part 2c—Pacific, Redmond, Renton, Seatac,
Shoreline, Skykomish, Snoqualmie, Tukwila, Woodinville

Agency Review Submittal
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TETRA TECH

King County

REGIONAL HAZARD MITIGATION PLAN UPDATE
VOLUME 2: PLANNING PARTNER ANNEXES

AGENCY REVIEW SUBMITTAL

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Prepared for:
King County
Office of Emergency Management
3511 NE 2nd Street
Renton, WA 98056

Prepared by:

TETRA TECH
complex world | CLEAR SOLUTIONS™
19803 North Creek Parkway, Bothell, WA 98011
Tel 425.877.2800 Fax 425.877.2899 www.tetratech.com

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King County
Regional Hazard Mitigation Plan Update; Volume 2—Planning Partner Annexes

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INTRODUCTION

BACKGROUND

The Federal Emergency Management Agency (FEMA) encourages multi-jurisdictional planning for hazard mitigation. All participating jurisdictions must meet the requirements of Chapter 44 of the Code of Federal Regulations (44 CFR):

> "Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan." (Section 201.6.a(4))

For the King County Regional Hazard Mitigation Plan Update, a Planning Partnership was formed to leverage resources and to meet requirements of the federal Disaster Mitigation Act (DMA) for as many eligible local governments in King County as possible. The DMA defines a local government as follows:

> "Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity."

There are two types of Planning Partners that participated in this process, with distinct needs and capabilities:

- Incorporated municipalities (cities and the County)
- Special purpose districts.

Each participating planning partner has prepared a jurisdiction-specific annex to this plan. These annexes, as well as information on the process by which they were created, are contained in this volume. This volume also includes brief profiles of the two Native American tribes that have land within King County. The tribes are independent, sovereign nations and were not official Planning Partners in this effort. However, they are important stakeholders in the region, and the King County Planning Partnership recognizes that tribal-level plans can support or enhance hazard mitigation in the planning area.

THE PLANNING PARTNERSHIP

Initial Solicitation and Letters of Intent

The planning team solicited the participation of the County and all County-recognized special purpose districts at the outset of this project. A kickoff meeting was held on January 24, 2013 at King County Office of Emergency Management in Renton to identify potential stakeholders and planning partners for this process. The purpose of the meeting was to introduce the planning process to jurisdictions in the County that could have a stake in the outcome of the planning effort. All eligible local governments within the planning area were invited to attend. Various agency and citizen stakeholders were also invited to this meeting. The goals of the meeting were as follows:

- Provide an overview of the Disaster Mitigation Act.
- Provide an update on the planning grant.

- Outline the King County plan update work plan.
- Describe the benefits of multi-jurisdictional planning.
- Outline planning partner expectations.
- Solicit planning partners.
- Confirm a Steering Committee.

All interested local governments were provided with a list of planning partner expectations developed by the planning team and were informed of the obligations required for participation. Local governments wishing to join the planning effort were asked to provide the planning team with a "notice of intent to participate" that agreed to the planning partner expectations (see Appendix A) and designated a point of contact for their jurisdiction. In all, formal commitment was received from 59 planning partners by the planning team, and the King County Planning Partnership was formed.

Maps for each participating city are provided in the individual annex for that city in Parts 2a through 2c of this volume. Maps showing the location of participating special purpose districts by district type are provided at the beginning of Part 2d, which includes the special purpose district annexes. These maps will be updated periodically as changes to the partnership occur, either through linkage or by a partner dropping out due to a failure to participate.

Planning Partner Expectations

The planning team developed the following list of planning partner expectations, which were confirmed at the kickoff meeting held on January 24, 2013:

- Each partner will provide a "Letter of Intent to Participate."
- Each partner will support and participate in the selection and function of the Steering Committee overseeing the development of the update. Support includes allowing this body to make decisions regarding plan development and scope on behalf of the partnership.
- Each partner will provide support for the public involvement strategy developed by the Steering Committee in the form of mailing lists, possible meeting space, and media outreach such as newsletters, newspapers or direct-mailed brochures.
- Each partner will participate in plan update development activities such as:
  - Steering Committee meetings
  - Public meetings or open houses
  - Workshops and planning partner training sessions
  - Public review and comment periods prior to adoption.

  Attendance will be tracked at such activities, and attendance records will be used to track and document participation for each planning partner. No minimum level of participation will be established, but each planning partner should attempt to attend all such activities.
- Each partner will be expected to perform a "consistency review" of all technical studies, plans, and ordinances specific to hazards identified within the planning area to determine the existence of plans, studies or ordinances not consistent with the equivalent documents reviewed in preparation of the County plan. For example: if a planning partner has a floodplain management plan that makes recommendations that are not consistent with any of the County's basin plans, that plan will need to be reviewed for probable incorporation into the plan for the partner's area.

- Each partner will be expected to review the risk assessment and identify hazards and vulnerabilities specific to its jurisdiction. Contract resources will provide jurisdiction-specific mapping and technical consultation to aid in this task, but the determination of risk and vulnerability will be up to each partner.
- Each partner will be expected to review the mitigation recommendations chosen for the overall county and determine if they will meet the needs of its jurisdiction. Projects within each jurisdiction consistent with the overall plan recommendations will need to be identified, prioritized and reviewed to determine their benefits and costs.
- Each partner will be required to create its own action plan that identifies each project, who will oversee the task, how it will be financed and when it is estimated to occur.
- Each partner will be required to complete its normal pre-adoption process prior to submitting the plan to its governing body for adoption. For example, if it is the community's normal process to submit a planning document to a Planning Commission prior to submittal to council for adoption, then that process must be followed for the adoption of this plan.
- Each partner will be required to formally adopt the plan.

It should be noted that by adopting this plan, each planning partner also agrees to the plan implementation and maintenance protocol established in Volume 1. Failure to meet these criteria may result in a partner being dropped from the partnership by the Steering Committee, and thus losing eligibility under the scope of this plan.

Linkage Procedures

Eligible local jurisdictions that did not participate in development of this regional plan update may comply with DMA requirements by linking to this plan following the procedures outlined in Appendix B.

ANNEX-PREPARATION PROCESS

Templates

Templates were created to help the Planning Partners prepare their jurisdiction-specific annexes. Since special purpose districts operate differently from incorporated municipalities, separate templates were created for the two types of jurisdictions. The templates were created so that all criteria of Section 201.6 of 44 CFR would be met, based on the partners' capabilities and mode of operation. Templates available for the planning partners' use were specific as to whether the partner is a municipality or a special purpose district and whether the annex is an update to a previous hazard mitigation plan or a first-time hazard plan. Each partner was asked to participate in a technical assistance workshop during which key elements of the template were completed by a designated point of contact for each partner and a member of the planning team. The templates were set up to lead each partner through a series of steps that would generate the DMA-required elements that are specific for each partner. The templates and their instructions can be found in Appendix C to this volume of the Regional Hazard Mitigation Plan Update.

Workshop

Workshops were held for Planning Partners to learn about the templates and the overall planning process. Topics included the following:

- DMA
- King County plan background
- The templates

- Risk ranking
- Developing your action plan
- Cost/benefit review.

Separate sessions were held for special purpose districts and municipalities, in order to better address each type of partner's needs. The sessions provided technical assistance and an overview of the template completion process. Attendance at this workshop was mandatory under the planning partner expectations established by the Steering Committee. There was 92-percent attendance of the partnership at these sessions.

In the risk-ranking exercise, each planning partner was asked to rank each risk specifically for its jurisdiction, based on the impact on its population or facilities. Cities were asked to base this ranking on probability of occurrence and the potential impact on people, property and the economy. Special purpose districts were asked to base this ranking on probability of occurrence and the potential impact on their constituency, their vital facilities and the facilities' functionality after an event. The methodology followed that used for the countywide risk ranking presented in Volume 1. A principal objective of this exercise was to familiarize the partnership with how to use the risk assessment as a tool to support other planning and hazard mitigation processes. Tools utilized during these sessions included the following:

- The risk assessment results developed for this plan
- Hazard maps for all hazards of concern
- Special district boundary maps that illustrated the sphere of influence for each special purpose district partner
- Hazard mitigation catalogs
- Federal funding and technical assistance catalogs
- Copies of partners' prior annexes, if applicable.

Prioritization

44 CFR requires actions identified in the action plan to be prioritized (Section 201.c.3.iii). The planning team and steering committee developed a methodology for prioritizing the action plans that meets the needs of the partnership and the requirements of 44 CFR. The actions were prioritized according to the following criteria:

- **High Priority**—Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
- **Medium Priority**—Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
- **Low Priority**—Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

These priority definitions are dynamic and can change from one category to another based on changes to a parameter such as availability of funding. For example, a project might be assigned a medium priority because of the uncertainty of a funding source, but be changed to high once a funding source has been

identified. The prioritization schedule for this plan will be reviewed and updated as needed annually through the plan maintenance strategy.

Benefit/Cost Review

44 CFR requires the prioritization of the action plan to emphasize a benefit/cost analysis of the proposed actions. Because some actions may not be implemented for up to 10 years, benefit/cost analysis was qualitative and not of the detail required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. A review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to costs and benefits as follows:

- Cost ratings:
  - **High—**Existing funding levels are not adequate to cover the costs of the proposed action; implementation would require an increase in revenue through an alternative source (for example, bonds, grants, and fee increases).
  - **Medium—**The action could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the action would have to be spread over multiple years.
  - **Low—**The action could be funded under the existing budget. The action is part of or can be part of an existing, ongoing program.
- Benefit ratings:
  - **High—**The action will have an immediate impact on the reduction of risk exposure to life and property.
  - **Medium**—The action will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
  - **Low—**Long-term benefits of the action are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

It should be noted that for many of the strategies identified in this action plan, funding might be sought under FEMA's HMGP or PDM programs. Both of these programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed on projects at the time of application preparation. The FEMA benefit-cost model will be used to perform this review. For projects not seeking financial assistance from grant programs that require this sort of analysis, the Partners reserve the right to define "benefits" according to parameters that meet their needs and the goals and objectives of this plan.

Analysis of Mitigation Initiatives

Each planning partner reviewed its recommended initiatives to classify each initiative based on the hazard it addresses and the type of mitigation it involves. Mitigation types used for this categorization are as follows:

- **Prevention**—Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.

- **Property Protection**—Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness**—Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection**—Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services**—Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects**—Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

COMPATIBILITY WITH PREVIOUS APPROVED PLANS

Of the 59 committed planning partners, 22 were covered by prior plans approved by FEMA. This does not include local governments covered under the initial 2004 Regional Plan that did not perform and update to that plan in 2009. Table 1 lists those communities, the status of those plans, and the role this regional plan will play in achieving compliance and the CRS status if applicable. These 22 plans identified over 280 initiatives. The progress made on these initiatives has been reviewed in the progress report included in Appendix B of Volume 1 of this plan update.

FINAL COVERAGE UNDER THE PLAN

Of the 59 committed planning partners, 54 fully met the participation requirements specified by the Steering Committee. The principal requirement not met by the other partners was the completion of the jurisdictional annex template following the workshops. All 54 partners that attended the workshop subsequently submitted completed templates. Only those 54 jurisdictions are included in this volume and will seek DMA compliance under this plan. The remaining jurisdictions will need to follow the linkage procedures described in Appendix B of this volume. Table 2 lists the jurisdictions that submitted letters of intent and their ultimate status in this plan.

TABLE 1.
PRIOR PLAN STATUS

Jurisdiction	FEMA Approval Date	Will Be Replaced by King County Regional Hazard Mitigation Plan? (Yes/No)	CRS Community (Yes/No)	King County Regional Hazard Mitigation Plan Will Become CRS Plan of Record?(Yes/No)
City of Auburn	12/2/2009	Yes	Yes	Yes
City of Bothell	6/17/2010	Yes	No	N/A
City of Federal Way	12/2/2009	Yes	No	N/A
City of Issaquah	1/28/2010	Yes	Yes	Yes
City of Kent (including annex for Kent Fire Department/King County Fire District 37)	1/27/2005	Yes	Yes	Yes
City of Mercer Island	6/16/2011	Yes	No	N/A
City of Pacific	12/2/2009	Yes	No	N/A
City of Redmond	1/8/2010	Yes	No	N/A
City of Renton	4/19/2012	Yes	Yes	Yes
City of Shoreline (including annex for Shoreline Fire Department /King County Fire District 4)	12/2/2009	Yes	No	n/a
City of Snoqualmie	4/20/2010	Yes	Yes	Yes
City of Tukwila	2/16/2011	Yes	No	N/A
City of Woodinville (an annex to the North King and South Snohomish Counties Regional Mitigation Plan for Natural Hazards)	11/29/2010	Yes	No	N/A
King County (Unincorporated)	1/28/2010	Yes	Yes	No[a]
Covington Water District	1/28/2010	Yes	N/A	N/A
Highline Water District	12/2/2009	Yes	N/A	N/A
King County Water District 19	12/28/2010	Yes	N/A	N/A
King County Water District 111	4/20/2010	Yes	N/A	N/A
North City Water District (known as Shoreline Water District at the time of the previous hazard mitigation plan`)	N/A[b]	Yes	N/A	N/A
Soos Creek Water District	3/18/2010	Yes	N/A	N/A
Sammamish Plateau Water and Sewer District	12/2/2009	Yes	N/A	N/A
Southwest Suburban Sewer District	1/28/2010	Yes	N/A	N/A
South King Fire and Rescue	12/2/2009	No	N/A	N/A

a. For unincorporated King County, the CRS plan of record is the *2013 King County Flood Hazard Management Plan Update and Progress Report*.
b. The 2010 Shoreline Water District Hazard Mitigation Plan was not submitted to FEMA for approval.

TABLE 2.
PLANNING PARTNER STATUS

Jurisdiction	Letter of Intent Date	Attended Workshop?	Completed Template?	Covered by This Plan?
Municipalities				
King County	N/A	Yes	Yes	Yes
City of Algona	1/29/2013	Yes	Yes	Yes
City of Auburn	2/13/2013	Yes	Yes	Yes
City of Bellevue	2/22/2013	No[a]	No	No
City of Bothell	2/12/2013	Yes	Yes	Yes
City of Burien	2/13/2013	Yes	Yes	Yes
City of Carnation	2/11/2013	Yes	Yes	Yes
City of Covington	2/12/2013	No[a]	No	No
City of Clyde Hill	2/21/2013	Yes	Yes	Yes
City of Duvall	2/13/2013	Yes	Yes	Yes
City of Federal Way	1/31/2013	Yes	Yes	Yes
City of Issaquah	1/33/2013	Yes	Yes	Yes
City of Kent	2/21/2013	Yes	Yes	Yes
City of Kirkland	2/21/2013	Yes	Yes	Yes
City of Maple Valley	1/30/2013	Yes	Yes	Yes
City of Medina	2/11/2013	Yes	Yes	Yes
City of Mercer Island	2/21/2013	Yes	Yes	Yes
City of North Bend	2/22/2013	Yes	Yes	Yes
City of Pacific	3/15/2013	Yes	Yes	Yes
City of Redmond	2/19/2013	Yes	Yes	Yes
City of Renton	2/22/2013	Yes	Yes	Yes
City of SeaTac	2/7/2013	Yes	Yes	Yes
City of Shoreline	2/15/2013	Yes	Yes	Yes
City of Snoqualmie	3/14/2013	Yes	Yes	Yes
City of Tukwila	3/1/2013	Yes	Yes	Yes
City of Woodinville	2/28/2013	Yes	Yes	Yes
Town of Beaux Arts Village	2/14/2013	Yes	Yes	Yes
Town of Hunts Point	2/23/2013	Yes	Yes	Yes
Town of Skykomish	3/15/2013	Yes	Yes	Yes
Fire Districts				
Burien Fire (King County Fire District #2)	1/24/2013	Yes	Yes	Yes
Duvall Fire (King County Fire District #45)	2/15/2013	Yes	Yes	Yes
Kent Fire	2/21/2013	Yes	Yes	Yes
Shoreline Fire	2/13/2013	Yes	Yes	Yes

TABLE 2.
PLANNING PARTNER STATUS

Jurisdiction	Letter of Intent Date	Attended Workshop?	Completed Template?	Covered by This Plan?
Valley Regional Fire Authority	1/29/2013	Yes	Yes	Yes
South King Co. Fire and Rescue	2/13/2013	No	No	No
Vashon Island Fire & Rescue	1/31/2013	Yes	Yes	Yes
School and Hospital Districts				
Kent School District	2/14/2013	Yes	Yes	Yes
Lake Washington School District	3/15/2013	No	No	No
Riverview School District	1/30/2013	Yes	Yes	Yes
Evergreen Health (Public Hospital District #2)	2/5/2013	Yes	Yes	Yes
Snoqualmie Hospital	2/25/2013	No	No	No
Valley Medical (Public Hospital District #1)	2/21/2013	Yes	Yes	Yes
Water, Sewer and Utility Districts				
Covington Water District	2/12/2013	Yes	Yes	Yes
Highline Water District	2/21/2013	Yes	Yes	Yes
King County Water District 19	2/21/2013	Yes	Yes	Yes
King County Water District 20	2/20/2013	Yes	Yes	Yes
King County Water District 90	2/12/2013	Yes	Yes	Yes
King County Water District 111	2/25/2013	Yes	Yes	Yes
King County Water District 125	2/21/2013	Yes	Yes	Yes
North City Water District (formerly Shoreline Water District)	2/26/2013	Yes	Yes	Yes
Coal Creek Utility District	1/30/2013	Yes	Yes	Yes
Sammamish Plateau Water & Sewer District	2/26/2013	Yes	Yes	Yes
Skyway Water & Sewer District	3/12/2013	Yes	Yes	Yes
Soos Creek Water & Sewer District	2/27/2013	Yes	Yes	Yes
Midway Sewer District	2/21/2013	Yes	Yes	Yes
Ronald Wastewater District	2/13/2013	Yes	Yes	Yes
Southwest Suburban Sewer District	2/21/2013	Yes	Yes	Yes
Valley View Sewer District	2/21/2013	Yes	Yes	Yes
Woodinville Water District	2/20/2013	Yes	Yes	Yes

a. Cities of Bellevue and Covington decided to maintain their own plans after submitting letter of intent

KING COUNTY TRIBAL STAKEHOLDERS

FEMA's Tribal Multi-Hazard Mitigation Planning Guidance

FEMA's 2010 *Tribal Multi-Hazard Mitigation Planning Guidance* assists Indian tribal governments and other tribal entities in identifying and assessing their risk to natural hazards. The document offers the following types of assistance (44 CFR 201.7):

- It helps Indian tribal governments identify their risks from natural hazards and protect their members and other resources.
- It helps Indian tribal governments develop and adopt new mitigation plans, or revise or update existing mitigation plans, to meet the requirements of 44 CFR 201.7.
- It helps plan reviewers evaluate mitigation plans from different Indian Tribal governments in a fair and consistent manner.
- It helps Indian tribal governments exercise flexibility and apply for assistance as either a grantee or subgrantee under FEMA grant programs with a single plan type.
- It provides guidance and culturally relevant examples to other tribal entities that comply with similar planning requirements under 44 CFR 201.6 as a local government.

Indian tribal governments with an approved tribal mitigation plan in accordance with 44 CFR 201.7 may apply for assistance from FEMA as a grantee. If the Indian tribal government coordinates with the state for review of the tribal mitigation plan, then the Indian tribal government also has the option to apply as a subgrantee through a state or another tribe. A grantee is an entity such as a state, territory, or Indian tribal government to which a grant is awarded and that is accountable for the funds provided. A subgrantee is an entity—such as a community, local or Indian tribal government, state-recognized tribe, or private nonprofit organization—to which a subgrant is awarded and that is accountable to the grantee for use of the funds provided.

If the Indian tribal government is eligible as a grantee or subgrantee because it has an approved tribal mitigation plan and has coordinated with the state for review, it can decide which option it wants to take on a case-by-case basis with respect to each federal disaster declaration, and for each grant program under a declaration, but not on a project-by-project basis within a grant program. For example, an Indian tribal government can participate as a subgrantee for public assistance, but as a grantee for the Hazard Mitigation Grant Program under the same declaration. However, the Indian tribal government would not be able to request grantee status under HMGP for one HMGP project, then request subgrantee status for another HMGP project under the same declaration.

By acknowledging the tribes as stakeholders, the King County regional planning partnership recognizes tribal level plans as existing and potential mechanisms that could support or enhance hazard mitigation in King County. This is a requirement of 44 CFR 201.6.b.3. While the King County regional planning effort and those of the tribal governments are separate and autonomous efforts, tribal plans offer an opportunity to partner and share information that may lead help to leverage resources in the planning area.

The Muckleshoot Indian Tribe

Brief Profile

This section is excerpted from the City of Auburn's 2013 Annex to the King County Regional Hazard Mitigation Plan (http://www.auburnwa.gov/Assets/EM/AuburnWA/Docs/hazmit2013.pdf) and the Muckleshoot Indian Tribe website (http://www.muckleshoot.nsn.us/about-us/overview.aspx)

The Muckleshoot Indian Tribe is a federally recognized Indian tribe whose membership is composed of descendants of the Duwamish and Upper Puyallup people who inhabited Central Puget Sound for thousands of years before non-Indian settlement. The Tribe's name is derived from the native name for the prairie on which the Muckleshoot Reservation was established. Following the Reservation's establishment in 1857, the Tribe and its members came to be known as Muckleshoot, rather than by the historical tribal names of their Duwamish and Upper Puyallup ancestors. Today, the United States recognizes the Muckleshoot Tribe as a tribal successor to the Duwamish and Upper Puyallup bands from which the Tribe's membership descends.

The Muckleshoot Reservation consists of six sections situated diagonally, has 20 miles of boundaries, and encompasses 6 square-miles. Three sections (3 square miles) are within the municipal limits of the City of Auburn. The Muckleshoot Tribe is one of Washington's largest tribes, with a membership of about 3,300. Through the Indian Reorganization Act, the Tribe adopted its constitution in 1936. It provides a nine-member council with advice and input of the General Council, consisting of all community members, and it provides a full range of governance services to tribal members and tribal properties in the reservation.

Status of Approved Plan

The Mucklehoot Tribe does not currently have a FEMA-approved, state-level, multi-hazard mitigation plan; however, the Tribe is currently pursuing plan development.

The Snoqualmie Indian Tribe

Brief Profile

The following information is excerpted from the 2011 Snoqualmie Tribe Hazard Mitigation Plan (http://www.snoqualmietribe.us/sites/default/files/linkedfiles/snoqualmie_tribe_hmp_final_11.1.11.pdf).

The people known today as the Snoqualmie Tribe have lived in the Puget Sound region of Washington State since time immemorial, long before the early explorers came to the Northwest. They hunted deer, elk, and other game animals, fished for salmon and gathered berries and wild plants for food and medicinal purposes.

The Snoqualmie Tribe currently has approximately 650 members. Historically, tribal members lived in an area of East King and Snohomish Counties that now contains the communities of Monroe, Carnation, Fall City, Snoqualmie, North Bend, Mercer Island and Issaquah. Tribal members continue to live in each of these communities.

In 1855, Snoqualmie signed the Point Elliott Treaty creating a government-to-government relationship between the United States and the Snoqualmie Tribe. The Tribe ceded to the U.S. government all of its land between Snoqualmie Pass and Marysville. The Tribe lost federal recognition in 1953 when federal policies limited recognition to tribes having reservations.

In October 1999, After 46 years of petitioning, the Bureau of Indian Affairs notified the Tribe's Fall City headquarters that the U.S. government had re-recognized the Snoqualmie Tribe and granted Snoqualmie Nation tribal status based on evidence that the Tribe had maintained a continuous community from historical times to the present. Recognition gave the Tribe the right to acquire its initial reservation land and to develop a casino to help fund tribal governance, administration and services to its members.

In the decade since re-recognition, the Tribe has worked to develop programs and provide services to meet the needs of its members. The Tribe has developed a government, created medical clinics, and promoted economic development, social and health services, and housing programs.

On March 2, 2006 the Snoqualmie Reservation site was officially put into trust status. The Snoqualmie Casino (which opened in 2009) was built on the reservation and is used to pursue economic development and increase the financial resources of the Tribe for government operations.

Status of Approved Plan

The Snoqualmie Tribe has a FEMA-approved, state-level, multi-hazard mitigation plan effective October 2011 through October 11, 2016.

Hazards of Concern

The 2011 plan addressed the following hazards of concern:

- Earthquake
- Flood
- Landslide/mass movement
- Epidemic/pandemic
- Hazardous materials.
- Severe weather
- Wildfire
- Dam failure
- Abandonded mines

ACRONYMS AND ABBREVIATIONS

The following terms are used in the planning partner annexes:

- ATC—Applied Technology Council
- CED—Community and Economic Development (city department)
- CEMP—Comprehensive Emergency Management Plan
- CERT—Citizens Emergency Response Training
- CFR—Code of Federal Regulations
- cfs—cubic feet per second
- CIP—Capital Improvement Plan
- CRS—Community Rating System
- DCD—Department of Community Development
- DI—Ductile iron
- DMA—Disaster Mitigation Act
- DNRP—Department of Natural Resources and Parks (King County)
- DOT—Department of Transportation (King County)
- DPER—Department of Permitting and Environmental Review (King County)
- EOC—Emergency Operations Center
- EPA—U.S. Environmental Protection Agency
- FEMA—Federal Emergency Management Agency
- GIS—Geographic Information System
- GMA—Growth Management Act (Washington State)
- gpm—gallons per minute
- Hazus-MH—Hazards, United States-Multi Hazard
- HDPE—High-density polyethylene
- HMGP—Hazard Mitigation Grant Program
- IBC—International Building Code
- IRC—International Residential Code
- KCFD—King County Fire District
- KCSO—King County Sheriff's Office
- KCWD—King County Water District
- mgd—million gallons per day
- NFIP—National Flood Insurance Program
- NOAA—National Oceanic and Atmospheric Administration
- NPDES—National Pollutant Discharge Elimination System

- OEM—Office of Emergency Management (King County)
- OFM—Office of Financial Management (Washington State)
- PDM—Pre-Disaster Mitigation Grant Program
- PRV—Pressure-reducing valve
- RCW—Revised Code of Washington
- SCADA—Supervisory Control and Data Acquisition
- SPU—Seattle Public Utilities
- USGS—U.S. Geological Survey
- WSDOT—Washington State Department of Transportation
- WTD—Wastewater Treatment Division (a division of King County Department of Natural Resources and Parks)

CHAPTER 19.
CITY OF PACIFIC UPDATE ANNEX

19.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

John Calkins, Public Safety Director
133 Third Avenue SE
Pacific, WA 98047
Telephone: (253) 929-1131
e-mail Address: jcalkins@ci.pacific.wa.us

Alternate Point of Contact

Jim Schunke, EOC Deputy Director
100 Third Avenue SE
Pacific, WA 98047
Telephone: (253)929-1116
e-mail Address: jschunke@ci.pacific.wa.us

19.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**August 10, 1909
- **Current Population—**6,760 as of April 1, 2013 (WA OFM estimates)
- **Population Growth—**The population of the City of Pacific increased 19.5 percent between 2000 and 2010
- **Location and Description—**The City of Pacific is approximately 2.5 square miles and straddles the King County and Pierce County border. The City is situated on State Route 167 with the City of Algona to the north, the City of Auburn to east, the City of Sumner to the south, and unincorporated King County and Edgewood to the west.
- **Brief History—**The first pioneers arrived in the White River Valley in the mid-1800s to farm hops as was common throughout King and Pierce Counties. By the end of the century famers had turned to dairies, berries, vegetables and bulbs. Construction on the Interurban Railway began in 1902 and was a major factor in the development of the City. Flooding issues plagued the City and its farmers in the early years. These issues were resolved by the construction of Mud Mountain Dam and the Howard Hanson Dam. Pacific City, incorporated in 1909, was named to reflect the meaning of the word Pacific – peaceful. The founder, Clarence Dayton Hillman, wished to promote Pacific as a peaceful, rural setting. The City grew slowly over the next several decades until the 1970s when sewer systems were installed throughout the valley. Increasing land prices made it difficult for farmers to stay in the valley and most of the truck farms that were common in the area are now gone. Pacific still strives to maintain its rural small town atmosphere of friendliness and independence (City of Pacific website 2013).
- **Climate—**The City of Pacific enjoys as mild climate as is common in the Puget Sound Lowlands. The average low is 36 °F and the average high is 76 °F. The City receives an average annual precipitation of about 42 inches.
- **Governing Body Format—**The City operates under the Mayor-Council form of government authorized by Chapter 35A.12 of the Revised Code of Washington. The City Council, as the legislative body of the City, is responsible for passing ordinances and resolutions, adopting the budget, appointing committees and adopting goals and general policies. The seven council members are elected for four year, staggered terms. The mayor is elected directly by

the citizens of the City and is the chief executive officer of the City. The mayor takes an active role in regional governmental coordination, economic development and disaster preparedness. The City Council assumes responsibility for the adoption of this plan; The Public Safety Director will oversee its implementation.

- **Development Trends—**According to the Washington Office of Financial management, the population for the City of Pacific increased by 22%, averaging 1.56% per year between 2000 and 2013. Based on its projected growth, the anticipated development trends for the City of Pacific are considered to be low to moderate, consisting of primarily residential development. The City adopted its current Comprehensive Plan in 20011.

  Washington State Law (RCW 36.70) requires that counties that meet specified population criteria, and the cities within those counties, to prepare and adopt a comprehensive long-range plan to serve as a guide for community development. The plan must consist of an integrated and internally consistent set of goals, policies, and implementation measures. In addition, the plan must focus on issues of the greatest concern to the community and be written in a clear and concise manner. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with such a plan. The City of Pacific is in compliance and good standing with the provisions of RCW 36.70 and adopted its most recent general plan in 2005. The City will review and amend its Comprehensive Plan as necessary. Future growth and development will be managed as identified in this plan.

19.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 19-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 19-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 19-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 19-4. Classifications under various community mitigation programs are presented in Table 19-5.

TABLE 19-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	PMC Title 17, 2008
Zoning	Yes	No	No	Yes	PMC Title 20, 2011
Subdivisions	Yes	No	No	Yes	PMC Title 19, 2010
Stormwater Management	Yes	No	No	Yes	PMC Title 24, 2012
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	RCW 64.06- WA State real Estate Disclosure Law
Growth Management	Yes	No	No	Yes	PMC Title 3, 1991
Site Plan Review	Yes	No	No	Yes	PMC Title 24, 2012
Public Health and Safety	Yes	No	No	No	PMC Title 8, 2012
Environmental Protection	Yes	No	No	Yes	PMC Title 23, 2004
Planning Documents					
General or Comprehensive Plan	Yes				Updated in 2011
	Is the plan equipped to provide linkage to this mitigation plan?				Yes. Plan includes a land use and environmental elements
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	No	PMC 24, 2008
Capital Improvement Plan	Yes	No	No	No	
	What types of capital facilities does the plan address?				All Infrastructure
	How often is the plan revised/updated?				Annually
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	No	No	No	No	
Shoreline Management Plan	Yes	No	No	Yes	PMC Title 21, 2011
Community Wildfire Protection Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	No	February 22, 2010
Threat and Hazard Identification and Risk Assessment	Yes	No	No	No	SS and W Plans
Terrorism Plan	Yes	No	No	No	SS and W Plans
Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	Yes	No	No	No	Started in August 2009
Public Health Plans	No	No	No	No	

TABLE 19-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 19-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	City Engineer as well as on-call consultants
Engineers or professionals trained in building or infrastructure construction practices	Yes	Building official and on-call consultants
Planners or engineers with an understanding of natural hazards	Yes	City Engineer as well as on-call consultants
Staff with training in benefit/cost analysis	Yes	On staff as well as on-call consultants
Surveyors	Yes	On-call consultants
Personnel skilled or trained in GIS applications	Yes	On staff as well as on-call consultants
Scientist familiar with natural hazards in local area	Yes	On-call consultants
Emergency manager	Yes	Public Safety Director as well as on-call consultants
Grant writers	Yes	On staff as well as on-call consultants

TABLE 19-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Community Development
Who is your community's floodplain administrator? (department/position)	Community Development, Director (position is vacant)
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	PMC 23.40, 2006
When was the most recent Community Assistance Visit or Community Assistance Contact?	April 2006. Next visit is scheduled for 2015.
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	No. The FEMA maps do not reflect more recent King County studies.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Checklists for compliance
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	No Not at this time

TABLE 19-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	3	Not available
Public Protection	Yes	4	Not available
StormReady	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	No	N/A	N/A

19.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 19-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: None
- Number of FEMA-Identified Severe Repetitive Loss Properties: None
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: None

TABLE 19-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Washington Severe Winter Storm, Flooding, Landslides and Mudslides	4056	January 2012	
Severe Winter Storm, Flooding, Landslides and Mudslides	1963	January 2011	
Severe Winter Storm	1825	March 2009	$22,300
Severe Winter Storm, landslides, Mudslides and Flooding	1817	January 2009	$15.2 million
Severe Storms and Flooding	1734	December 2007	$1,000
Severe Winter Storms, Wind, Landslides and Mudslides	1682	February 2007	$36,000
Severe Storms, Floods, Landslides, Mudslides	1671	December 2006	No information available
Earthquake	1361	February 2001	No information available
Flooding	1172	March 1997	$500
Winter Storm and Flooding	1159	December 1996	No information available
Flooding	1100	February 1996	$160,000
Flooding and Wind	1079	November 1995	No information available
Storms, High Wind and Flooding	896	December 1990	$2,000
Severe Storms and Flooding	852	January 1990	No information available
Severe Storms and Flooding	757	January 1986	$500
Volcanic Eruption	623	May 1980	No information available
Storms, High Tides, Mudslides and Flooding	612	December 1979	$15,000
Severe Storms and Flooding	492	December 1975	$500
Heavy Rains and Flooding	328	February 1972	$500
Heavy Rains and Flooding	328	February 1972	$500
Wind Storm	137	October 1962	No information available

19.5 HAZARD RISK RANKING

Table 19-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE 19-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Earthquake	48
1	Severe Weather	48
1	Severe Winter Weather	48
4	Flood	24
5	Dam Failure	18
5	Landslide	18
5	Volcano	18
8	Wildfire	6
9	Avalanche	0
9	Tsunami	0

19.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 19-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 19-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

	Action Status			
Action #	Completed	Carry Over to Plan Update	Removed; No Longer Feasible	Comments
PA-1		**Yes**		This is ongoing.
PA-2		**Yes**		This is ongoing.
PA-3		**Yes**		This is ongoing.
PA-4		**Yes**		This is ongoing.
PA-5		**Yes**		
PA-6		**Yes**		King County has portions of this project under design.
PA-7		**Yes**		The City has this project under design.
PA-8		**Yes**		West Valley is under design and Stewart Road is prepared to begin construction in 2014.
PA-9		**Yes**		
PA-10		**No**		

19.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 19-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 19-10 identifies the priority for each initiative. Table 19-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 19-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
#P1—Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts							
New and existing	Flood	2,4,10,12	City	Low	General Fund	Ongoing	No
#P2—Install generator at City Hall to be able to operate computer network systems to serve the public during various hazard events.							
New	All	1,2	City	Medium	General Fund	2015	No
#P3—Purchase emergency preparedness supplies for operations during various hazard events: • Radios (10) to ensure communications during power outage which may impact other telecommunication facilities • Portable reader boards (2) to communicate road closures or detours for floods, chemical spills, landslides, etc. • Portable lighting systems (2) to provide adequate visibility for nighttime work during various hazard operations for the safety of works, volunteers, and the public.							
New	All	1,2,3	City	Low	General and Utility Funds	2014	No
#P4—Encourage and facilitate the integration of the Regional Hazard mitigation Plan in to General Plans and Zoning Codes to limit development in hazard areas.							
Existing	All Hazards	1,3,6	City	Low	General Fund	Annually	Yes
#P5—Enforce the Building Codes, the General Plan and Zoning Ordinances of the City of Pacific, which will prevent or minimize damage to residential and commercial structures due from hazard events.							
Existing	All Hazards	1,3,6	City	Low	General Fund	Annually	Yes
#P6—Evaluate protocols, purchase emergency containment supplies, invest in notifications systems, and supply neighborhood groups' emergency training/equipment.							
Existing	Earthquake, Severe Weather	1,2,4,5	City	Low	General Fund	Bi-Annually	Yes

TABLE 19-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
#P7—Inspect and retro-fit the critical facilities of the City against failure from earthquake snow and wind. Enforce the provisions of the latest edition of the Pacific Building Code for Pacific Critical Facilities, alterations and additions.							
Existing	Earthquake, Severe Weather, Severe Winter Weather	1,2,6	City	Medium	General Fund	Long Term	Yes
#P8—Improve capacity of arterial routes. This includes West Valley Highway, Butte Avenue, Valentine Avenue S and Stewart Road.							
Existing	Flood Earthquake	1,2,5,6	City	High	Street Fund and Grants	Short term	Yes
#P9—The slopes along West Valley are prone to slipping during wet weather. This route has a lot of traffic on normal days and would exceed this amount during an emergency, thus resulting in increased injuries and casualties. Identify measures to reduce this risk.							
Existing	Landslide, Earthquake	1,2,5,6	City	High	Street Fund and Grants	Short term	Yes
#P10—Construct White River Setback Levee using earthen materials along the eastern side of the Pacific City Park.							
Existing	Flood	1,2,5,6	King Co.	High	Flood District Funds	Long Term	Yes
#P11—The City will work with external partners to identify dead or diseased trees for annual trimming and or removal.							
Existing	Severe Weather Hazards	1,3,6	City	Low	General Fund	Annual	Yes
#P12—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority.							
Existing	All Hazards	5,7,9	City	High	FEMA Grant funding, local match	Long-term	No
#P13—Continue to support the county-wide initiatives identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	City	Low	General Fund	Short term	No
#P14—Actively participate in the plan maintenance strategy identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	King County OEM City of Pacific	Low	General fund	Short term	No

TABLE 19-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
P-1	4	Medium	Low	Yes	Yes	Yes	High
P-2	2	Medium	Medium	Yes	Yes	Yes	High
P-3	3	Medium	Low	Yes	Yes	Yes	High
P-4	3	Medium	Low	Yes	No	Yes	High
P-5	3	Medium	Low	Yes	No	Yes	High
P-6	4	Medium	Low	Yes	Yes	No	Medium
P-7	3	Medium	Medium	Yes	Yes	No	Medium
P-8	4	High	High	Yes	Yes	Yes	High
P-9	4	High	High	Yes	Yes	Yes	High
P-10	4	High	High	Yes	Yes	Yes	High
P-11	3	Low	Low	Yes	No	Yes	High
P-12	3	High	High	Yes	Yes	No	Medium
P-13	7	Medium	Low	Yes	No	Yes	High
P-14	7	Low	Low	Yes	Yes	Yes	High

a. See Introduction for explanation of priorities.

TABLE 19-11.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	4,5,14	12	13		2,3,13	
Earthquake	4,5,14	7,12	13		2,3,6,8,13	9
Flood	1,4,5,14	1,12	1,13	1	1,2,3,8,13	10
Landslide	4,5,14	12	13		2,3,13	9
Severe Weather	4,5,14	7,11,12	13		2,3,6,13	
Severe Winter Weather	4,5,14	7,11,12	13		2,3,6,13	
Tsunami	--	--	--	--	--	--
Volcano	4,5,14	12	13		2,3,13	
Wildfire	4,5,14	12	13		2,3,13	

a. See Introduction for explanation of mitigation types.



CITY OF PACIFIC

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

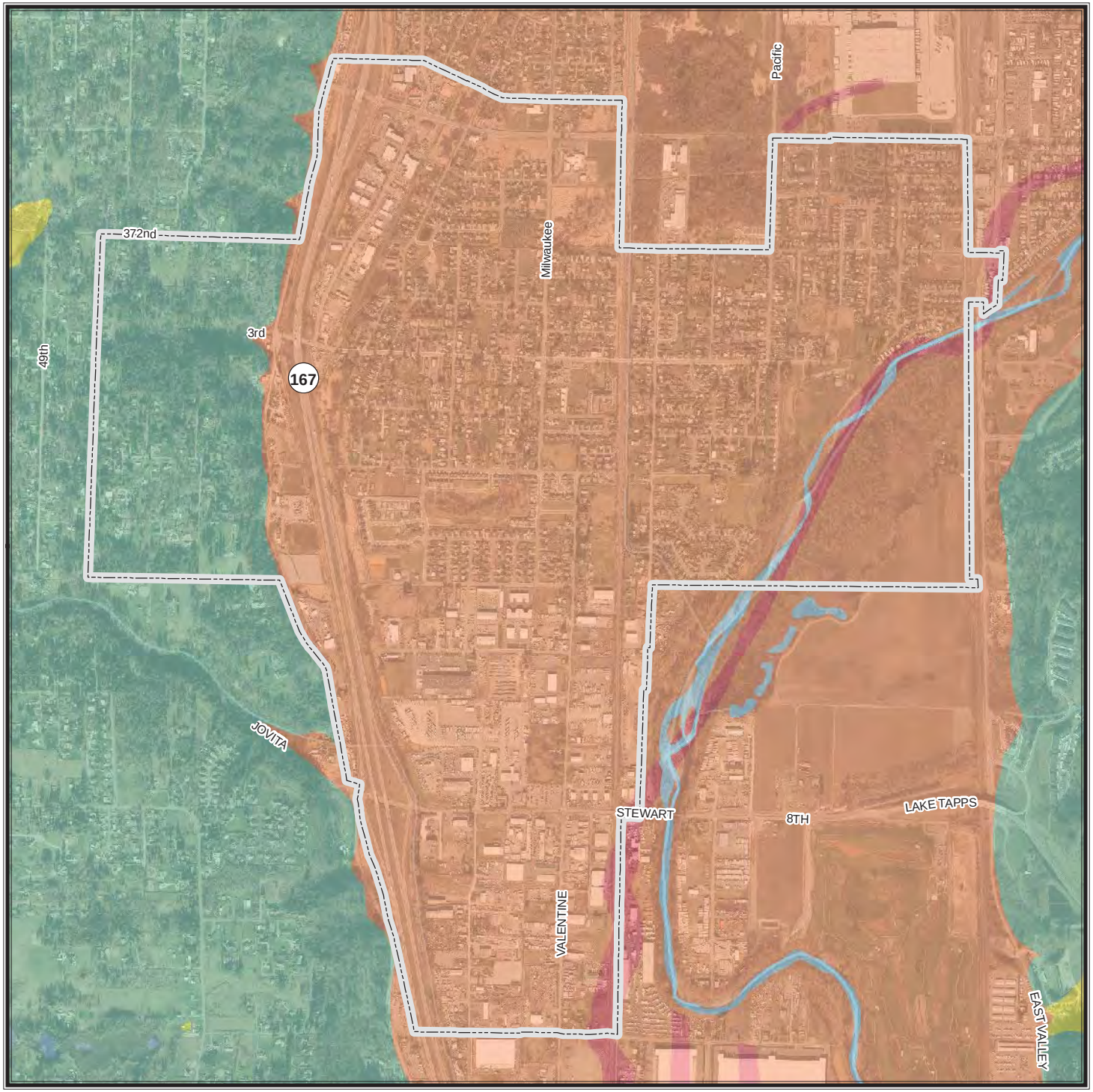
Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF PACIFIC

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

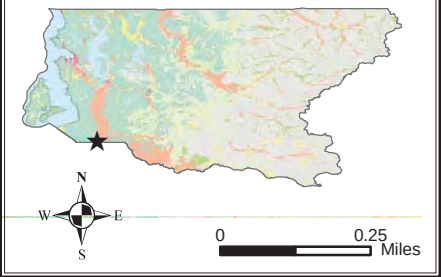
Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

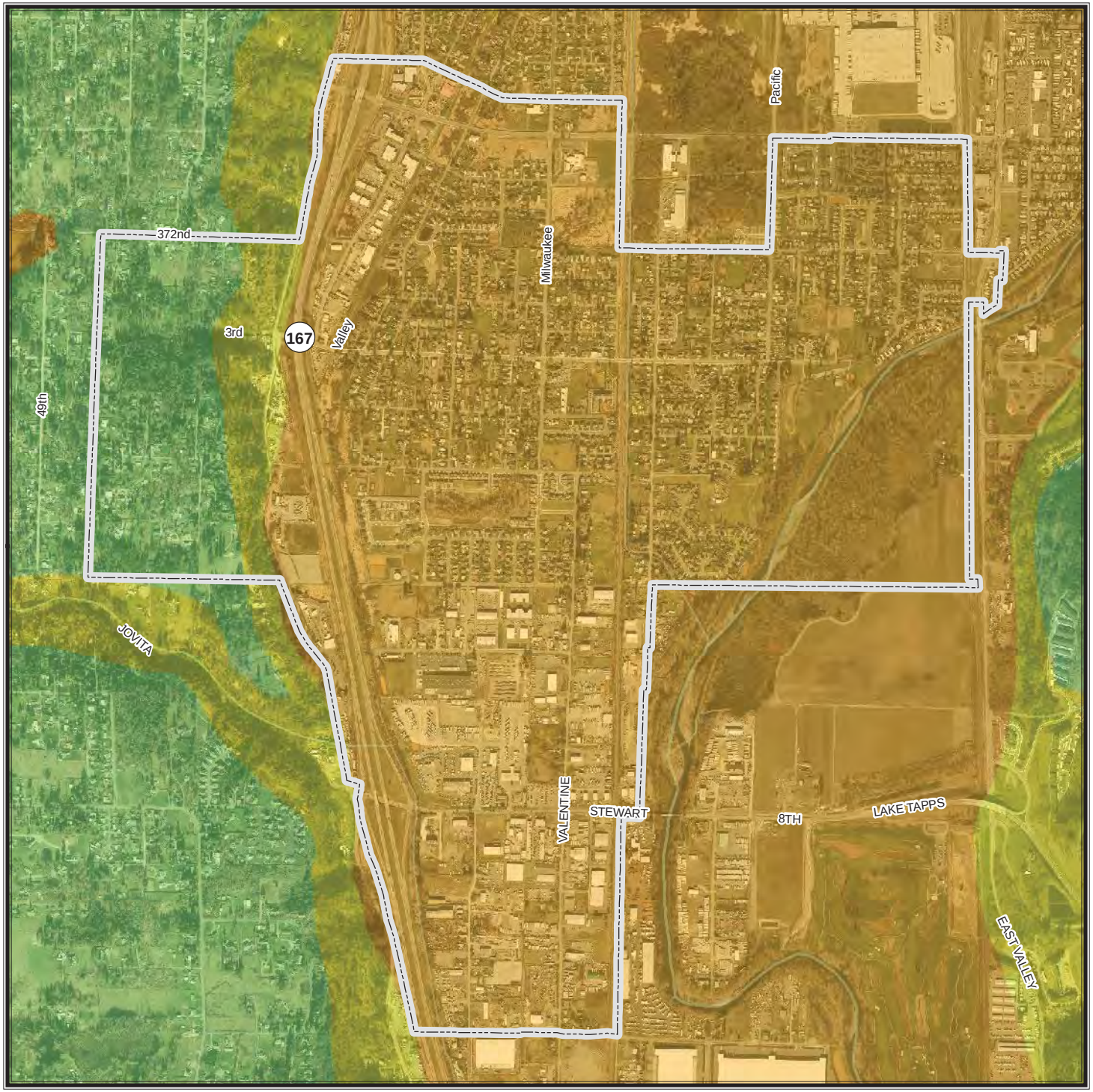
A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Base Map Data Sources: King County, U.S. Geological Survey, WA Department of Ecology

King County

TETRA TECH





CITY OF PACIFIC

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

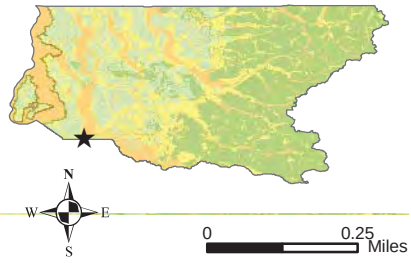
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

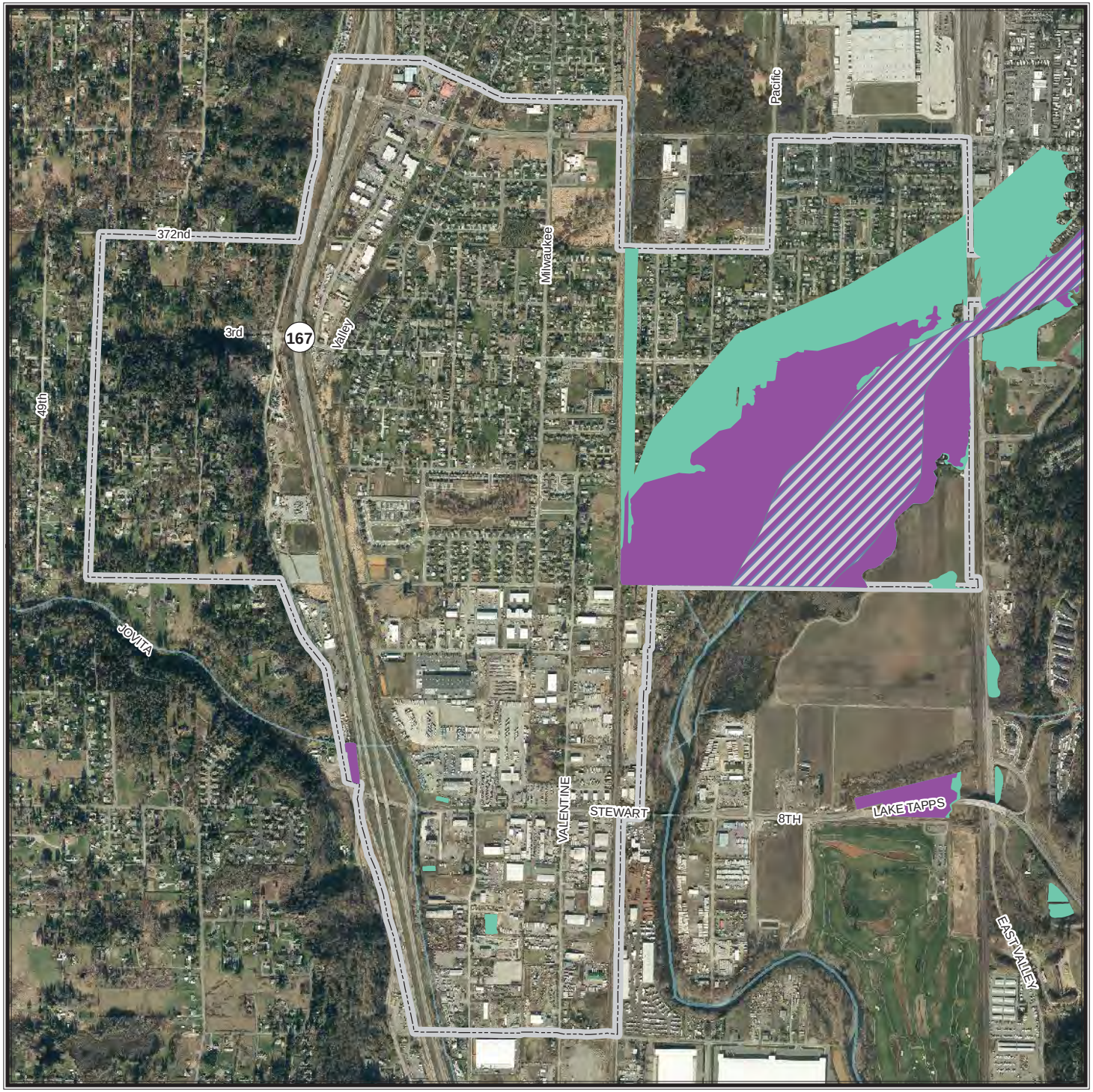
The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources: King County, U.S. Geological Survey, WA Department of Ecology

King County

TETRA TECH





CITY OF PACIFIC

FEMA DFIRM
Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

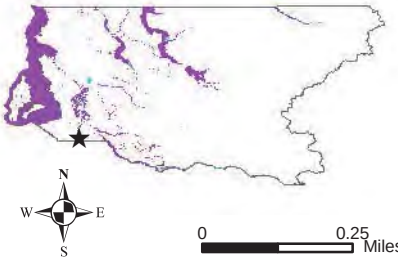
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

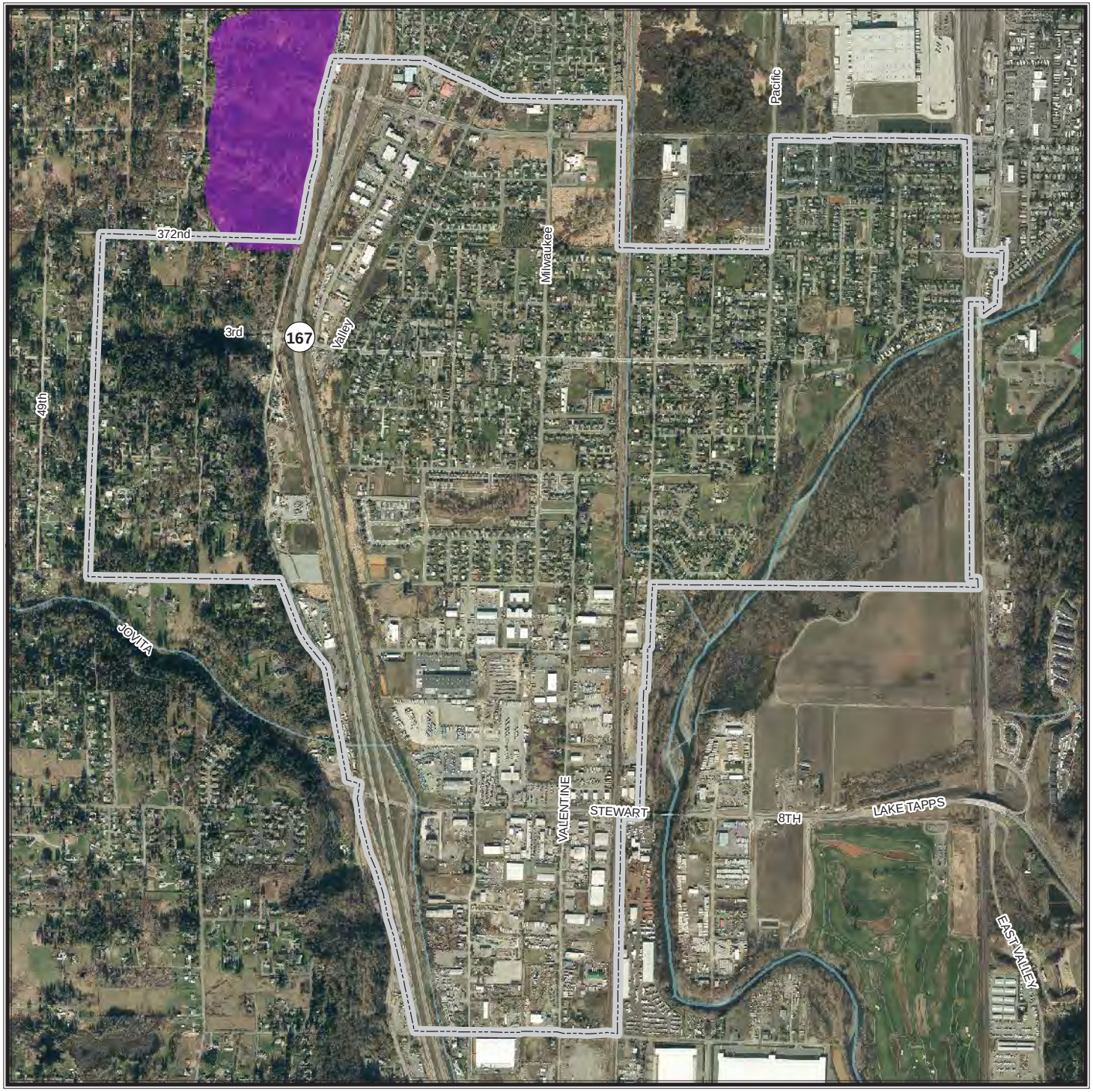
The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources: King County, U.S Geological Survey, WA Department of Ecology

King County

TETRA TECH





CITY OF PACIFIC

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

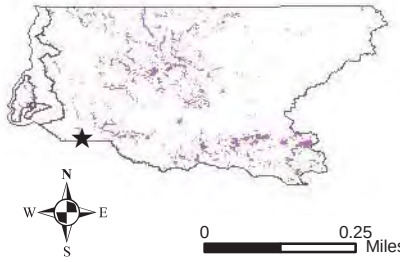
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

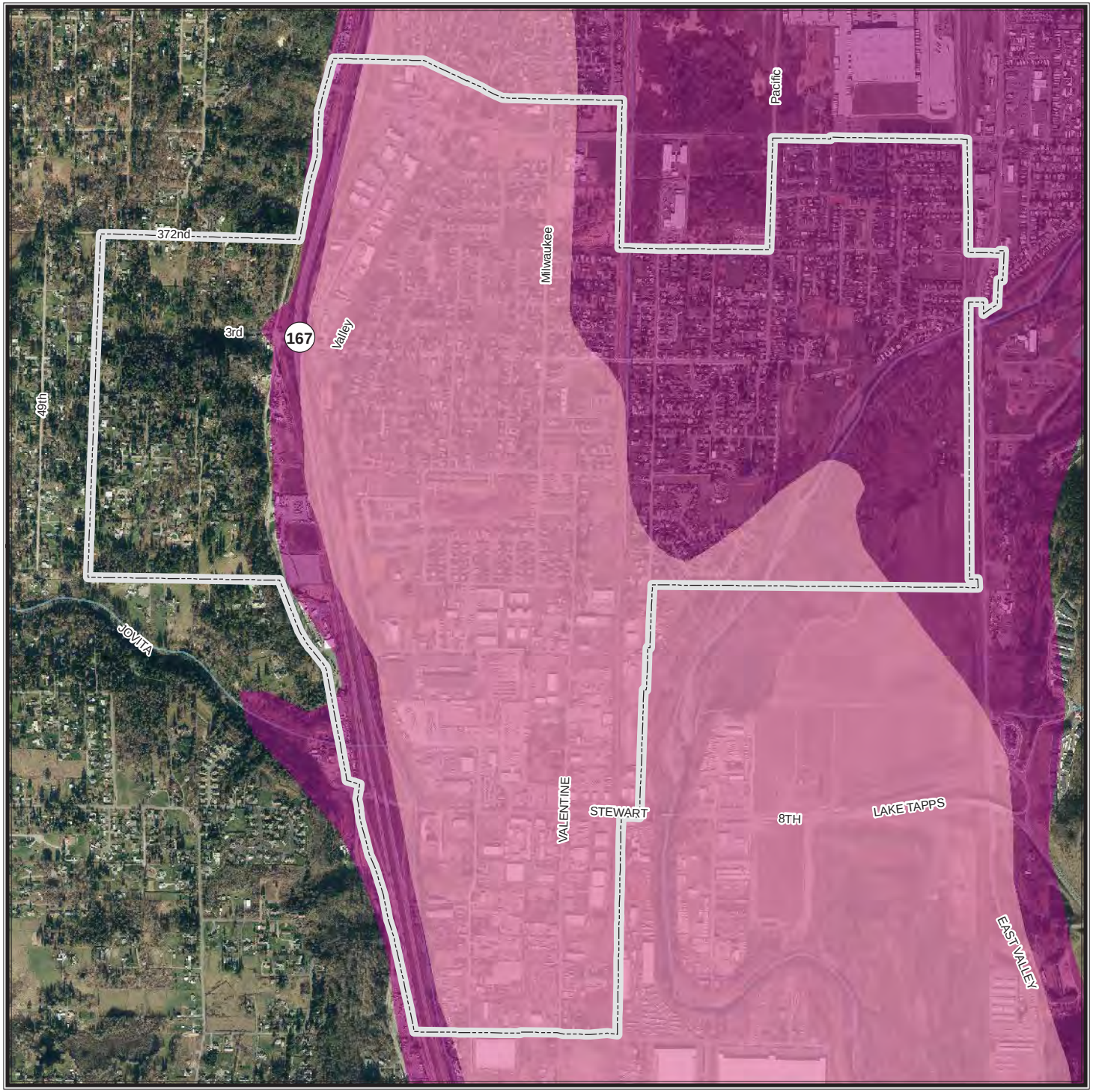
Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources: King County, U.S. Geological Survey, WA Department of Ecology

King County

TETRA TECH





CITY OF PACIFIC

Lahar Hazards (Puyallup Valley)

- Case 1 - Large Lahars
- Case 2 - Moderate Lahars
- Post-Lahar Sedimentation

Lahar hazards data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. These data were produced as part of a project to estimate the potential economic losses from future eruptions of Mount Rainier.

Case 1 - Large Lahars (Recurrence Interval 500–1000 Years)
Shows areas that could be affected by cohesive lahars that originate as enormous avalanches of weak, chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The time interval between Case I lahars on Mount Rainier is about 500 to 1,000 years.

Case 2 - Moderate Lahars (Recurrence Interval 100–500 Years)
Shows areas that could be affected by relatively large noncohesive lahars, which are commonly caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but they can also have a noneruptive origin. The time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.

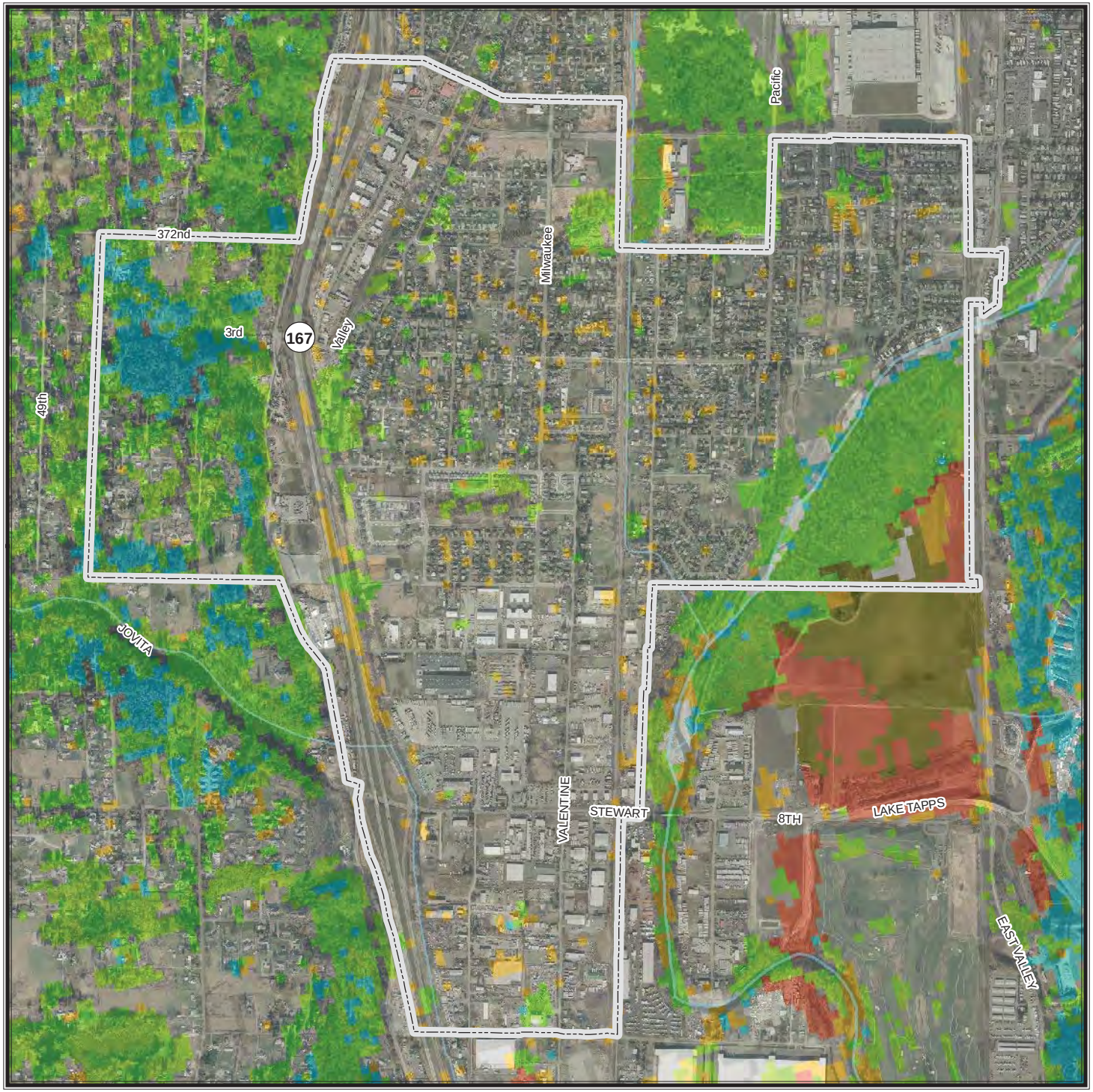
Post-Lahar Sedimentation Shows areas subject to post-lahar erosion and sedimentation and the ongoing potential for flooding.

Base Map Data Sources: King County, U.S. Geological Survey, WA Department of Ecology

King County

TETRA TECH





CITY OF PACIFIC

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

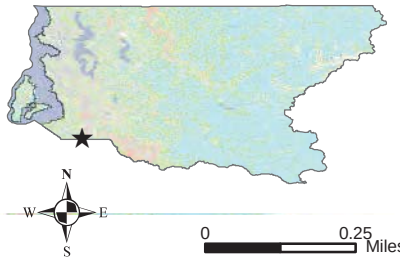
Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources: King County, U.S. Geological Survey, WA Department of Ecology

King County

TETRA TECH



CHAPTER 20.
CITY OF REDMOND UPDATE ANNEX

20.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Debbie Newman, Program Coordinator
8701 160th Avenue NE
Redmond, WA 98052
Telephone: (425) 556-2259
e-mail Address: danewman@redmond.gov

Alternate Point of Contact

Mark Hagreen, Commander
8701 160th Avenue NE
Redmond, WA 98052
Telephone: (425) 556-2509
e-mail Address: mhagreen@redmond.gov

20.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history; additional information about the City of Redmond is attached in profile data sheets at the end of this annex:

- **Date of Incorporation—**1912
- **Current Population—**55,840 as of 2013; population doubles to 110,000 during the workday.
- **Population Growth—**Redmond population exploded from 1,426 in 1960 to 55,840 in 2013. According to information tracked by the Washington State Office of Financial Management, Redmond's population more than doubled in a 232 percent increase between 1980 and 2010. Population rose steadily from 23,318 in 1980; 35,800 in 1990; 45,256 in 2000; and 54,144 in 2010. Details are provided in the profile data sheets attached at the end of this annex.
- **Location and Description—**The City of Redmond is located in western Washington State, approximately 17 miles east of Seattle and 281 miles west of Spokane. The city is a center of technology and home to some of the major high-tech firms in the country, including Microsoft, Nintendo of America, AT&T, and Physio-Control. Redmond also has a significant concentration in avionics/aerospace, homeland defense, and equipment manufacturers. The nearest seaport is the Port of Seattle on Puget Sound. Lake Sammamish lies to the south of downtown Redmond. The Sammamish River and Bear Creek pass through the City. The Cascade Range, a 1,000-mile long chain of volcanic mountains, which extends from Northern California to southern British Columbia, Canada is about 40 miles east of Redmond. WA State Highway 520 runs through the City. Cities bordering Redmond include Bellevue on the southwest, Kirkland on the west and Sammamish with a small border to the southeast.

  The City topography includes hills and valleys. The soil in the valley is classified as alluvial soil, which may liquefy during an earthquake. Some of the hills surrounding the valley have steep slopes. Two large park facilities are adjacent to Redmond: Willows Run Golf Course to the north and Marymoor Park to the south, adjacent to Lake Sammamish.
- **Neighborhoods-**Map NP-1 Redmond Neighborhoods in the profile data sheets attached at the end of this annex shows the location of the neighborhoods.
  - North Redmond borders the Sammamish Valley and is north of the Education Hill neighborhood. Located on Education Hill (one of the City's three hills), the area is residential and primarily single family housing. There are a few parcels in the neighborhood that are zoned commercial. This area could be isolated from services if

transportation routes are limited due to a hazard event. Fire Station 17 was built in this neighborhood beginning in 2010 and went into service in March 2012.

- Education Hill is located in northeast Redmond. It consists of primarily low- to moderate-density residential and includes the Emerald Heights retirement community. There are very few services that are currently available in the neighborhood and they are likely to become isolated in the event of a hazard. There are numerous schools and open space that could be utilized for emergency response and recovery.
- Sammamish Valley is located in the valley floodplain. The area is characterized by large amounts of open space, parks and low-density residential housing. A variety of business and manufacturing parks are present as well. This neighborhood is located both in the floodplain and the liquefaction zone.
- Willows/Rose Hill is located in northwest Redmond. This is a hill neighborhood that is primarily residential. The Olympic Pipeline runs through this neighborhood. A variety of business and manufacturing parks are present as well.
- Overlake is located on a hill in the southwest region of Redmond. This area has residential, commercial and business parks. Microsoft is located in Overlake. This location may provide opportunities for emergency operations, but (as is the case with much of Redmond) it is located very close to the Seattle Fault and could experience extreme ground shaking in the case of an earthquake along the Seattle Fault.
- Grass Lawn is located north of Overlake on the western side of Redmond. This hill neighborhood is mostly low- to moderate-density residential. The Olympic Pipeline runs through this neighborhood.
- Idylwood is Redmond's lakefront neighborhood. It is located along Lake Sammamish, east of Overlake. The neighborhood is primarily low- to moderate- density residential. Along the lake there are some multi-family buildings. Home values are especially high in Idylwood. There are several schools, churches and open space.
- Bear Creek is located in the central eastern river valley in Redmond. This is the least populated neighborhood and has diverse zoning. There are residential areas to the north and west sides of the neighborhood. The residential area includes a mobile home park. There is some community retail in the north. The central area has resource lands. Land south of Bear Creek and Evans Creek provides commercial and industrial activities.
- Downtown is located in central Redmond on the valley floor, which is subject to both floods and liquefaction. City services are located in downtown, including City Hall, Fire Station Headquarters, Police Station and most of the commercial retail. Dense transit-oriented development, including residential housing, has been encouraged in this area.
- Southeast Redmond is split between the hill and the valley. Lowlands are subject to liquefaction. This neighborhood has residential, commercial and manufacturing parks.

- **Brief History—**Pioneers arrived in the Sammamish Valley in 1871 and began a logging industry that continued into the 1920s. Logging gave way to agriculture, with dairy, chicken, and truck farms the norm. The Evergreen Point floating bridge was completed in 1963, providing an easy link between Seattle and Redmond. Better roads heralded strong residential development, followed by commercial growth that began slowly in the 1970s and accelerated significantly in the 1990s and 2000s with high-tech companies like Microsoft growing enormously. In 100 years, Redmond grew from an incorporated area of three square blocks to over 17 square miles.
- **Climate—**Redmond's weather is typical of the Seattle area, with mild summers and cool, wet winters. Temperatures rarely dip far below freezing in the winter and rarely reach above 80 degrees Fahrenheit in the summer. Annual average rainfall is 35.5 inches, with rain year-

round, but most falling in the 7-month period of October through May. The annual mean temperature is 52.8 degrees Fahrenheit.

- **Governing Body Format—**The City of Redmond is governed by a Mayor and seven-member City Council. The City consists of eight departments: Mayor/Executive, Police, Fire, Public Works, Parks, Finance, Planning, and Human Resources. The City has five committees which report to the council. Redmond's Mayor and City Councilmembers serve on twenty-three regional committees. City Council assumes responsibility for the adoption of this plan; the Mayor will oversee its implementation.
- **Development Trends—**City of Redmond adopted its 2030 Comprehensive Plan in 2011. It maintains the vision of Redmond's future with vibrant regional growth centers in the Downtown and Overlake neighborhoods and improved connections among all of Redmond's 10 neighborhoods. The urban centers will provide for concentrated residential, employment, and transportation and will support sustainable growth for the next 20 years; approximately two-thirds of the City's new housing and 60 percent of new commercial floor area are planned to occur in Downtown and Overlake. Those areas have already experienced appreciable residential and commercial growth for a number of years. Outside of the urban center neighborhoods, Southeast Redmond is the primary location for additional employment growth and most remaining capacity for additional single-family development is in the Willows-Rose Hill neighborhood. Details are provided in the profile data sheets attached at the end of this annex.

20.3 CAPABILITY ASSESSMENT

The following tables assess Redmond's capabilities in various areas:

- Table 20-1: Legal and Regulatory
- Table 20-2: Fiscal
- Table 20-3: Administrative and Technical
- Table 20-4: National Flood Insurance Program (NFIP) Compliance
- Table 20-5: Classifications under various community mitigation programs

TABLE 20-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	Current 2012 International Codes, 2012 Uniform Plumbing Code, 2009 ICC/ANSI A117.1 and Redmond Municipal Code (RMC) Title 15
Zoning	Yes	No	No	Yes	Redmond Zoning Code (RZC) – RMC Title 21; 4/16/2011
Subdivisions	Yes	No	No	Yes	RZC 21.74; 4/16/2011
Stormwater Management	Yes	No	Yes	Yes	RMC 15.24 implemented in Stormwater Technical Notebook
Post Disaster Recovery	Yes	No	No	No	Redmond Municipal Code, Ch. 2.20 Emergency Preparedness; Hazard Mitigation Plan Annex
Real Estate Disclosure	No	No	No	Yes	WA State mandates certain disclosures by Real Estate agents under RCW 64.06
Growth Management	Yes	No	Yes	Yes	City of Redmond Comprehensive Plan; 12/17/2011
Site Plan Review	Yes	No	Yes	Yes	RZC 21.76; 4/16/2011
Public Health and Safety	No	No	Yes	No	Seattle/King County Public Health
Environmental Protection	Yes	No	Yes	Yes	RZC 21.64; 4/16/2011
Planning Documents					
General or Comprehensive Plan	Yes	No	Yes	Yes	Redmond 2030 Comprehensive Plan adopted 12/06/2011, Ordinance 2638
Is the plan equipped to provide linkage to this mitigation plan?					Yes
Floodplain or Basin Plan	Yes	No	No	Yes	Floodplain regulations in RZC 21.64.040 (Frequently Flooded Areas, Ordinance 2663 effective 09/29/2012) and RMC 15.04 (Flood Control, Ordinance 2645 passed 02/07/2012) Comprehensive Flood Hazard Management Plan was adopted by Council Resolution 1315 on 12/15/2009. Citywide Watershed Management Plan was adopted by City Council - Number 13-212 (C14) on 12/03/2013.

TABLE 20-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Stormwater Plan	Yes	No	Yes	Yes	Watershed Plan approved 12/2013 (no ordinance); Water Resources Strategic Plan (draft) in progress; RMC 13.06 Stormwater Management Code, 13.18 Stormwater Management Utility
Capital Improvement Plan	Yes	No	Yes	Yes	Capital Investment Program (CIP) 2013-2018 adopted as part of the 2013-2014 budget, Ordinance 2676 on 12/04/2012.
What types of capital facilities does the plan address?	Water, Wastewater, Stormwater, Transportation, Construction, Parks, Fire, Police				
How often is the plan revised/updated?	Every 2 years				
Habitat Conservation Plan	Yes	No	Yes	No	Tri-County Chinook Recovery Plan City of Redmond Critical Areas Code, stream regulations, buffer setbacks RZC 21.64; 4/16/11
Economic Development Plan	Yes	No	Yes	No	Draft Strategic Plan, no date of adoption; WA State Growth Management Act
Shoreline Management Plan	Yes	No	Yes	Yes	RZC 21.68; 9/16/11
Community Wildfire Protection Plan	No	No	No	No	No plan
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	Yes	Yes	City of Redmond Municipal Code, Ch. 2.20 Emergency Preparedness
Threat and Hazard Identification and Risk Assessment	Yes	No	Yes	No	City of Redmond Municipal Code, Ch. 2.20 Emergency Preparedness; in Hazard Mitigation Plan
Terrorism Plan	No	No	Yes	No	
Post-Disaster Recovery Plan	Yes	No	Yes		City of Redmond Municipal Code, Ch. 2.20 Emergency Preparedness; Hazard Mitigation Plan Annex
Continuity of Operations Plan	Yes	No	Yes	No	City of Redmond Municipal Code, Ch. 2.20 Emergency Preparedness; Comprehensive Emergency Management Plan (CEMP)
Public Health Plans	No	No	Yes	No	Seattle-King County Public Health

TABLE 20-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	No
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	No*
Incur Debt through Special Tax Bonds	No*
Incur Debt through Private Activity Bonds	No*
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

*Jurisdiction has access to the resource indicated; however, local policies may prevent or prohibit use of these resources for mitigation projects or programs.

TABLE 20-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning, Public Works, Parks
Engineers or professionals trained in building or infrastructure construction practices	Yes	Planning, Public Works
Planners or engineers with an understanding of natural hazards	Yes	Planning, Public Works
Staff with training in benefit/cost analysis	Yes	Planning, Finance
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Planning, Public Works, Finance, Parks
Scientist familiar with natural hazards in local area	Yes	Planning, Public Works
Emergency manager	Yes	Police
Grant writers	Yes	Police, Fire, Planning, Public Works, Parks

TABLE 20-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Planning
Who is your community's floodplain administrator? (department/position)	Jeff Dendy, Senior Engineer, Planning
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	4/16/2011
When was the most recent Community Assistance Visit or Community Assistance Contact?	01/09/2012
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	Yes, however the preliminary updated maps are even better.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Help in identifying work that requires a permit from work that does not.
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	Not yet. We are in the process of joining.

TABLE 20-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	In progress	In progress	In progress
Building Code Effectiveness Grading Schedule	Yes	2	7/23/2007
Public Protection	Yes	3	Not available
StormReady	In progress	In progress	In progress
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	N/A	No	No

20.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 20-6 lists past occurrences of natural hazards within the jurisdiction, going back to 1990. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: None
- Number of FEMA-Identified Severe Repetitive Loss Properties: none
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: N/A

TABLE 20-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Snow and ice storm	4056	2012 January 12	$122,984 in road materials (anti-icer) and overtime (final cost submitted to FEMA)
Flood	1817	2009 January 6	
Snowstorm	1825	2008 Dec. 18-28	9-18 inches of snow accumulation in Redmond due to a series of five significant storms. $225,487 in debris removal, snow & ice removal, materials, repairs and overtime for emergency response (final cost submitted to FEMA)
Windstorm	1682	2006 December 14	$197,598 in debris removal, equipment usage, labor, contracted work, repairs (final cost submitted to FEMA)
Nisqually Earthquake	1361	2001 February 28	Minor cosmetic damage to city buildings and infrastructure did not exceed $7,000.
Flood, Landslide	1159	1997 January 17	Unknown
Columbus Day Wind Storm		1993 October 11	Unknown
Windstorm		1993 March	Unknown
Inaugural Day Windstorm	981	1993 January 20	Unknown
Severe Storm		1991 March	Unknown
Severe Storm	883	1990 November 9	Unknown
Severe Storm	852	1990 January 6	Unknown

20.5 HAZARD RISK RANKING

Table 20-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

20.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 20-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 20-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Winter Weather	48
2	Severe Weather	48
3	Earthquake	32
4	Flood	12
5	Wildfire	6
6	Landslide	6
7	Dam Failure	6
8	Volcano	0
9	Tsunami	0
10	Avalanche	0

TABLE 20-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
RD-1	**X**	**RD-1**		**Outreach activities** are ongoing, completed every year. Participated in a wide variety of preparedness fairs and gave dozens of preparedness talks to the public, businesses and visitors throughout the whole community. Developed the Redmond Ready basic preparedness education class for City of Redmond employees and Redmond residents. Began delivering Redmond Ready classes in July 2012. Trained approximately 200 City of Redmond employees to make them Redmond Ready. Conducted several Redmond Ready Days to train the public in basic preparedness, First Aid, and CPR. Worked with Microsoft to develop the www.redmondready.org web portal, which promotes the program and which lives in the cloud and can be updated quickly by OEM staff during a disaster. Promoted the regional Make it Through preparedness campaign. Conducted Map Your Neighborhood classes. Conducted an average of three CERT classes every year. Partnered with the Redmond Citizens Corps Council and Amateur Radio Emergency Services regarding community outreach. Worked with many partner agencies to develop a high-quality, low-cost emergency preparedness calendar for 2013 and 2014 that is a great year-round resource.

TABLE 20-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
RD-2	**X**	**RD-2**		**Alternative service centers** Fire Station 17 was built and went into service in March 2012. The station is located on Education Hill, away from the liquefaction zone in downtown Redmond. Future development will concentrate in both the Downtown and Overlake Urban centers. Overlake is away from the liquefaction zone.
RD-3	**X**	**RD-3**		**Safe-to-fail mechanisms** Emergency power generation was substantially upgraded at the Public Works Maintenance and Operations Center and at the Redmond Municipal Campus. Redundant network infrastructure has been added. Water tanks on Education Hill were seismically retrofitted. Public Works is in the process of their Buildings Facilities Condition Assessment, the outcome of which will give the city a better handle on the condition of our assets and what may need to be implemented. The Public Works construction group is looking at bridge seismic retrofits (such as 148th). Our bridges are rated for safety based on King County's bridge inventory system.

TABLE 20-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
RD-4	**X**	**RD-4**		**Resilient transportation networks** 1. Redmond is completing a grid network in both the Downtown and Overlake Urban Centers where most of the growth will be occurring in the future. 2. All of our bridges are inspected regularly and the existing bridges meet reasonable earthquake standards with the exception of the 148th Bridge north of Redmond Way which has funding for a seismic retrofit. All the new bridges and bridge replacements are designed to current earthquake standards. 3. City is developing a complete multi-modal transportation system to provide travel choices including bringing light rail to Overlake in 2023 and eventually to downtown. 4. Redmond has a state of the art Traffic Operations Center that has cameras at key intersections to monitor and change parking signals remotely to respond to changing traffic conditions. 5. Redmond's R-TRIP program offers infrastructure for ride matching, transit route information, and periodic communication and incentives to encourage individuals to explore ways of getting between home and work that don't rely on driving alone and support finding a potential carpool partner or bus route that could be used in the event of an emergency. This program has nearly 29,000 registered users among employees and residents in Redmond. Further, by contract with King County Metro, we provide these services in our community. 6. Bridge at 95th and Bear Creek needs to be rebuilt by 2016 to address flooding and seismic issues.

TABLE 20-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
RD-5	**X**	**RD-5**		**Business outreach** programs are ongoing, completed every year. Police Department conducted Critical Incident Protocol (CIP) outreach regarding crime prevention and man-made hazards. Emergency Management conducted many preparedness sessions at businesses, helping businesses prepare their employees. As part of the City's Economic Development initiatives, the City has developed close communications and relationships with businesses through its One Redmond partnership (which took the place of the former Greater Redmond Chamber of Commerce) and neighborhood level business outreach which could be deployed to assist outreach and communication about emergency planning and operations. Past outreach has included: winter time promotions via www.GOrtrip.com to encourage winter emergency planning; and partnering with the Greater Redmond Transportation Management Association in 2012 to bring in Ed Gabriel, Principal Deputy Assistant Secretary for Preparedness and Response, US Health and Services to raise awareness by businesses of all sizes about the need for emergency preparedness.
RD-6	**X**	**RD-6**		**Flood tolerant community** Redmond does not allow development in the floodway and has adopted regulations for developments outside of the floodway but within the floodplain. One of those regulations requires compensating floodplain storage for these developments so we don't reduce our floodplain capacity. Redmond completed a large trunk line (storm drainage line) in the BNSF railroad right of way that will carry the 50 year storm for much of downtown. Additionally, Redmond is constructing an enormous stormwater vault in Overlake behind Sears. The vault will reduce flow rates from about 345 ac. The vault is about 1.5 ac in area and 20 feet deep. Two additional vaults are proposed in Overlake in the future including one to be constructed with the light rail station. Both the trunk line in downtown and the Overlake vaults should greatly reduce the risk of flooding in Redmond's urban centers. Evans Creek will be moved to the north out of the industrial area. Regional stormwater facilities will go into SE Redmond to mitigate localized flooding. Sewer pump stations are being updated.

20.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 20-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 20-10 identifies the priority for each initiative. Table 20-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 20-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
#RD-1—To mitigate impacts involved with isolation following a severe hazard event, Redmond will develop outreach activities to enable Redmond residents, businesses and visitors to survive in-place for more than three days.							
New and Existing	Severe Weather, Earthquake, Flood, Wildfire, Landslide, Dam Failure	4, 6, 7, 8, 11, 13, 14, 15	OEM	Low	General Fund	Ongoing	Yes
#RD-2—To ensure provision of vital services following a hazard event, Redmond will develop alternative service centers in less hazardous areas.							
New	Severe Weather, Earthquake, Flood, Wildfire, Landslide, Dam Failure	1, 5, 8	Planning	Medium	Grants, Bonds	Long Term	Yes
#RD-3—To mitigate damage to vulnerable structures and infrastructure, Redmond will promote retrofitting with safe-to-fail mechanisms.							
Existing	Severe Weather, Earthquake, Flood, Landslide	1, 5, 8	Planning	Low	General Fund	Long Term	Yes
#RD-4—To mitigate against the loss of major transportation facilities in and around the City, Redmond will invest resources in building more resilient transportation networks.							
New and Existing	Severe Weather, Earthquake, Flood, Landslide, Dam Failure	1, 5, 8, 12	Public Works	Low	General Fund, Grant	Long Term	Yes

TABLE 20-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
#RD-5—To mitigate against the functional loss of business communities, Redmond will develop and deliver business outreach programs.							
New and Existing	Severe Weather, Earthquake, Flood, Wildfire, Landslide, Dam Failure	4, 6, 7, 8, 11, 13, 14, 15	OEM	Low	General Fund	Ongoing	Yes
#RD-6—To mitigate impacts from expected increases in incidents of shallow flooding, Redmond will build a flood tolerant community able to accommodate increases in low impact flooding.							
New and Existing	Severe Weather, Flood, Landslide	1, 5, 7, 8, 12	Public Works	Low	General Fund	Long Term	Yes
#RD-7—Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts							
New and existing	Flood	2, 4, 10, 12	King Co.	Low	General Fund	Ongoing	No
#RD-8—Integrate the hazard mitigation plain into other plans, ordinances or programs to dictate land uses within the jurisdiction.							
New	All Hazards	2, 4, 8, 10	Planning	Low	General Fund	Short-term	No
#RD-9—Continue to support the county-wide initiatives identified in this plan.							
New and Existing	All Hazards	4,6,11,12, 13, 14, 15	City of Redmond	Low	General Fund	Short term	No
#RD-10—Actively participate in the plan maintenance strategy identified in this plan.							
New and Existing	All Hazards	4, 6, 11, 12, 13, 14, 15	King County OEM City of Redmond	Low	General fund	Short term	No

TABLE 20-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
RD-1	8	High	Low	Yes	No	Yes	High
RD-2	3	Medium	Medium	Yes	Yes	Yes	Low
RD-3	3	Medium	Low	Yes	Yes	Yes	Low
RD-4	4	Medium	Low	Yes	Yes	Yes	Low
RD-5	8	High	Low	Yes	No	Yes	High
RD-6	5	Medium	Low	Yes	Yes	Yes	Low
RD-7	4	Medium	Low	Yes	No	Yes	High
RD-8	4	Medium	Low	Yes	No	Yes	High
RD-9	7	Medium	Low	Yes	No	Yes	High
RD-10	7	Low	Low	Yes	Yes	Yes	High

a. See Introduction for explanation of priorities.

TABLE 20-11.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	2, 3, 4, 6, 8, 10	3, 4	1, 5, 9		2, 4, 9	
Earthquake	2, 3, 4, 8, 10	3, 4	1, 5, 9		2, 3, 4, 9	4
Flood	2, 3, 4, 6, 7, 8, 10	3, 4, 7	1, 5, 7, 9	6, 7	2, 3, 4, 7, 9	4, 6
Landslide	2, 3, 4, 6, 8, 10	3, 4	1, 5, 9	6	2, 4, 9	
Severe Weather	2, 3, 4, 6, 8, 10	3, 4	1, 5, 9	6	2, 3, 4, 9	4, 6
Severe Winter Weather	2, 3, 4, 6, 8, 10	3, 4	1, 5, 9	6	2, 3, 4, 9	4, 6
Tsunami	--	--	--	--	--	--
Volcano	--	--	--	--	--	--
Wildfire	2, 3, 4, 8, 10		1, 5, 9		2, 9	

a. See Introduction for explanation of mitigation types.

20.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Public Works recently completed a Facilities Condition Assessment for City of Redmond-owned buildings. Results of the assessment will help determine which buildings require further evaluation.

Hazard scenarios should continue to be examined to determine cost effective ways to address the hazard if possible and make the community and its infrastructure more resilient.

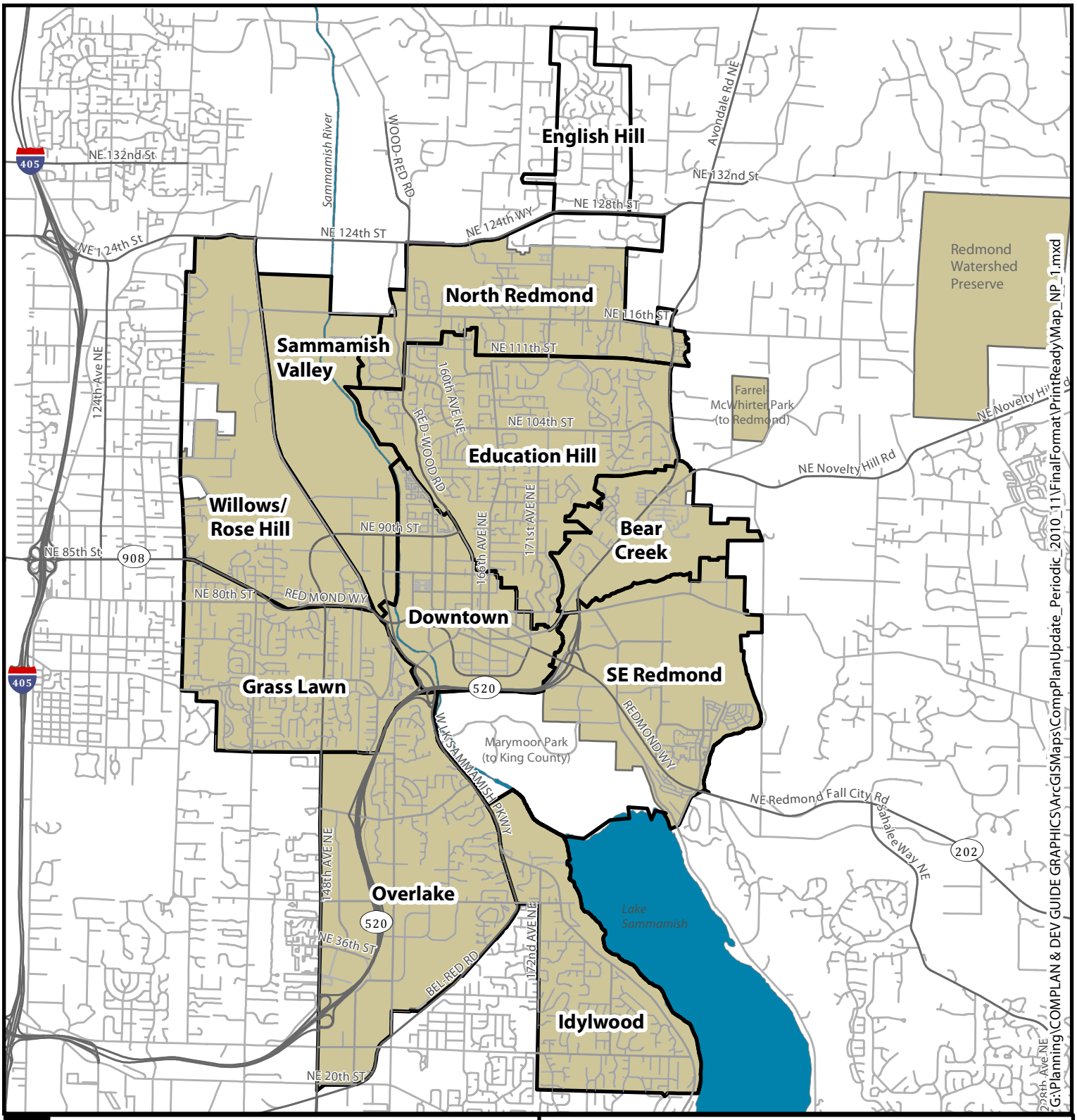
20.9 ADDITIONAL COMMENTS

This 2014 City of Redmond Hazard Mitigation Plan updates the 2009 "City of Redmond Hazards Mitigation Plan Update," which updated and superseded the 2004 plan. The 2009 Hazard Mitigation Plan is robust at over 235 pages. The 2014 and 2009 plans were developed through similar yet sufficiently divergent processes and formats that the 2009 Hazard Mitigation Plan will still prove a useful Redmond-specific reference, addressing some items and hazards not covered in the 2014 regional effort.

Dam failure is the only hazard added to this 2014 Redmond plan that was not addressed in the 2009 Redmond Hazard Mitigation Plan. The addition is due to the existence of a private dam in King County that could affect Bear Creek from the north. No deficiencies in the dam are currently known; its existence is merely noted for completeness.

The following profile data sheets provide additional information that is relevant for the current City of Redmond annex.

CITY OF REDMOND PROFILE DATA SHEETS



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Legend

- Neighborhood
- Redmond City Limits

MAP NP-1
Redmond Neighborhoods

Effective: December 17, 2011

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Miles

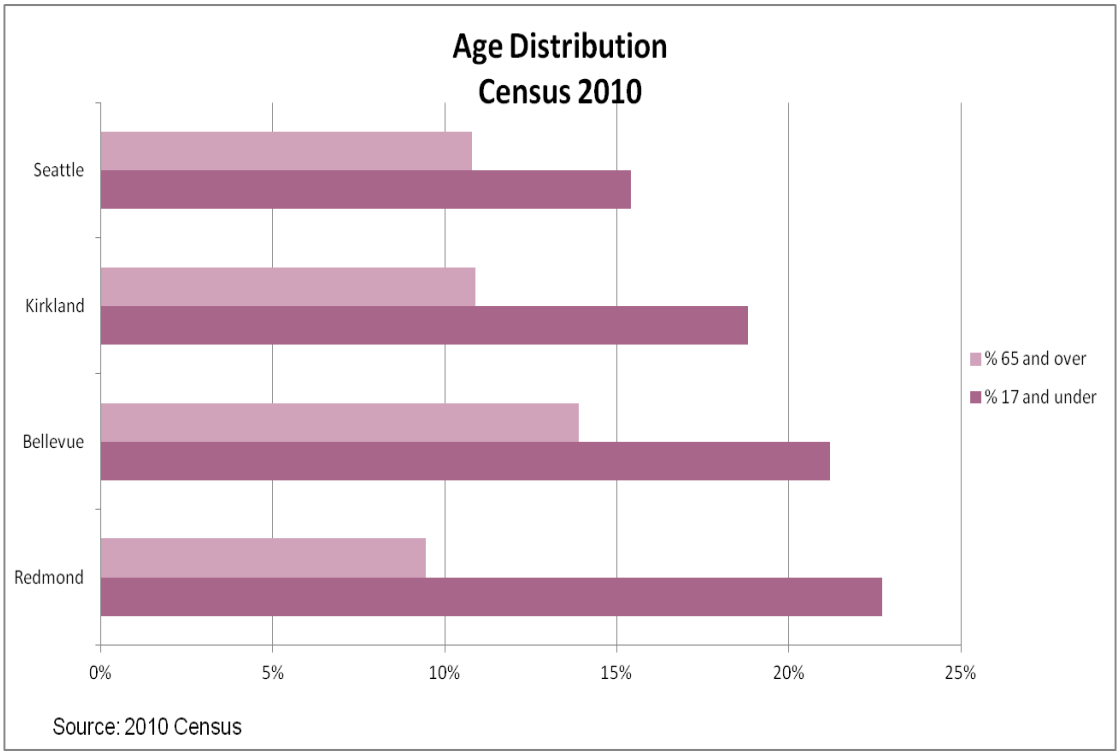
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PEOPLE

Children and Seniors

Redmond's youth population (under 18 years of age) accounts for nearly one-quarter of the population. Seniors (ages 65 and over) account for almost 10% of the population. **The under-18 population outnumbers the senior population more than 2-to-1.**

Redmond has a **larger percentage of youth** than Seattle, Kirkland, and Bellevue. The portion of seniors is similar to Seattle's and Kirkland's.

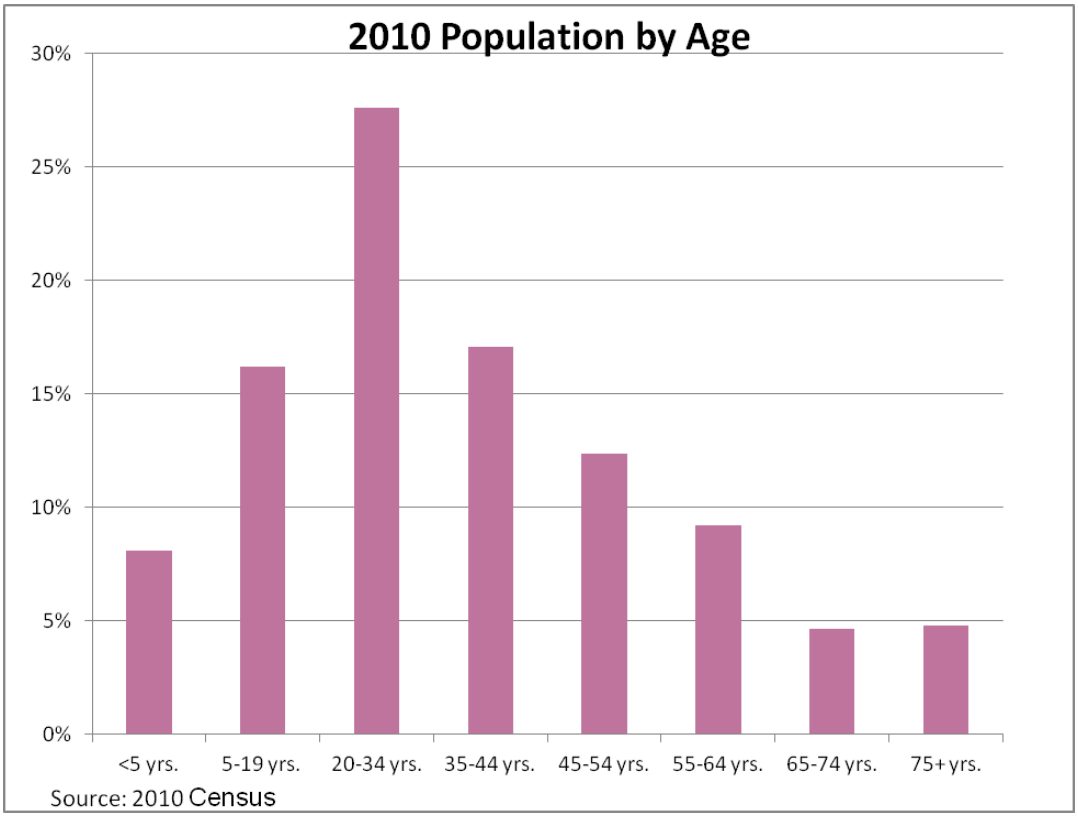


City	Under 18	65 and over
Redmond	23%	10%
Bellevue	21%	14%
Kirkland	19%	11%
Seattle	15%	11%

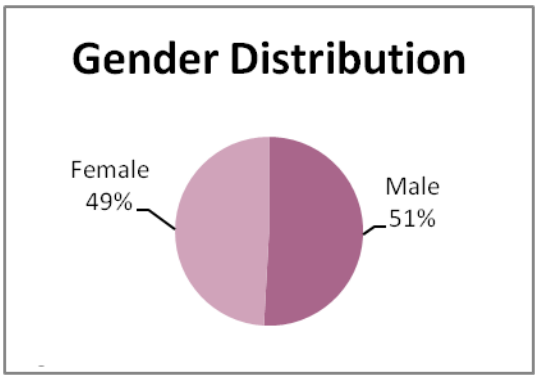
PEOPLE

Age Distribution

There is a significantly higher concentration of people 20-34 years old, at nearly 28% of the total population, compared to the total 65 and over population, at about 10%. **Adults ages 18-64 account for two-thirds of Redmond's population.**



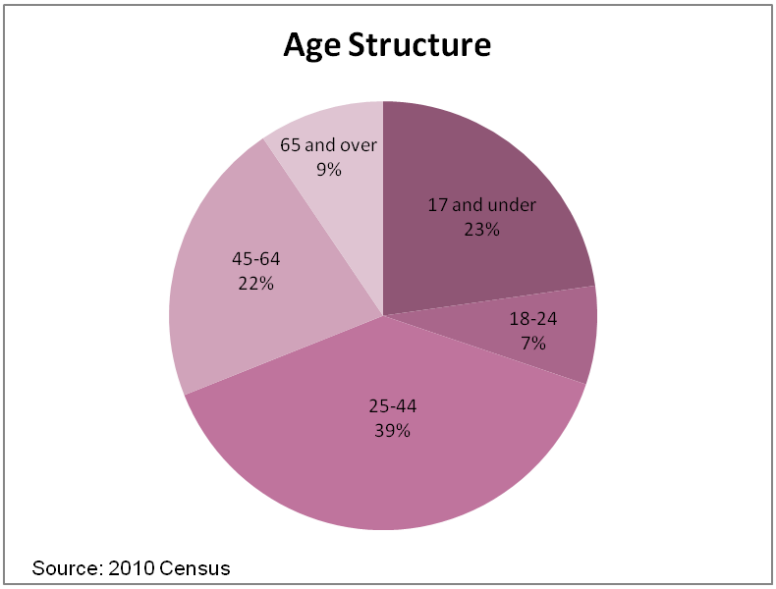
Age	Percentage of population
< 5 years	8%
5-19 years	16%
20-34 years	28%
35-44 years	17%
45-54 years	12%
55-64 years	9%
65-74 years	5%
75+ years	5%



PEOPLE

Age Structure

The majority of the population is between the ages of 18-64 years old, and less than 10% is 65 years and over. The children (17 and under) represent just under one-quarter of Redmond's population.

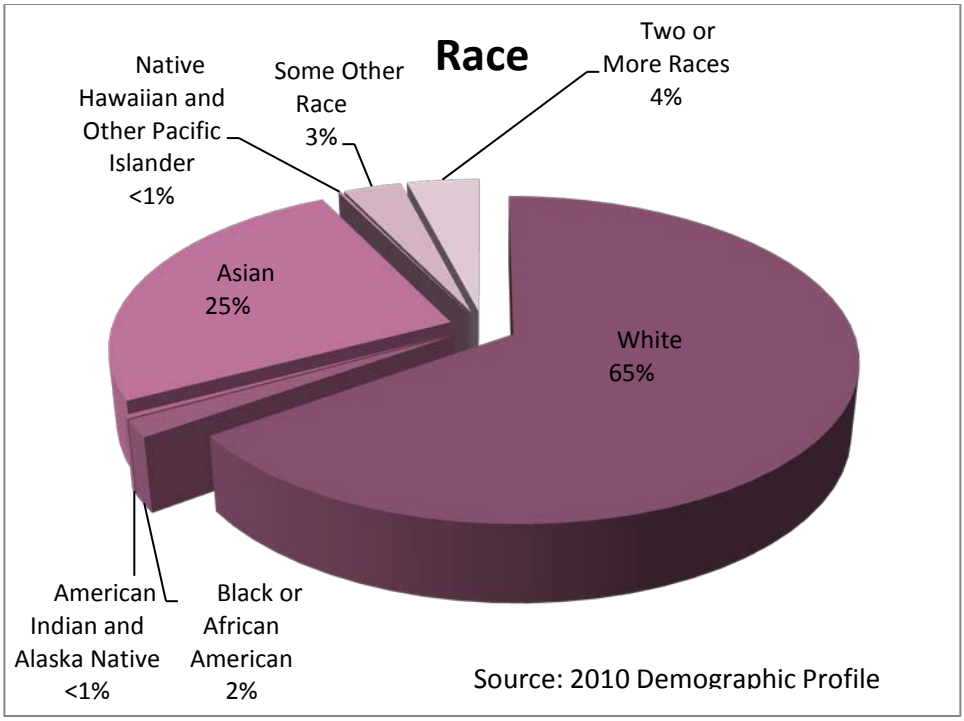


Age	Number of People	Percent of Population
17 and under	12,317	23%
18-64	36,706	68%
65 and over	5,121	9%
Total	54,144	100%

PEOPLE

Racial Distribution

Redmond's single-race population is composed of almost **two-thirds white, one-quarter Asian, 8% Hispanic or Latino, 2% Black or African American, less than 1% Indian American and Alaska Native, and less than 1% Native Hawaiian and other Pacific Islander.** Three percent consider themselves 2 or more races, and 1% consider themselves some other race.

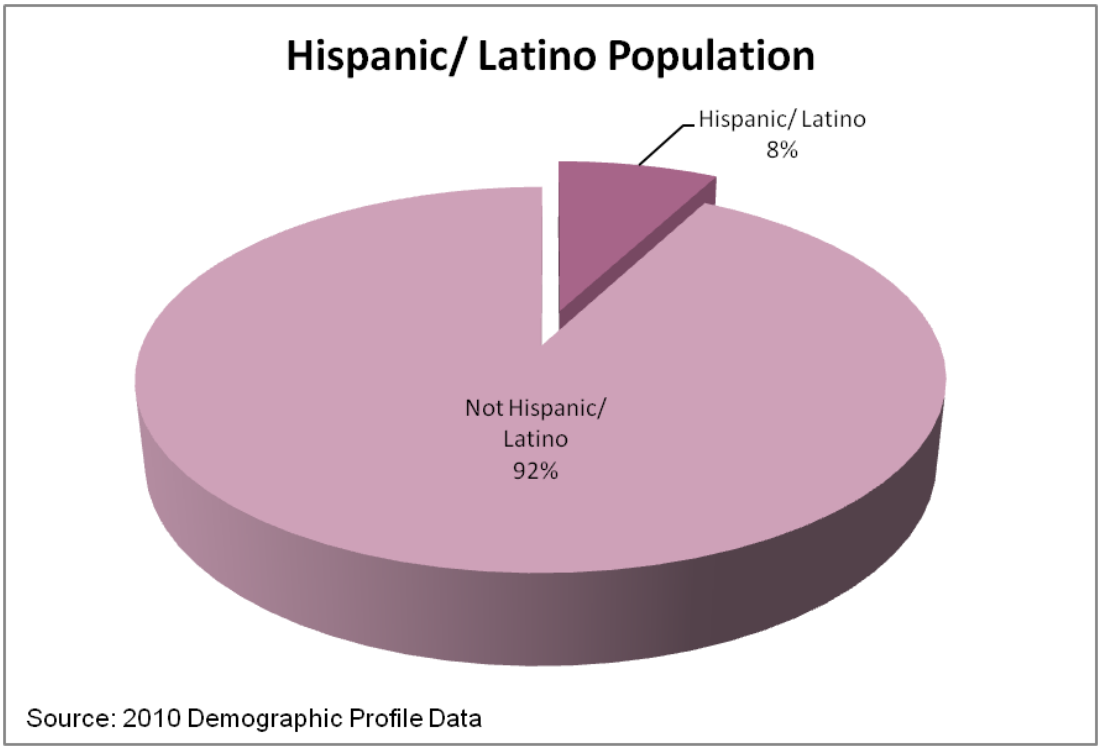


Race	Number of People
White alone	35,296
Black or African American alone	924
American Indian and Alaska Native alone	200
Asian alone	13,733
Native Hawaiian and Other Pacific Islander alone	82
Some Other Race alone	1,744
Two or More Races	2,165

PEOPLE

Hispanic or Latino Population

About 4,214 individuals in Redmond, or **8% of the total population, are Hispanic/Latino**.



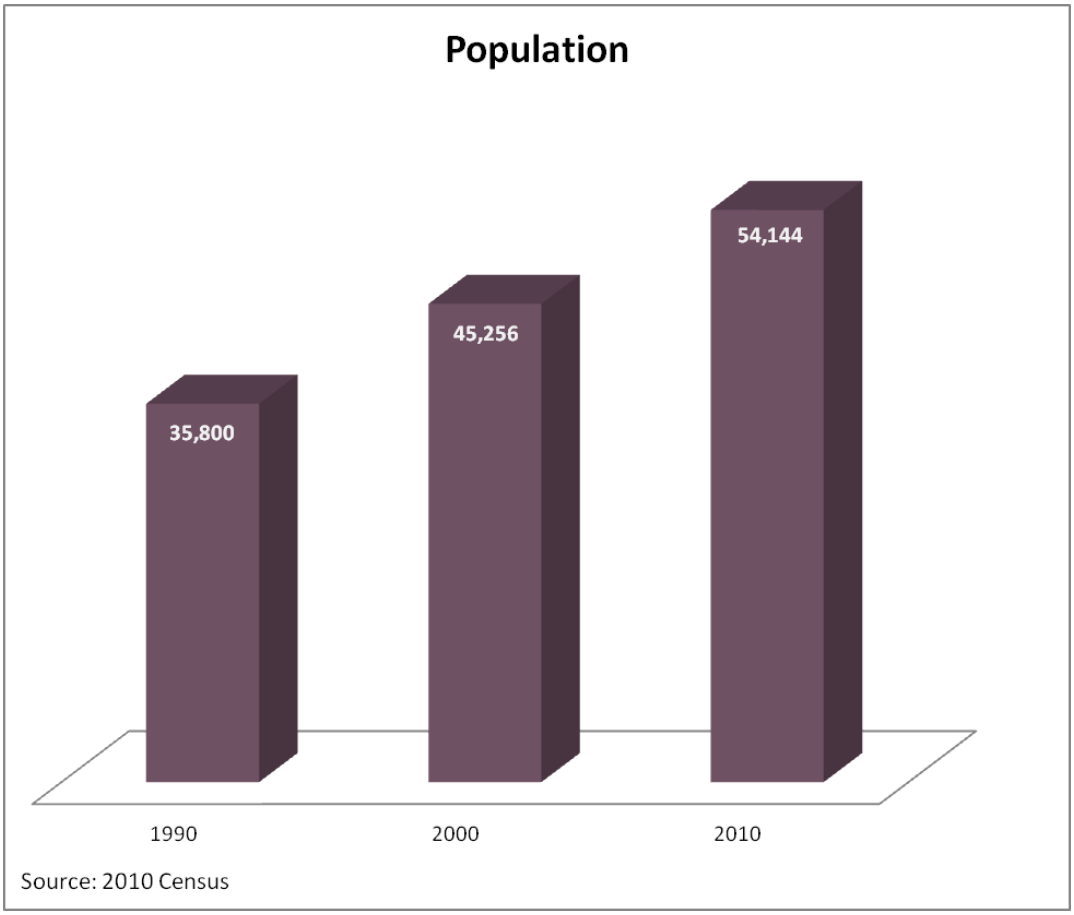
Source: 2010 Demographic Profile Data

Race	Count
Hispanic/ Latino	4,214
Race other than Hispanic/ Latino	49,930

PEOPLE

Population

Redmond's population **grew from 35,800 people in 1990 to 54,144 in 2010,** a 51% increase. Although the population saw a net increase in both decades, the rate of growth decreased between 2000 and 2010, compared to the period between 1990-2000.



Source: 2010 Census

Year	Youth	Adult	Senior
2010-Redmond	23%	68%	9%
2010-Washington	18%	69%	13%
2020-Washington	18%	65%	18%
2030-Washington	19%	60%	21%

PEOPLE

Age Distribution

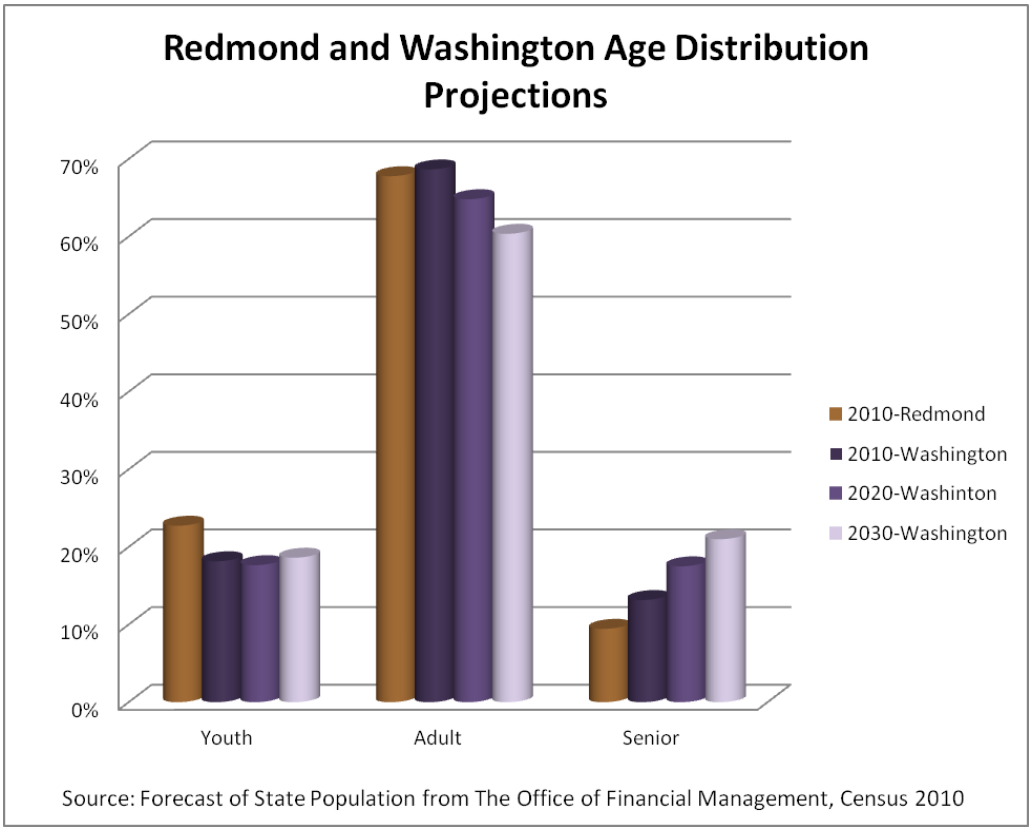
The age distribution in 2010 is comprised of **nearly one-quarter youth.** Nearly two-thirds of the population, and **the largest portion of the Redmond's population are adults,** and **seniors account for one-tenth of the population**.

The Washington State Office of Financial Management predicts that, in the next two decades, the youth population will remain fairly consistent. The highly concentrated adult age group will move into the senior age group. **This trend will result in a steady decrease in adult population and a steady increase in the senior population.**

Youth: 17 and under

Adult: 18 to 64

Senior: 65 and over

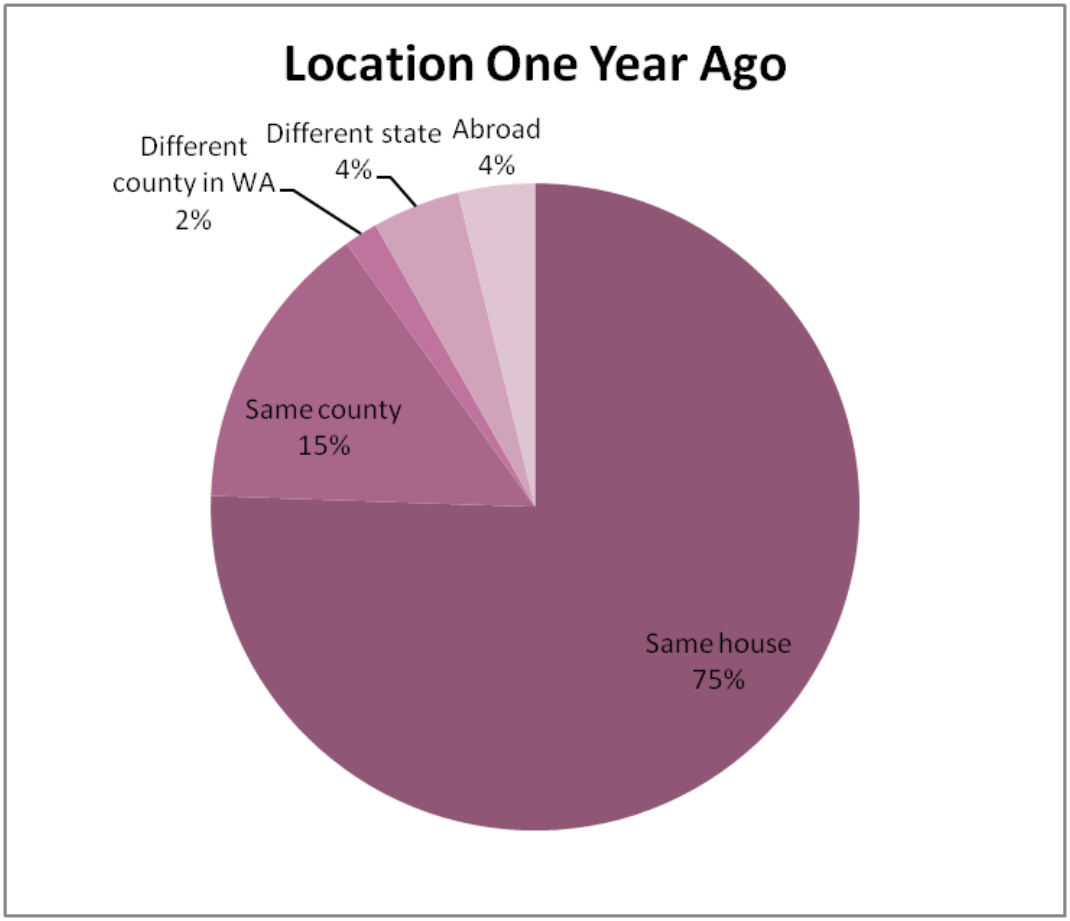


Source: Forecast of State Population from The Office of Financial Management, Census 2010

PEOPLE

Geographic Mobility

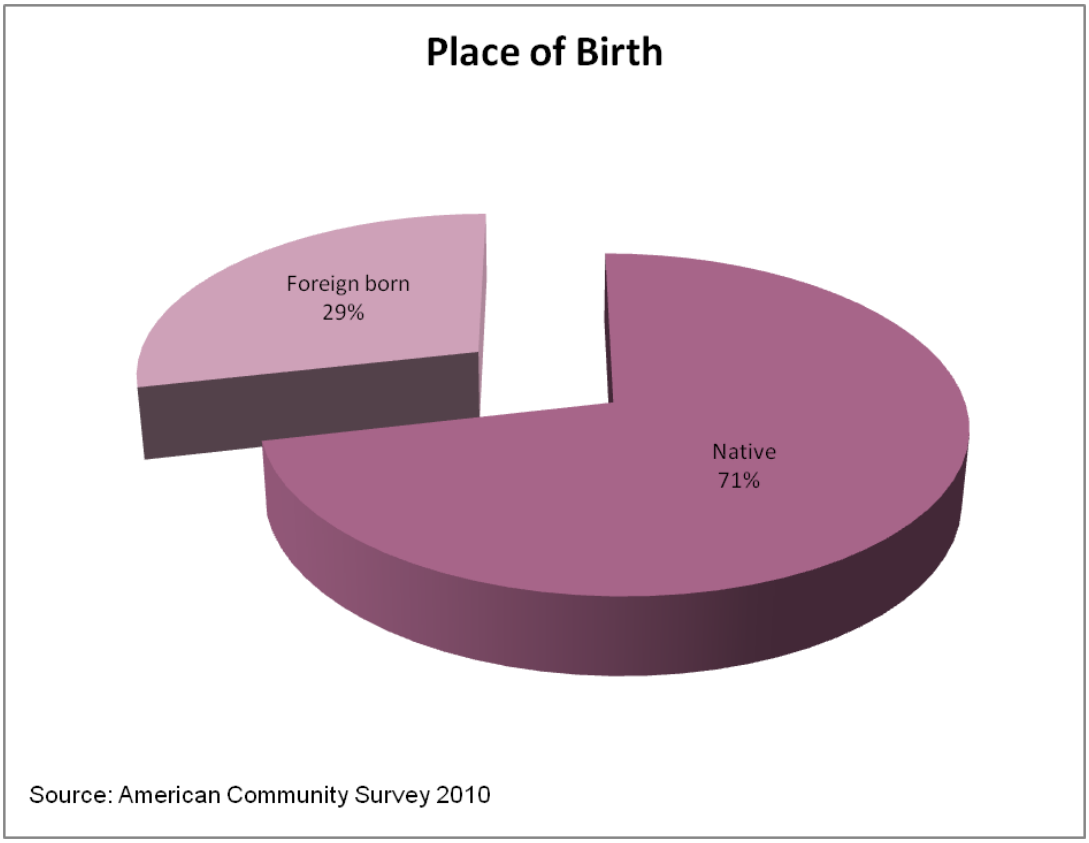
Three-quarters of Redmond residents lived in the same house one year ago. Fifteen percent moved from another home King County, 2% from another county in Washington, and 4% each from another state or another country.



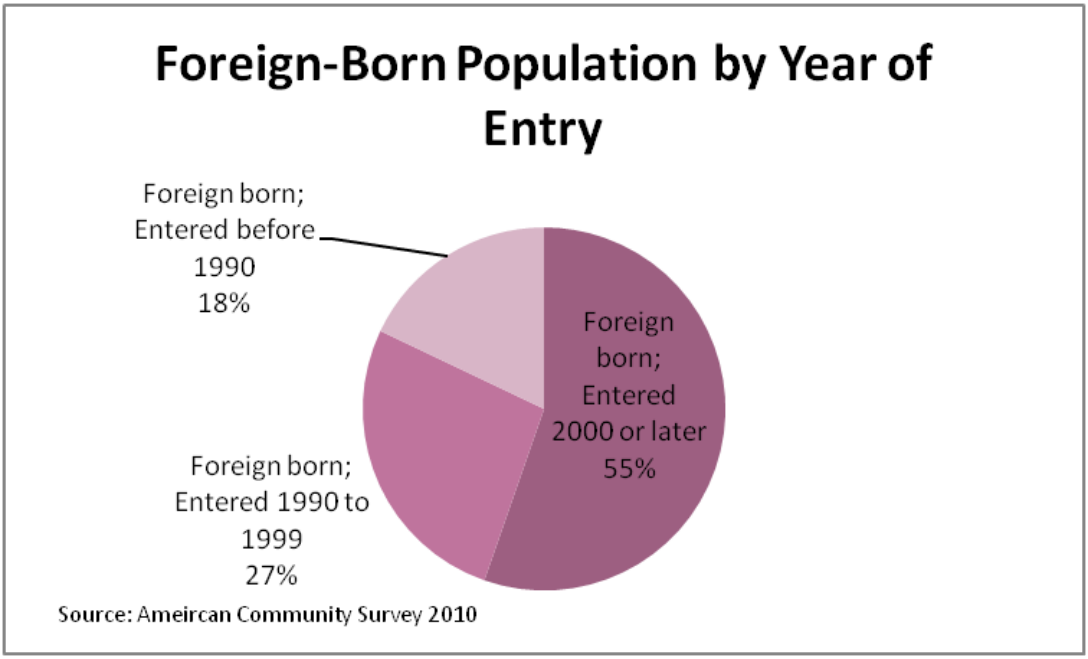
PEOPLE

Place of Birth

About 15,000 of Redmond's residents, or **29% of the total population, are foreign born.**



Of the foreign-bon population, **55% immigrated to the US in or after the year 2000,** 27% from 1990-1999, and the remaining 18% prior to 1990.

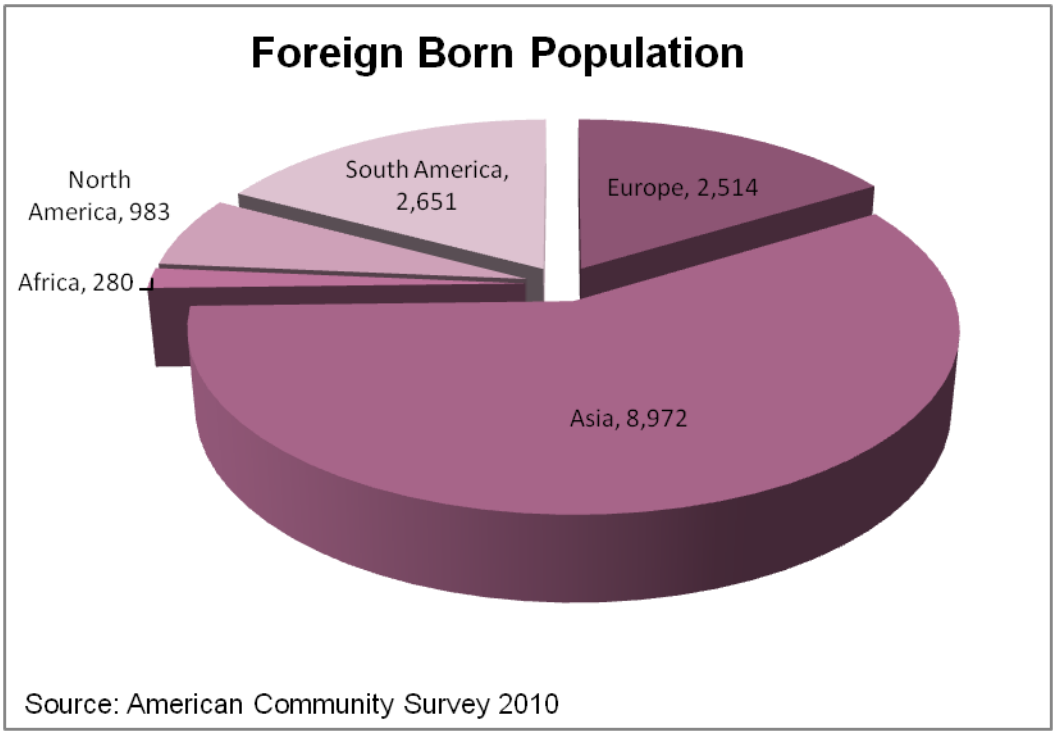


PEOPLE

Foreign-Born Population

Nearly 9,000 residents—almost 60% of all foreign-born residents—immigrated from Asia. South Americans and Europeans comprise 2,651 and 2,514 residents, respectively. Under 1,000 other North Americans, primarily Canadians, have come to Redmond. Finally, 280 people immigrated to Redmond from Africa.

Thirty-nine percent of Redmond residents were born in another state in the US. Foreign-born individuals and native Washingtonians each account for just under one-third of the population, and the remaining 1% consists of US natives born abroad.

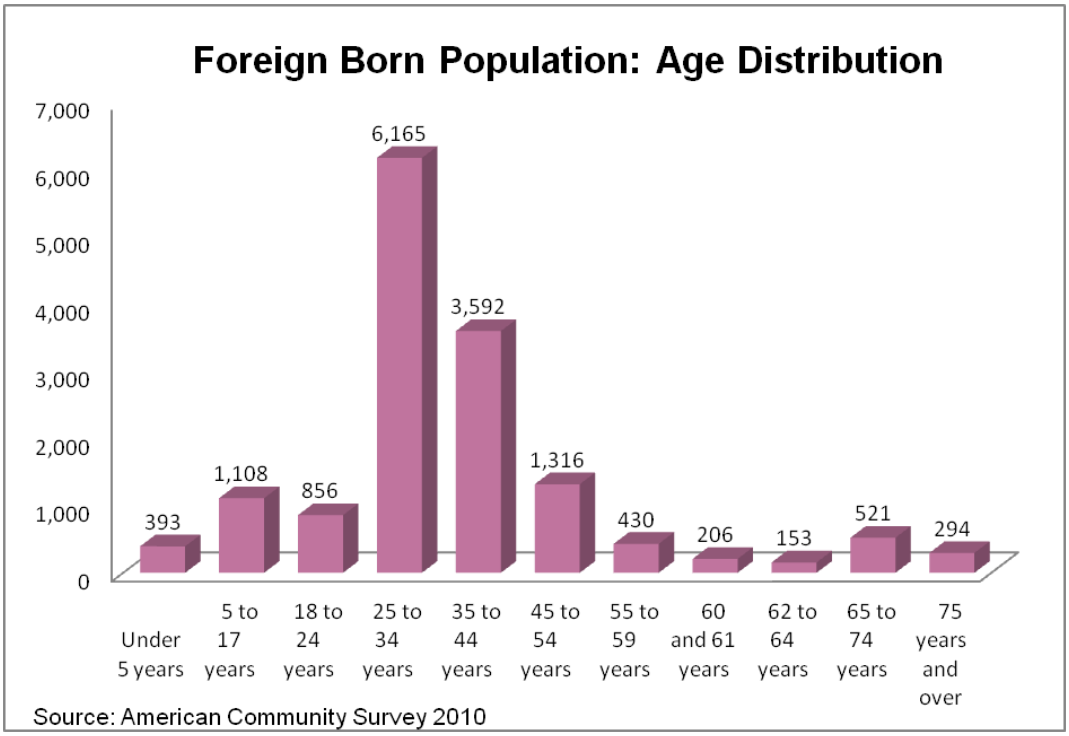


Country Origin	Population Percentage
Europe	16.3%
Asia	58.3%
Africa	1.8%
North America	6.4%
South America	17.2%

PEOPLE

Foreign Born Population: Age Distribution

The most frequently-occurring age group among the foreign born population is 25 to 34 years (young adults), followed by ages 35 to 44.

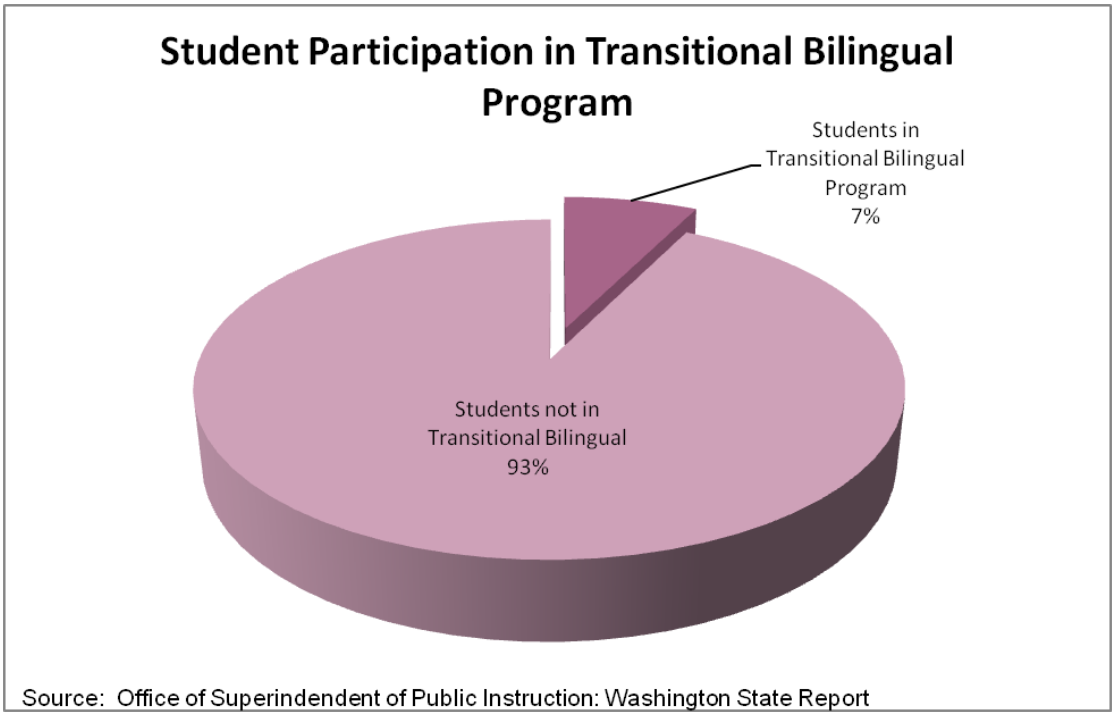


Foreign born:	Number of people	Percentage of population
Under 5 years	393	2.6%
5 to 17 years	1,108	7.4%
18 to 24 years	856	5.7%
25 to 34 years	6,165	41.0%
35 to 44 years	3,592	23.9%
45 to 54 years	1,316	8.8%
55 to 59 years	430	2.9%
60 and 61 years	206	1.4%
62 to 64 years	153	1.0%
65 to 74 years	521	3.5%
75 years and over	294	2.0%

PEOPLE

Transitional Bilingual Program Participation

There are 7,851 students enrolled in the 12 schools in Redmond (Lake Washington School District), of whom **581 participate in the Transitional Bilingual Program.**

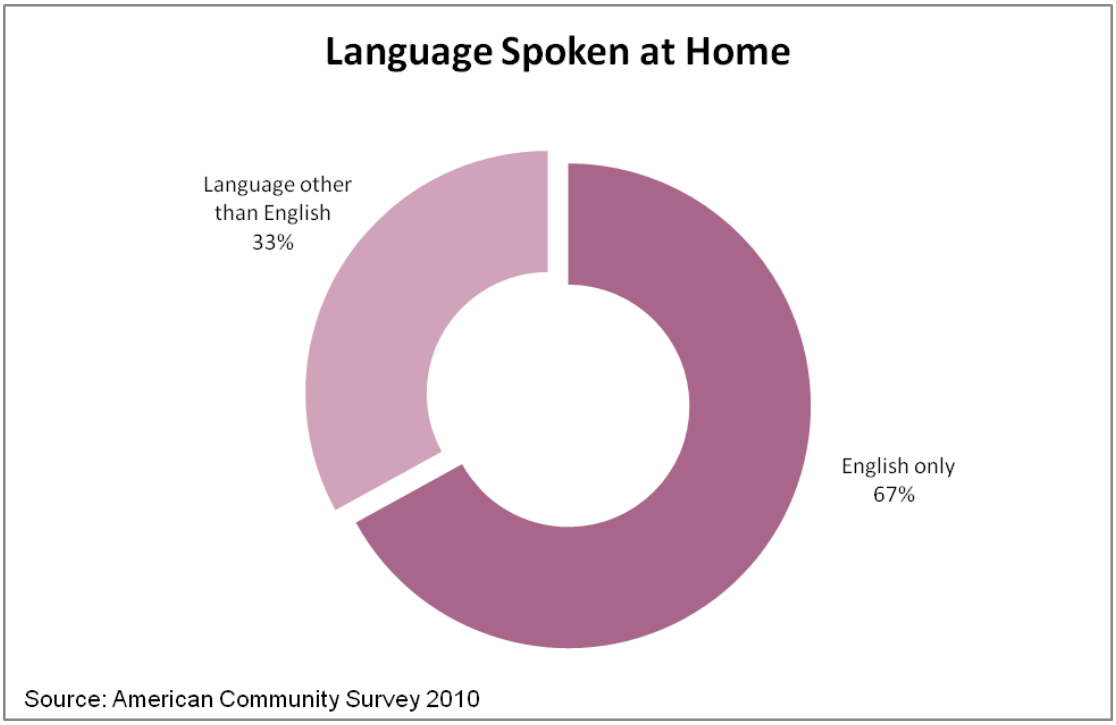


Source: Office of Superindendent of Public Instruction: Washington State Report

PEOPLE

Language Spoken at Home

Sixty-seven percent of residents in Redmond speak English at home, while the remaining 33% speak other languages. These numbers are very similar to the proportions of foreign born and native born residents.

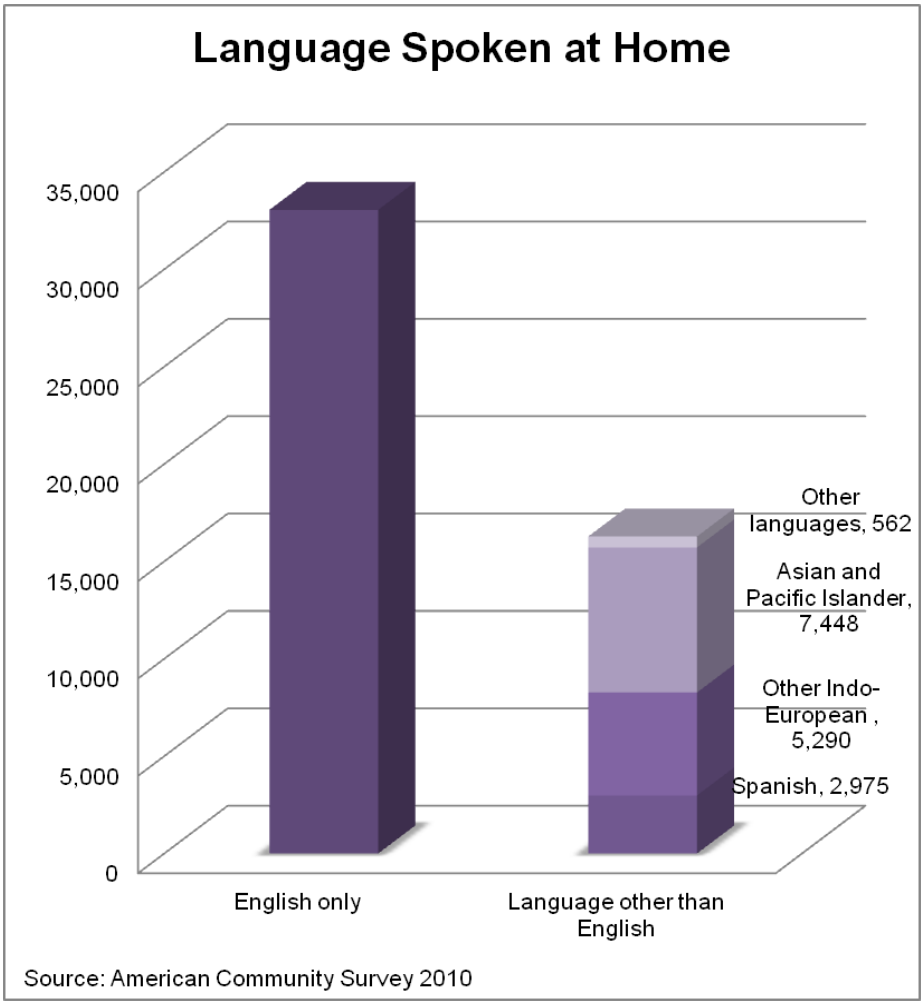


Source: American Community Survey 2010

PEOPLE

Language Spoken at Home (continued)

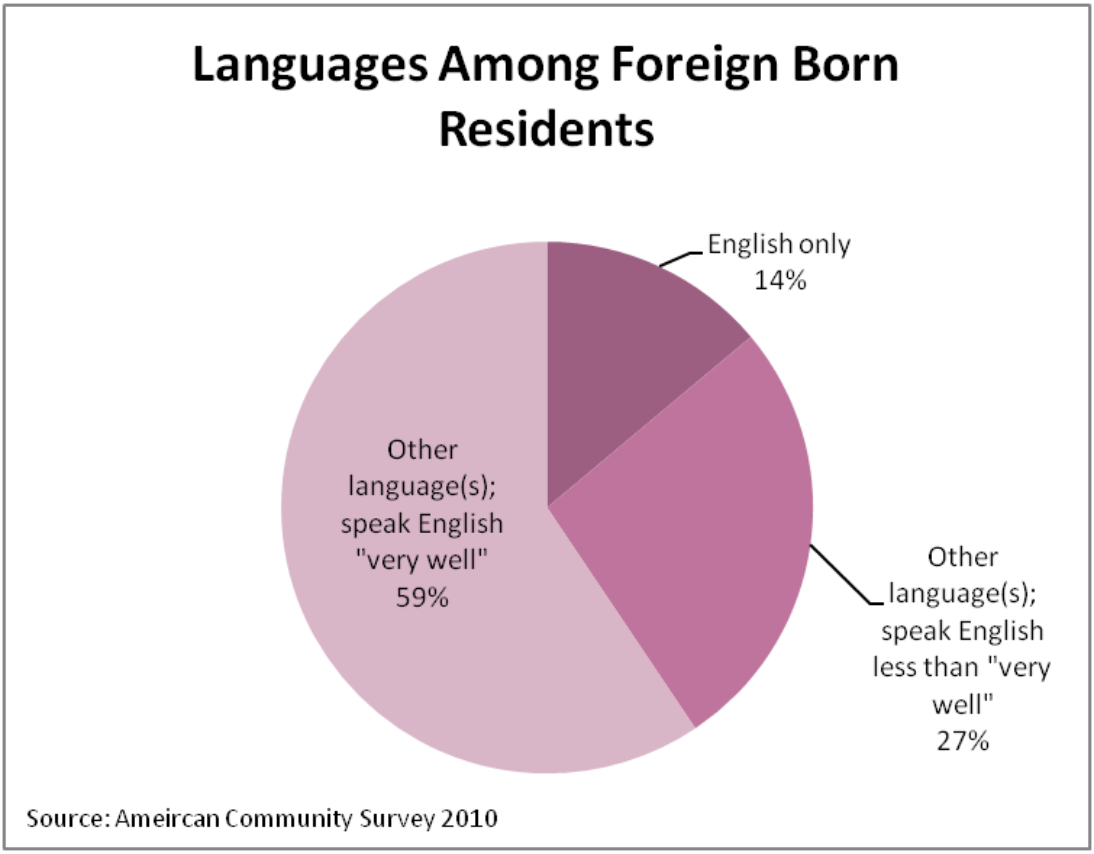
After English, **Asian and Pacific Islander languages form the second-largest linguistic** group, accounting for at 45% of foreign-language speakers, followed by Indo-European languages (besides Spanish) with 32%, Spanish with 18%, and all other languages with 3.5%.



PEOPLE

Non-English Speakers

Fourteen percent of all foreign born Redmond residents speak only English. Fifty-nine percent speak primarily another language but also speak English "very well," and the remainder speak primarily another language but do not speak English "very well."

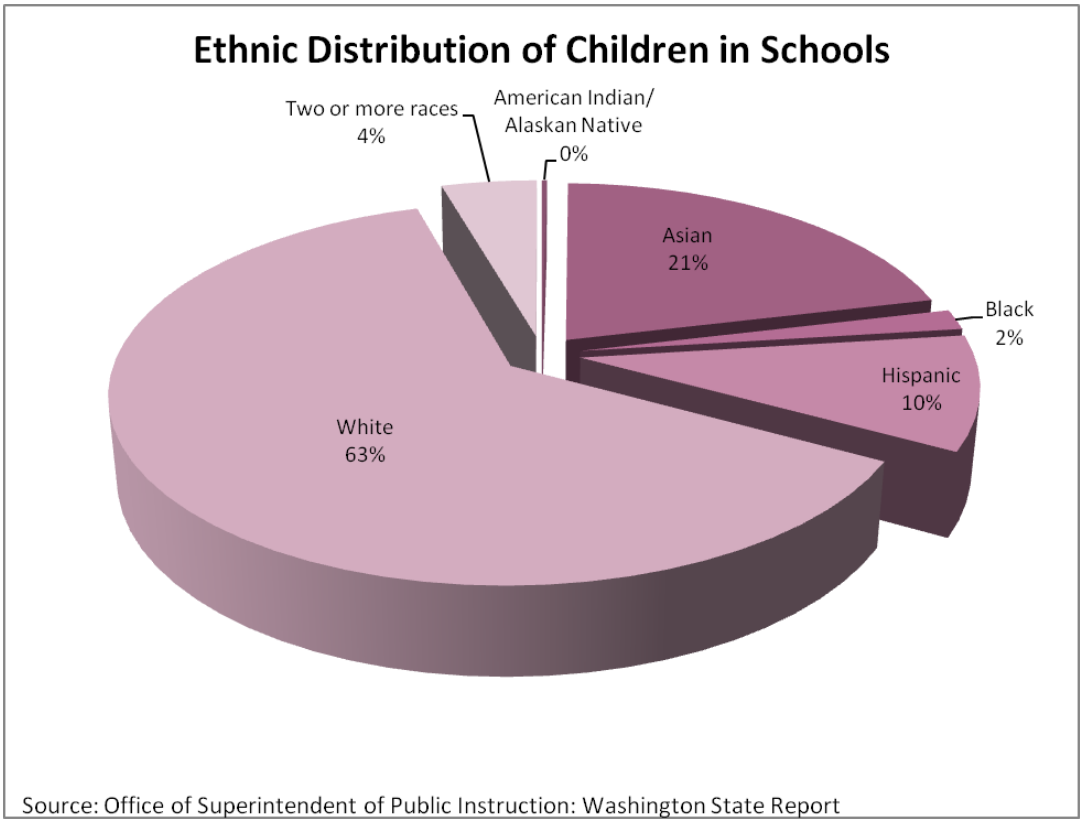


PEOPLE

Ethnic Distribution in Schools

The ethnic distribution of students in Redmond schools is **very similar to the ethnic distribution for the entire city of Redmond,** generally differing by no more than one to two percentage points.

Sixty-three percent of students are white, followed by Asian at 21%, Hispanic at 10%, Black with 2%, American Indian/ Alaskan Native at less than 1%, and two or more races at 4% of the student population.



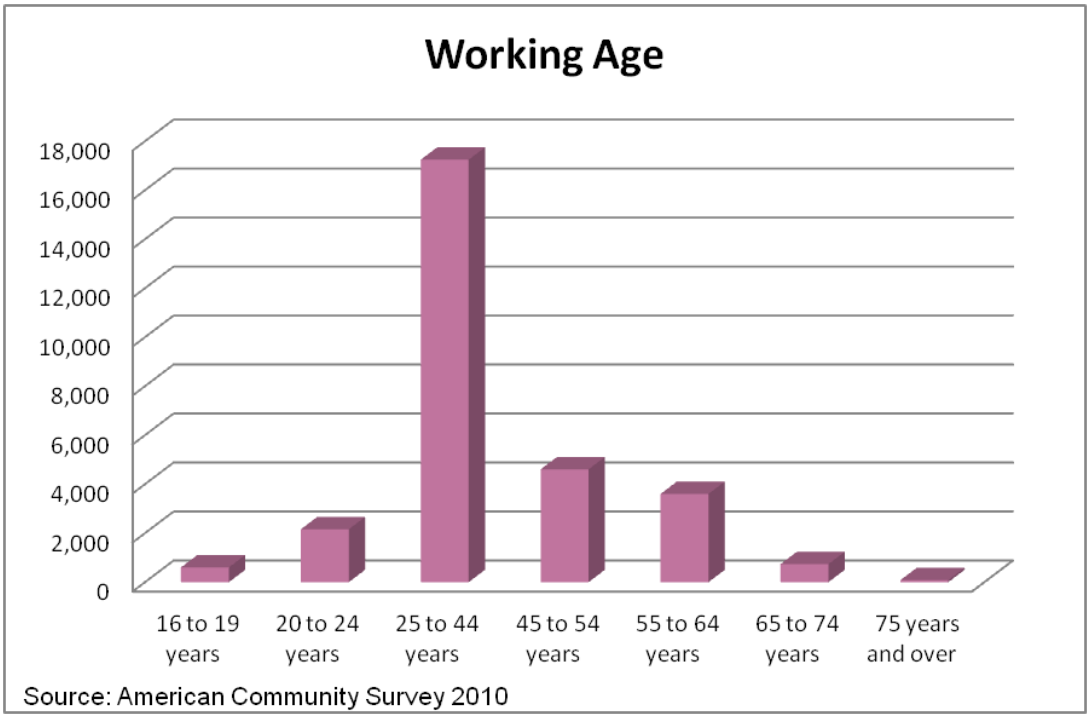
Source: Office of Superintendent of Public Instruction: Washington State Report

American Indian/ Alaskan Native	Asian	Black	Hispanic	White	Two or more races
19	1648	136	770	4899	353

PEOPLE

Working Age

Of the working-age Redmond residents (those ages 16 and over), **a majority of are in the 25-44 category, which includes 17,246 workers.** The 45-54 age group is the second-largest, with 4,605 workers, followed by third is 55-64, with 3,601 workers.



Source: American Community Survey 2010

Age	Employed
16 to 19 years	602
20 to 24 years	2,158
25 to 44 years	17,246
45 to 54 years	4,605
55 to 64 years	3,601
65 to 74 years	735
75 years and over	81

PEOPLE

Disabilities

Approximately 2% of children under 5 years of age have a disability. The rates are similar between children 5-17 years old and adults 18-64 years old, at 5% and 4%, respectively. However, **disabilities are reported by 41% of adults 65 and over.** Women are half again as likely as men to be disabled, with rates at 9% and 6%, respectively.

Age	Percent with Disability
Under 5 years	2%
5 and 17 years	5%
18 and 64 years	4%
65 years and over	41%

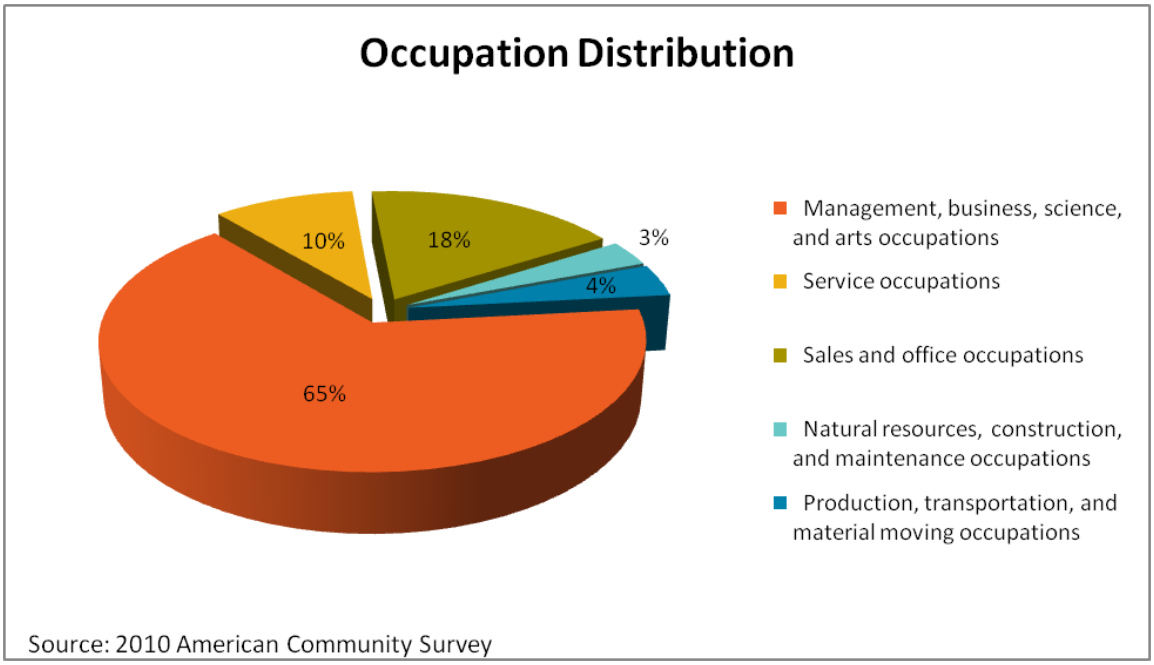
Sex	Percent with Disability
Male	6%
Female	9%

ECONOMIC

Occupation Distribution

The occupation distribution in Redmond is dominated by management, business, science, and arts fields, with nearly two-thirds of the civilian employed population.

The remaining 35% are distributed across service occupations; sales and office occupations; natural resources, construction, and maintenance occupations; and production, transportation, and material moving occupations.



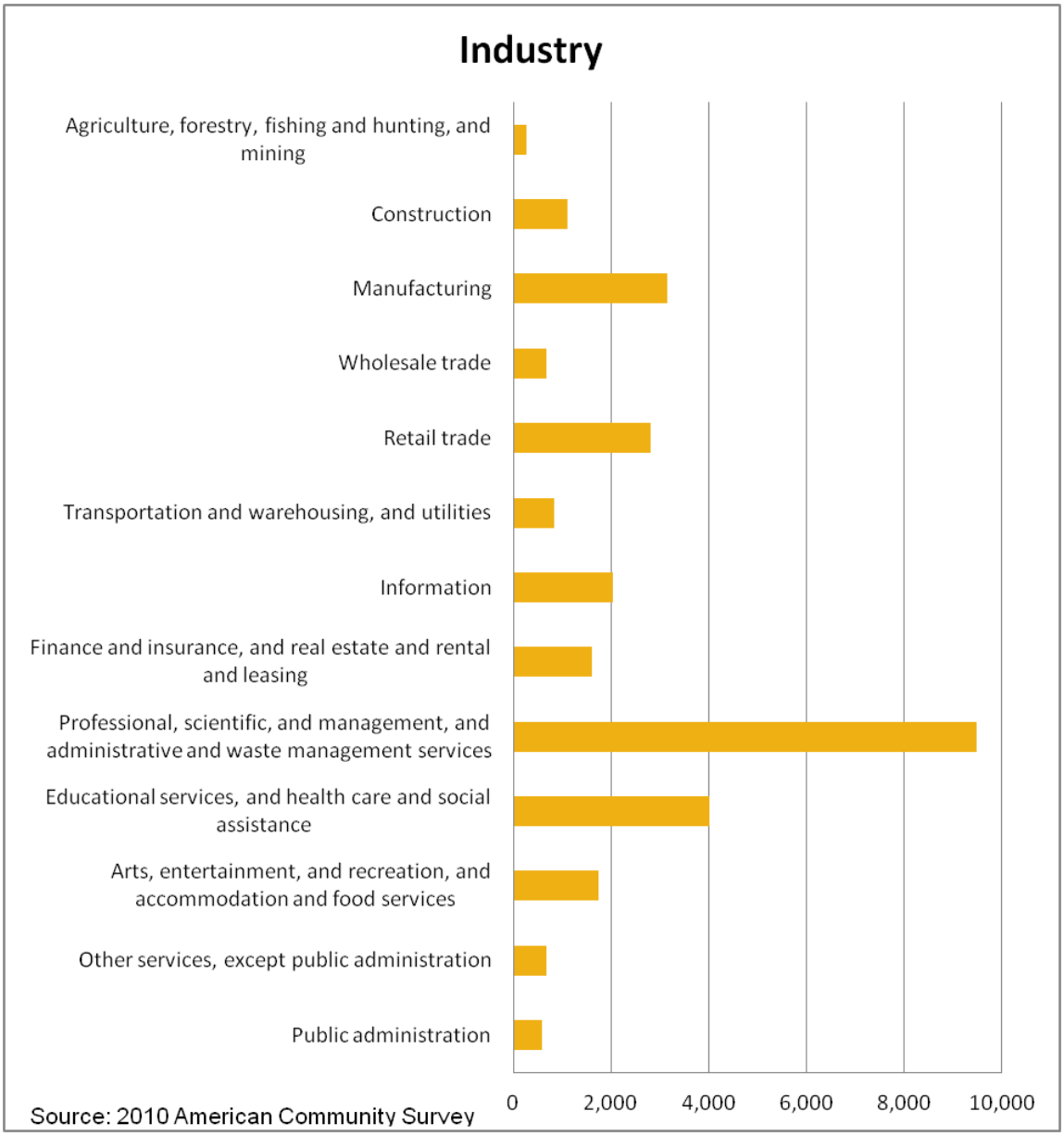
Source: 2010 American Community Survey

Occupation	People (employed population over 16)	Percentage of Population
Management, business, science, and arts occupations	19,000	65%
Service occupations	2,820	10%
Sales and office occupations	5,090	18%
Natural resources, construction, and maintenance occupations	930	3%
Production, transportation, and material moving occupations	1,170	4%
Total	29,020	100%

ECONOMIC

Industry

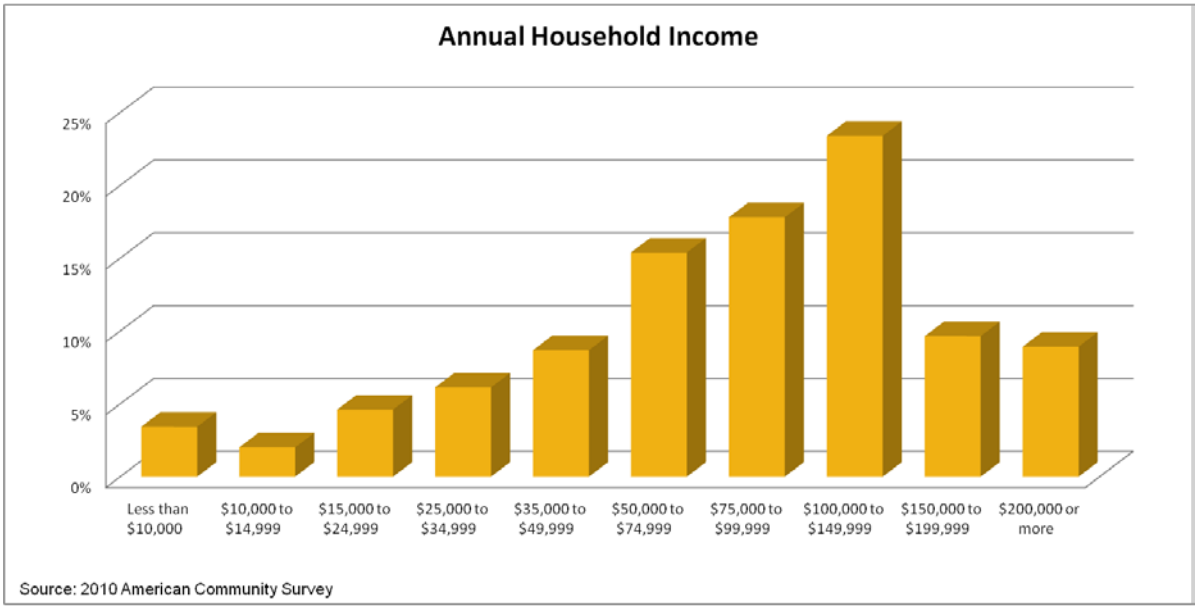
Of the 29,020 employed people ages 16 and over in Redmond, 9,490 workers, who account for **nearly one-third of the workforce, have occupations within the professional, scientific, management, administrative and waste management services.** The next largest industry is educational services, health care, and social assistance, with over 4,000 workers.



ECONOMIC

Annual Household Income

The median **annual household income in Redmond is $92,164,** while the mean is $104,610.



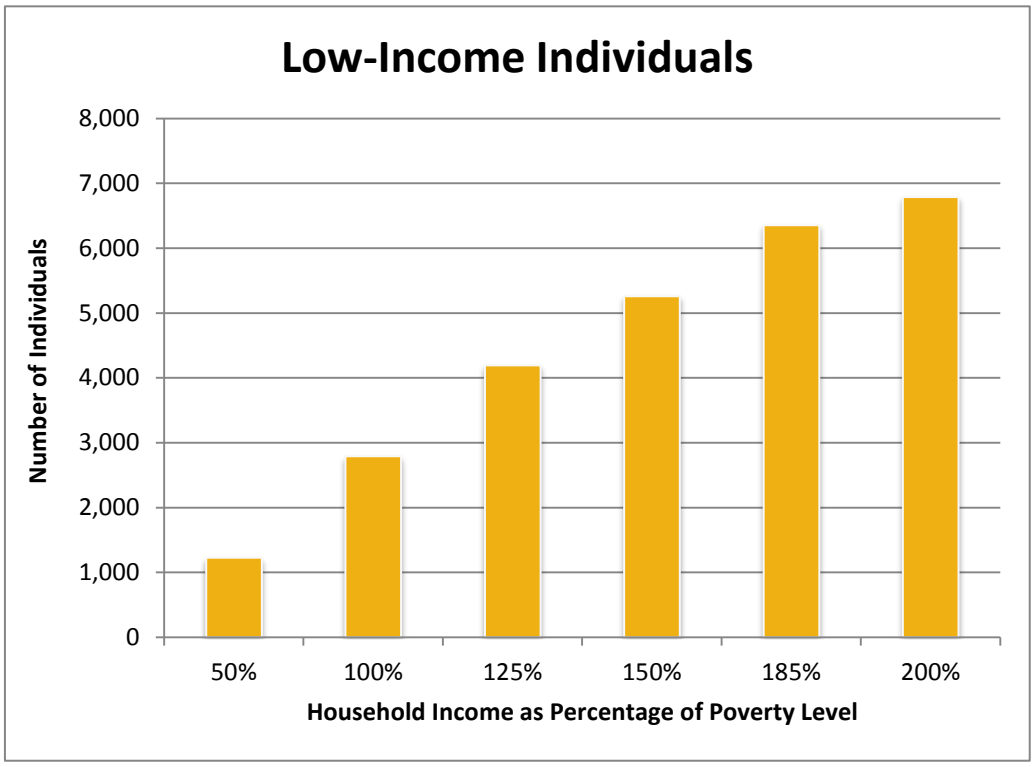
Household Income	Percent
Less than $10,000	3%
$10,000 to $14,999	2%
$15,000 to $24,999	5%
$25,000 to $34,999	6%
$35,000 to $49,999	8%
$50,000 to $74,999	16%
$75,000 to $99,999	15%
$100,000 to $149,999	24%
$150,000 to $199,999	11%
$200,000 or more	10%
Median income	*$92,160*
Mean income	*$104,610*

ECONOMIC

Poverty Level

Five percent of Redmond's population are living below the poverty level. The poverty threshold for a four-person household with two related children under 18 is approximately $22,000/year, whereas the city's median annual household income is $92,160.

About **13% of the total population is low-income,** i.e. lives in a household that earns under 200% of the poverty level.

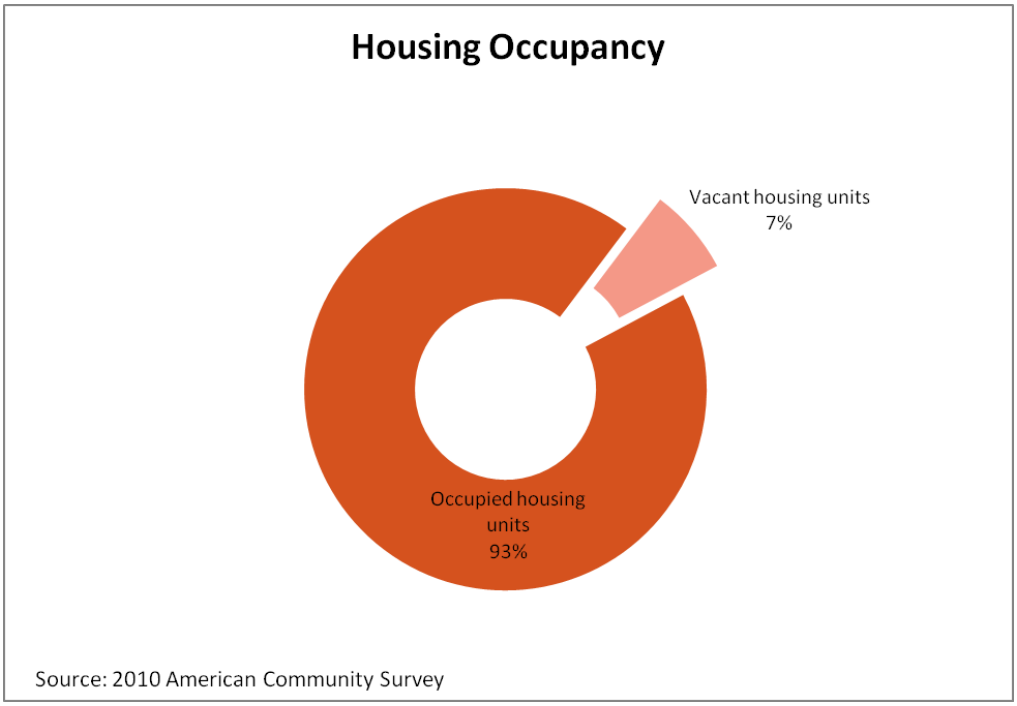


Household Income as Percentage of Poverty Level	Number of Individuals	Percentage of Total Population
Under 50%	1,230	2%
Under 100%	2,800	5%
Under 125%	4,200	8%
Under 150%	5,260	10%
Under 185%	6,360	12%
Under 200%	6,790	13%
Total Population	*54,144*	*100%*

HOUSING

Housing Occupancy

In Redmond, about **93% of the housing units are occupied.**



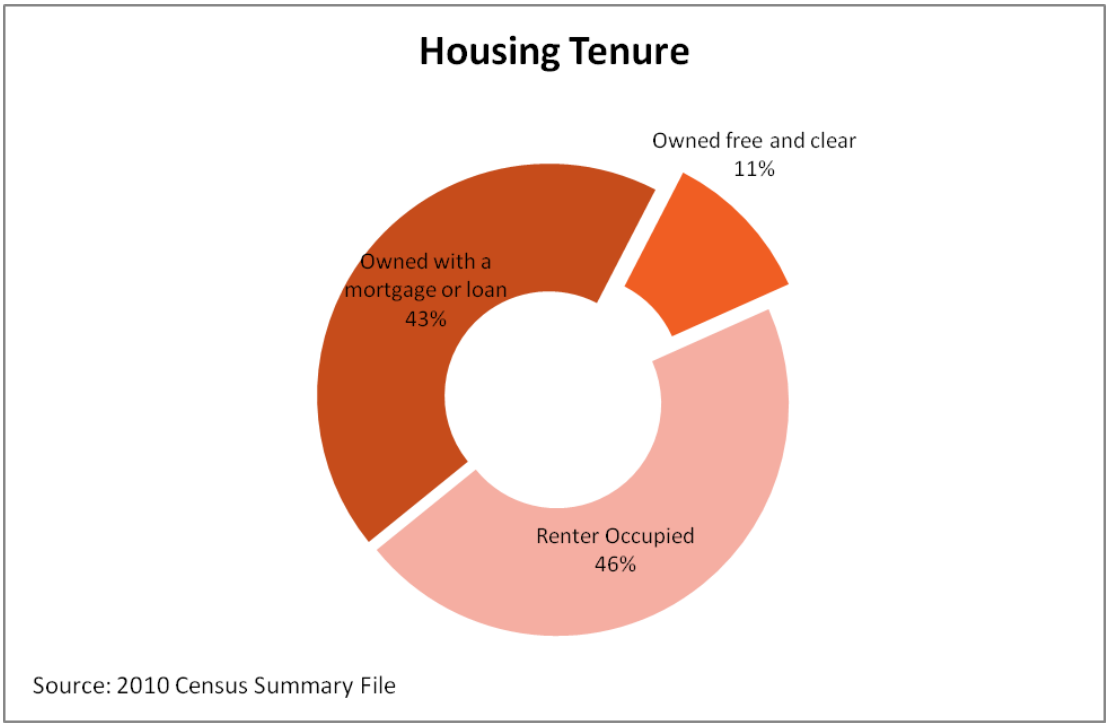
The mean number of bedrooms in a housing unit is 2.32. On average, owner-occupied units tend to have more bedrooms than renter-occupied ones.

Tenure	Average Number of Bedrooms
Owned-occupied	2.49
Renter-occupied	2.13
Total	*2.32*

HOUSING

Housing Tenure

Of the 22,550 occupied homes, around **46% are rented,** about **43% are owned with a mortgage or loan,** and **11% are owned free and clear.**

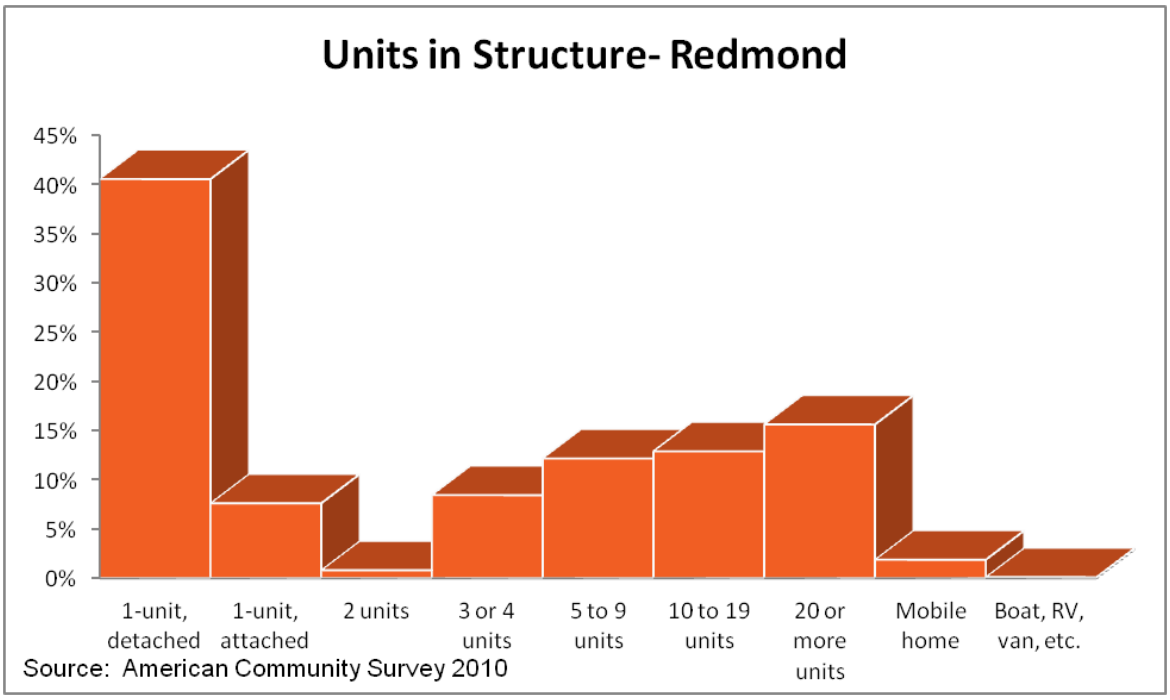


Housing tenure	Percent
Owner with a mortgage/ loan	43%
Owned free and clear	11%
Renter occupied	46%
Occupied housing units	*100%*

HOUSING

Housing Type

Redmond's housing units are **mostly 1-unit detached homes, and higher density housing**. Although 1-unit detached structures are the single most common type of residential structure, at nearly 40%, nearly one-half of all structures contain at least two units. Finally, two percent of all housing units are mobile homes, boats, RVs, vans, etc.

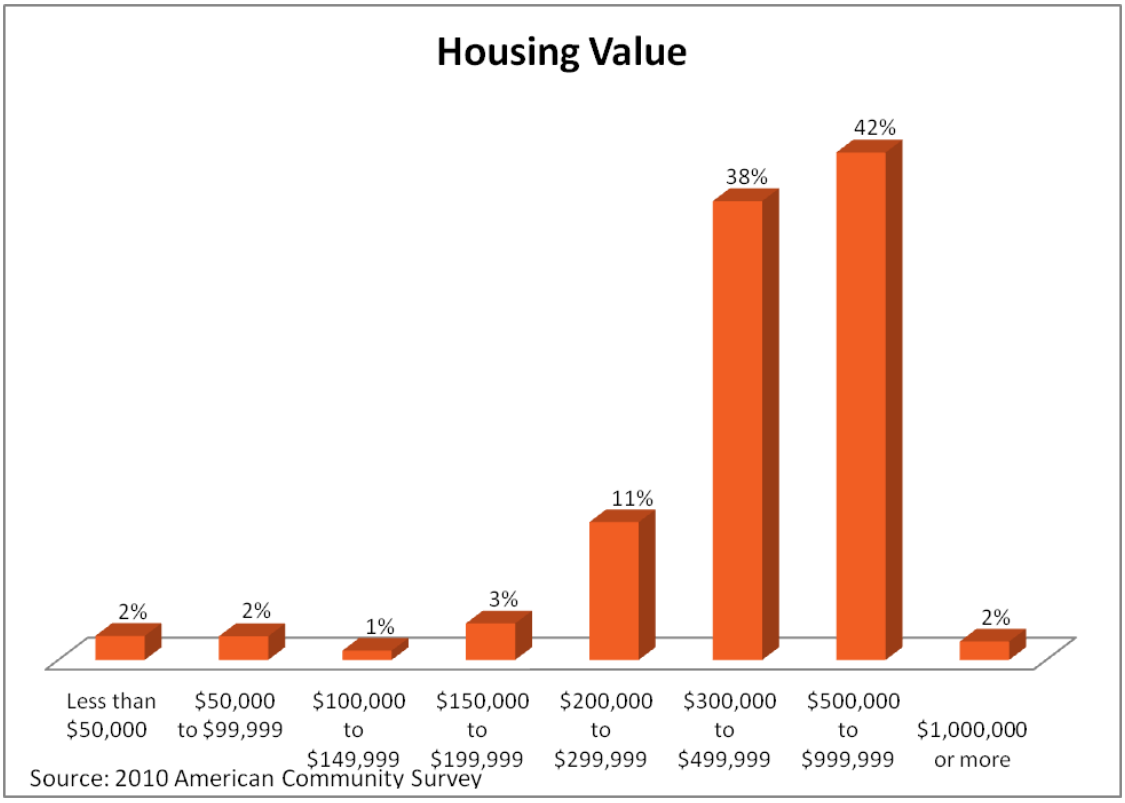


Housing type	Percent
1-unit, detached	41%
1-unit, attached	8%
2 units	1%
3 or 4 units	8%
5 to 9 units	12%
10 to 19 units	13%
20 or more units	16%
Mobile home	2%
Boat, RV, van, etc.	<1%
Total	*100%*

HOUSING

Housing Values

The **median value of a home in Redmond is $469,500,** but 44% of all homes are worth $500,000 or more.



Value	Estimate
Less than $50,000	2%
$50,000 to $99,999	2%
$100,000 to $149,999	1%
$150,000 to $199,999	3%
$200,000 to $299,999	11%
$300,000 to $499,999	38%
$500,000 to $999,999	42%
$1,000,000 or more	2%
Median	*$469,500*

City of Redmond Population and Employment

	Dwellings	Population	Employment
1980	8,721	23,318	12,035
1990	14,972	35,800	35,708
1993	17,392	38,987	39,026
1995	18,287	40,030	47,657
1998	18,509	43,310	59,631
2000	20,248	45,256	72,219
2001	20,368	45,490	78,853
2002	20,660	46,040	77,365
2003	21,274	46,480	78,286
2004	21,810	46,900	79,459
2005	22,204	47,600	82,073
2006	22,616	49,890	81,814
2007	22,869	50,680	85,775
2008	23,144	51,320	89,599
2009	23,323	51,890	90,704
2010	24,227	54 144	76,876
2011	24,602	55,150	78,893
2022	*33,500*	*72,000*	*118,000*
2012	*24,770*	*55,360*	*77,615*
2013	*24,872*	*55,840*	
2030	*36,500*	*78,000*	*119,000*

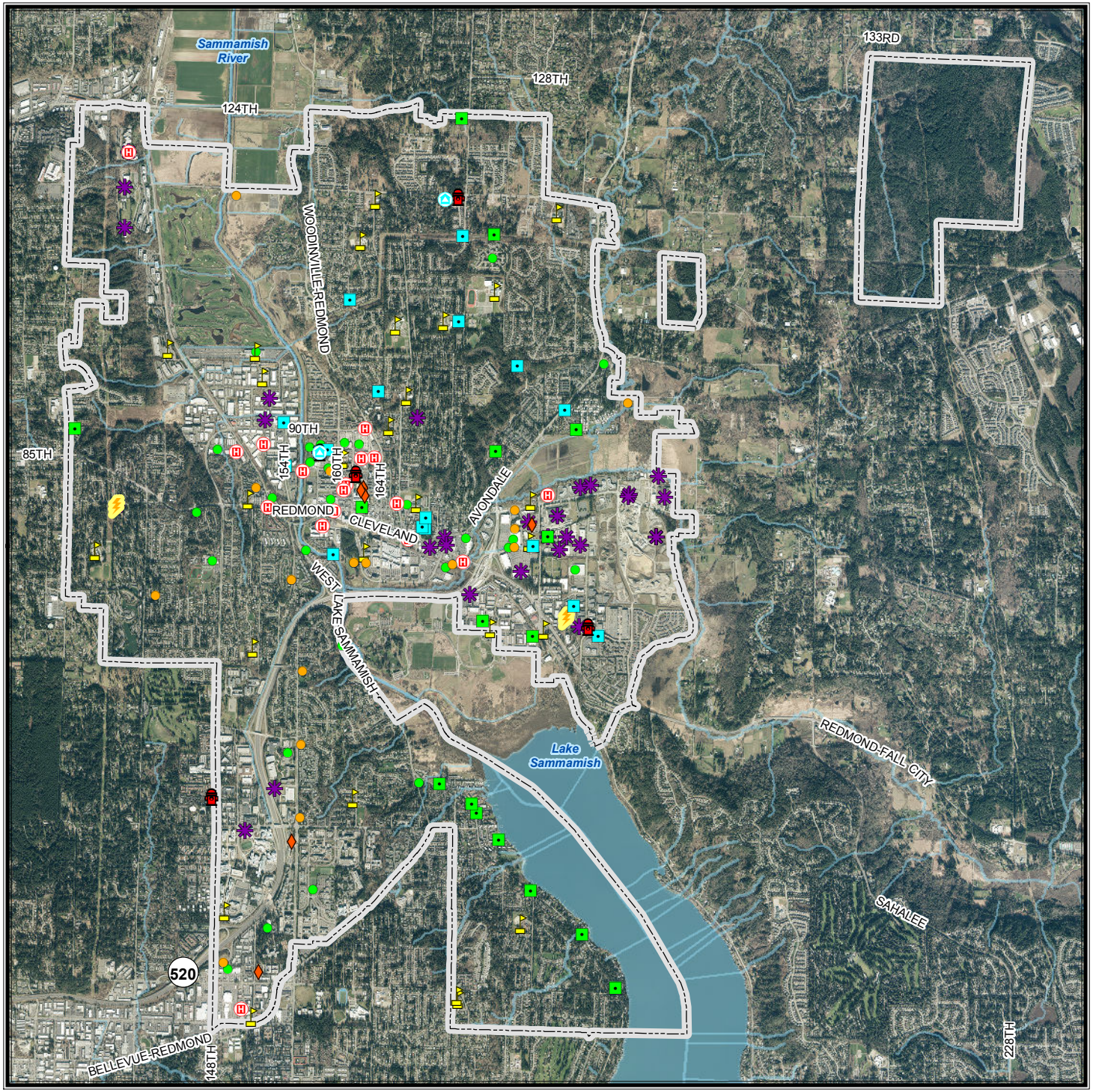
Notes:
Population from US Census for each decade

Population from WA State Office of Financial Management for intervening years, except 1993 from City of Redmond

Employment from WA State Employment Security Department, allocated by PSRC to jurisdicational boundaries, except 1980 and 1993 from City of Redmond

Employment estimates for 1995, 2000, 2001, and 2002 reflect most recent PSRC revisions

CITY OF REDMOND HAZARD MAPPING



CITY OF REDMOND

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

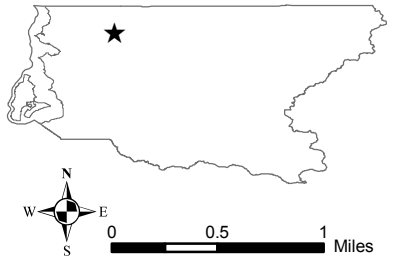
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

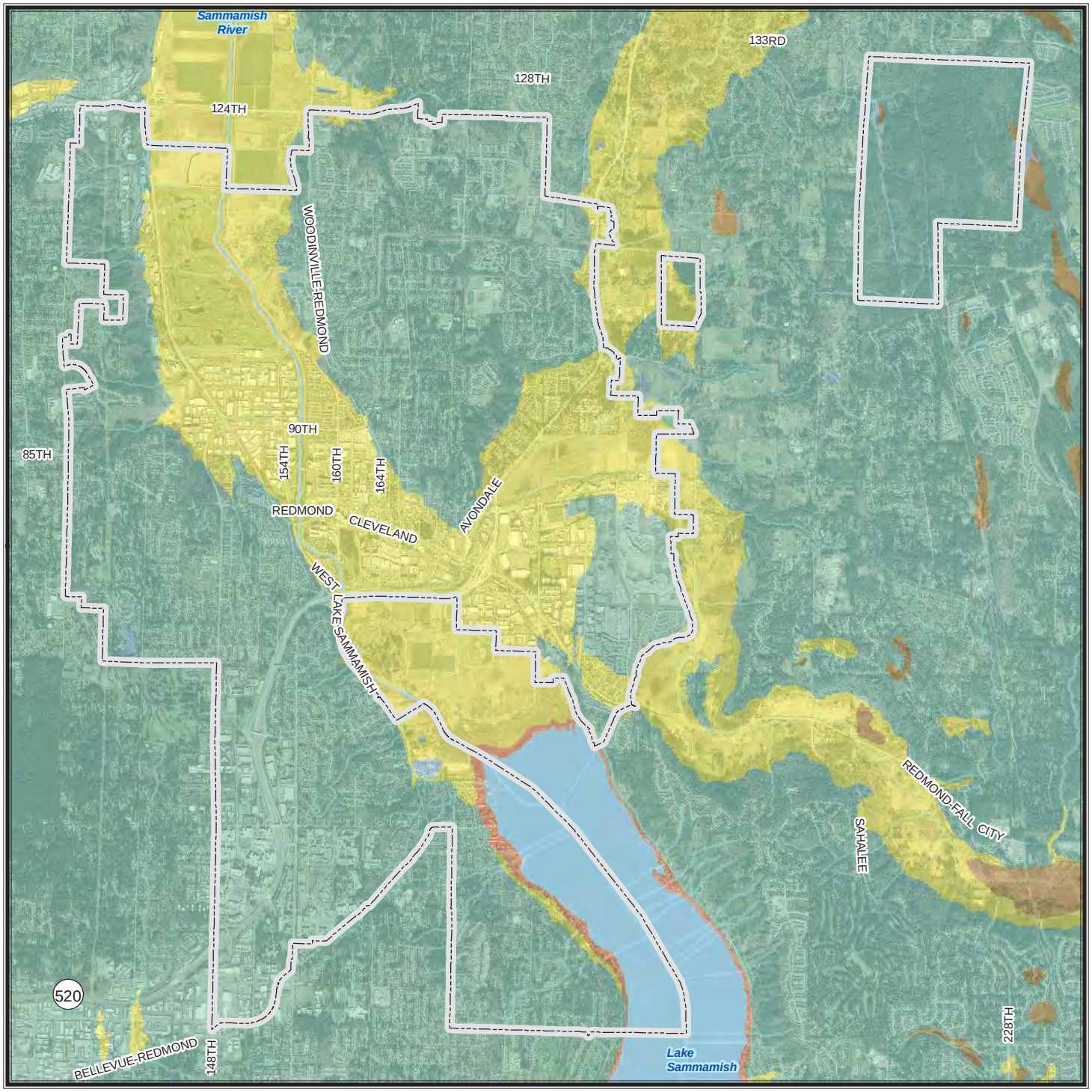
Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF REDMOND

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

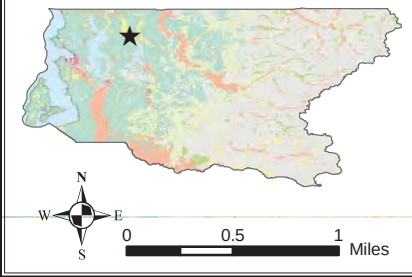
Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

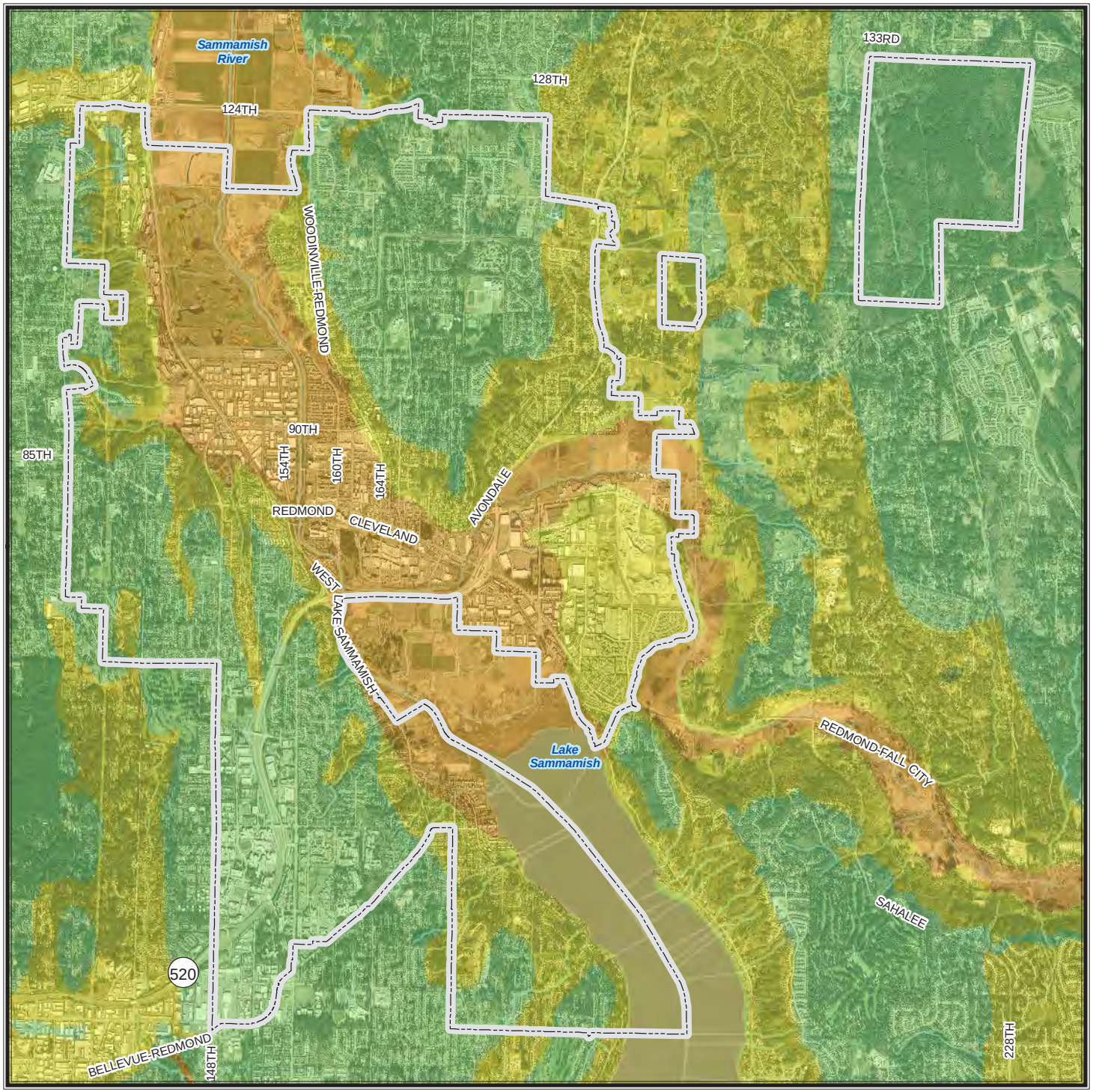
A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF REDMOND

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

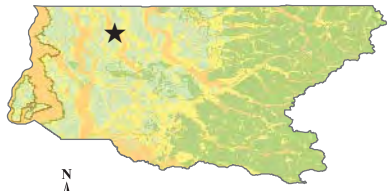
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

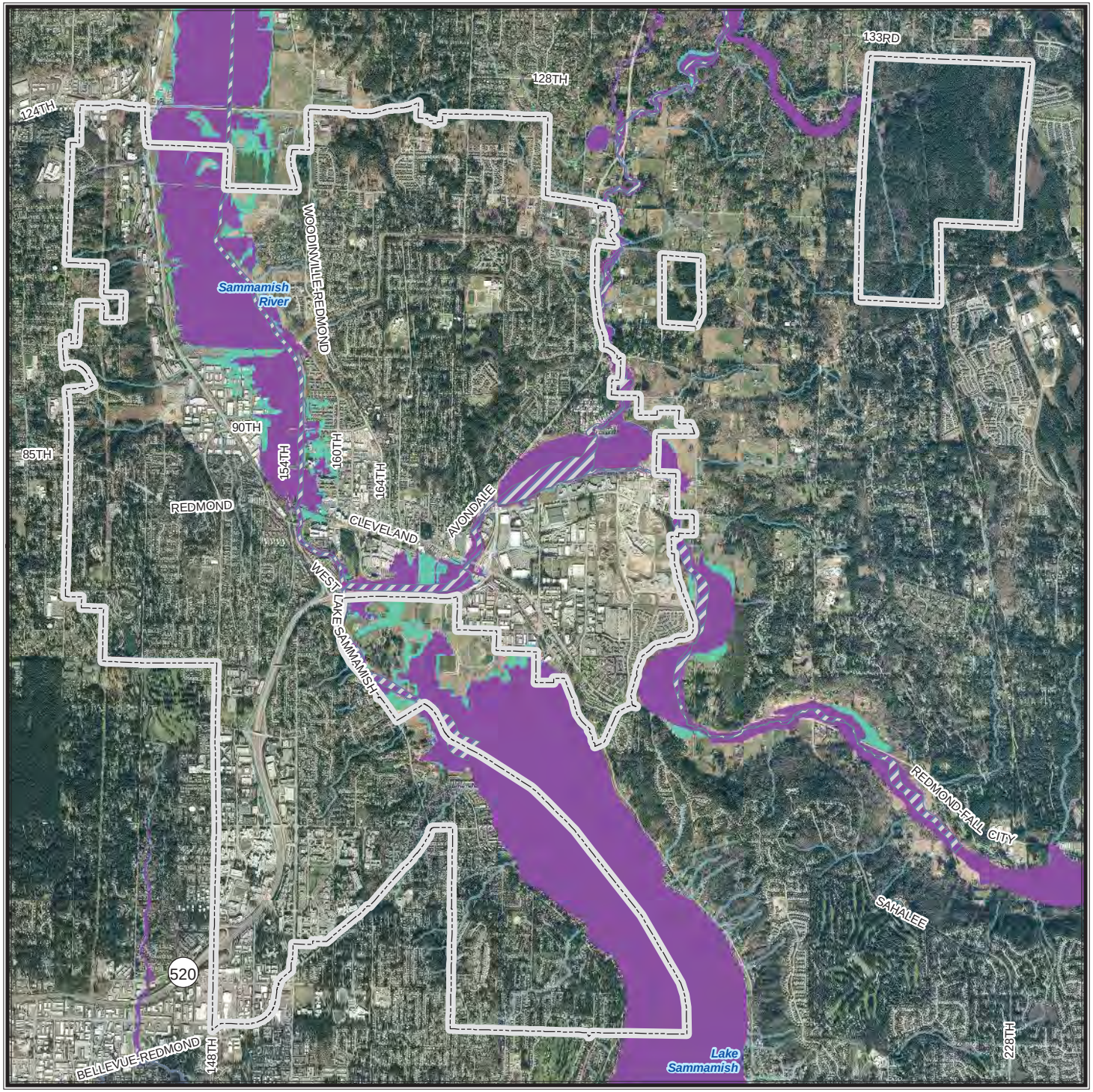
The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF REDMOND

FEMA DFIRM
Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

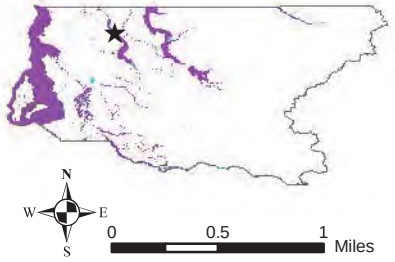
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

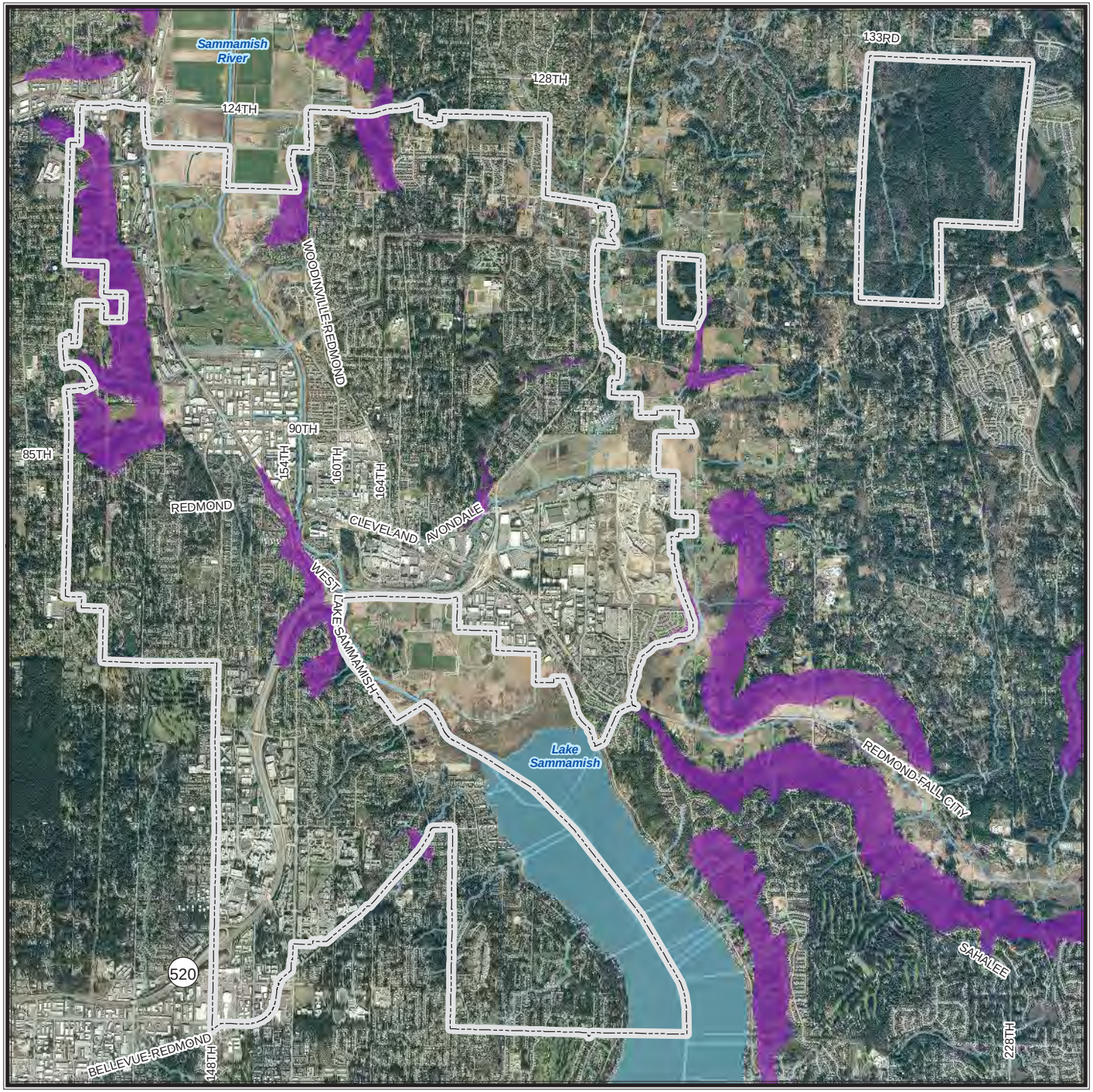
The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF REDMOND

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

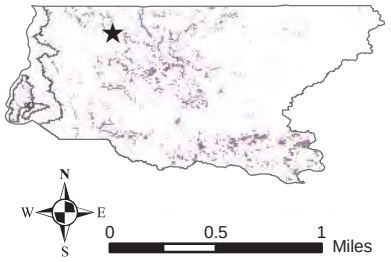
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

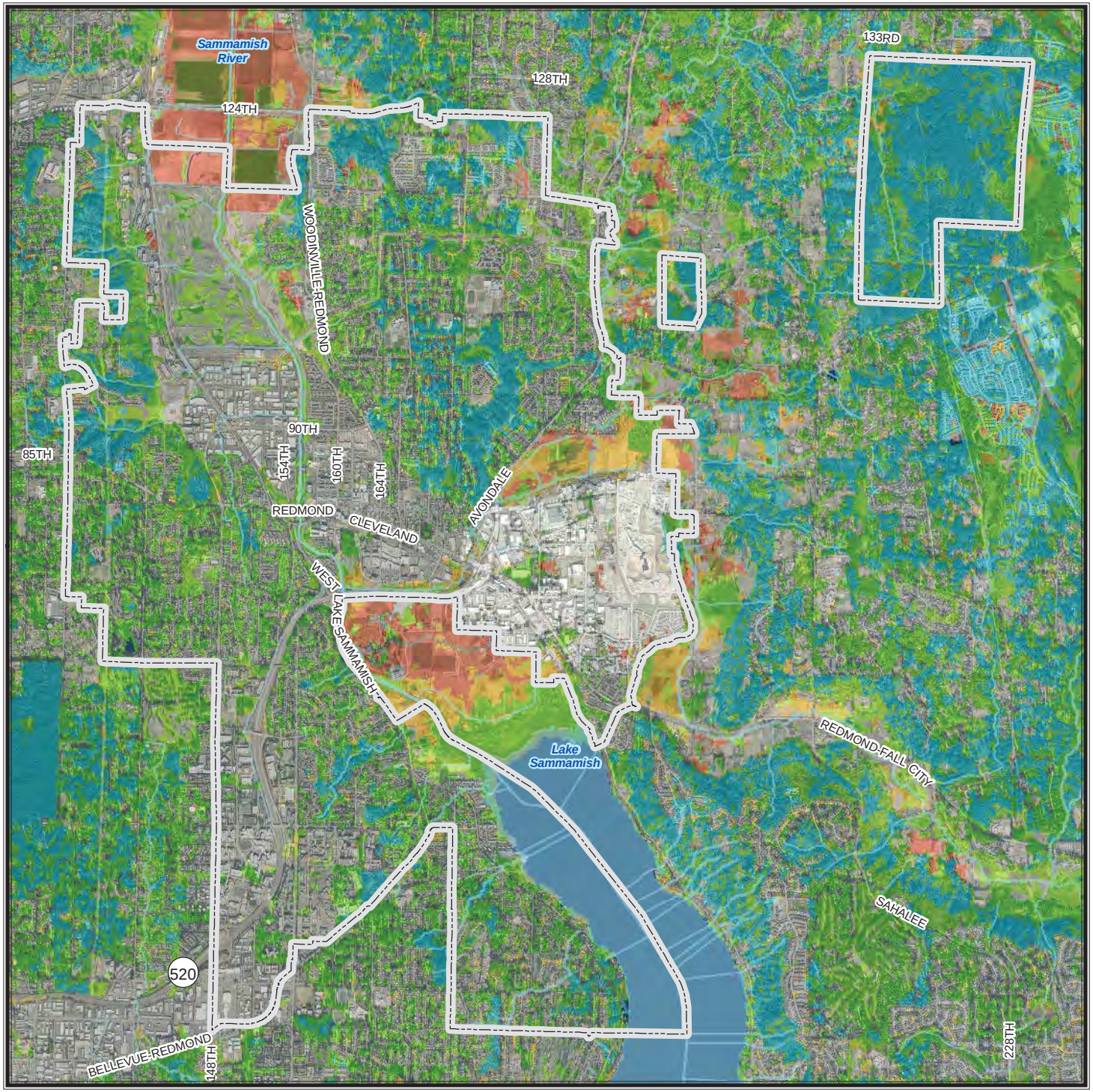
Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF REDMOND

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

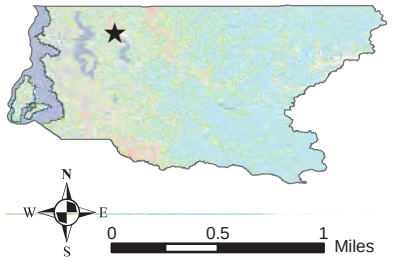
Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH



CHAPTER 21.
CITY OF RENTON UPDATE ANNEX

21.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Deborah Needham, Emergency Management Director
1055 S Grady Way
Renton, WA 98057
Telephone: 425-430-7027
e-mail Address: dneedham@rentonwa.gov

Alternate Point of Contact

Mindi Mattson, Emergency Management Coordinator
1055 S Grady Way
Renton, WA 98057
Telephone: 425-430-7041
e-mail Address: mmattson@rentonwa.gov

21.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**September 6, 1901
- **Current Population—**95,540 as of April 1, 2013
- **Population Growth—**The City experienced rapid growth in the two decades from 1990 to 2010. The population increased from 39,340 to 90,927 in those twenty years for a cumulative population growth rate of 230 percent, or an average of 11.5 percent per year. Growth has now slowed in the City. In the three years from 2010 to 2013 the city grew 5 percent, and annual average growth rate of 1.7 percent, which translates into an average annual growth rate of 1.7%.
- **Location and Description—**The City of Renton comprises approximately 24 square miles at the southern end of Lake Washington in King County. It is located about 10 miles southeast of downtown Seattle. Renton is situated at the center of a regional and international transportation network. The City is surrounded by freeways and is in close proximity to air, sea and rail transportation hubs. The City has its own airport and seaplane base. Renton is bisected by State Route 167 and Interstate 405. The dominant natural landscape features are Lake Washington, the Cedar River and the Green River. The topography of Renton varies, with generally flat areas near Lake Washington and hilly areas in the east and southeast. Elevations range from about 45 feet at Lake Washington to about 400 feet in the hills.
- **Brief History—**originally an important fishing area for Native Americans at the confluence of the Black and Cedar Rivers, Renton was settled by people of European descent in the 1850s, leading to the displacement of the Duwamish people. As the influx of settlers continued, the early Renton economy developed around coal, timber and clay production from the hills surrounding the downtown. In 1911 a major flood provided the impetus for diverting the channel of the Cedar River to prevent future flooding in the City, and in 1916 the Black River disappeared when the Montlake Cut lowered Lake Washington. The building of the Renton Boeing plant during World War II brought thousands to Renton seeking employment. To this day, all 737 jets produced by Boeing have their final assembly in Renton and are launched from the municipal airport. Renton is also home to several important regional government facilities and major corporations, including the Federal Aviation Administration, the Federal Reserve, Providence Health & Services, and PACCAR.

- **Climate—**The climate of Renton is moderate, with mild winters, averaging 154 precipitation days per year, and warm, dry summers. During the year temperatures range from 37 to 78 degrees and extreme temperatures rarely go below 28 degrees or above 87 degrees. The average annual rainfall is 38 inches. Average monthly precipitation varies from 6 inches November through January to less than an inch in July and August. Average annual snowfall is 12 inches. Humidity varies between 44 percent and 95 percent in summer and winter, respectively. Winds are variable and prevail from the south/southeast at an average speed of 7 miles per hour, seldom exceeding 22 miles per hour.
- **Governing Body Format—**The City of Renton operates under the laws of the State of Washington as an "optional municipal code city," governed by the Renton Municipal Code. Code cities have broad authority within their geographic domain. Renton is governed with a mayor-council form of government. Renton voters elect these eight officials "at-large," meaning there is no geographic representation to any position among the city's policy makers. The city consists of ten departments: Administrative Services, City Attorney, Community and Economic Development, Community Services, Court Services, Executive, Fire & Emergency Services, Human Resources and Risk Management, Police, and Public Works. The Fire & Emergency Services Department assumes responsibility for the adoption of this plan; the Emergency Management Director will oversee its implementation.
- **Development Trends—**Renton has a mix of land uses throughout the City. Industrial and commercial uses are located primarily in the downtown areas of Renton. The city center area includes mixed-use residential and commercial land, with both single and multi-family homes. Single family residences dominate the eastern and southeastern portions of the City, where most residential growth is still occurring. In addition, there are pockets of mixed-use commercial centers aimed at providing services for residents living along the eastern edges of the City.

  The Comprehensive Plan provides a vision for Renton's development 20 years into the future. The vision includes an emphasis on infill development occurring in existing neighborhoods rather than sprawl and an increase in multi-family housing in the downtown area.

21.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 21-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 21-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 21-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 21-4. Classifications under various community mitigation programs are presented in Table 21-5.

TABLE 21-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	Yes	Yes	International Building Code 2012 Edition adopted by reference with State Amendments 51-40 WAC and City amendments RMC 4-05-050
Zoning	Yes	No	No	No	RMC 4-2 (also covered in Comprehensive Plan)
Subdivisions	Yes	No	No	No	RMC 4-7 (RMC Title IV)
Stormwater Management	Yes	No	Yes	No	4-6-030.C. (Adoption of 2009 King County Surface Water Design Manual). RMC Titles IV and VIII.
Post Disaster Recovery	Yes	No	No	No	RES 4133, 2/27/2012
Real Estate Disclosure	No	No	Yes	Yes	WA State mandates certain disclosures by Real Estate agents under RCW 64.06
Growth Management	Yes	No	Yes	Yes	State Growth Management Act, RCW 36.70, City Comprehensive Plan, RMC
Site Plan Review	Yes	No	Yes	No	RMC 4-9-200 (RMC Title IV)
Public Health and Safety	Yes	No	Yes	Yes	Seattle-King County, RMC and City policy and procedure. Some state mandates on public safety.
Environmental Protection	Yes	No	Yes	Yes	RMC 4-3, Growth Management Act
Planning Documents					
General or Comprehensive Plan (latest update Fall 2007 general; June 2011 – specific (Ord. 5612)			(Currently in draft form – will be adopting the Hazard Mitigation Plan by reference just as was done with the Recovery Plan)		
Is the plan equipped to provide linkage to this mitigation plan?			Yes		
Floodplain or Basin Plan	Yes	No	Yes	Yes	Growth Management Act, adopted by reference
Stormwater Plan	Yes	No	Yes	Yes	Growth Management Act, adopted by reference
Capital Improvement Plan	Yes	No	Yes	Yes	Required by the city budget document as well as the Growth Management Act, by reference
What types of capital facilities does the plan address?			Transportation, Utilities, General Governmental (which includes, Fire, Police, and Community Services/Facilities.		
How often is the plan revised/updated?			Annually		
Habitat Conservation Plan	Yes	No	Yes	Yes	RMC Title IV, Aquifer Protection – 2000, Growth Management Plan, adopted by reference

TABLE 21-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Economic Development Plan	Yes	No	Yes	Yes	Comprehensive Plan adopted by reference
Shoreline Management Plan	Yes	No	Yes	Yes	RMC 4-3-090, Department of Ecology RCW 90.58.90
Community Wildfire Protection Plan	Yes	No	No	No	Renton Fire Department Master Plan 1987
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	Yes	RES 4163, adopted 11/5/2012. State approved January 2012
Threat and Hazard Identification and Risk Assessment	No	No	No	No	N/A – Have a current (2012) Hazard Identification and Vulnerability Assessment associated with 2012 Hazard Mitigation Plan.
Terrorism Plan	Yes	No	No	No	Annex to current CEMP
Post-Disaster Recovery Plan	Yes	No	No	No	RES 4133, formally adopted 4/27/2012
Continuity of Operations Plan	No	No	No	No	Draft plan continues to evolve, not formally adopted by Council
Public Health Plans	No	No	Yes	No	RES 4130 in 2012. Agreement with Seattle/King County. Have Emergency Support Function #8 of CEMP that addresses in part.

TABLE 21-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 21-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	• Community and Economic Development (CED): CED Administrator/Planning Director, Associate Planners, Senior Planners, Planning Manager
Engineers or professionals trained in building or infrastructure construction practices	Yes	• CED: Building Official, Building Plans Examiner and Building Inspectors • Public Works: Civil Engineers, Engineering Supervisors
Planners or engineers with an understanding of natural hazards	Yes	• CED: CED Administrator/Planning Director, Associate Planners, Senior Planners, Planning Manager, Development Engineering Manager, Construction Inspectors • Community Services: Urban Forestry and Natural Resources Manager • Public Works: Civil Engineers, Engineering Supervisors
Staff with training in benefit/cost analysis	Yes	• Finance: All staff
Surveyors	No	• n/a – contracted out
Personnel skilled or trained in GIS applications	Yes	• CED: Engineering Specialists • Information Technology: GIS Coordinator • Public Works: Engineering Specialists
Scientist familiar with natural hazards in local area	No	• n/a
Emergency manager	Yes	• Fire & Emergency Services Department, Emergency Management Director
Grant writers	Yes	• No position in the city is wholly dedicated to grant writing. Available personnel have written grants in the past from the following departments and divisions: City Clerk, Community and Economic Development, Community Services, Emergency Management Division, Finance, Fire & Emergency Services Department, Human Resources/Risk Management, Police, Public Works

TABLE 21-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Community and Economic Development
Who is your community's floodplain administrator? (department/position)	Community and Economic Development Administrator
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	January 1, 1987, Last updated on December 3, 2012
When was the most recent Community Assistance Visit or Community Assistance Contact?	October 2, 2012
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	Yes, but FEMA's delay in updating Green River Floodplain Maps has created uncertainty about the accuracy of the maps in this area.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes, floodplain administrator training and certification
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	Yes, and Yes

TABLE 21-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	Yes	6	10/1/2009
Building Code Effectiveness Grading Schedule	Yes	3	August 23, 2012
Public Protection	Yes	3	Not available
StormReady	Yes	Blue	8/21/2103
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	N/A	N/A	N/A

21.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 21-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: None
- Number of FEMA-Identified Severe Repetitive Loss Properties: None
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: N/A

TABLE 21-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe Winter Weather	4056	2012	$225,105
Severe Winter Weather	n/a	2011	No PDA done
Flooding	1963	2011	$23,500
Severe Winter Weather	1963	2011	No PDA done
Flooding	n/a	2010	$515,303
Severe Winter Weather	n/a	2010	No PDA done
Severe Weather	n/a	2009	No PDA done
Flooding	1817	2009	$11,607,310
Severe Winter Weather	1825	2008	$199,879
Severe Weather	n/a	2008	No PDA done
Flooding	1734	2007	$4,827,545
Severe Weather	n/a	2007	No PDA done
Severe Winter Weather	1682	2006	$239,281
Flooding	1671	2006	$5,019,223
Earthquake	1360	2001	$1,750,240
Flooding	1172	1997	$20,000
Landslides	1100	1996	$159,790
Flooding	1079	1995	No records available
Flooding	883	1990	No records available
Flooding	n/a	1982	No records available
Flooding	492	1975	No records available
Earthquake	196	1965	No records available

21.5 HAZARD RISK RANKING

Table 21-7 presents the ranking of the hazards of concern. Hazard area extent and location maps for earthquake, flood, and landslide hazards (including coal mine areas) are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE 21-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Earthquake	32
2	Severe Weather	30
3	Severe Winter Weather	30
4	Flood	21
5	Dam Failure	18
6	Landslide	15
7	Volcano	11
8	Wildfire	7
9	Tsunami	0
10	Avalanche	0

21.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 21-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

21.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 21-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 21-10 identifies the priority for each initiative. Table 21-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

21.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Existing databases containing information about individual structures, particularly for privately owned structures, may not be accurate, and may not have information on very old structures. Any efforts taken to improve the quality of data in those databases will improve the understanding of impact on the community. Likewise, future studies of levee integrity along both the Cedar and Green Rivers would add to the knowledge of flood risk present in their floodplains.

TABLE 21-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
RN-1	✓			EM included in citywide planning effective in 2011, now ongoing.
RN-2		✓		Becomes Initiative #2.
RN-3		✓		Becomes Initiative #3.
RN-4		✓		Becomes Initiative #4.
RN-5	✓			Project completed in 2013.
RN-6		✓		Becomes Initiative #5
RN-7	✓			Projected completed in 2010.
RN-8			✓	Similar to RN-4. Combined them into Initiative #4.
RN-9			✓	Duplicates other more specific projects in plan that are ongoing.
RN-10			✓	Similar to RN-21. Combined them into Initiative #9.
RN-11			✓	Many similar projects combined under new initiative #1.
RN-12			✓	Many similar projects combined under new initiative #1.
RN-13			✓	Many similar projects combined under new initiative #1.
RN-14		✓		Becomes Initiative #6.
RN-15		✓		Becomes Initiative #7.
RN-16		✓		Combined with RN-25 into Initiative #8.
RN-17	✓			Project completed on February 10, 2010.
RN-18			✓	Already covered by other projects, incl. ongoing compliance with ecological mandates. Remove.
RN-19	✓			Completed in 2013. Permanent practice, not needed in plan.
RN-20	✓			Completed in 2013. Permanent practice, not needed in plan.
RN-21			✓	Similar to RN-10. Combined them into Initiative #9.
RN-22		✓		Becomes Initiative #10.
RN-23			✓	Similar to RN-4. Combined them into Initiative #4.
RN-24	✓			Project completed in 2011.
RN-25			✓	Similar to RN-16. Combined them into Initiative #8.
RN-26			✓	Determined to be a response plan element, not mitigation.
RN-27			✓	Outside of control of city staff.
RN-28			✓	Outside of control of city staff.
RN-29			✓	Outside of control of city staff.
RN-30	✓			Completed RCC Transfer Switch in 2012.
RN-31			✓	Outside of control of city staff.

TABLE 21-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
RN-32		✓		Becomes Initiative #11.
RN-33		✓		Becomes Initiative #12.
RN-34			✓	Will use existing information in database, not staff time.
RN-35		✓		Becomes Initiative #13.
RN-36	✓			This project duplicated RN-30. Completed in 2012.
RN-37		✓		Becomes Initiative #14.
RN-38	✓			Project completed, maps updated when checked in 2013.
RN-39			✓	Assessment shows no current building or infrastructure threat.
RN-40		✓		Becomes Initiative #15.
RN-41	✓			Project completed in 2011.
RN-42			✓	Response oriented, not mitigation. Remove.
RN-43			✓	Outside of control of city staff. Remove.
RN-44	✓			2013. Permanent requirement, no longer needed in plan.
RN-45	✓			2013. Completed annually.
RN-46	✓			2013. Completed annually.
RN-47	✓			2013. Completed annually.
RN-48	✓			Project completed in 2012.
RN-49	✓		✓	Current assessment shows all feasible measure already taken.
RN-50	✓			Project completed in 2013.
RN-51			✓	Not feasible or appropriate based on current risk assessment.

TABLE 21-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
RN #1: Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts							
New and existing	Flood	2,4,10,12	Public Works/CED	Low	Local Budget	Short Term	No
RN #2: Identify and pursue funding opportunities to implement mitigation actions.							
New and existing	All	5	Emergency Mgmt.	Low	Local Budget	Short Term	Yes
RN #3 Develop public and private sector partnerships to foster hazard mitigation activities.							
New and existing	All	13,14,15	Emergency Mgmt.	Low	Local Budget	Long Term	Yes
RN #4: Develop detailed inventories of at-risk buildings, infrastructure, critical facilities, and important transportation or utility system components, and prioritize mitigation actions.							
New and existing	All	4,5	CED/ Community Services/ Public Works	Medium	Local Budget	Long Term	Yes
RN #5: Integrate the Mitigation Plan findings into planning and regulatory documents and programs.							
New and existing	All	2,10	CED	Low	Local Budget	Short Term	Yes
RN #6: Continue to enforce, maintain and update the Renton Critical Areas Regulations and Shoreline Master Program requirements.							
New and Existing	Flood	2,10	CED	Low	Local Budget	Short Term	Yes
RN #7: Continue to perform maintenance dredging, maintenance of floodwalls and levees associated with the Army Corps of Engineers Cedar River Section 205 Flood Hazard Reduction Project.							
Existing	Flood	5,8,12	Public Works	High	Grants	Short Term	Yes
RN #8: Continue to implement the Surface Water Utility programs related to flood hazard management, which include public education and customer service programs, and the Capital Improvement Program, engineering program, and maintenance and operations program, which may address measures such as upsizing culverts or storm water drainage capacity.							
New and existing	Flood	5,8,12	Public Works	High	Grants/Local Budget	Short Term	Yes

TABLE 21-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
RN #9: Continue to be a member of the FEMA Community Rating System, and work to identify and implement measures and policies to increase Renton's Community Rating System score to reduce flood insurance rates.							
New and existing	Flood	2,3,4,5,7,8, 9,12	Public Works	High	Grants/Local Budget	Long-Term	Yes
RN #10 Re-evaluate future land use/zoning designations in FEMA mapped 100-year floodplain.							
New	Flood	2,10	CED	Low	Local Budget	Short Term	Yes
RN #11: Encourage new developments to include underground power lines.							
New	Severe Weather, Severe Winter Weather	1,2	CED	Low	Local Budget	Short Term	Yes
RN #12: Evaluate the seismic vulnerability of critical city-owned buildings, utilities, and infrastructure and establish priorities to retrofit or replace vulnerable facilities to ensure adequate seismic performance of critical facilities.							
Existing	Earthquake	1,4,5,6,9, 14	Community Services/ Public Works	Medium	Local Budget	Long Term	Yes
RN #13: Disseminate FEMA pamphlets to educate homeowners about structural and non-structural retrofitting of vulnerable homes and encourage retrofit.							
Existing	Earthquake	4,6,14	CED	Low	Local Budget	Short Term	Yes
RN #14: Obtain funding and retrofit important public facilities with significant seismic vulnerabilities.							
Existing	Earthquake	1,5,9	Community Services	High	Grants/Local Budget	Short Term	Yes
RN #15: Limit future development in high landslide potential areas.							
New	Landslide	2,8,10	CED	Low	Local Budget	Short Term	Yes
#RN-16—Continue to support the county-wide initiatives identified in this plan.							
New and Existing	All Hazards	4,6,11,12,1 3, 14, 15	City of Renton	Low	General Fund	Short term	No
#RN-17—Actively participate in the plan maintenance strategy identified in this plan.							
New and Existing	All Hazards	4,6,11,12,1 3, 14, 15	King County OEM, City of Renton	Low	General fund	Short term	No

TABLE 21-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
1	4	Medium	Low	Yes	No	Yes	High
2	1	Medium	Low	Yes	No	Yes	Medium
3	3	Medium	Low	Yes	No	Yes	Low
4	2	Low	Medium	Yes	No	Yes	Low
5	2	Low	Low	Yes	No	Yes	Medium
6	2	Medium	Low	Yes	No	Yes	Medium
7	3	High	High	Yes	Yes	No	High
8	3	High	High	Yes	Yes	No (not entirely)	High
9	8	Medium	High	Yes	Yes	No (not entirely)	Medium
10	2	Medium	Low	Yes	No	Yes	High
11	2	Medium	Low	Yes	No	Yes	High
12	6	Medium	Medium	Yes	No	Yes	Low
13	3	Medium	Low	Yes	No	Yes	High
14	3	High	High	Yes	Yes	No	High
15	3	Medium	Low	Yes	No	Yes	High
16	7	Medium	Low	Yes	No	Yes	High
17	7	Low	Low	Yes	Yes	Yes	high

a. See Introduction for explanation of priorities.

TABLE 21-11.
ANALYSIS OF MITIGATION INITIATIVES

Hazard Type	Initiative Addressing Hazard, by Mitigation Type[a]					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	n/a	n/a	n/a	n/a	n/a	n/a
Dam Failure	17	1,2,3,4,5,6,7,8,9,10	1,9,16	7,8	9,16	7
Earthquake	17	2,3,12,13	3,16	2,3,4,5	16	12,13
Flood	1,7,17	1,2,3,4,5,6,7,8,9,10	1,9,16	2,3,4,7,8	9,16	7,8
Landslide	17	2,3,4,5,14	3,14,16		16	
Severe Weather	17	2,3,4,11	3,16		11,16	
Severe Winter Weather	17	2,3,4,11	3,16		11,16	
Tsunami	n/a	n/a	n/a	n/a	n/a	n/a
Volcano	17	2,3,4	3,16		16	
Wildfire	17	2,3,4	3,16		16	

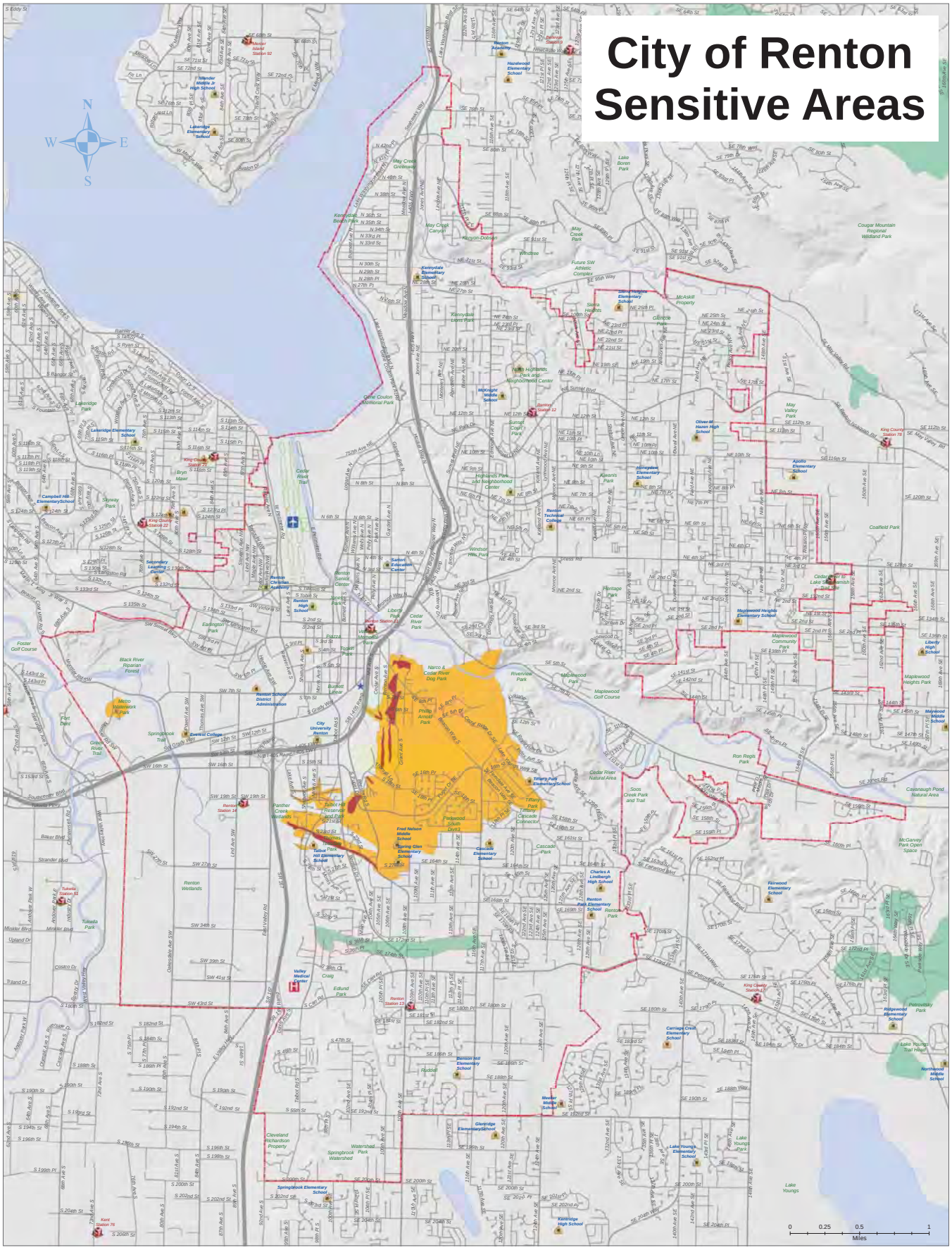
a. See Introduction for explanation of mitigation types.

21.9 ADDITIONAL COMMENTS

Two of the hazards assessed and named in this annex do not have applicability to Renton: tsunamis, and avalanches. Renton is sufficiently far inland that a tsunami event will not have any direct effect within the city limits. Although there is potential for a seiche (sloshing of water in an inland body of water that can occur during an earthquake), the effects of the earthquake will be substantial enough that the additional damages of a potential seiche are not considered separately from those of an earthquake. Likewise, it is highly improbable that Renton would ever experience an avalanche, so that hazard is also not addressed.

An additional risk posed by abandoned coal mines is present within Renton but not specifically called out in this plan. Since the primary hazard in Renton associated with coal mines is collapse, those potential impacts and mitigation measures have not been individually addressed but are captured within two other hazards that cause land movement: landslides, and earthquakes. The City of Renton prepared maps of the coal mine, flood, landslide and earthquake liquefaction hazards, separate from those prepared as part of this regional hazard mitigation plan update. These are included with this annex, along with the hazard maps generated from Hazus, for clarity about the locations of these specific hazards.

City of Renton Sensitive Areas



Data Sources: City of Renton, King County
This document is a graphic representation, not guaranteed to survey accuracy, and is based on the best information available as of the date shown. This map is intended for City display purposes only.

Information Technology - GIS
mapsupport@rentonwa.gov
Printed on: 10/14/2013

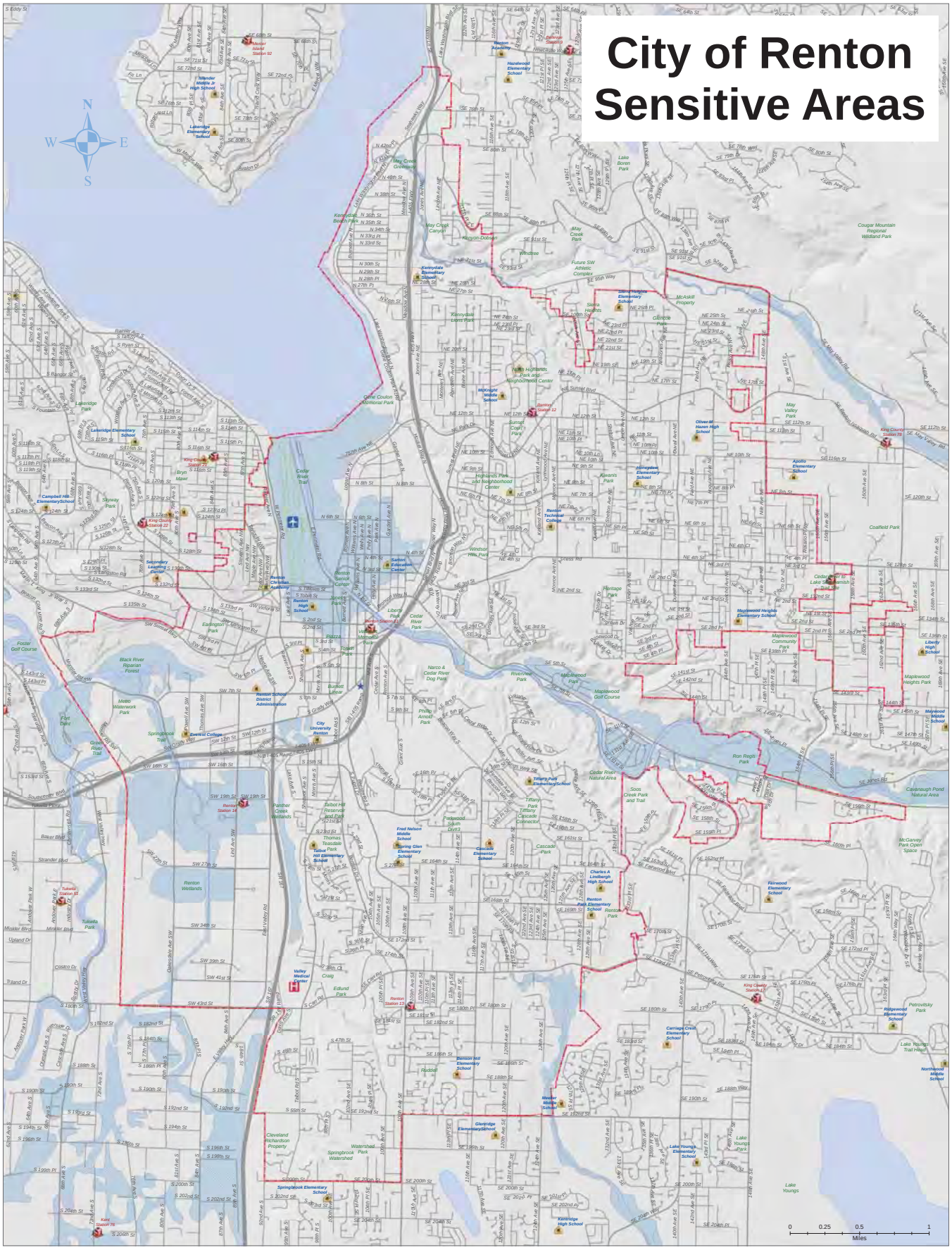
- Schools/Education Facilities
- Fire Station / EMS Station
- Renton City Hall
- Valley Medical Center
- Airport
- Renton City Limits

Coal Mine Hazards

Severity

- HIGH
- MODERATE
- UNCLASSIFIED

City of Renton Sensitive Areas



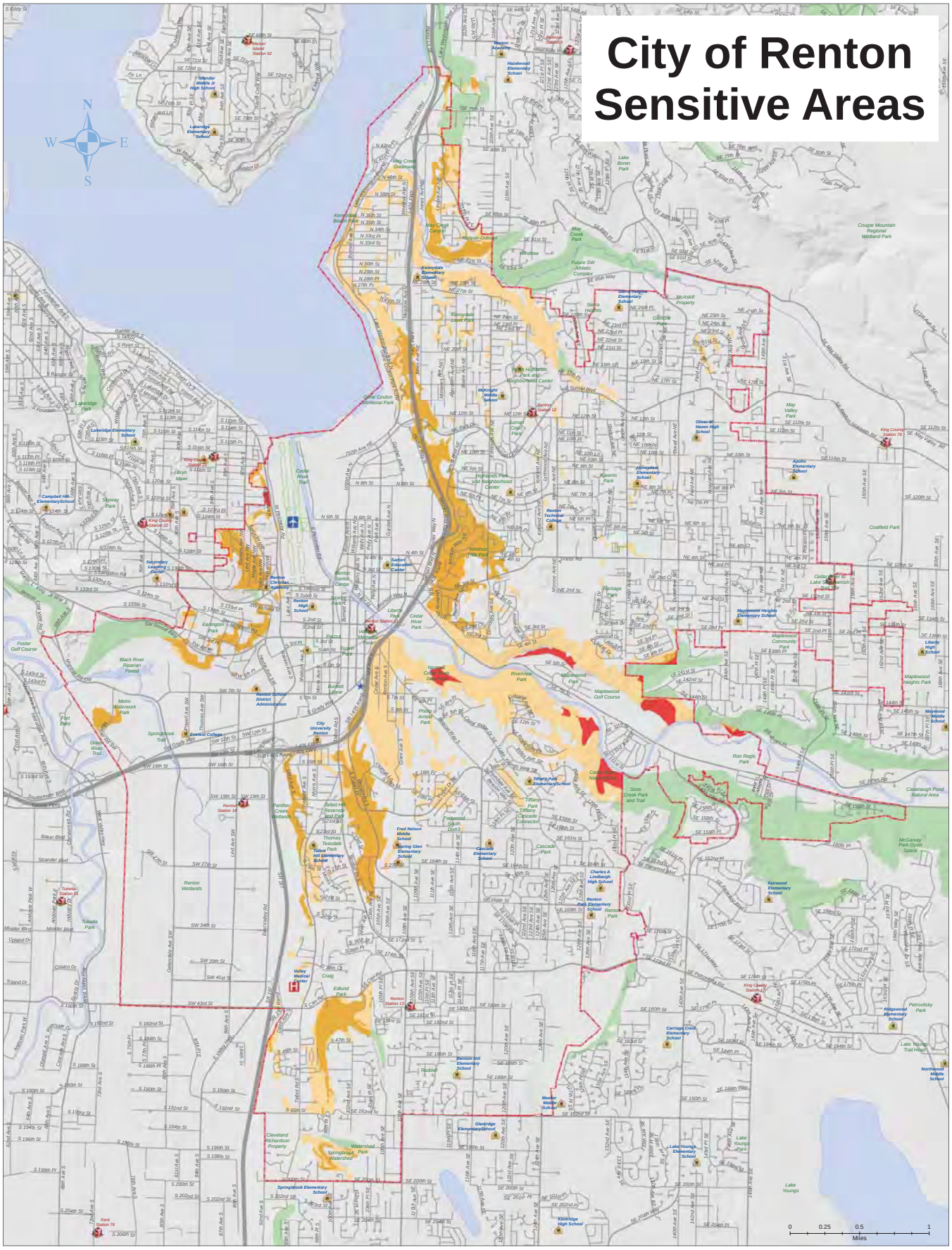
Data Sources: City of Renton, King County
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- Schools/Education Facilities
- Fire Station / EMS Station
- Renton City Hall
- Valley Medical Center
- Airport
- Renton City Limits

Flood Hazard

City of Renton Sensitive Areas



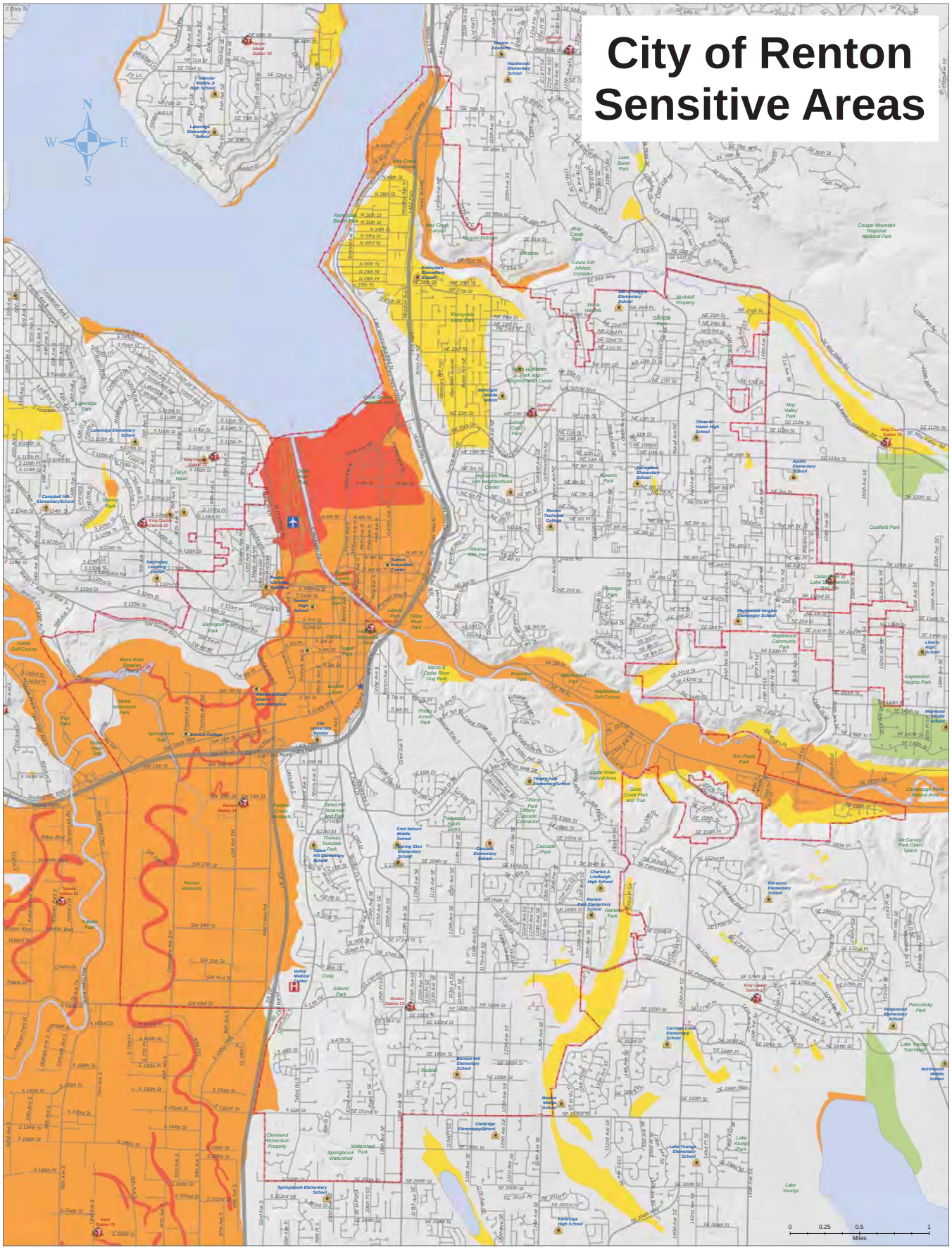
Data Sources: City of Renton, King County
This document is a graphic representation, not guaranteed to survey accuracy, and is based on the best information available as of the date shown. This map is intended for City display purposes only.

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- Schools/Education Facilities
- Fire Station / EMS Station
- Renton City Hall
- Valley Medical Center
- Airport
- Renton City Limits

Landslide Hazard Severity
- Very High
- High
- Moderate
- Unclassified

City of Renton Sensitive Areas



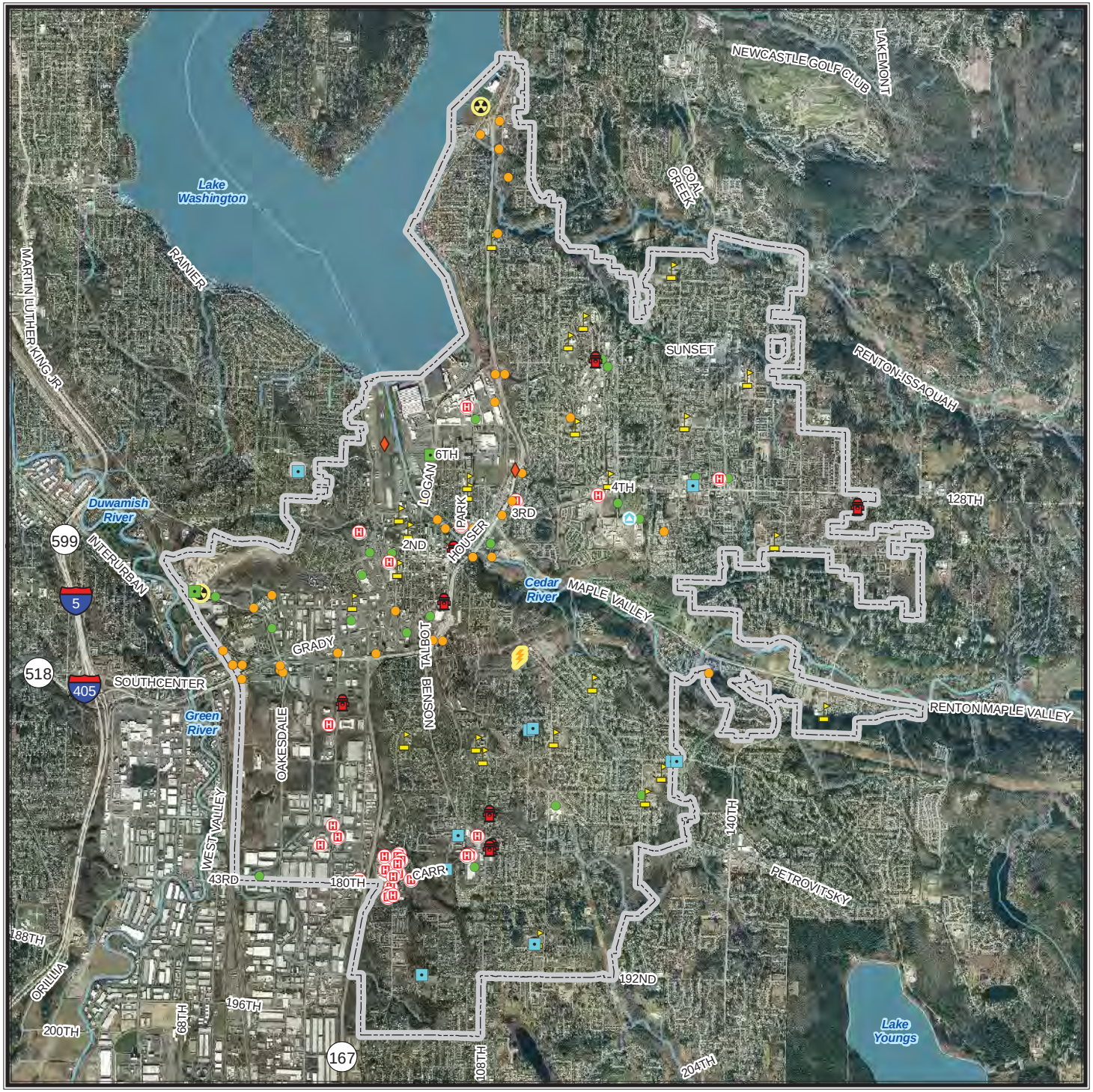
Data Sources: City of Renton, King County
This document is a graphic representation, not guaranteed to survey accuracy, and is based on the best information available as of the date shown. This map is intended for City display purposes only.

Information Technology - GIS
mapsupport@rentonwa.gov
Printed on: 10/14/2013

- Schools/Education Facilities
- Fire Station / EMS Station
- Renton City Hall
- Valley Medical Center
- Airport
- Renton City Limits

Liquefaction Susceptability

- low
- low to moderate
- moderate to high
- high



CITY OF RENTON

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

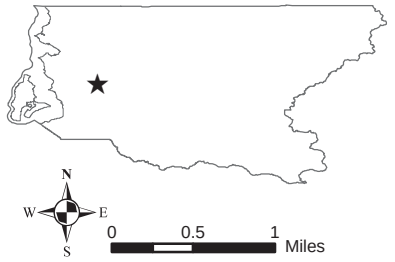
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

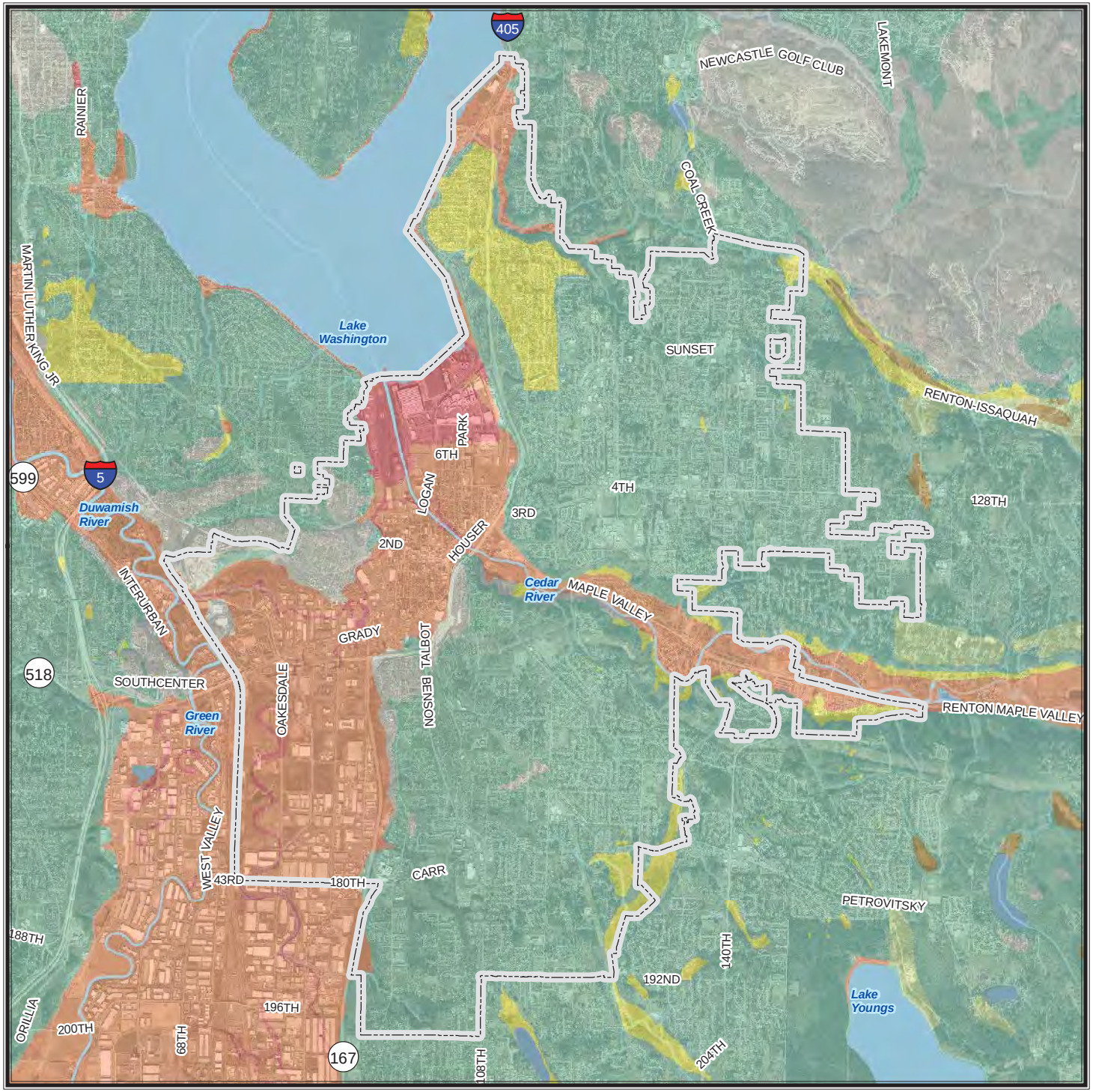
Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





CITY OF RENTON

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

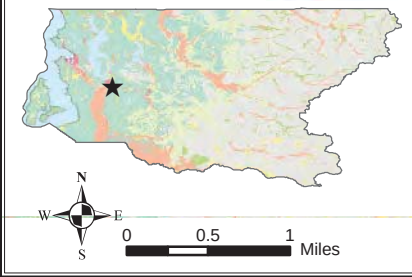
Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF RENTON

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

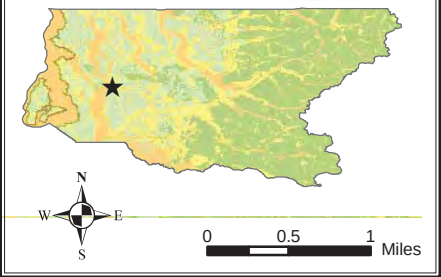
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

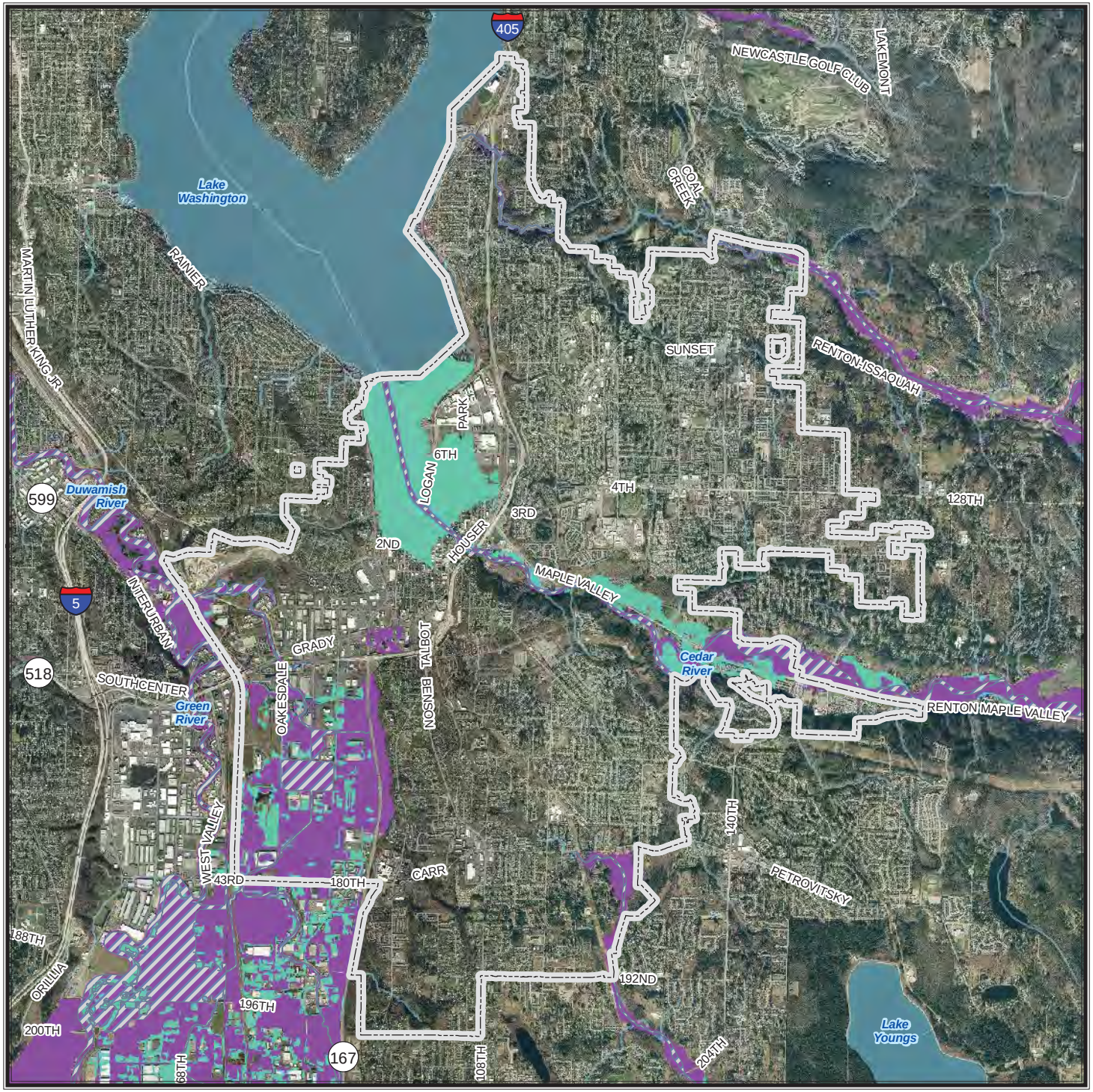
The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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FEMA DFIRM
Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

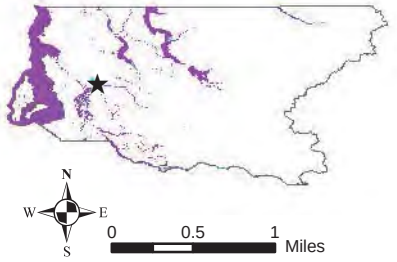
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

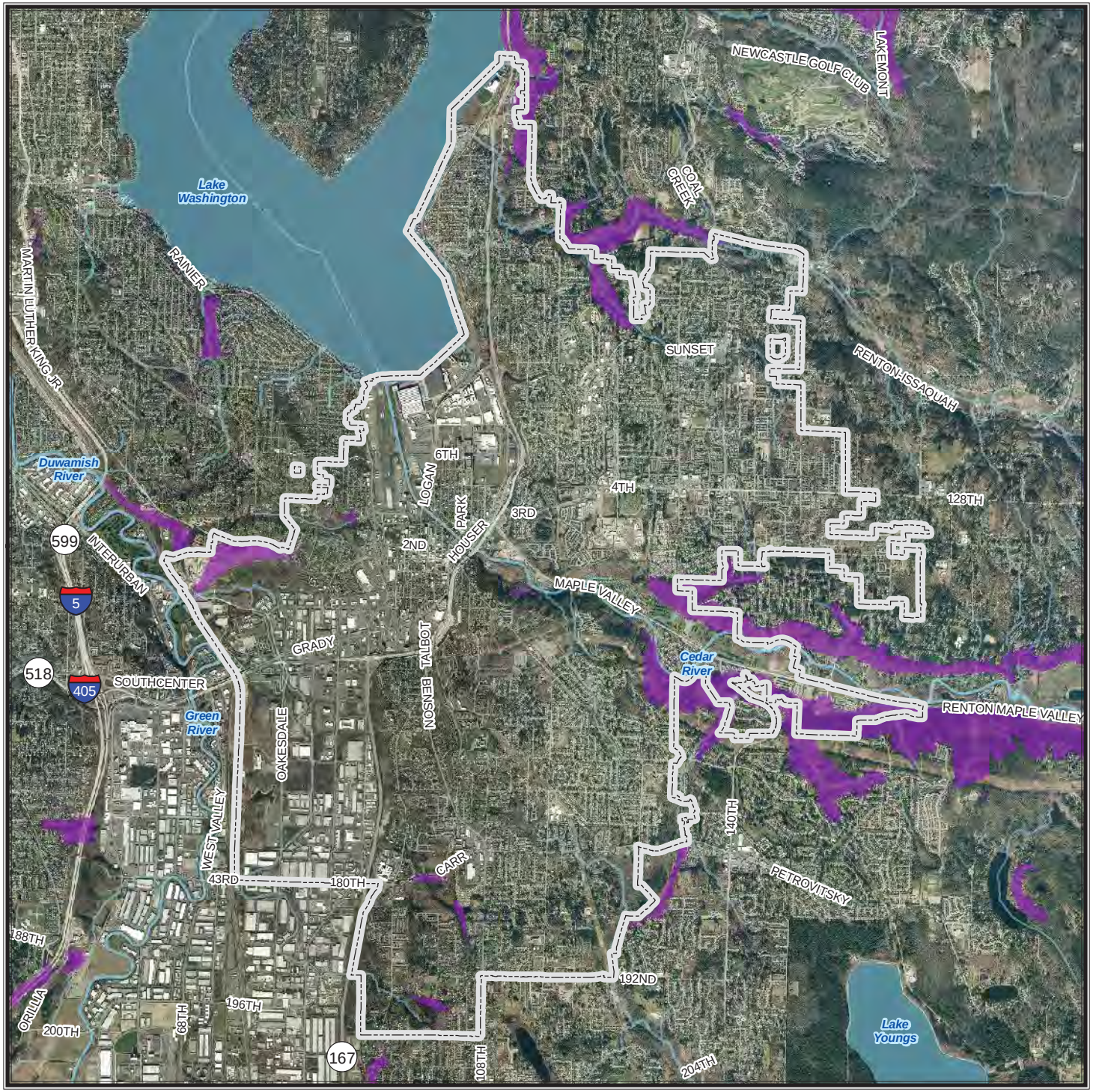
The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF RENTON

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

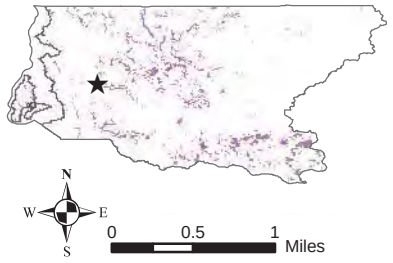
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF RENTON

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

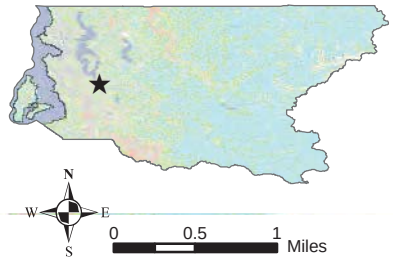
Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH



CHAPTER 22.
CITY OF SEATAC ANNEX

22.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Patrick Lowery, Program Manager
3521 S 170th St
SeaTac WA., 98188
Telephone: (253) 856 4565
e-mail Address: plowery@ci.seatac.wa.us

Alternate Point of Contact
Kimberly Behymer, Program Coordinator
24611 116th Ave SE
Kent, WA 98042
Telephone: (253) 856 4343
e-mail Address: kbehymer@kentwa.gov

22.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation -** February 1990
- **Current Population -** 27,310 as of 2013
- **Population Growth -** Population in SeaTac is expected to increase by 21 percent over the next several decades, from 25,496 in 2000 to 30,850 in the year 2020. Meanwhile, the size of households is expected to decrease from 2.5 persons per household in 2000 to 2.42 persons per household in 2020, reflecting continuing national and regional trends toward smaller households. Thus, SeaTac households are forecast to increase by 31 percent, from 9,708 to 12,750, housing new population moving to the area as well as accommodating some of the existing population in smaller households.
- **Location and Description -** The City is located in King County, the most populous county in the State of Washington. SeaTac is strategically located between the two largest cities in the area, Seattle and Tacoma. The City's boundaries surround the SeaTac International Airport resulting in a significant number of employers who are connected to the air travel industry. This group includes airlines, hotels, car rental agencies and park-and-fly operations.
- **Brief History -** The area that became the incorporated City of SeaTac was originally a community that was predominately rural. World War II and the sudden growth of defense activities nearly tripled the population of the area. In 1942, the Port of Seattle began the development of a new airport called Seattle Tacoma International Airport in South King County. Within two decades, the Airport had expanded to 1,400 acres and had a thriving suburban community around it. Seattle-Tacoma International Airport is the key international air hub for the Pacific Northwest. In 2011, 32.8 million passengers passed through the Airport, up 4 percent from 2010. This total includes nearly 3 million international passengers. The record number of passengers increases job growth contributing to the nearly 90,000 jobs being generated by airport activities
- **Climate -** SeaTac's climate is described as oceanic or temperate marine, with cool, wet winters and warm, relatively dry summers. Temperature extremes are moderated by the adjacent Puget Sound. In an average year, at least 0.01 inches of precipitation falls on 150 days. It is cloudy 201 days out of the year and partly cloudy 93 days. Average annual snowfall, as measured at Sea-Tac Airport, is 5.9 inches.

- **Governing Body Format -** The City of SeaTac operates as a Non-Charter Code City under the laws of the State of Washington. The City has a Council-Manager form of government with daily operations administered by a full-time City Manager and a seven member City Council, with one of its members serving as Mayor. The Council establishes policies, provides the necessary resources to operate the City through the budget process and adopts local laws through ordinances. The seven-member City Council is elected at-large rather than by district, and serve a four-year term. Elections are staggered on a two-year cycle. The SeaTac City Manager assumes responsibility for the adoption of this plan; the SeaTac Office of Emergency Management will oversee its implementation.
- **Development Trends -** Like many central Puget Sound communities, SeaTac is expected to experience significant growth over the next twenty years. Most of that growth is expected to concentrate in the areas around SeaTac's three light rail transit stations, and to consist of multi-family residential development ranging from townhouse and lower density multifamily development to mixed-use higher density development, up to six stories with ground floor retail and commercial uses. SeaTac also expects growth in commercial uses, especially in the warehousing and distribution sector related to air cargo.

22.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 22-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 22-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 22-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 22-4. Classifications under various community mitigation programs are presented in Table 22-5.

TABLE 22-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	SMC, Title 13
Zoning	Yes	No	No	Yes	SMC, Title 15
Subdivisions	Yes	No	No	No	SMC, Title 14
Stormwater Management	Yes	No	No	Yes	SMC, Title 12, Chapter 12.10 Adopted 01/28/2014
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	WA State mandates certain disclosures by Real Estate agents under RCW 64.06
Growth Management	Yes	No	No	Yes	City of SeaTac Comprehensive plan is currently being updated
Site Plan Review	Yes	No	No	No	SMC, Title 16A, adopted 01/28/2014
Public Health and Safety	Yes	No	No	No	SMC, Title 7
Environmental Protection	Yes	No	No	Yes	SMC, Title 15

TABLE 22-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Planning Documents					
General or Comprehensive Plan					Update for 2015
Is the plan equipped to provide linkage to this mitigation plan?					Plan includes land use and environmental elements.
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	No	No	No	No	
Capital Improvement Plan	Yes	No	No	Yes	Capital facilities element of Comprehensive plan
What types of capital facilities does the plan address?			*City owned buildings, parks, parks and recreation facilities, transportation facilities, surface water management, fire and fire equipment,*		
How often is the plan revised/updated?			*Every 7 years or according to Washington State Growth Management Act schedule.*		
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	No	No	Economic development element of Comprehensive Plan
Shoreline Management Plan	Yes	No	No	Yes	SMC, Title 18, adopted 01/28/2014
Community Wildfire Protection Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	No	
Threat and Hazard Identification and Risk Assessment	Yes	No	No	No	
Terrorism Plan	Yes	No	No	No	
Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	Yes	No	No	No	
Public Health Plans	No	No	No	No	

TABLE 22-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Y
Capital Improvements Project Funding	Maybe
Authority to Levy Taxes for Specific Purposes	Y
User Fees for Water, Sewer, Gas or Electric Service	N
Incur Debt through General Obligation Bonds	Y
Incur Debt through Special Tax Bonds	Y
Incur Debt through Private Activity Bonds	Not recommended
Withhold Public Expenditures in Hazard-Prone Areas	Y
State Sponsored Grant Programs	Y
Development Impact Fees for Homebuyers or Developers	Y
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 22-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Y	Community and Economic Development Department, Planning Division. Planning Manager, Senior Planners. Engineering Review Division. Engineering Development Review Manager, Senior Engineering Technician, Engineering Technician.
Engineers or professionals trained in building or infrastructure construction practices	Y	Community and Economic Development Department, Engineering Review Division. Engineering Development Review Manager, Senior Engineering Technician, Engineering Technician, Building Services Manager. Public Works Department. City Engineer, Assistant City Engineer, Civil Engineers
Planners or engineers with an understanding of natural hazards	Y	Community and Economic Development Department, Planning Division. Planning Manager, Senior Planners. Engineering Review Division. Engineering Development Review Manager, Senior Engineering Technician, Engineering Technician.
Staff with training in benefit/cost analysis	Y	
Surveyors		
Personnel skilled or trained in GIS applications	Y	Finance Department, GIS Division. GIS Coordinator/Analyst, GIS Analysts.
Scientist familiar with natural hazards in local area		
Emergency manager	Y	Emergency Management Program Director
Grant writers	Y	Community and Economic Development Department, Planning Division. Planning Manager, Senior Planners. Public Works Department. City Engineer, Assistant City Engineer.

TABLE 22-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Community and Economic Development
Who is your community's floodplain administrator? (department/position)	City Manager
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	1993
When was the most recent Community Assistance Visit or Community Assistance Contact?	04/26/2006
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	Yes, only a small fraction of the City is located within an identified flood plain.
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Not at this time
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	No Not at this time

TABLE 22-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	2	05/04/2009
Public Protection	Yes	4	Not available
StormReady	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	No	N/A	N/A

22.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 22-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: None
- Number of FEMA-Identified Severe Repetitive Loss Properties: None
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: None

TABLE 22-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe wind storm	1682-DR-WA	12/14-15/2006	$54,972
Severe winter storm	1825-DR-WA	12/12/2008 - 1/5/2009	$117,907
Severe winter ice storm	4056-DR-WA	1/14-23/2012	$146,903

22.5 HAZARD RISK RANKING

Table 22-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE 22-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe weather	45
2	Storm winter weather	45
3	Earthquake	26
4	Landslide	6
5	Flooding	6
6	Volcano	6
7	Wildfire	0
8	Dam failure	0
9	Avalanche	0
10	Tsunami	0

22.6 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 22-8 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 22-9 identifies the priority for each initiative. Table 22-10 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 22-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative # ST1 - Emergency Management will develop a plan for and deliver community –wide instruction regarding major disaster-72 hour preparedness strategies. This program will work to use community partnerships that provide greater access to recent immigrant and English-second-language (ESL) populations.						
New and Existing	All Hazards	3,4,6,13	City of SeaTac	Low	General Fund	Ongoing
Initiative # ST2 - Develop a post-disaster Business Community Response Plan that establishes a framework of procedures and resources to be accessed during the recovery phase following a major disaster. This will include potential Federal, State, and regional recovery-aid agencies, as well as development of templates for stream-lining official processes that might be encountered during a recovery period.						
New	All Hazards	1,3,5,11,13, 14,15	City of SeaTac	Low	General Fund	Ongoing
Initiative # ST3 - Emergency Management will work to improve the delivery of emergency notifications and updates to the community, focusing on recent immigrant and ESL populations. This will include reaching out to community stakeholders as well as using notification systems already in place.						
Existing	All Hazards	3,4,6,11,13	City of SeaTac	Low	General Fund	Ongoing
Initiative # ST4 - Start planning for and establish a network of Safe Refuge locations within walking distance of the City's residential neighborhoods and major lodging centers.						
New	All Hazards	1,3,4,13	City of SeaTac	Low	General Fund	Ongoing
Initiative # ST5 - Review and update the City of SeaTac Continuity of Operations Plan, make changes as necessary and provide updates to staff and community as warranted.						
Existing	All Hazards	1,7	City of SeaTac	Low	General Fund	Ongoing
Initiative # ST6 – In support of event response and recovery efforts, the City plans for, designs, and continues to construct improved pedestrian corridors interconnecting local neighborhoods with Safe Refuge and regional resource distribution sites.						
Existing and New	All Hazards	1,2,4,5	City of SeaTac	High	State and Local funds	Ongoing
Initiative # ST7—Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts						
New and Existing	Flood and Earthquake	**2,**4,10,12	Building	Low	General Fund	Ongoing
Initiative # ST8—Integrate the hazard mitigation plain into other plans, ordinances or programs to dictate land uses within the jurisdiction.						
New	All Hazards	2,4,8,10	Planning	Low	General Fund	Short-term

TABLE 22-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative # ST9—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority.						
Existing	All Hazards	5,9,13	Building	High	FEMA grants, Local sources for local Match	Long-term
Initiative # ST10—Continue to support the county-wide initiatives identified in this plan.						
New and Existing	All Hazards	4,6,11,12,13, 14, 15	City of SeaTac	Low	General Fund	Ongoing
Initiative # ST11—Actively participate in the plan maintenance strategy identified in this plan.						
New and Existing	All Hazards	4,6,11,12,13, 14, 15	King County OEM, City of SeaTac	Low	General Fund	Ongoing

TABLE 22-9.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
1	4	High	Low	Yes	No	Yes	High
2	7	High	Low	Yes	Yes	Yes	High
3	5	High	Low	Yes	No	Yes	High
4	4	Medium	Low	Yes	No	Yes	High
5	2	Medium	Low	Yes	Yes	Yes	High
6	4	High	High	Yes	Yes	No	Medium
7	4	Medium	Low	Yes	No	Yes	High
8	4	Medium	Low	Yes	No	Yes	High
9	3	High	High	Yes	Yes	No	Medium
10	7	Medium	Low	Yes	No	Yes	High
11	7	Low	Low	Yes	Yes	Yes	High

a. See Introduction for explanation of priorities.

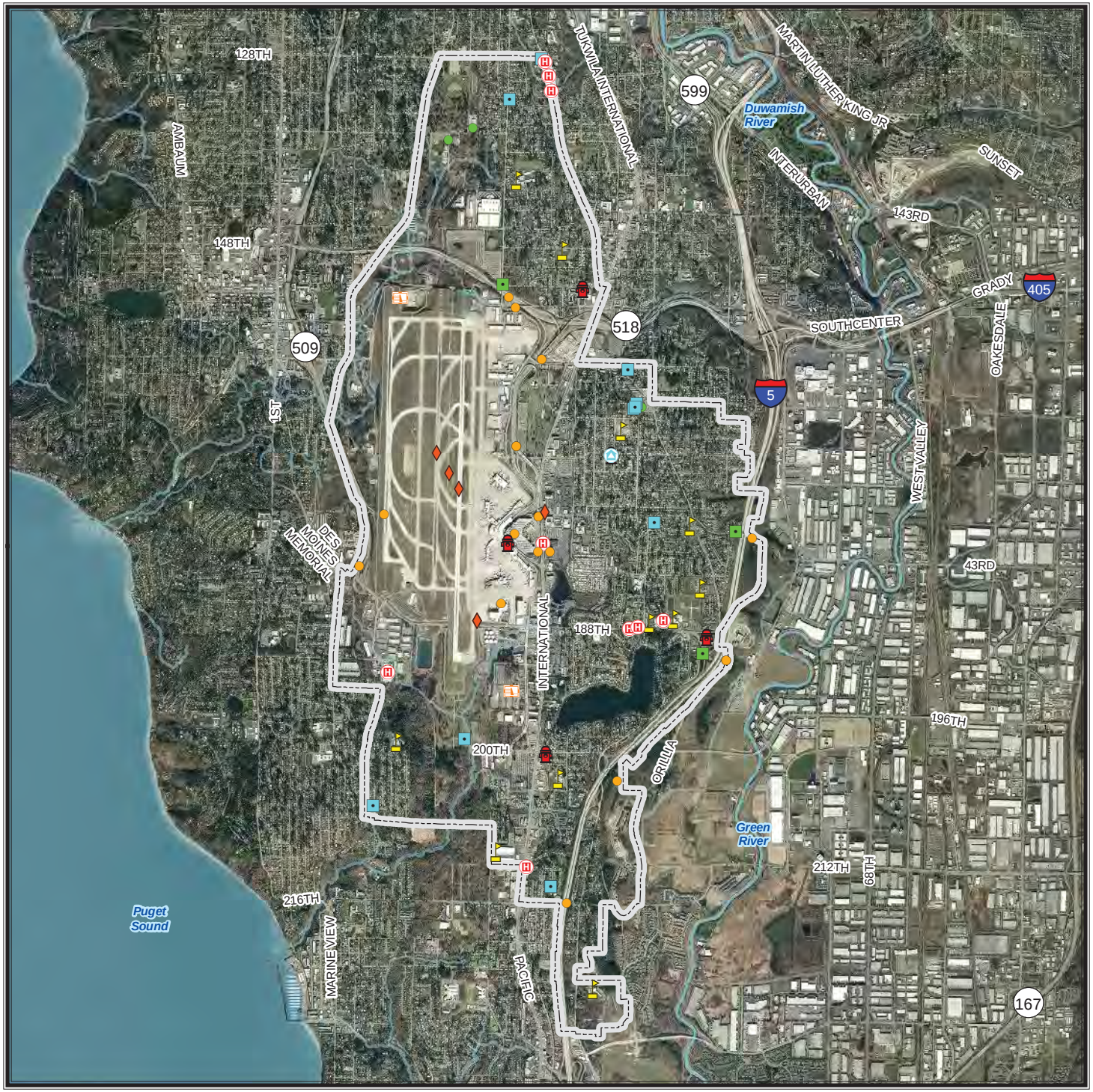
TABLE 22-10.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	--	--	--	--	--	--
Earthquake	2,5,6,8,11	1,9	10		3,4,10	
Flood	2,5,6,7,8,11	1,7,9	7,10	7	3,4,7,10	
Landslide	2,5,6,8,11	1,9	10		3,4,10	
Severe Weather	2,5,6,8,11	1,9	10		3,4,10	
Severe Winter Weather	2,5,6,8,11	1,9	10		3,4,10	
Tsunami	---	--	--	--	--	--
Volcano	2,5,6,8,11	1,9	10		3,4,10	
Wildfire	--	--	--	--	--	--

a. See Introduction for explanation of mitigation types.

22.7 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Development of contemporary assessment tools for evaluating the risks associated with movement, storage and dispensing of flammable / explosive materials through the City. The risk assessment would include evaluation of a sub-terrain fuel pipeline that crosses through residential and business sectors of the community, as well as above-ground maintenance, fuel storage, and fuel dispensing terminals located in and about Sea-Tac International Airport. The goal of the assessment will be to identify systemic and physical improvements to the system and initiate proposed modifications.



CITY OF SEATAC

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

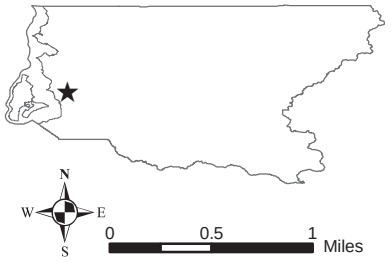
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

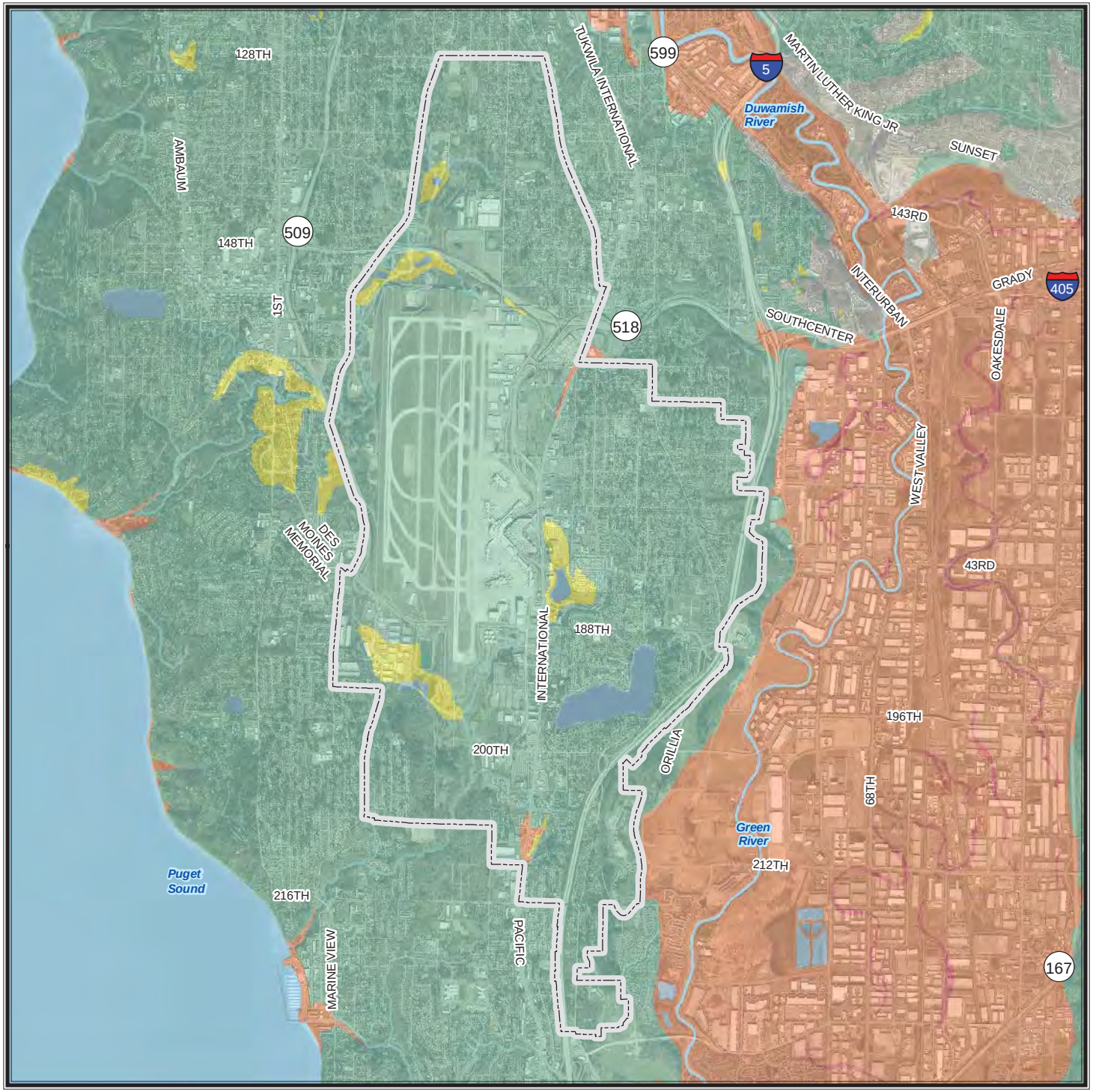
Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

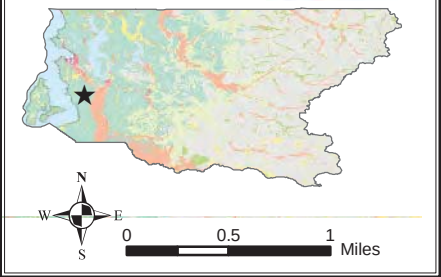
Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

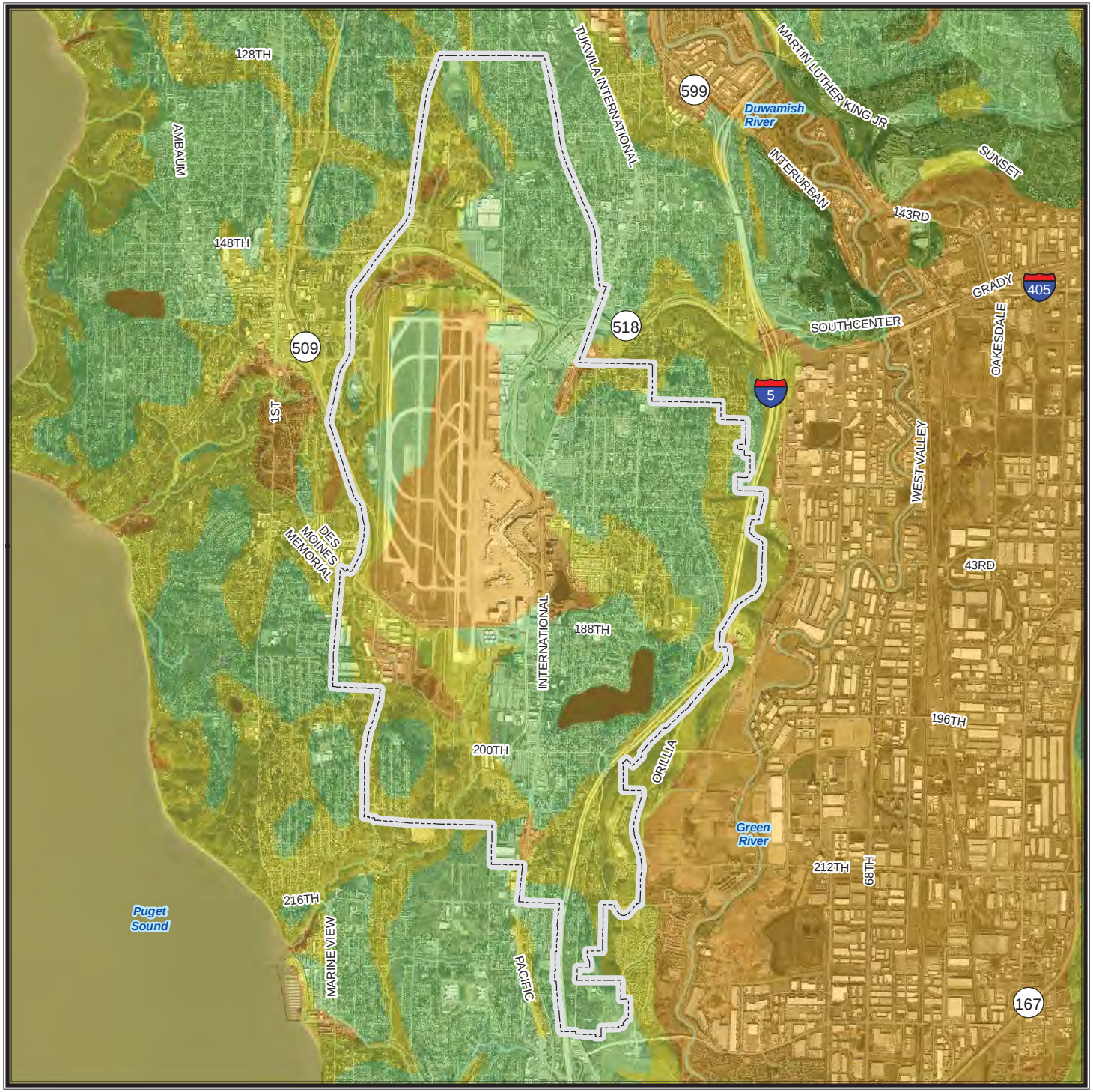
A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

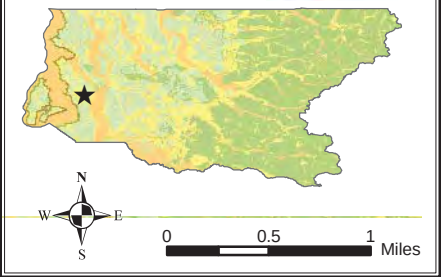
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

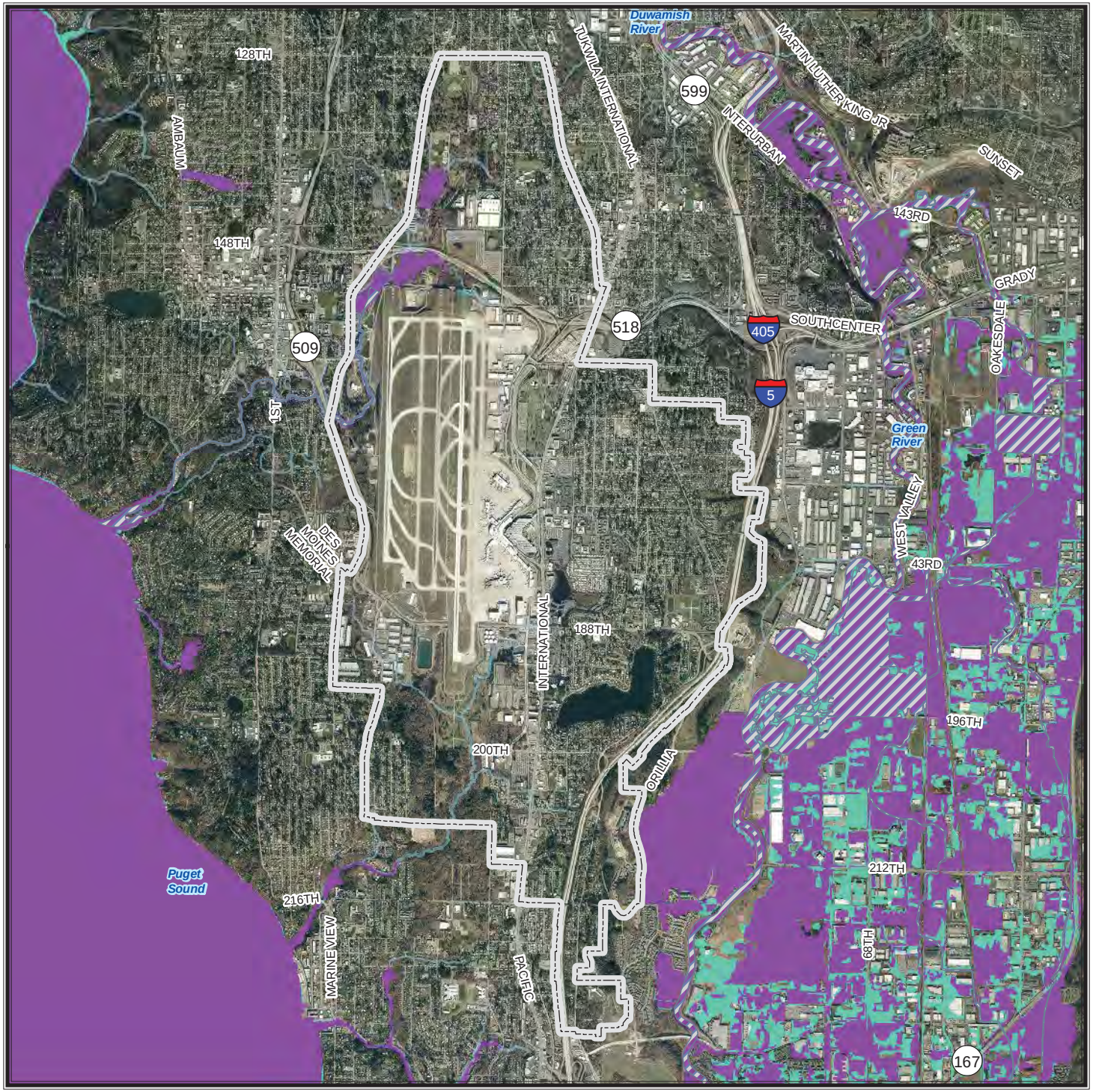
The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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FEMA DFIRM
Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

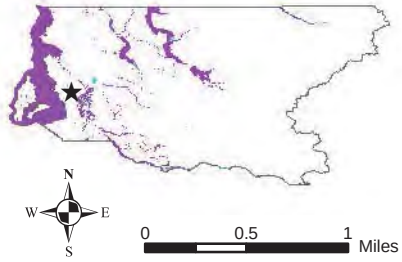
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

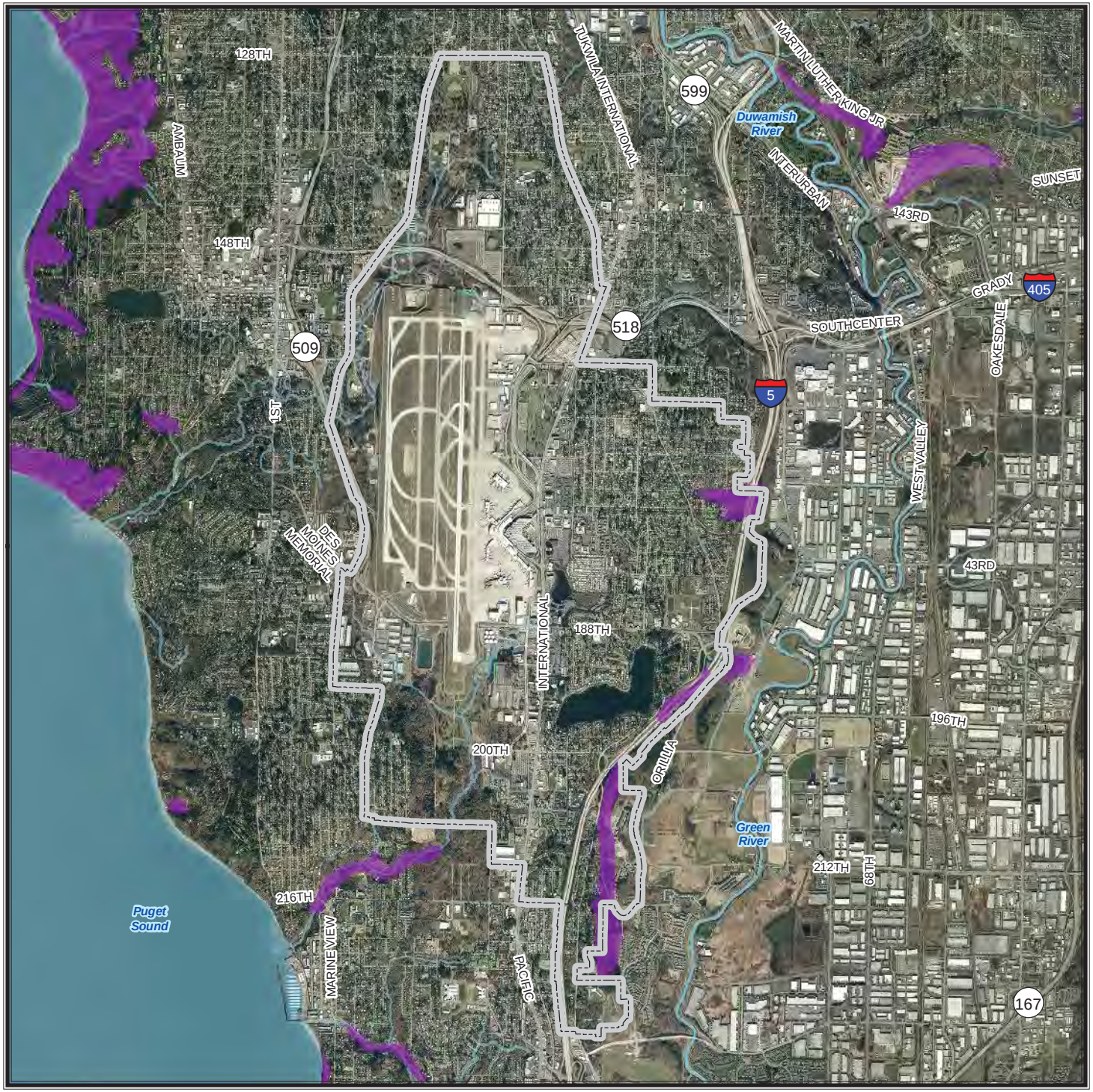
The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

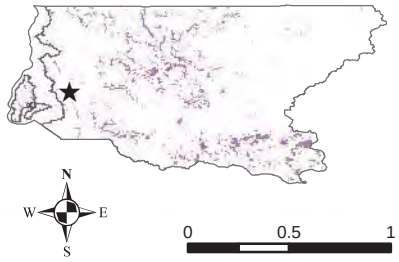
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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Lahar Hazards (Puyallup Valley)

- Case 1 - Large Lahars
- Case 2 - Moderate Lahars
- Post-Lahar Sedimentation

Lahar hazards data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. These data were produced as part of a project to estimate the potential economic losses from future eruptions of Mount Rainier.

Case 1 - Large Lahars (Recurrence Interval 500–1000 Years)
Shows areas that could be affected by cohesive lahars that originate as enormous avalanches of weak, chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The time interval between Case I lahars on Mount Rainier is about 500 to 1,000 years.

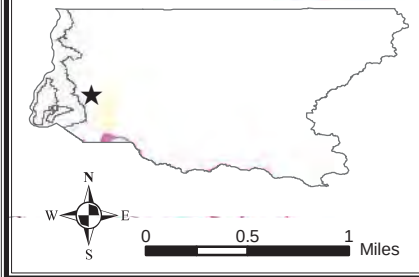
Case 2 - Moderate Lahars (Recurrence Interval 100–500 Years)
Shows areas that could be affected by relatively large noncohesive lahars, which are commonly caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but they can also have a noneruptive origin. The time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.

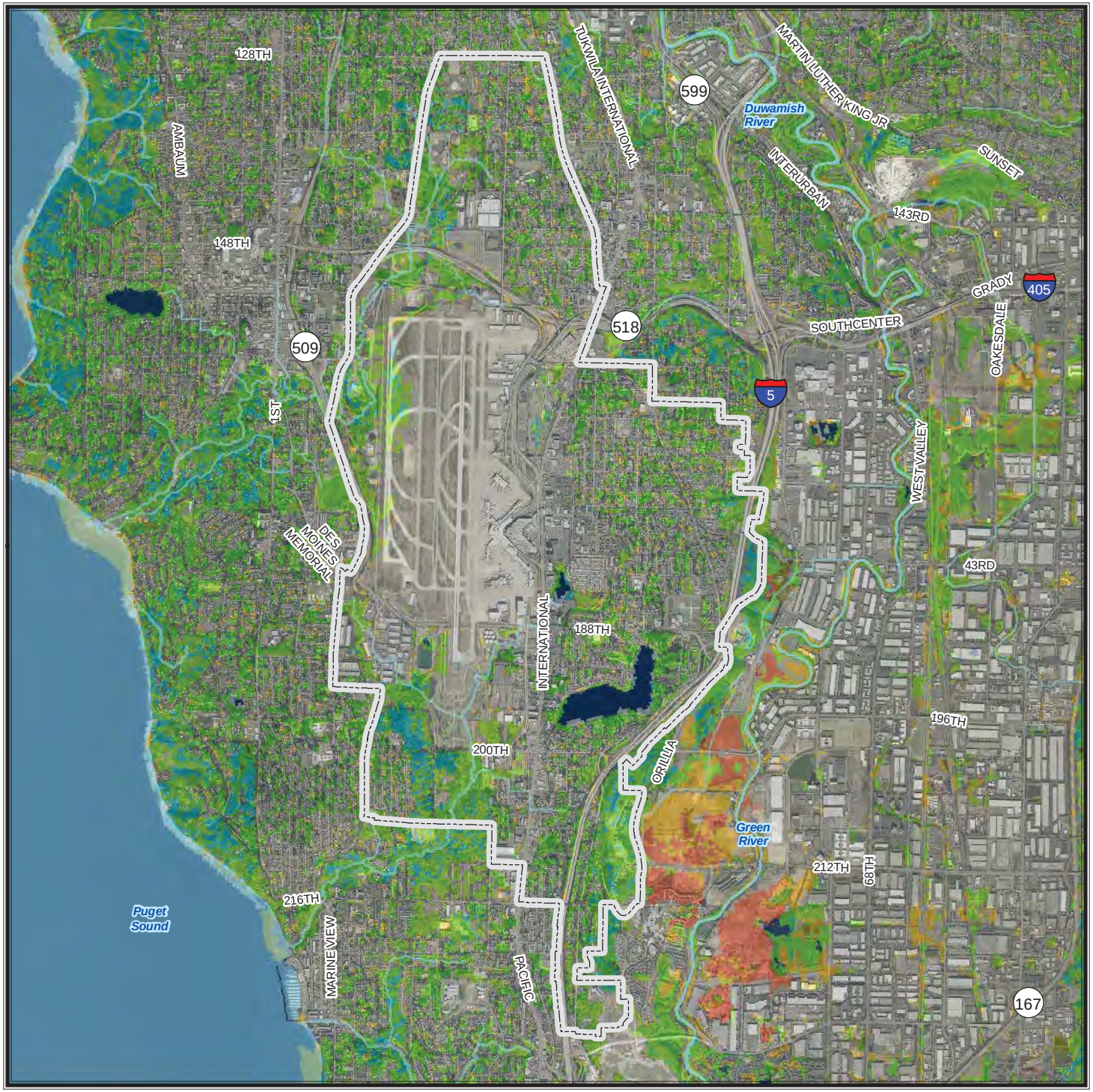
Post-Lahar Sedimentation Shows areas subject to post-lahar erosion and sedimentation and the ongoing potential for flooding.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

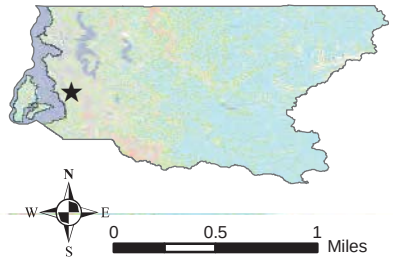
Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH



CHAPTER 23.
CITY OF SHORELINE UPDATE ANNEX

23.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact
Gail C Harris, Emergency Manager
17500 Midvale Ave N
Shoreline, WA 98133
Telephone: 206 801-2271
e-mail Address: gharris@shorelinewa.gov

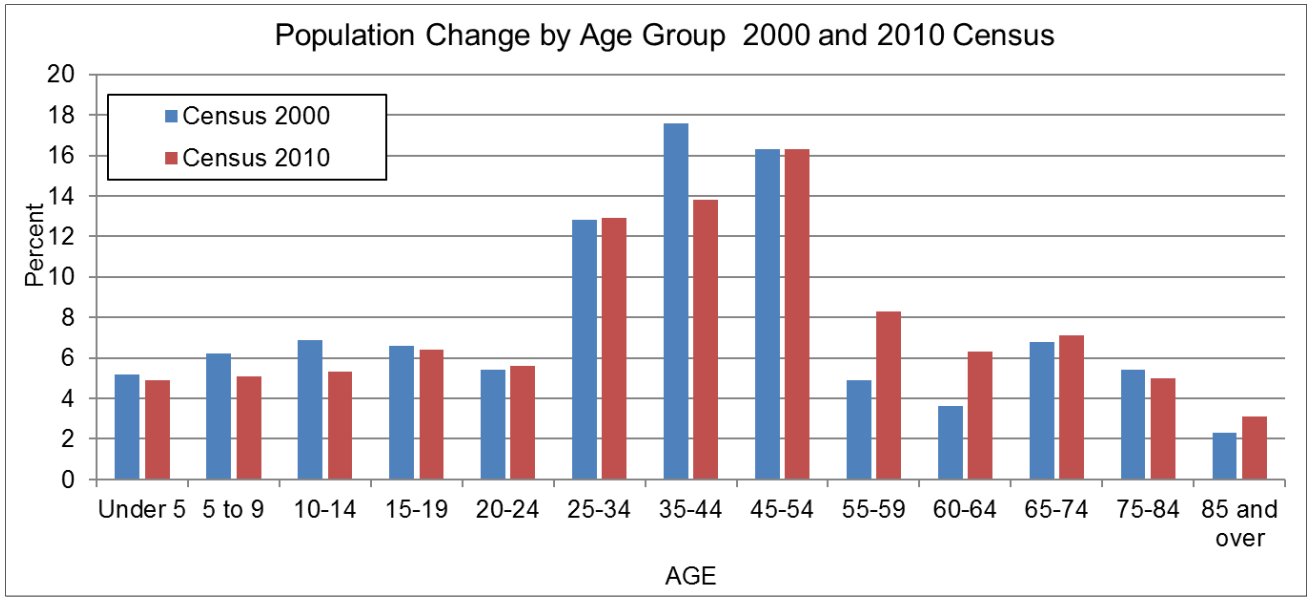
Alternate Point of Contact
Rob Beem, Community Services Manager
17500 Midvale Ave N
Shoreline, WA 98133
Telephone: 206 801-2251
e-mail Address: rbeem@shorelinewa.gov

23.2 JURISDICTION PROFILE

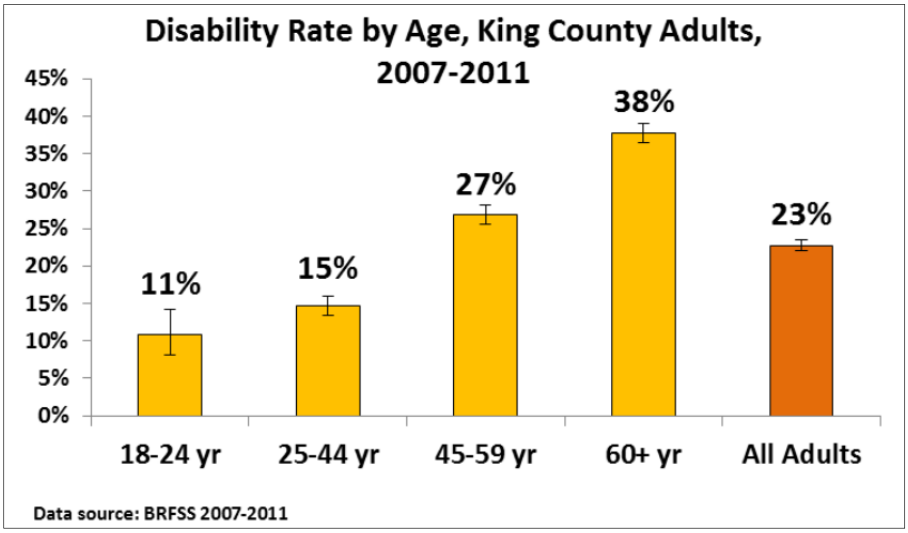
The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**August 31, 1995
- **Current Population—**53,670 as of April 1, 2013 (WA OFM estimate)
- **Population Growth—**The overall population remained unchanged in total number between 2000 and 2010 with the Census 2010 total of 53,007 people. While the population did not increase during this time period, the city became older (15.2% 65 and older) and more diverse (28.6% non-white).

  The under-18 population decreased 14.9%. The population 65 and over increased 4.1% with highest increase, 33.6% in the 85 and older group. Late Baby Boomers, born 1956-1964 form largest segment of Baby Boom age cohort defined as births between 1946 and 1964. Shoreline has the second highest number of people 65 and older of any city in King County.



- **Population Trends—**Population growth was static during the past decade despite an almost 7% increase in the number of housing units. The population forecast produced by Washington State Office of Financial Management shows a 9.2% increase in population between 2010 and 2020 for King County. Historically Shoreline has grown at only a fraction of the King County rate, so it is likely that stagnant to slow growth in population will continue to be the pattern for the City.
- **Poverty**—The estimated poverty rate for Shoreline in 2010 was 8.3% with a margin of error of 1.1%. (Source 2006-2010 American Community Survey Five Year Estimates). The poverty rate is trending higher from the 2000 rate of 6.9%. About one in five people live on an income of twice the poverty level or less and have no cash reserves to cover unexpected costs occurring after a natural event. The highest poverty rate, 9.4% (2.7% margin of error) is for adults 65 and older.
- **Race**—The greatest change was in Black, Hispanic and some other race categories. (Source: American Community Survey, 2006-10 Five Year Estimates) Asian remains largest non-white group at 15.2% of population. White population declined by 7.29% to 71.4% of population. People of color make up 28.6% of the population compared to King County as a whole at 35.2%. The percent of people identifying as Hispanic or Latino, who may be of any race, increased from 3.9% to 6.6% of the population.
- **Disability**—People living with disabilities are significantly more likely to have difficulty responding to a hazard event than the general population. Almost one quarter of King County's population has some type of disability and the rate increases with age. Many will require assistance during the 72 hours post disaster event, the period generally reserved for self-help (Tierney et al. 1988).



Shoreline has a Washington State Habilitation Center, six nursing homes and more than 100 adult family homes with clients requiring 24 hour care. The number of people living in "group quarters" the term the Census Bureau uses for people living in care facilities increased from 1302 people in 2000 to 1415 in 2010, an increase of 8.6%. A key problem in a natural event will be ensuring transportation access for health care workers to these facilities. The highest acuity patients in Shoreline are at Fircrest School, the Washington State Habilitation Facility.

Disabilities can vary greatly in severity and permanence, making these populations difficult to define and track. There is no "typical" disabled person, which can complicate disaster-

planning processes that attempt to incorporate them. Furthermore, disability is likely to be compounded with other vulnerabilities, such as age, economic disadvantage and ethnicity, all of which mean that housing is more likely to be substandard.

- **Linguistic Barriers**—Approximately 9.9% of Shoreline's residents reported speaking English "less than 'very well' " (Source American Community Survey, 2005 to 2007, Three Year Estimates). The largest group of languages spoken, other than English, was Asian and Pacific Island languages. Over half of those speaking Asian and Pacific Island languages reported that they speak English less than "very well." The number of non-English speakers will have important implications for emergency managers, who must get crucial information out to all members of the population in emergency events.
- **Location and Description—**The City of Shoreline is situated in the northwestern corner of King County along the shores of Puget Sound. Shoreline is bounded by Lake Forest Park to the east, Seattle to the south, Puget Sound to the west and Snohomish County to the north. Shoreline covers 11.74 square miles and is Washington's thirteenth most populated city with a population of about 53, 000 people.
- **Brief History—**Development patterns in the City of Shoreline were influenced by Seattle becoming King County's commercial center. Suburban development began after the turn of the century due to expanding transportation networks. The trans-continental railroad tracks, Seattle- Everett Interurban line and the brick-surfaced North Trunk Road made it easier to travel to and from Shoreline and spurred suburban development. During the early twentieth century, Shoreline attracted some large developments and commercial centers formed around the Interurban stops. After the end of World War II (WWII), there was tremendous demand for family housing. In the 1940s, large housing developments formed and business leaders and residents began to see Shoreline as a unified region.
- In 1949, the name "Shoreline" was used for the first time and described a community running from the Puget Sound shore to the Lake Washington shore and from the Seattle City line to the Snohomish County line. The City of Shoreline was incorporated on August 31, 1995 (City of Shoreline 1997).
- **Climate—**The City of Shoreline has the temperate climate typical of Western Washington. Summers are dry with mild temperatures, and winters are rainy with occasional snow. In Shoreline, the average temperature for January is 39.7 Fahrenheit (F) and 75 Fahrenheit for the average July high (http://www.weather.com/). Average annual rainfall is 38.27 inches and average annual snowfall is 11.7 inches (City of Shoreline, http://www.cityofshoreline.com/index.aspx?page=44).
- **Governing Body Format—**Council –Manager Form of Government. The City of Shoreline is organized as a council-manager form of government. This form is the system of local government that combines the strong political leadership of elected officials in the form of a governing body, with the strong managerial experience of an appointed local government manager, or in our case the City Manager. The governing body, commonly known as the council, may also be referred to as the commission or board.

  City of Shoreline City Council assumes responsibility for the adoption of this plan; the Emergency Management Coordinator will oversee its implementation.
- **Development Trends—**Development patterns in the City of Shoreline were influenced by Seattle becoming King County's commercial center. The City of Shoreline is a developed city with little vacant land. Much of the vacant land cannot be developed do to environmental restrictions, such as steep slopes. The majority of new development in Shoreline is infill development and redevelopment projects. Such development is most likely to take place

along the Aurora Avenue corridor, specifically in Town Center or the Community Renewal Area of Aurora Square, or in the areas surrounding future light rail stations.

23.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 23-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 23-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 23-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 23-4. Classifications under various community mitigation programs are presented in Table 23-5.

TABLE 23-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	SMC Title 15, adopted 3/3/2014
Zoning	Yes	No	No	Yes	SMC Title 20, Chapter 20.40, adopted 3/3/2014
Subdivisions	Yes	No	No	Yes	SMC Title 17, adopted 3/3/2014
Stormwater Management	Yes	No	No	Yes	SMC Title 13, Chapter 13.10, adopted 3/3/2014
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	WA state Disclosure Law, RCW 64.06
Growth Management	Yes	No	No	Yes	City of Shoreline Comprehensive Plan, adopted 12/10/2012
Site Plan Review	Yes	No	No	No	SMC Title 20, Chapter 20.30, adopted 3/3/2014
Public Health and Safety	No	No	Yes	Yes	Seattle King County Public Health District
Environmental Protection	Yes	No	No	Yes	SMC Title 20, Chapter 20.80, adopted 3/3/2014
Planning Documents					
General or Comprehensive Plan	Yes	No	No	Yes	
Is the plan equipped to provide linkage to this mitigation plan?					Yes, Land use, environment and shorelines elements
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	2011 Surface Water Master Plan update

TABLE 23-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Capital Improvement Plan	Yes	No	No	Yes	
What types of capital facilities does the plan address?			City Facilities, Parks, Right Away, Surface Water Assets & Utilities		
How often is the plan revised/updated?			Annually: 11/2013		
Habitat Conservation Plan	Yes	No	No	No	
Economic Development Strategic Plan	Yes	No	No	No	
Shoreline Management Plan	Yes	No	No	Yes	Shoreline master program element in Comprehensive Plan
Community Wildfire Protection Plan	No	No	No	No	
Climate Action Plan	Yes	No	No	No	Adopted Sept. 2013
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	Yes	Renewed in 2011
Threat and Hazard Identification and Risk Assessment	Yes	No	No	Yes	Renewed in 2011
Terrorism Plan	Yes	No	No	No	2004
Post-Disaster Recovery Plan	Yes	No	No	No	Adopted in 2010
Continuity of Operations Plan	Yes	No	No	No	Adopted in 2013
Public Health Plans	No	No	Yes	Yes	King County Public Health

TABLE 23-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 23-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Y	Planning and Community Development/Planner and Public Works/City Engineer
Engineers or professionals trained in building or infrastructure construction practices	Y	Planning and Community Development/Building Official and Inspectors
Planners or engineers with an understanding of natural hazards	Y	Planning and Community Development/Public Works
Staff with training in benefit/cost analysis	Y	Administrative/Grants Writer
Surveyors	N	
Personnel skilled or trained in GIS applications	Y	Information Technology/GIS Specialist
Scientist familiar with natural hazards in local area	N	
Emergency manager	Y	Community Services/ Emergency Management Coordinator
Grant writers	Y	Administrative Services Division/Grant Writer

TABLE 23-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Public Works
Who is your community's floodplain administrator? (department/position)	PW/ Surface Water and Environmental Services Manager
Do you have any certified floodplain managers on staff in your community?	Yes
What is the date of adoption of your flood damage prevention ordinance?	8/2012
When was the most recent Community Assistance Visit or Community Assistance Contact?	Don't know of any
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	No. We have an area that was identified years ago as a flood plain and we want to request of FEMA that that designation be removed. (It will be one of our strategies).
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	No
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program? Yes	No

TABLE 23-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	2	2010
Public Protection	Yes	3	Not available
StormReady	Yes	Blue	12/2012
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	No	N/A	N/A

23.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 23-6 lists all past occurrences of natural hazards within the jurisdiction. Note: The City of Shoreline did not incorporate until 1995. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 1
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: 1

TABLE 23-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Winter Storm/Sink Hole	1671	Dec. 1996 – Feb. 1997	$2,405,144
Earthquake	1361`	Feb. 28, 2001	n/a
Severe Winter Storm	1671	Nov. 2006	n/a
Severe Winter Wind Storm	1682	Dec. 2006	$15,549
Severe Winter Flood Storm	1734	Dec. 2007	$437,178
Severe Winter Storm	1825	Jan. 2009	$101,408
Winter Storm & Ice Storm	4056	Jan 16, 2012	$10,051

23.5 HAZARD RISK RANKING

Table 23-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE 23-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Earthquake	48
2	Severe Winter Weather	48
3	Landslide	42
4	Severe Weather	32
5	Flood	18
6	Wildfire	16
7	Volcano	9
8	Tsunami	6
9	Dam Failure	2
10	Avalanche	0

23.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 23-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 23-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

	Action Status			
Action #	Completed	Carry Over to Plan Update	Removed; No Longer Feasible	Comments
SH-1	✓			November 2013 Completed. Ongoing efforts in place
SH-2	✓			July 2011 Completed. Ongoing efforts in place
SH-3	✓			July 2011 Completed. Ongoing efforts in place.
SH-4	✓			All Franchise Agreements Completed by Dec. 2014.
SH-5	✓			September 2013 Completed. Ongoing efforts in place
SH-6	✓			July 2011 Completed. Ongoing efforts in place
SH-7	**x**		**x**	Bridge project completed July 2011. Police Facility completed memorandum of understanding with Fire Dept. to use their facilities for shorter needs if they lose their facility. Building a new police facility is not fiscally feasible at this time.
SH-8	✓			Meeting with impacted residence completed Oct. 2009. Flood Berm project completed Dec. 2010. Special Drainage Area designation approved by FEMA Sept. 2010 and Flood Plain map approved by FEMA in 2012.

23.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 23-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 23-10 identifies the priority for each initiative. Table 23-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 23-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
SH-1—Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts							
New and existing	Flood	2,4,10,12	Public Works	Low	Surface Water Utility Fund	Ongoing	No
SH-2—The City of Shoreline City Hall facility, which is approximately 4 years old, doesn't have an alternate power supply. The City will be researching funding opportunities and will endeavor to have an alternative power supply in place by 2016.							
New	All Hazards	1, 3	Central Services	700,000.	CIP and other	2016	No
SH-3—Continue to do public education outreach to our neighborhoods using the Map Your Neighborhood" tool so ensure communities can take care of themselves and those who live around them during a disaster event. • Work with the Neighborhood Associations • Utilize CERT members to assist in this outreach • Use materials from the "What to Do to Make it Through" and "Take Winter by Storm" Campaigns. • Identify those homes within the neighborhoods that have vulnerable or isolated populations living in them, specifically the Adult Family Homes and Boarding Homes. • Utilize Social Media and Emergency Alert Systems to communicate preparedness and emergency messaging							
Existing	All Hazards	6, 8, 11	Community Services Division	Low	General and Grant funds	Ongoing	Yes
SH-4—Continue to ensure operational readiness of the Emergency Operations Center and establish the backup EOC in a new location at the Washington State Public Health Lab. • Identify technologies that will support communications internally and externally at the EOC • Reduce the noise level in the EOC by moving the Communications Team to a new location and researching sound proofing technologies. • Establish a floor plan, communications plan, and technology issues for the back-up EOC • Activate the EOC at least once a year for an exercise and activate the back-up EOC once it is established at least every 2 years.							
New and Existing	All Hazards	1, 3	Community Services Division	Med	General and Grant Funds	EOC by end of 2015 and back-up EOC by mid-2016	No

TABLE 23-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
SH-5—Salt Water Park Pedestrian Bridge Repair – replacing the decking and improving the structural integrity of the only access to Richmond Salt Water Beach Park. This bridge is the only way to access the beach and it crosses the Burlington Northern Railroad lines. • Provides safe crossing for public access to the beach • Provides safe access for first responders to fight fires on the steep slopes and provide for rescue operations associated with medical emergencies and landslides.							
New and Existing	All Hazards	1, 3, 5	Parks	300,000.	CIP	2015	No
SH-6—Storm water pipe replacement program – replace aging storm water infrastructure throughout the city.							
Existing	Flooding, Earthquake	1	Public Works	5.28 million	Surface Water Utility	2019	No
SH-7—Surface Water Basin Planning – identify drainage, water quality, and habitat issues within specific drainage basins, and prioritize mitigation strategies.							
New and Existing	Flooding, Severe Weather	1, 5, 7, 8, 12	Public Works	730,000.	Surface Water Utility	2016	No
SH-8—City of Shoreline will consider participating with Community Rating Systems for communities who participate in the National Flood Insurance Program (NFIP).							
Excising	Flooding	6, 8	Public Works	Low	General Fund	2016	No
SH-9—Study the feasibility of replacing the aging Hidden Lake bridge on 10th Ave NW that is built on a ravine as its structural sufficiency rating is at a point that will require replacement soon. We will need to seek opportunities for funding the project.							
Existing	Earthquake, Landslide	1, 5, 8	Public Works	150,000.	Roads Capital	2015	No
SH-10—Begin implementing strategies identified in the City of Shoreline Climate Action Plan. • Through the new water utility, consider rate structures or incentives for customers to encourage water conservation • Utilize zoning and permitting methods to concentrate new growth in proximity of services and transit. • Identify opportunities for habitat improvements to reduce the urban heat island effect and support carbon sequestration in City open spaces.							
New and Existing	All Hazards	1, 2, 4, 6, 10, 12	Public Works & Planning	High	Funding unknown	2019	No
SH-11—Require new development to be designed and constructed to reduce or eliminate flood damage by requiring use of Low Impact Development techniques as required under the existing City Code.							
Existing	Flooding	2, 4, 10, 12	Planning & Public Works	Low	General Fund	Ongoing	No

TABLE 23-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
SH-12—Implement updated international building and residential codes.							
New	Flooding, Earthquake	2, 7, 10	Planning	Low	General Fund	2016	No
SH-13—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority.							
Existing	All Hazards	5,7,9	Planning & Public Works	High	FEMA Grant funding, local match	Long-term	No
SH-14—Continue to support the county-wide initiatives identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	City	Low	General Fund	Short term	No
SH-15—Actively participate in the plan maintenance strategy identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	King County OEM City of Shoreline	Low	General fund	Short term	No
SH-16- Integrate the Mitigation Plan findings into planning and regulatory documents and programs.							
New and existing	All	2,10	Planning	Low	Local Budget	Short Term	No

TABLE 23-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
SH-1	4	High	Low	Yes	No	Yes	High
SH-2	2	High	Medium	Yes	No	Yes	High
SH-3	3	High	Low	Yes	Yes	Yes	Med
SH-4	2	Medium	Medium	Yes	Yes	Yes	Med
SH-5	3	High	Medium	Yes	No	Yes	High
SH-6	1	High	High	Yes	Yes	Yes	High
SH-7	5	High	Medium	Yes	Yes	Yes	High
SH-8	2	Med	Low	Yes	No	Yes	Med
SH-9	3	High	Low	Yes	Yes	Yes	Med
SH-10	6	High	High	Yes	Yes	No	High
SH-11	4	High	Low	Yes	No	Yes	High
SH-12	3	High	Low	Yes	No	Yes	High
SH-13	3	High	High	Yes	Yes	No	Medium
SH-14	7	Medium	Low	Yes	No	Yes	High
SH-15	7	Low	Low	Yes	Yes	Yes	High
SH-16	2	Medium	Low	Yes	No	Yes	High

a. See Introduction for explanation of priorities.

TABLE 23-11.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	15,16	5,13	3,14	10	2,4	
Earthquake	12,15,16	5,6,9,13	3,14	10	2,4	
Flood	1,7,8,11,12, 15,16	1,5,6,8,9,13	1,3,8,14	1,8,10	1,2,4,8	
Landslide	15,16	5,13	3,14	10	2,4	
Severe Weather	7,15,16	5,13	3,14	10	2,4	
Severe Winter Weather	15,16	5,13	3,14	10	2,4	
Tsunami	15,16	5,13	3,14	10	2,4	
Volcano	15,16	5,13	3,14	10	2,4	
Wildfire	15,16	5,13	3,14	10	2,4	

a. See Introduction for explanation of mitigation types.

23.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Apply future climate science and related regional weather events to potential revision of hazard mitigation strategies and implementation.

Point Wells is an area just north of the City of Shoreline in unincorporated Snohomish County. The area is not currently within the incorporated borders of Shoreline; however, the only access is through the City and it is served by Shoreline's wastewater agency, Ronald Wastewater. The City is assuming that in the next few years, the Shoreline Fire Department and Shoreline Police will serve as mutual aid agencies to the Snohomish County Sheriff for this area, as they are often the closest fire and law enforcement agencies. The area is currently occupied by an asphalt company and used for petroleum storage, but it may be redeveloped into a mixed-use community. The city's Office of Emergency Management has worked with the police and fire departments and the current company to address response to that area by agencies on both sides of the county line. There has been a high degree of community interest in this area and it is possible that it will eventually be annexed by Shoreline. Figure 23-1 shows the NEHRP soil classification for the area of interest.

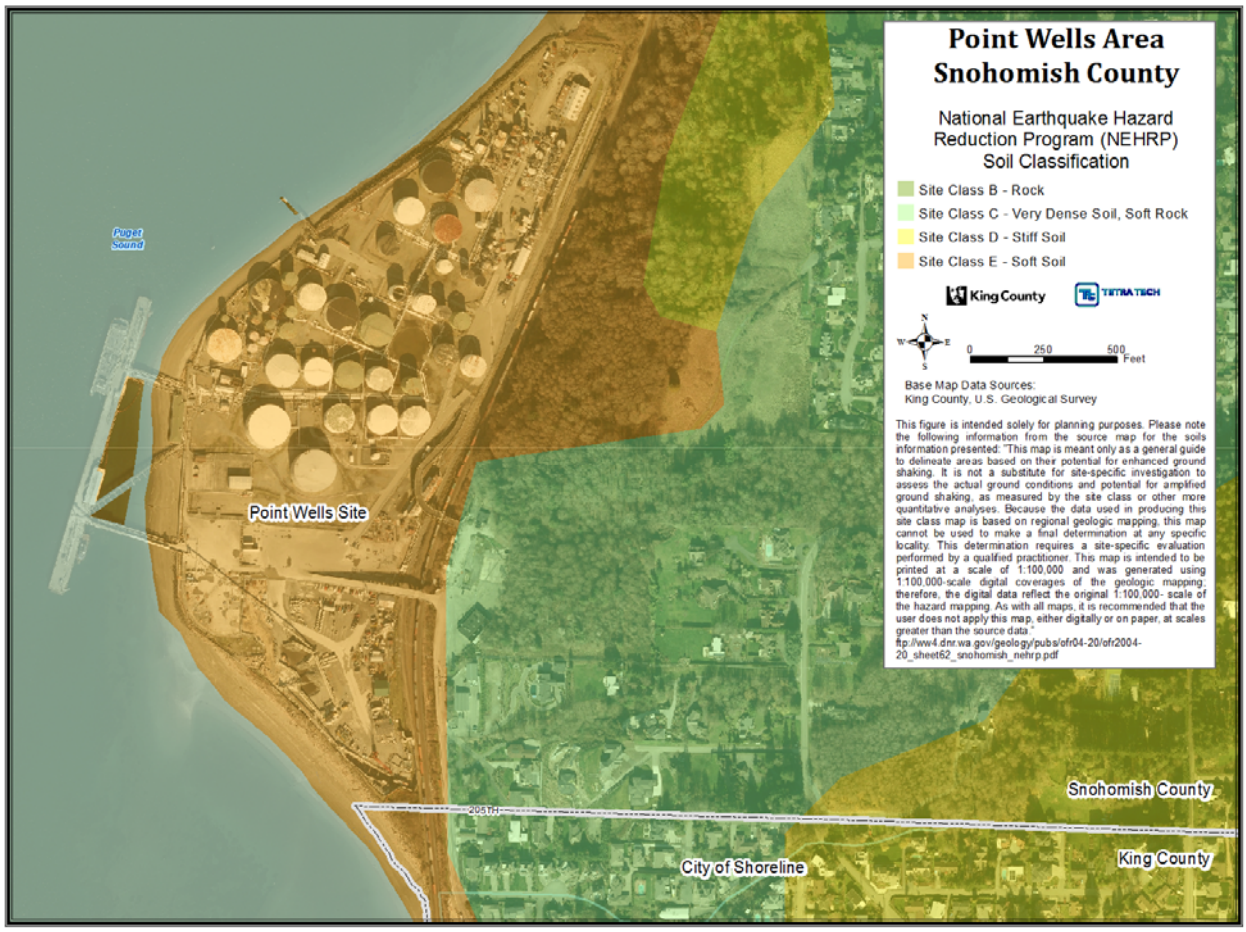
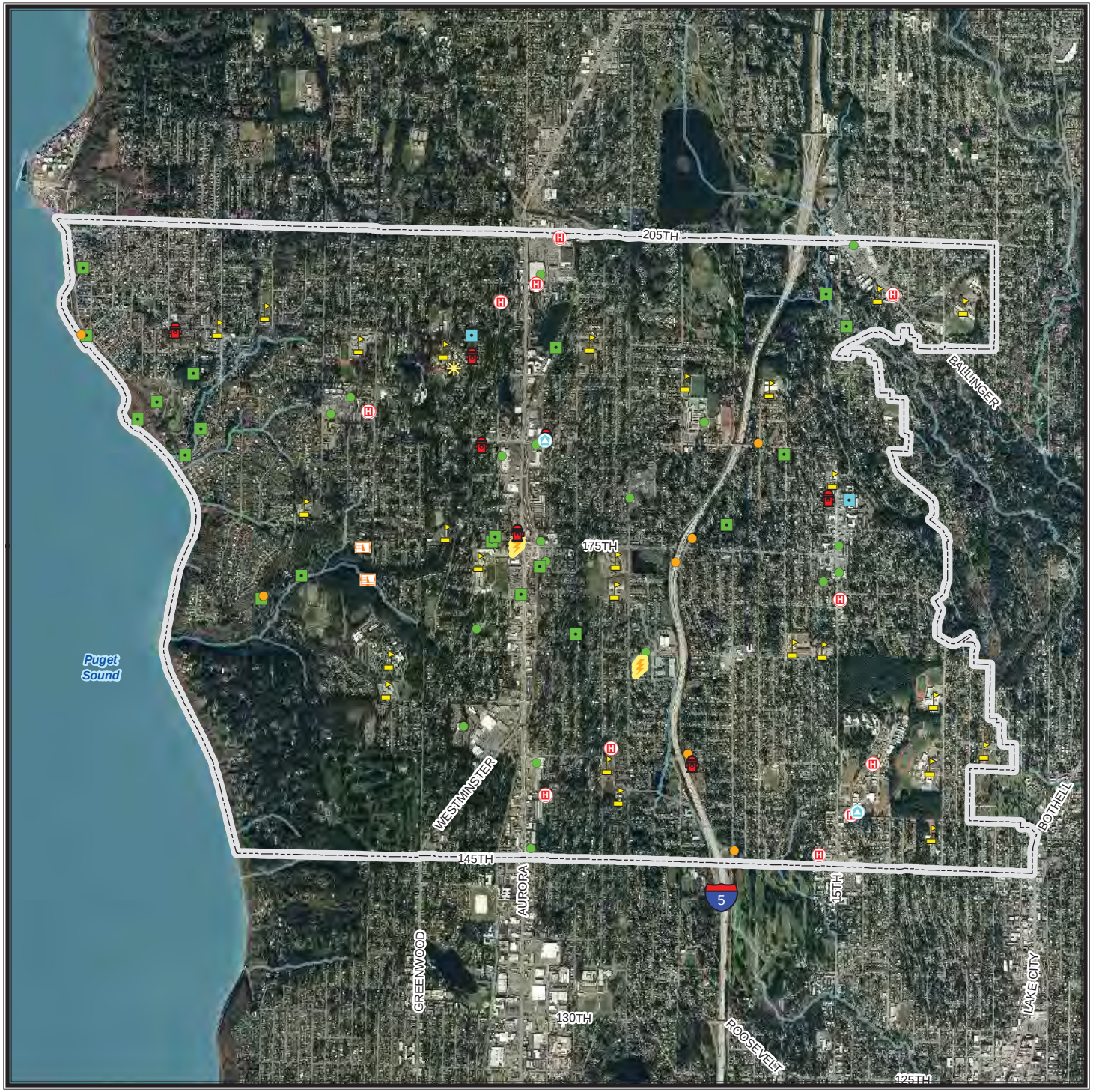


Figure 23-1. Point Wells Soil Classifications



CITY OF SHORELINE

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

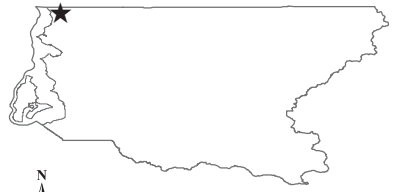
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

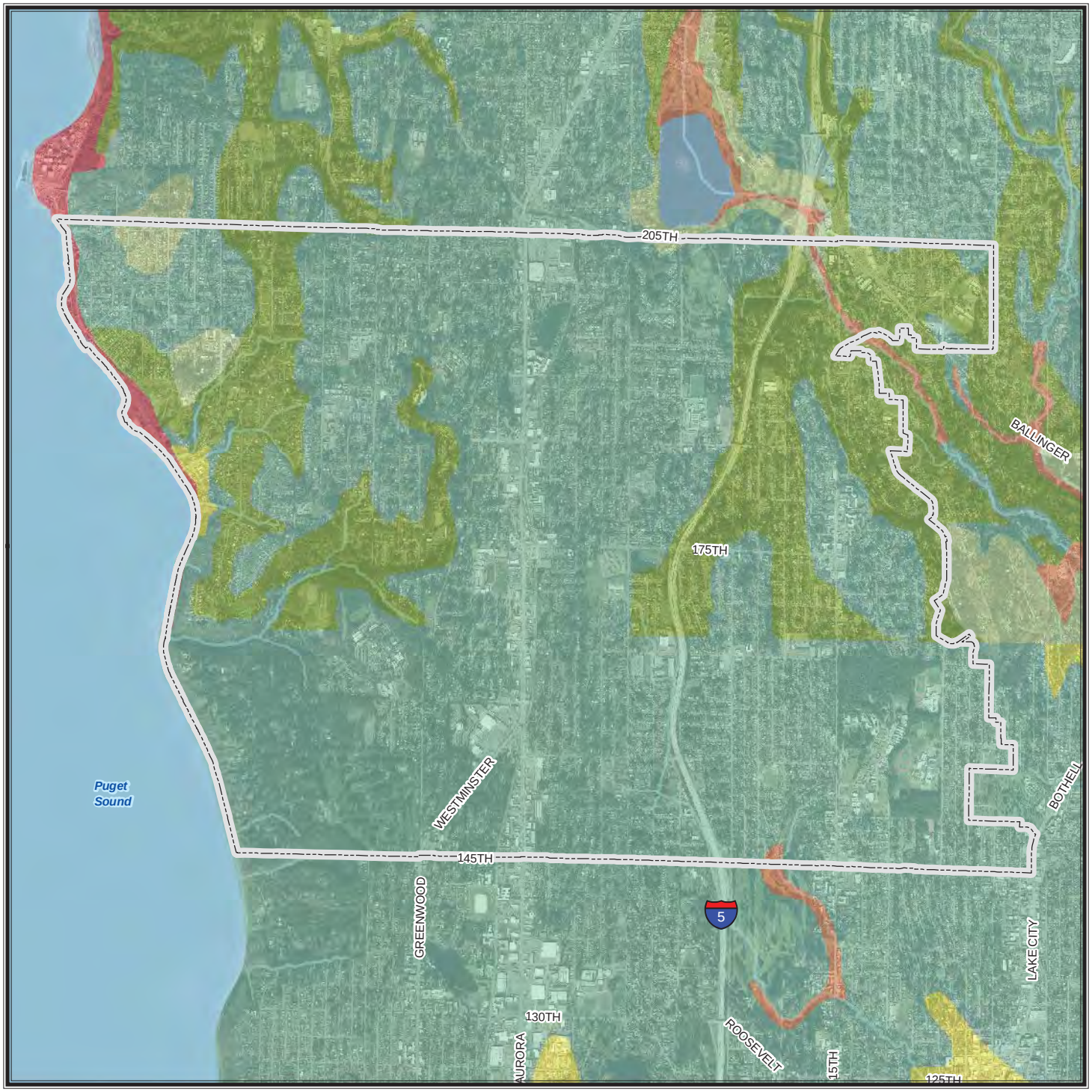
King County

TETRA TECH



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CITY OF SHORELINE

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

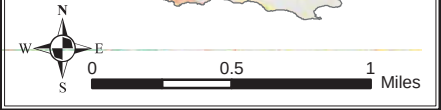
A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

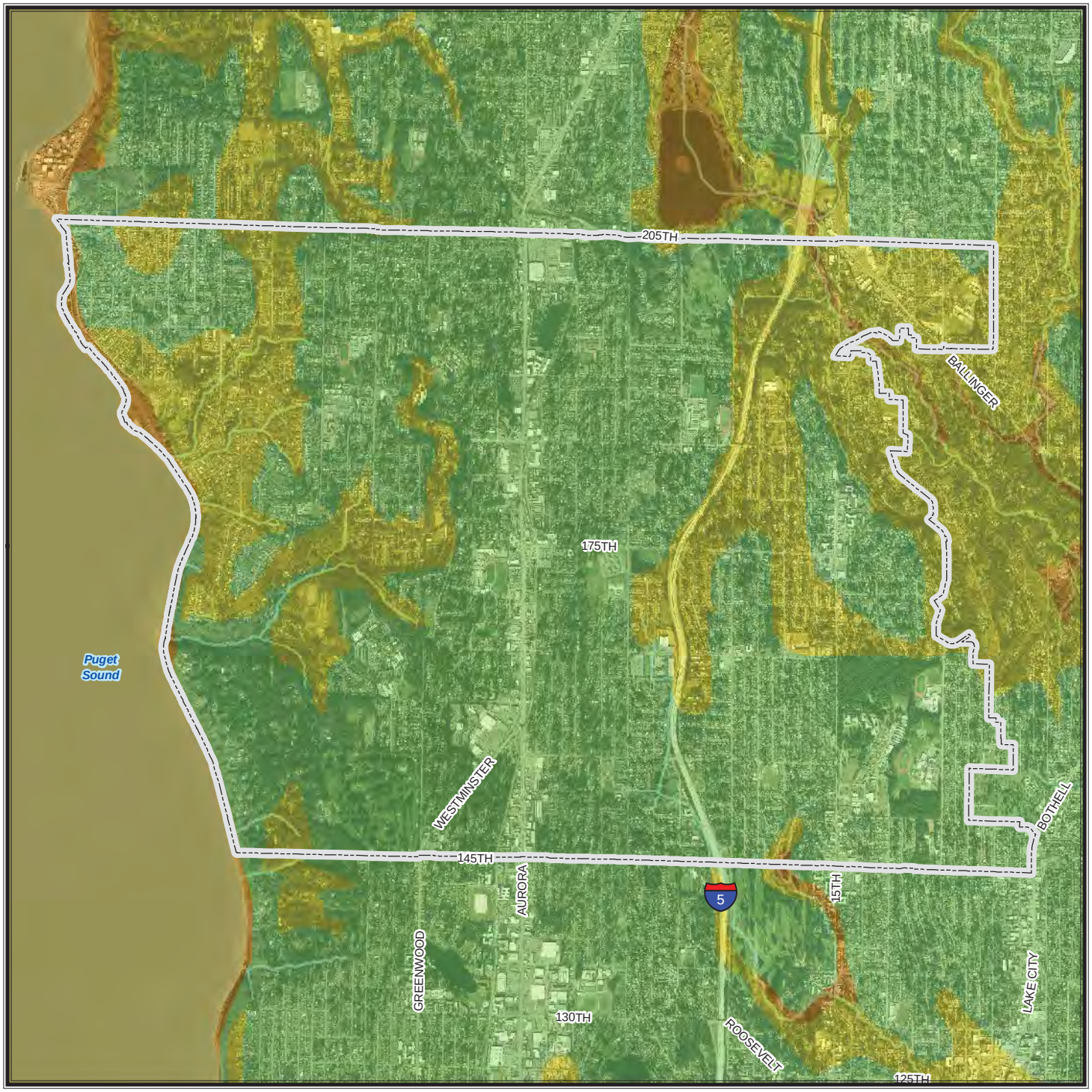
Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF SHORELINE

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

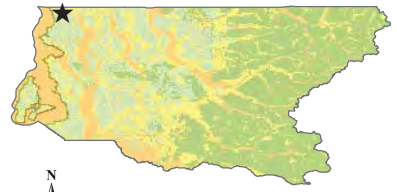
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF SHORELINE

FEMA DFIRM
Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

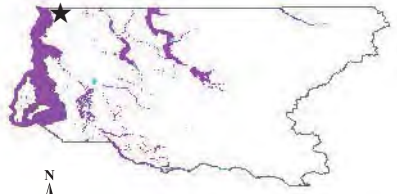
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
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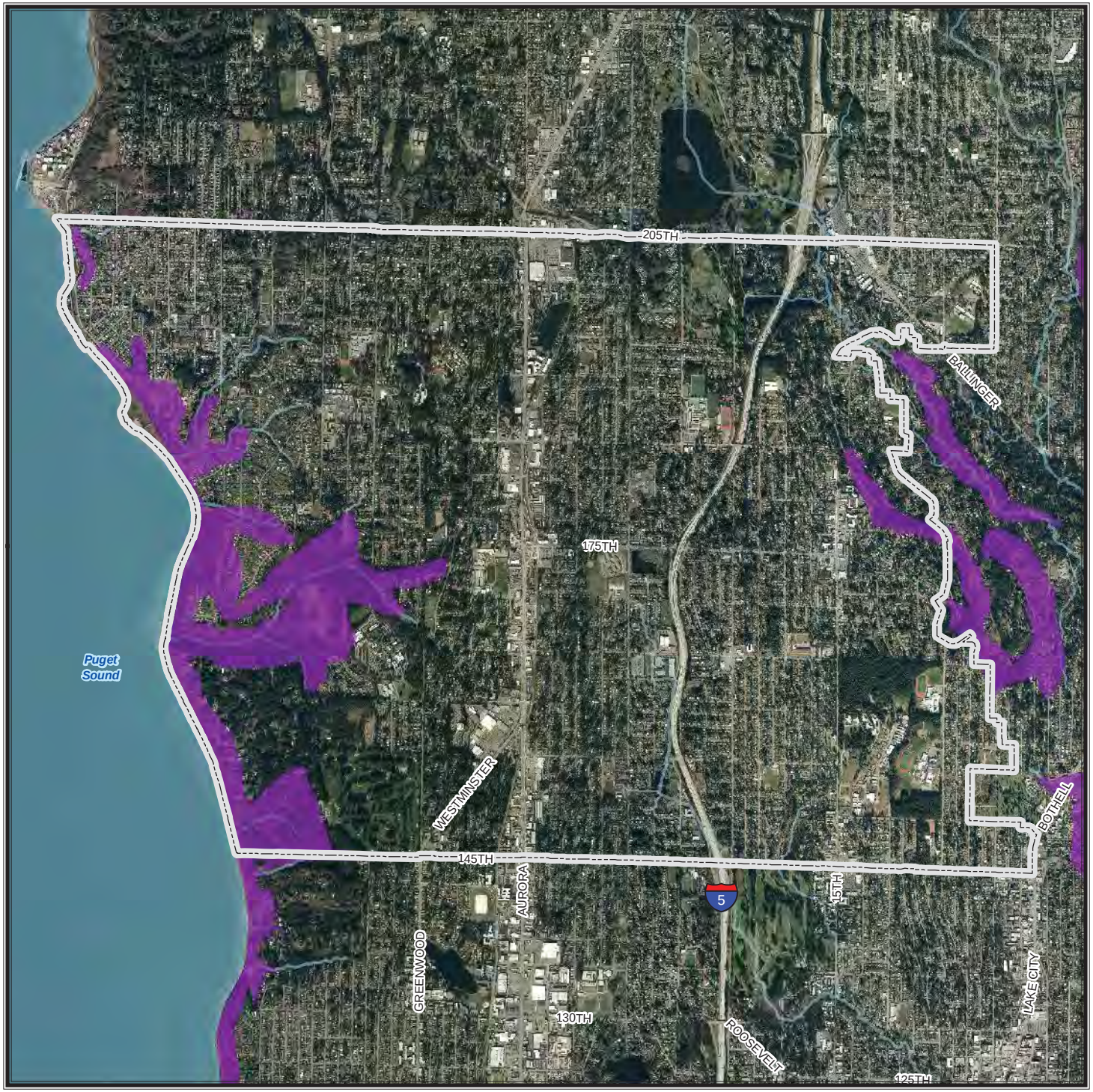
King County

TETRA TECH



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CITY OF SHORELINE

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

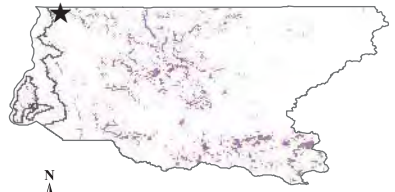
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH



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CITY OF SHORELINE

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH



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CHAPTER 24.
TOWN OF SKYKOMISH ANNEX

24.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Deborah Allegri, Clerk/ Treasurer
119 4th St
Skykomish, WA 98288
Telephone: 360-677-2388
e-mail Address: townofsky@frontier.com

Alternate Point of Contact

Mike Janasz Council Member
119 4th St
Skykomish, WA 98288
Telephone: 360-677-2643
e-mail Address: janaszmichael@yahoo.com

24.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**1909
- **Current Population—**195 as of 4-1-2013
- **Population Growth—**We see very little growth in our town due to location.
- **Location and Description—**Town of Skykomish is nestled in the foot hills of the Cascade Mountain Range. It is located approximately 15 miles from the top of Steven Pass.
- **Brief History—**The Town of Skykomish has a wealth of history surrounding the railroad and logging. The town used to be over 2,000 people in the early 1900s. All our buildings face the railroad as BNSF still uses our town for stopping location.
- **Climate—**warm summers and very cold winter with snow packs.
- **Governing Body Format—Mayor ran Town with Council Members.** Tony Grider assumes responsibility for the adoption of this plan; Clerk/Mayor will oversee its implementation.
- **Development Trends—**According to the WA Office of Financial Management**, t**he population for the Town of Skykomish decreased by 10%, averaging a 0.71 percent decline per year from 2000 to 2013. The population has fluctuated between 195 and 200 over the last 8 years. It is anticipated that the growth rate for the town will stabilize over the next 5 years, with little or no change from current trends. The Town is equipped to manage any future growth with a Comprehensive plan, zoning ordinance and a building code.

24.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 24-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 24-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 24-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 24-4. Classifications under various community mitigation programs are presented in Table 24-5.

TABLE 24-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	yes	No	No	yes	International Building Code. Ord. # 399
Zoning	yes	No	No	Yes	Ord. #235 Title 18.20
Subdivisions	yes	No	No	No	Title 18.20
Stormwater Management	yes	No	No	Yes	Dept. of Ecology/Ord. #362-2005
Post Disaster Recovery	No	No	No	No	NA
Real Estate Disclosure	No	No	No	No	NA
Growth Management	yes	No	No	No	BHC Consultants/ Comp Plan 2004 amended 2011
Site Plan Review	yes	No	No	No	Planning Commission
Public Health and Safety	yes	No	No	Yes	Title 17.05. Ord. # 291 2000
Environmental Protection	yes	yes	No	Yes	FEMA/Ecology/ Ord. # 280-1999 Title 16.5
Planning Documents					
General or Comprehensive Plan	Yes	No	No	Yes	Comp Plan 2004 amended 2011
Is the plan equipped to provide linkage to this mitigation plan?			*Is the plan equipped to provide linkage to this mitigation plan?*		
Floodplain or Basin Plan	Yes	yes	No	yes	Ord. # 362- 2005
Stormwater Plan	yes	No	No	yes	Ord. # 362-2005
Capital Improvement Plan	Yes	No	No	Yes	Ord. # 361-2005
What types of capital facilities does the plan address? How often is the plan revised/updated?					
Habitat Conservation Plan	yes	yes	No	Yes	Title 19.02/ Ord. # 361-2005
Economic Development Plan	yes	No	No	Yes	Capital Improvement
Shoreline Management Plan	yes	yes	No	Yes	Shoreline Management Plan 2010/Reviewing by Ecology at this time for adoption update
Community Wildfire Protection Plan	yes	No	No	Yes	King County Fire Protection District #50 Disaster Management Plan

TABLE 24-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	yes	KC Regional Hazard Mitigation Plan 2014
Threat and Hazard Identification and Risk Assessment	Yes	No	No	Yes	School Dist. #404 Emergency Procedure Hand Book
Terrorism Plan	Yes	No	No	Yes	School Dist. #404 Emergency Procedure Hand Book
Post-Disaster Recovery Plan	yes	No	No	Yes	School Dist. #404 Emergency Procedure Hand Book
Continuity of Operations Plan	Yes	No	No	Yes	Fire District #50
Public Health Plans	Yes	No	No	Yes	Town Water Supply/ Title 13.05/ Ord. #320- 2002/ Fire District #50 Disaster Management Plan

TABLE 24-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	yes
Capital Improvements Project Funding	yes
Authority to Levy Taxes for Specific Purposes	no
User Fees for Water, Sewer, Gas or Electric Service	yes
Incur Debt through General Obligation Bonds	no
Incur Debt through Special Tax Bonds	no
Incur Debt through Private Activity Bonds	no
Withhold Public Expenditures in Hazard-Prone Areas	no
State Sponsored Grant Programs	yes
Development Impact Fees for Homebuyers or Developers	yes
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 24-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	y	Gray & Osborne Engineering firm/ Harry Sellers
Engineers or professionals trained in building or infrastructure construction practices	y	Harry Seller Town Engineer
Planners or engineers with an understanding of natural hazards	y	Harry Sellers
Staff with training in benefit/cost analysis	y	Gray & Osborne
Surveyors	y	Harmsen and Assoc.
Personnel skilled or trained in GIS applications	n	NA
Scientist familiar with natural hazards in local area	n	NA
Emergency manager	y	Mayor Grider (Town) James Knisley (Fire Department) Michael Janasz (Fire Department)
Grant writers	n	Not yet

TABLE 24-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	BHC Consultants, Planning Commission
Who is your community's floodplain administrator? (department/position)	BHC Consultants, Roger Wagoner
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	1997 Ord. # 255
When was the most recent Community Assistance Visit or Community Assistance Contact?	Community Assistance Contact -1/30/2012 Community Assistance Visit - 7/15/2010
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No/ In Compliance
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Training is always valuable
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	Do Know?

TABLE 24-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	No	N/A	N/A
Public Protection	Yes	6	Not available
StormReady	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	No	N/A	N/A

24.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 24-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 1
- Number of FEMA-Identified Severe Repetitive Loss Properties: 1
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: None

TABLE 24-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Flooding	Timber Lane Acquisitions	2009-10	$1.2 million
Flooding	McKnight Revetment	2011	$60,000
Flooding	Dharma Acquisition/ Demolition	2013	$600,000
Flooding	Miller River/Old Cascade Washout	2011	$4.2 million/ not completed
Severe Winter Weather	Snow/ loss of power	2006, 09	No Estimate available
Severe Avalanche	Hwy 2 -Stevens Pass	2006, 09, 11	No Estimate Available

24.5 HAZARD RISK RANKING

Table 24-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

24.6 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 24-8 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 24-9 identifies the priority for each initiative. Table 24-10 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 24-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Weather	54
2	Severe Winter Weather	54
3	Earthquake	51
4	Flooding	42
5	Landslide	30
6	Wildfire	24
7	Avalanche	9
8	Dam Failure	6
9	Volcano	6
10	Tsunami	0

TABLE 24-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
SK-1—Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts						
New and Existing	All Hazards	2,4,10,12	BHC Consultants, Planning Commission	Low	General Fund	Ongoing
SK-2—The Town of Skykomish needs a building where we can serve our community as a food bank, and to use as an out source for a natural disaster.						
New	All Hazards	1,3,7	Town of Skykomish	High	Bond, General Fund, Grants	Long term

TABLE 24-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
SK-3—Storm drain improvements are very necessary to the town. The Town of Skykomish has been in a toxic cleanup before 2006, as a result of the clean up the town now has more storm drains then previously. Some of the drains are new, but several locations specifically under Hwy 2 are very old and should be replaced in the near future as they show signs of crumbling.						
New and Existing	Flood, Severe Weather, Severe Winter Weather	1,5,9	Town Engineer	High	General Fund, FEMA grants, King County Flood Control District	Long term
SK-4—Town water lines should be brought to new standards. We still have some water lines that are the original lines from when our lines were first put in the ground. New lines have been replaced where the cleanup took place. A earth quake could shake our lines apart is some locations.						
Existing	All Hazards	1,5,9	Town Engineer	High	Bonds, Grants, general Fund	Long term
SK-5—Flood management control is still a danger to our town. Ecology, BNSF and the Town has restructured the Maloney Creek that sets north of the town. The Town still needs assistance with other areas that are a flood hazard. West River Drive and the School are in critical areas that could see flooding which covers the same area as the levy.						
New and Existing	Flood	1,5,9	Town Engineer		General Fund, FEMA grants, King County Flood Control District	Long term
SK-6—Integrate the hazard mitigation plain into other plans, ordinances or programs to dictate land uses within the jurisdiction.						
New	All Hazards	2,4,8,10	Town Council	Low	General Fund	Short-term
SK-7—Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority.						
Existing	All Hazards	5,9,13	Town Council	High	FEMA grants, Local sources for local Match	Long-term
SK-8—Continue to support the county-wide initiatives identified in this plan.						
New and Existing	All Hazards	4,6,11,12,13, 14, 15	Town Council	Low	General Fund	Ongoing
SK-9—Actively participates in the plan maintenance strategy identified in this plan.						
New and Existing	All Hazards	4,6,11,12,13, 14, 15	King County OEM, Town Council	Low	General Fund	Ongoing

TABLE 24-9.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
1	4	High	High	Yes	Yes	No	Medium
2	3	High	High	Yes	Yes	No	Medium
3	3	High	High	Yes	Yes	No	Medium
4	3	High	High	Yes	Yes	No	Medium
5	3	High	High	Yes	Yes	No	Medium
6	4	Medium	Low	Yes	No	Yes	High
7	3	High	High	Yes	Yes	No	Medium
8	7	Medium	Low	Yes	No	Yes	High
9	7	Low	Low	Yes	Yes	Yes	High

a. See Introduction for explanation of priorities.

TABLE 24-10.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	6,9	4,7	8		2,8	
Dam Failure	6,9	4,7	8		2,8	
Earthquake	6,9	4,7	8		2,8	
Flood	1,6,9	1,4,7	1,8	1,5	1,2,8	3,5
Landslide	6,9	4,7	8		2,8	
Severe Weather	6,9	4,7	8		2,8	3
Severe Winter Weather	6,9	4,7	8		2,8	3
Tsunami	--	--	--	--	--	--
Volcano	6,9	4,7	8		2,8	
Wildfire	6,9	4,7	8		2,8	

a. See Introduction for explanation of mitigation types.



TOWN OF SKYKOMISH

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

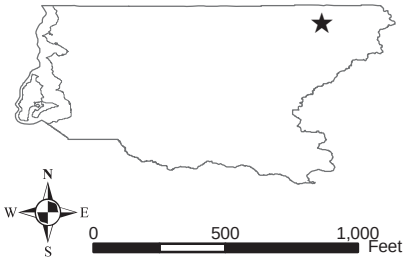
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH





TOWN OF SKYKOMISH

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

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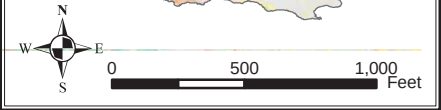
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King County

TETRA TECH







TOWN OF SKYKOMISH

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
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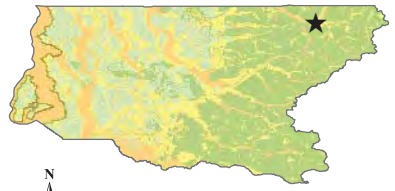
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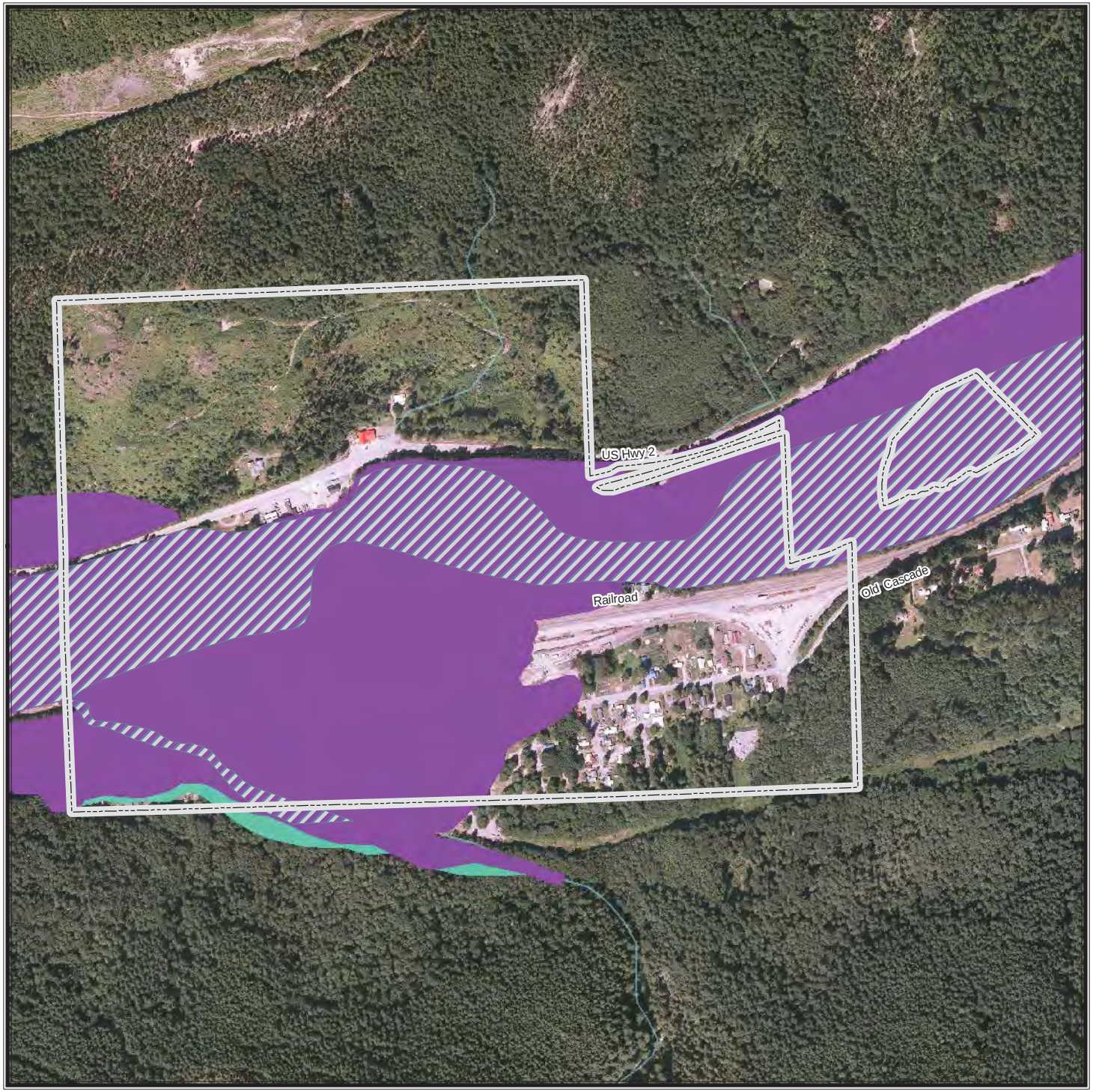
King County

TETRA TECH



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0 500 1,000 Feet



TOWN OF SKYKOMISH

FEMA DFIRM
Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

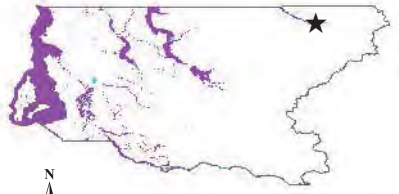
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

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King County

TETRA TECH



N
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0 500 1,000 Feet



TOWN OF SKYKOMISH

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

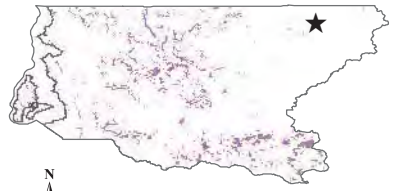
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

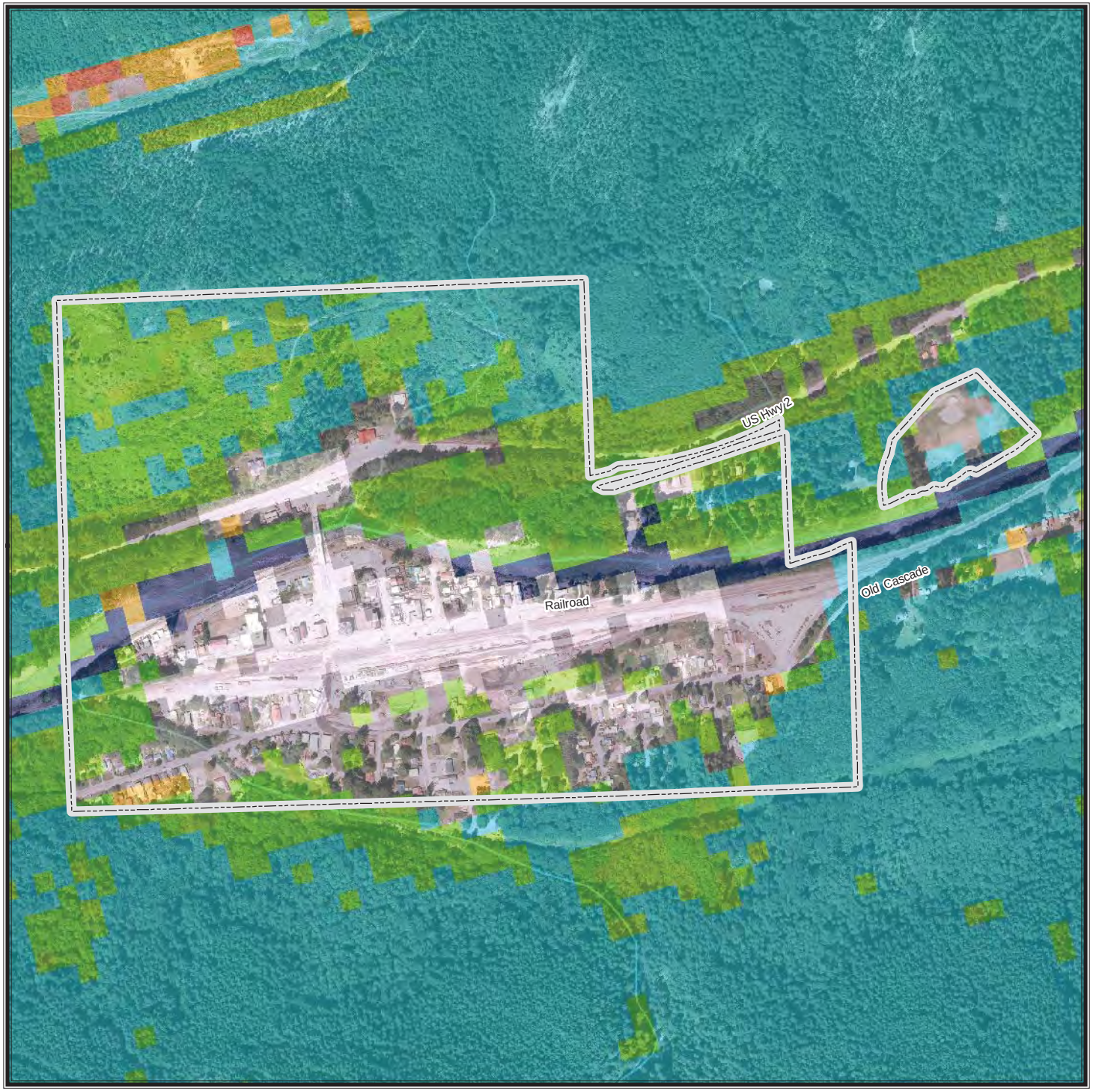
King County

TETRA TECH



N
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0 500 1,000
Feet



TOWN OF SKYKOMISH

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CHAPTER 25.
CITY OF SNOQUALMIE UPDATE ANNEX

25.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Lauren Hollenbeck, Senior Planner
P.O. Box 987
Snoqualmie, WA 98065
Telephone: 425-888-5337
e-mail Address: lhollenbeck@ci.snoqualmie.wa.us

Alternate Point of Contact

Dan Marcinko, Public Works Director
P.O. Box 987
Snoqualmie, WA 98065
Telephone: 425-831-4919
e-mail Address: dmarcinko@ci.snoqualmie.wa.us

25.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**1903
- **Current Population—**11,700 as of April 1, 2013
- **Population Growth—**Snoqualmie is the fastest growing city in Washington according to the Office of Financial Management. Census estimates from April 1, 2009, estimate the total population to be 9,730, reflecting rapid growth from recent development of the Snoqualmie Ridge area. This population increased to 11,700 in 2013, a 4.7% per year increase during this time frame.
- **Location and Description—**The City of Snoqualmie lies on the western slope of the Cascade Mountains in King County, about 30 miles east of Seattle. The Comprehensive Plan divides the City into the following planning subareas:
  - Historic Snoqualmie
  - Meadowbrook
  - Snoqualmie Ridge
  - Snoqualmie Ridge II
  - Snoqualmie Falls
  - Snoqualmie Hills
  - Rattlesnake Ridge
  - Mill

  The 5,574-acre planning area includes 3,303 acres of incorporated land and 2,271 acres making up the city's urban growth area outside the city limits. In the City's early days, residential development was compact and close to retail services, allowing easy access for pedestrians. The newer planning areas, such as Snoqualmie Ridge, have been designed to offer a similar compact, pedestrian-friendly development pattern, with modified grid streets and mixed land-use. Many of the residential neighborhoods mimic the historical city pattern, with smaller lots. The business park represents a large-scale contemporary commercial development designed to promote residents to live and work in close proximity.

  Geologic conditions in the City are primarily the result of continental and alpine glaciation and intervening non-glacial episodes. The City is underlain by glacial till, sediments of the Tokul Creek alluvial fan, and overbank, channel and river terrace deposits associated with the Snoqualmie River and its tributaries. Soils at higher elevations generally consist of very dense glacial till. On the lower slopes, glacial till is mantled with loose to medium-dense

alluvial sand, gravel and silt deposits. Near the Snoqualmie River, surface soils are generally over bank deposits of fine loose sand and silts.

Bedrock exposed in the vicinity of Snoqualmie Falls consists of lava flow from the Tertiary Period, roughly 50 million years ago. Topography within the existing City is characterized by level river bottomlands that rise to gentle or moderate slopes. Elevations range from 410 feet on the Snoqualmie River floodplain to 1,000 feet on Rattlesnake Ridge.

- **Brief History—**For thousands of years, the mountains and valleys of the Snoqualmie area were occupied by massive glaciers. After the Snoqualmie Valley was carved out by these alpine glaciers, it was first inhabited by the Snoqualmie Indians. In their native tongue, "Snoqualmie" means "people of the moon" and "crowned with snow." The Snoqualmie tribe hunted large game and fished for salmon. They gathered berries and indigenous plants for food and medicinal purposes. To preserve the valley's productivity, the Snoqualmie frequently burned and cleared the valley floor.

  In 1851, Samuel Hancock, an early explorer, hired members of the Snoqualmie tribe to take his party up river in search of coal. Although no coal was discovered, Hancock recognized the value in the abundant timber and agricultural potential of the Snoqualmie Valley. Settlers soon claimed land once used by the Snoqualmie tribe for berry and root crops and constructed rudimentary wooden forts such as Fort Alden. By 1855, the Snoqualmie Tribe had signed the Point Elliot Treaty with the U.S. government, relinquishing all of its land between Snoqualmie Pass and Marysville. At this time, the Snoqualmie people were one of the largest tribes in the Puget Sound region, with about 4,000 members.

  During the spring of 1858, Pioneer Jeremiah Borst settled at the remnants of Fort Alden becoming known as the "Father of the Snoqualmie Valley." Borst purchased vast areas of land where he raised hogs and grew apples to sell in the Seattle area. Other pioneers began logging and milling operations in the forests of Douglas fir, western hemlock, Sitka spruce and western red cedar. In 1872, the first water-powered mill in the area opened at the mouth of Tokul Creek. By the 1880s there were over a dozen logging facilities and camps along the Snoqualmie River. Millions of board feet of logs were floated over Snoqualmie Falls and down river to Puget Sound.

  Jeremiah Borst sold much of his land in the Meadowbrook area to the Hop Growers Association. The 1,500-acre farm extended from Snoqualmie to North Bend. About 900 acres of the farm was in hops, and at that time the Snoqualmie Hop Farm was the largest hop farm in the world. Members of the Snoqualmie tribe and other tribes were hired to pick hops at the farm. Productivity at the farm peaked in the 1880s but declines in the world market and an insect infestation brought hop cultivation to a halt by the late 1890s.

  In 1890, the Snoqualmie Railroad Depot was completed. Entrepreneurs from Puget Sound had funded and built the railroad into the Snoqualmie Valley in an attempt to cross the Cascade Mountains. The expansion of the railroad into the valley brought tourists and land speculators to the area. The Upper Valley (now known as North Bend) was originally platted as "Snoqualmie" by Will Taylor in 1889 while the town of Snoqualmie was first platted as "Snoqualmie Falls" later that year. Historical records indicate that the Kinsey family purchased the first lots in Snoqualmie. The Kinseys built the first hotel, post office, horse stable, dance hall, general store and meat market in the new community. Also credited with constructing the first church in Snoqualmie, Kinsey's name is engraved on the church bell and the building exists today as the American Legion Hall.

  The massive underground power plant at Snoqualmie Falls was designed and built by a civil engineer named Charles Baker in the late 1890s. This power plant brought both electricity

and jobs to the area. As the small community grew, a second powerhouse was added just below the falls in 1911. Although a century old, these original hydroelectric generators are still in operation today at Snoqualmie Falls.

Snoqualmie became an incorporated city in 1903 with a rocky beginning. In protest of high lot prices, disgruntled citizens began building as squatters within street right-of-ways and on vacant lots. To the developers' dismay, dozens of buildings were constructed on un-purchased land. The new town council was tasked with restoring order. Lot prices were eventually reduced and the abatement process began relocating homes, barns, mills and stores out of the public right-of-way.

In 1917, the second all-electric lumber mill in the nation opened in Snoqualmie Falls. This provided a stable economic base for the company town that made housing available to mill workers. Although World War I reduced the labor force, soldiers often stepped in to keep wood products in production, particularly for airplane construction.

A building boom, continued until the Great Depression in the 1930s. Fortunately, the Weyerhaeuser Snoqualmie Falls Lumber Company continued production and provided employment to over 200 people. Many immigrants worked at the mill and planted trees as part of a beautification project.

Mill workers were able to purchase their own property farther from the mill. Soon after, the Snoqualmie Falls mill town and houses were dismantled and moved across a temporary bridge to new lots in Snoqualmie. World War II and the post-war housing boom increased the nation's demand for lumber but also modified major transportation routes. The construction of Interstate 90 resulted in an economic downturn for Snoqualmie as the interstate bypassed the city. Growth was stimulated again when Weyerhaeuser opened a nearby plywood plant in 1959. Logging and mill operations were Snoqualmie's economic cornerstone until 2003, at which time Weyerhaeuser closed the Snoqualmie mill.

The Meadowbrook Farm changed from farming hops to producing dairy into the 1950s. As agriculture declined, the property was purchased by local investors. In 1993, much of the remaining farmland was purchased by Snoqualmie and North Bend to be preserved as open space. This land now serves as a permanent riparian buffer, offering public recreation, and floodwater storage and wildlife habitat.

By 1960, Snoqualmie's population had stabilized at 1,216 as people began migrating toward urban centers. The population then grew slowly to about 1,500 over the next 30 years, an average growth increase of about 11 persons per year. Historically, growth within the city limits was limited due to severe flood hazards and regulations limiting new residences in flood-prone areas. In 1990, the city annexed about 1,300 acres outside the floodplain. This area, known as Snoqualmie Ridge, is currently being developed for commercial and residential purposes.

Today, the Snoqualmie Valley is a rapidly growing region due to its proximity to Seattle. The Snoqualmie Ridge Business Park employs about 1,000 people and continues to expand. With this new development and the opening of the Snoqualmie Tribe's Casino just outside the city limits, the city projects its population to increase in the near future.

- **Climate—**Snoqualmie's maritime temperate climate features dry summers and mild, wet winters. High winds are common in winter when major storms occur. Average daily temperatures since 1931 are as follows:
  - Winter minimum average daily temperatures range from 32.6ºF to 36.7ºF
  - Winter maximum average daily temperatures range from 44.7ºF to 50.6ºF

- Summer minimum average daily temperatures range from 46.4ºF to 50.6ºF
- Summer maximum average daily temperatures range from 69.5ºF to 75.4ºF.

Approximately two-thirds of the annual precipitation occurs between mid-October and late February. Peaks occur in December, May and June. Annual precipitation since 1931 is 61.25 inches, including 11.5 inches of snowfall between November and April. Snowfall occurs most years, but snow only remains on the ground for a short time. Accumulations of snow are usually light.

Wintertime peak flows of the Snoqualmie River occur in late November and December, often due to rain-on-snow events. Cooler weather in January and February causes a greater snowpack accumulation, followed by snowmelt runoff in late spring. The minimum flows are recorded in late summer to early fall.

The climate in the study area supports extensive conifer forests, predominantly consisting of western hemlock and Douglas fir. Other habitats include mixed conifer forest (Douglas fir, western red cedar, hemlock), deciduous forest (big-leaf maple, red alder, black cottonwood), upland scrub-shrub (thimbleberry, salmonberry, Douglas spiraea), and riparian or forested wetlands.

- **Governing Body Format—**The City of Snoqualmie is a non-charter code city operating under Revised Code of Washington (RCW) 35A, employing a mayor-council form of government. Seven council members act as policy makers, providing the mayor—the City's separately elected chief executive officer—with guidelines and performance objectives. The city administrator and city staff turn these goals into programs and services. All council members are elected citywide. The council divides itself into five committees: Community & Economic Affairs, Finance & Administration, Planning & Parks, Public Safety, and Public Works. This governmental structure was in place during development of the City's initial hazard mitigation plan. Planning Department assumes responsibility for the adoption of this plan; Planning Department will oversee its implementation.
- **Development Trends—**In 2001, Snoqualmie calculated the total developable and dividable land in the incorporated City and Urban Growth Area within each residential land-use district. Deductions were made for land within sensitive areas and their buffers, and for future public uses, such as road and utility right-of-ways, and parks. The total quantity of available land was then assigned an assumed density figure to calculate the total number of housing units that could be accommodated. This calculation demonstrates that the city has sufficient land available to accommodate the 2022 minimum household target of 1,697 units. The population is projected to be 15,859 when all residential property is developed.

  Surrounded by farms and forests, Snoqualmie has existed for years as a small town separated by open space from other communities nearby. Today, the City faces the challenge of accommodating and providing for growth while attempting to retain its character and identity. Snoqualmie expects significant growth over the next 20 years. The City's is working to identify a strategy for accommodating this growth in which the development of new neighborhoods continues to be compact and consist of pedestrian-friendly mixed land uses. To build economic sustainability, city staff, residents, community businesses and consultants are working together to achieve thoughtful and measured city planning. The following underlying principles form the foundation for Snoqualmie's land use goals and policies:

  - Strive to create complete and integrated communities (or neighborhoods) containing housing, shops, work places, schools, parks, pedestrian and bicycle paths, and civic facilities essential to the daily life of the residents.

- Encourage the City maintain a center focus that combines commercial, civic, cultural and recreational uses.
- Design new mixed-use communities so that housing, jobs, daily needs and other activities are within easy walking distance of each other. Encourage integration of housing, commercial, office park and public uses in designated mixed-use areas.
- Examine and amend the zoning code to cluster commercial districts to concentrate business and facilitate walking. Limit the linear extent of commercial areas along SR-202 to discourage auto-oriented sprawl.
- Allow neighborhood shops and services, located within a reasonable walking distance of homes, within new residential subdivisions in mixed use and planned residential areas. Consider grocery stores, banks, childcare, schools, recreation areas, open space, and other public and commercial services that residents need on a regular basis as appropriate shops and services.
- Encourage site design that promotes pedestrian access, orientation and transit use. Locate as many activities as possible within easy walking distance of transit stops.
- Ensure that streets, pedestrian paths and bike paths contribute to a system of fully connected and interesting routes to all destinations. Encourage pathways that facilitate pedestrian and bicycle use by being adequately sized and spatially defined by buildings, trees and lighting, and by discouraging high-speed traffic.
- Provide an ample supply of specialized open space in the form of squares, greens and parks whose frequent use is encouraged through placement and design.
- Ensure that the City maintains well-defined edges, such as agricultural greenbelts, wildlife corridors or urban separators, permanently protected from development.
- Ensure that planning and development are pedestrian-oriented and designed to enhance the human scale, creating a greater sense of community and place.
- Respect the integrity and character of existing natural topography, vegetation and landscape features when locating roads and other development.
- Establish maximum impervious surface lot coverage standards for land use designations.
- Promote development that supports natural drainage and infiltration for new subdivisions, multifamily development, and commercial development other than that on infill lots.

The principles are carried out through the goals and policies of the City's Comprehensive Plan. The Land Use Element consists of the land use map and land use polices. The land use map illustrates the City's existing and planned land use mix and pattern; it should be used as a general reference only.

25.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 25-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 25-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 25-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 25-4. Classifications under various community mitigation programs are presented in Table 25-5.

TABLE 25-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	NA	No		Snoqualmie Municipal Code (SMC) Chapter 15.04.A adopts 2006 International Building Code (IBC), International residential Code (IRC), International Mechanical Code (IMC), National Fuel Gas Code, and the Uniform Plumbing Code. All codes are required under state mandate (RCW 19.27.031). (Ord. 1013 § 2, 2007; Ord. 955 § 2, 2004).
Zoning	Yes	NA	No	No	SMC Chapter 17.05 (Zoning) - (Ord. 744 § 2, 1995).
Subdivisions	Yes	NA	No	Yes	SMC Chapter 16.04 (Subdivisions) - (Ord. 669 § 2, 1991). Required under state mandate (Chapter 58.17 RCW)
Stormwater Management	Yes	NA	Yes	Yes	SMC Chapter 15.18- adopts the King County Surface Water Design Manual. This document has been approved by WA Department of Ecology as an "equivalent" document to the Western Washington Stormwater Management manual.
Post Disaster Recovery	No	NA	No	No	None at this time.
Real Estate Disclosure	No	No	Yes	Yes	WA State Disclosure Law-RCW 64.06
Growth Management	Yes	NA	No	Yes	The City is in compliance and good standing with the Washington Growth Management Act of 1990 with its land- use policies identified in its comprehensive plan and Snoqualmie Municipal Code.
Site Plan Review	Yes	NA	No	No	SMC Chapter 14.10 (Development Review)- provides for combining the environmental review process, both procedural and substantive, with review of project permit applications; to provide for no more than one open record hearing and one closed record appeal in review of project permit applications; and to provide for establishment of a development review process which complies with the applicable requirements for local permit processing contained in the Regulatory Reform Act of 1995, Chapter 36.70B RCW.- Ord. 768 § 2, 1996

TABLE 25-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Public Health and Safety	Yes	No	No	No	SMC, Title 9, adopted 3/24/2014
Environmental Protection	Yes	N/A	Yes	Yes	SMC Chapter 15.12 (Flood Damage Prevention) regulates development in special flood hazard areas.- Ord. 1015 § 1, 2007 SMC Chapter 19.12 (Sensitive Areas) Provides for the designation and protection of sensitive areas, referred to as critical areas in the Washington Growth Management Act of 1990, Chapter 36.70A RCW. SMC Chapter 19.08 (Shoreline Management Regulations) - The city adopts by reference the policies of the Shoreline Management Act of 1971, Chapter 90.58 RCW, as they now exist, or may hereafter be amended by the legislature.- Ord. 588 § 1, 1986 SMC Chapter 17.40 (Floodway Overlay Zone)- The purpose of the floodway overlay zone is to provide for the authorization of alternative uses of residentially zoned properties within a designated floodway- Ord. 744 § 2, 1995
Planning Documents					
General or Comprehensive Plan	Yes	NA	No	Yes	The 2006 Comprehensive Plan provides broad goals and policies that guide how development is to occur, and how municipal projects are funded and prioritized. The Comprehensive Plan is subject to annual review and update. Amendments can be submitted by anyone, and are considered by City staff and the Planning Commission, who make a recommendation to the City Council.
Is the plan equipped to provide linkage to this mitigation plan?					Yes
Floodplain or Basin Plan	Yes	NA	No	No	The City developed The Floodplain Management and Repetitive Loss plan in September 1997 pursuant to planning requirements under the CRS program.
Stormwater Plan	Yes	No	No	No	A Stormwater Management Plan is currently being drafted.
Capital Improvement Plan	Yes	NA	No		6-year CIP
What types of capital facilities does the plan address?					Roads, water and sewer
How often is the plan revised/updated?					6 year CIP, reviewed and updated annually

TABLE 25-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Habitat Conservation Plan	Yes	NA	No	No	There are no Habitat Conservation Plans within the City. However, the City has adopted regulatory provisions within its sensitive areas ordinance that include elements to protect sensitive habitat areas.
Economic Development Plan	Yes	NA	No	No	The City developed a Downtown Master Plan in June 2009. This effort builds upon previous market analyses, visioning, and economic development plans and studies for the City and the downtown in particular.
Shoreline Management Plan	Yes	NA	No	Yes	SMC Chapter 19.08 (Shoreline Management Regulations) - The city adopts by reference the policies of the Shoreline Management Act of 1971, Chapter 90.58 RCW, as they now exist, or may hereafter be amended by the legislature.- Ord. 588 § 1, 1986
Community Wildfire Protection Plan	No	NA	No	No	None at this time.
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	Yes	The City developed a Comprehensive Emergency Management Plan. This plan provides policies, information, recommendations and guidance necessary for the officials making operational decisions.
Threat and Hazard Identification and Risk Assessment	No	No	No	No	None at this time.
Terrorism Plan	Yes	No		Yes	The Comprehensive Emergency Management Plan includes a terrorism annex section. The annex establishes a structure for a systematic, coordinated, unified, timely and effective law enforcement and investigative response to threats or acts of terrorism within the City.
Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	No	No	No	No	
Public Health Plans	No	No	Yes	No	King County Public Health

TABLE 25-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes (Water, Sewer, Stormwater)
Incur Debt through General Obligation Bonds	No
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	No
Development Impact Fees for Homebuyers or Developers	Yes
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 25-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning Department - 1 Planning Director 1 Senior Planner, 1 Associate Planner, 1 Planning Technician
Engineers or professionals trained in building or infrastructure construction practices	Yes	City contracts with a licensed engineer. Building Department - 1 Building Official, 1 Deputy Building Official, 1 Building Inspector. Utilities Department (12 Water/Sewer/Storm water employees)
Planners or engineers with an understanding of natural hazards	Yes	Planning Department 1 Senior Planner City has contracted for this level of expertise to support City staff in the past
Staff with training in benefit/cost analysis	Yes	Planning Department 1 Senior Planner City has contracted for this level of expertise to support City staff in the past
Surveyors	No	No licensed surveyors on City staff. City can and has contracted for survey work on as needed basis.
Personnel skilled or trained in GIS applications	Yes	The Information Technology (IT) Department includes 1 senior GIS Analyst
Scientist familiar with natural hazards in local area	Yes	No scientist of biologist on staff. The City has contracted for this level of expertise in the past.
Emergency manager	Yes	Fire Department (Fire Chief)
Grant writers	Yes	City staff writes grants but the City has contracted for this service in the past

TABLE 25-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Planning
Who is your community's floodplain administrator? (department/position)	Planning/Planning Technician and Senior Planner
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	Most recent adoption was 2008.
When was the most recent Community Assistance Visit or Community Assistance Contact?	2007
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	We could always use support with our floodplain management program. Training staff on how to collect data following a flood event. We would also like to develop a post-disaster program. Continued training on elevation certificates. Would also like to be kept abreast on changes to FEMA policies so we know when and how to respond.
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	Yes and Yes.

TABLE 25-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	Yes	5	05/31/13
Building Code Effectiveness Grading Schedule	Yes	2	02/08/10
Public Protection	Yes	4	Not available
StormReady	No	N/A	N/A
Firewise	No	NA	NA
Tsunami Ready (if applicable)	NA	NA	NA

25.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 25-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 133
- Number of FEMA-Identified Severe Repetitive Loss Properties: 32
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: 43

TABLE 25-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe Winter Storm and Record and Near Record Snow	1825	3/2/2009	No significant damage reported in the Snoqualmie vicinity.
Severe Winter Storm, Landslides, Mudslides, and Flooding	1817	1/30/2009	$4.8 million in public and private property damage
Severe Storms, Flooding, Landslides, and Mudslides	1734	12/8/2007	No significant damage reported in the Snoqualmie vicinity.
Severe Winter Storm, Landslides, and Mudslides	1682	2/14/2007	
Severe Storms, Flooding, Landslides, and Mudslides	1671	12/12/2006	$3.15 million in public and private property damage
Severe Storms and Flooding	1499	11/7/2003	Individual assistance only, $38,748 countywide.
Nisqually Earthquake	1361	3/1/2001	Over $650 million for entire county
Severe Storms, Flooding, Landslides, and Mudslides	1172	4/2/1997	$647,005
Severe Winter Storms/Flooding	1159	1/17/1997	No information available
Severe Storms/Flooding	1100	2/9/1996	$1,598,304 in public property damage
Storms/High Winds/Floods	1079	1/3/1996	$683,612 in public property damage
Severe Storm, High Winds	981	3/4/1993	
High Tides, Severe Storm	896	3/8/1991	
Flooding, Severe Storm	883	11/26/1990	$5.6 million for entire county
Flooding, Severe Storm	852	1/18/1990	$4.9 million for entire county
Severe Storms, flooding	784	12/15/1986	
Severe Storms, flooding	757	2/15/1986	
Storms, High Tides, Mudslides, Flooding	612	12/31/1979	

TABLE 25-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe Storms, mudslides, Flooding	545	12/10/1977	
Severe storms, flooding	492	12/13/1975	
Heavy Rains, Flooding	328	3/24/1972	
Heavy Rains & Flooding	185	12/29/1964	

25.5 HAZARD RISK RANKING

Table 25-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE 25-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Earthquake	48
2	Flood	45
3	Severe Weather	42
3	Severe Winter Weather	42
4	Landslide	18
5	Volcano	12
6	Wildland Fire	12
7	Avalanche	0
8	Tsunami	0
9	Dam Failure	0

25.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 25-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 25-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
S-1		✓		Action not completed. To date, the City's grant applications have been for home elevation projects, not planning projects.
S-2		✓		Action is ongoing. The mitigation initiative language was changed to add *incorporate and adopt by reference*. Adopting the plan as an element in the Comp. plan will make it challenging to revise the plan. This action will be completed as part of the City Comprehensive Plan update in 2014.
S-3		✓		Action is ongoing. Elevation certificates are currently being obtained.
S-4		✓		Action is ongoing. Up to 39 homes are currently under construction.
S-5		✓		Action not completed due to lack of city staff time and funding.
S-6		✓		Action not completed due to lack of city staff time and funding.
S-7		✓		Action not completed due to lack of city staff time.
S-8		✓		Action not completed at this time. City staff will be looking into this issue.
S-9		✓		This is an ongoing action. City continues to implement flood hazard regulations for all new development within the special flood hazard area.
S-10		✓		This is an ongoing action. The City will submit this updated annex as part of the CRS verification package to become the City's official CRS plan of record.
S-11		✓		This is an ongoing action. The plan is anticipated for Council adoption in 2014.
S-12		✓		This is an ongoing action. The city purchased four parcels during the reporting period.
S-13		✓		Action in ongoing. City staff is currently reviewing the Wildland/Urban Interface Code book for considering larger building setback/spacing requirements for wildfire areas.
S-14		✓		Action not completed. We have a low risk to wildfire to be a Firewise community but do subscribe to concepts of Firewise.
S-15		✓		This is an ongoing action. City staff is currently reviewing the Wildland/Urban Interface Code book for possibly adopting planting standards in Wildland buffer areas.
S-16		✓		This is an ongoing action. Public outreach is implemented through the annual safety fair, the citizens academy and local media outlets.
S-17		✓		Action has not been taken due to lack of funding and staff time

TABLE 25-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
S-18		✓		Action has not been taken due to city budget constraints
S-19		✓		Action is ongoing. Drainage maintenance is performed annually. The City is currently working on complying with the future NPDES Phase II permit requirements, which include a higher level of maintenance and documentation for storm drainage.
S-20		✓		Ongoing action. Included in the City's CIP budget but needs Council approval.
S-21		✓		Ongoing action. Included in the City's CIP budget but needs Council approval.
S-22		✓		This is an ongoing action. The downtown Ph. II design funding is secured for this project. Construction to commence 2014.
S-23	✓	✓		This action is partially completed. The storm drain pipeline on Doone Ave. has been replaced. With the traffic study now completed for this project, the storm drainage will be addressed with the design of Newton Street. The storm drainage will also tie into Doone Ave SE.
S-24		✓		Action has not been taken, but City continues to seek funding.
S-25	✓	✓		This action is partially completed. Design complete and construction anticipated in 2014.
S-26		✓		Action has not been taken, but City continues to seek funding. Mountain Ave SE and Meadowbrook Way SE was also added to the list for the installation of a new pipeline and outfall.
S-27		✓		Action has not been taken, but City continues to seek funding.
S-28	✓	✓		This action is partially completed. The storm drain pipeline on Beta, Epsilon and Falls has been installed. Funding for the installation of Delta will be provided through the utility bill.
S-29	✓	✓		This action is partially completed. The storm drain pipeline on Cedar has been installed. Funding has been secured for the other streets. Scope of work completed and in process for selecting a consultant.
S-30		✓		This is an ongoing action. The City the emergency notification systems annually.
S-31		✓		Action has not been taken. Currently no staff time to look into this initiative.
S-32		✓		Action has not been taken. Currently no staff time to look into this initiative.
S-33		✓		This is an ongoing action. City staff continues to participate in the Basin Technical Committee.

TABLE 25-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
S-34		✓		This is an ongoing action. City staff continues to participate/support King County's Public Outreach Strategy.
S-35	✓	✓		The Sandy Cove high bank feasibility study has been completed. Mitigation initiative S-35 was revised to include design and construction for bank stabilization for the King Street lot, immediately adjacent to Sandy Cove Park.
S-36		✓		Action has not been taken. Staff has not dedicated time to research grant funding for this initiative.
S-37		✓		Action is ongoing. Design is underway. Construction is anticipated to comment in Jan. 2015.
S-38		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for the bridge replacement.
S-39		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for installation of storm drain pipe along SE Northern Street.
S-40		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for installation of storm drain pipe along SE Cedar Street.
S-41		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for installation of storm drain pipelines within the SE Newton Street vicinity.
S-42		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for installation of storm drain pipeline along Railroad Ave SE between SE King St. and SE Fir St.
S-43		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for installation of storm drain pipelines along Maple Ave and Olmstead Ave.
S-44		✓		This is a new mitigation initiative. Action has not been taken. Staff continues to seek funding for stabilization of the riverbank.
S-45		✓		This is a new mitigation initiative. Design funding has been secured. Staff continues to seek funding for construction of the Northern Street retrofit project.

25.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 25-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 25-10 identifies the priority for each initiative. Table 25-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-1—Develop a post-disaster action plan for all hazard of concern that address: debris management, historical data gathering, substantial damage assessment, and grants management. This plan would be an appendix to the City's Emergency management plan.							
N	New and existing	All Hazards	3,6,7	Planning Department Fire Department Building Department	Low	City General Fund, FEMA Hazard Mitigation Planning Grant, HMGP funds	Short-term, depends on funding
S-2—Incorporate and adopt by reference the updated City of Snoqualmie Hazard Mitigation Plan as an element of the City Comprehensive plan to assure linkage between the 2 documents.							
Y, Action #1	New and existing	All Hazards	4,6,10	Planning Department	Low	General Fund	Short-term ongoing
S-3—Continue to acquire FEMA elevation certificates for all structures within the mapped floodplain for which the city does not currently have one.							
N	New and existing	Flood	9, 4, 5, 15	Planning Department, Building department	Medium	FEMA hazard Mitigation Grant programs, King County Flood Control District, Property owners	Long-term, Ongoing
S-4—Continue to pursue feasible, cost effective, home elevation projects, targeting identified repetitive loss or frequently flooded properties within the Snoqualmie floodplain.							
N	Existing	Flood	5, 9, 11, 13, 14	Planning Department, Building Department	High	FEMA HMGP funding, King County Flood Control District funding, w/property owner contribution for local match.	Long-term, depends on funding
S-5—Consider the adoption of a "split-flow" floodway as an alternative to the regulatory floodway in effect for the City.							
N	New and existing	Flood	2,4, 6, 7, 11, 13, 14	Planning Department, Public Works City Council	High	FEMA RiskMAP program, General Fund	Long-term, depends on funding

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-6—Re-map the City of Snoqualmie floodplain utilizing best available data and generating a mapped based product that will actively support hazard mitigation and land use decision making within the City							
N	New and existing	Flood	2, 4, 6, 7, 11, 13, 14	Planning Department, Public works, FEMA	High	FEMA risk Map program, King County Flood Control District	Long-term, depends on funding
S-7—Consider amending the City's flood damage prevention ordinance to add language that will track substantial improvements and damages cumulatively, to leverage Increased Cost of Compliance (ICC) opportunities for flood insurance policy holders.							
N	Existing	Flood	7, 9, 10, 12, 13, 14	Planning Department, City Council	Low	City General fund	Short-term
S-8—Considered adopting a higher regulatory freeboard standard above the current 1-foot standard.							
N	New and existing	Flood	7, 9, 10, 12, 13, 14	Planning Department Building Department City Council	Low	City General fund	Short-term
S-9—Maintain Snoqualmie's compliance and good standing under the National Flood Insurance program (NFIP)							
N	New and Existing	Flood	2, 4, 6, 7, 11, 13, 14, 15	Planning Department Public Works Building Department	Low	City General Fund	Short-term, ongoing
S-10—Continue to maintain or enhance the City's classification under the Community Rating System (CRS)							
Y Action #5	New and existing	Flood	2, 3, 4, 6, 9, 10, 11, 15	Planning Department Public Works Building Department	Low	General fund	Short-term Ongoing
S-11—Adopt the City of Snoqualmie Stormwater Management plan.							
N	New and Existing	Flood, Severe Weather	1, 2, 4, 7, 10 13, 14	Public Works Planning department	Low	Stormwater Utility	Short-term

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-12—Continue to pursue feasible, cost-effective property acquisition opportunities along the Snoqualmie River front							
Y Actions #6, #15	New and existing	Flood	9, 7, 8, 12, 13, 14	Planning Dept. King Co. Flood Control District	High	FEMA HMGP funding, King County Flood Control District funding, w/property owner contribution for local match, Conservation Futures Tax	Long-term, depends on funding
S-13—Consider an increase in the building setback/spacing requirement for new construction in areas deemed susceptible to wildfire exposure							
N	New	Wildfire	2, 9, 10	Planning Department, Fire Department, City Council	Low	General Fund	Short-term
S-14—Join Firewise program by adopting Firewise programs and policies in the management of the urban/wildland interface areas within Snoqualmie.							
Y Action #22	New and existing	Wildfire	2, 4, 6, 11, 13, 14	Fire Department Planning Department Building Department	Low	General Fund	Short term
S-15—Consider planting standards in Wildland buffer areas to use only loose branching habits, non-resinous woody material, high moisture content leaves and limited seasonal dead debris and other varieties that possess fire resistive traits.							
N	New and existing	Wildfire	2, 7, 13, 14	Planning Department, Fire Department City Council	Low	General fund	Short Term
S-16—Develop a public outreach program teaming with home improvement vendors educating the public on ways to protect their property form the potential impacts of all hazards of concern.							
N	New and existing	All Hazards	9, 4, 6, 7, 11, 13, 14, 15	Fire Department, Vendors Planning Department	Low	General fund	Short-term
S-17—Conduct seismic vulnerability study of critical facilities identified by City emergency managers.							
Y Action # 13	Existing	Earthquake	2, 4, 9	Building Department Fire department Planning department	Medium	FEMA Hazard Mitigation Grant funding	Long-Term

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-18—Promote the structural seismic retrofit of structures built before 1974 by a targeted outreach to the property owners of these structures.							
Y Action #21	Existing	Earthquake	1, 3, 4	Building Department Planning Department	Medium	General Fund	Short-term
S-19—Continue and/or enhance where feasible, the city's ongoing drainage system maintenance program to reduce or minimize the impacts from stormwater flooding within the City.							
N	New and existing	Flood, Severe Weather	1, 4, 10	Public Works	Low	Stormwater Utility, CIP	Short-term, ongoing
S-20—The City of Snoqualmie's North Well Field well # 6, 7 and 8 currently lack permanent back-up generation. A permanent standby generator needs to be installed to provide continuous service at this critical water service delivery facility							
N	New and Existing	All Hazards	1, 9, 12	Public Works Building Department	Medium	CIP	Short Term
S-21—The Fisher Creek Booster Station currently lacks back up generation. A permanent standby generator needs to be installed to provide continuous service at this critical water service delivery facility. This site has space inside the building designed for a Generator.							
N	New and Existing	All Hazards	1, 9, 12	Public Works	Medium	CIP	Long Term
S-22—To alleviate stormwater flooding problems along Railroad Avenue SE between SE Fir Street and SE King Street: • Install new 12-inch diameter pipeline along Railroad Avenue SE from SE King Street to SE Fir Street. Connect to existing outfall to Snoqualmie River. Install new 12-inch diameter pipeline between Railroad Avenue SE and the Snoqualmie River.							
N	New and existing	Flood, Severe Weather	1, 5, 9, 12	Public Works	$176,000 Medium	CIP, FEMA Hazard Mitigation Grant programs	Short-term
S-23—Address stormwater flooding problems due to undersized storm drain system in vicinity of Doone Avenue SE and SE Newton Street. • Replace existing storm drain pipeline on Doone Avenue SE with new 12- and 24-inch diameter pipeline. Connect to existing ditch at south end of Doone Avenue SE. • Install new 12-inch diameter pipeline along SE Newton from Olmstead Place SE to Doone Avenue SE.							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	$358,000 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-24—Address stormwater flooding problems due to lack of storm drain system on Railroad Avenue SE between SE Delta Street and SE 90th. • Install new 18-inch diameter storm drain pipeline along Railroad Avenue SE from SE Delta Street to SE 90th.							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	$282,000 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-25—Address stormwater flooding problems due to lack of storm drain system on SE Northern Street and Railroad Place SE. Ponding on east side of Railroad Avenue SE for extended periods during heavy rain events. The existing storm drain system on west side of Railroad Place SE is blocked due to a pipe failure or and obstruction in the pipeline.							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	High	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-26—Address stormwater flooding problems due to lack of storm drain system on SE Alder Street, SE Hemlock Street, SE Spruce Street, SE Walnut Street, Mountain Ave SE and Meadowbrook Way SE. • Install new 12-inch diameter pipeline along SE Alder Street. Connect to existing storm drain at Meadowbrook Way SE. • Install new 12-inch diameter pipeline along SE Hemlock Street. Connect to existing storm drain at Meadowbrook Way SE. • Install new 12-inch diameter pipeline along SE Spruce Street. Connect to existing storm drain at Meadowbrook Way SE. • Install new 12-inch diameter pipeline along SE Walnut Street. Connect to existing storm drain at Meadowbrook Way SE. • Install new 12-inch diameter pipeline along Mountain Ave SE. Connect to existing storm drain at Meadowbrook Way SE. • Install new 12-inch diameter pipeline along Meadowbrook Way SE.							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	High	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-27—Address stormwater flood problems due to lack of drainage conveyance system on SE Maple Street and Maple Avenue SE. • Install new 18-inch diameter pipeline along SE Maple Street from Maple Avenue SE to Johnson Slough. Install new water quality treatment facility. • Install new 18-inch diameter pipeline along Maple Avenue SE from 7900 block to SE Maple Street. Connect to new pipeline at SE Maple Street.							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	$269,000 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-28—Address stormwater flood problems due to lack of drainage conveyance system on SE Beta Street, SE Delta Street, SE Epsilon Street, and Falls Avenue SE. • Install new 12-inch diameter pipeline along SE Delta Street from Falls Avenue SE to Schusman Avenue SE. Connect to existing storm drain at SE Schuman Avenue Street							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-29—Address stormwater flood problems due to lack of drainage conveyance system in vicinity of SE Fir Street, SE 80th St and Pine Avenue SE. • Install new 12-diameter pipeline at Pine Avenue SE. Connect to new storm drain at Pickering Court SE. • Install new 12-diameter pipeline at SE 80th Street. Connect to new storm drain at Pickering Court SE. • Install new 12-diameter pipeline at SE Fir Street. Connect to new storm drain at Pickering Court SE. • Install new 18-diameter pipeline at Pickering Court SE. Outfall to wetland area.							
N	New and existing	Flood and Severe Weather	1, 5, 9, 12	Public Works	$501,000 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-30—Develop a public outreach strategy that maximizes the City's capabilities through its ongoing programs that provide multiple messages that support all phases of emergency management							
N	New and Existing	All Hazards	4, 6, 7, 9, 11, 13, 14, 15	Fire Department Planning Department	Low	City General fund, FEMA HMGP	Short-Term Ongoing
S-31—Conduct a vulnerability assessment of water and wastewater utilities for exposure to all identified hazards of concern.							
Y Action #10	Existing	All Hazards	1, 3, 7	Public Works	Medium	FEMA Hazard Mitigation Grant funding	Long-term, depends on funding
S-32—Review utility designs and standards for safety and competence under natural and human caused disasters.							
Y Action # 20	New	All hazards	2, 9	Public Works Planning Department	Low	Stormwater Utility	Short-Term, ongoing
S-33—Participate in the Basin Technical Committee process of the King County Flood Control District to leverage resources for flood hazard mitigation.							
N	New and existing	Flood, Severe Weather	7, 12, 13, 14	Planning Department Public Works	Low	General Fund	Short-term, ongoing

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-34—Continue to participate/support the King County Public Outreach Strategy developed to coordinate countywide outreach programs credited under the CRS program.							
N	New and existing	Flood, Severe Weather	4, 6, 7, 9, 11, 13, 14 15	Planning Department King Co. Flood Control District	Low	General Fund, King County Flood Control District program funding	Short-term, ongoing
S-35—Implement design and construction for bank stabilization for the King Street lot, immediately adjacent to Sandy Cove Park.							
N	New and Existing	Flood	2, 4, 5, 12	Public Works	$480,130 Medium	King County Flood Control District Opportunity funding	Short term, ongoing
S-36—Seek funding for the placement of a new stream flow gauge at the City of Snoqualmie above the falls that will accurately depict in channel flows at the City during high water events.							
N	New and existing	Flood	3, 4, 6, 7, 11, 13, 14, 15	Public Works Planning Department King Co. Flood Control District National Weather Service	Medium	National Weather Service Grants, USGS grants, King Co. Flood Control District	Long term, depends on funding
S-37—Replace two small bridges that have rotting wood pilings and abutments along Meadowbrook Way SE. These facilities were damaged by the Nisqually earthquake that required repair by King County bridge crews. Recent bridge inspection records indicate repair would be as costly as complete reconstruction.							
N	Existing	Flood, Earthquake	1, 5, 9, 12	Public Works	Low		Short-term
S-38—Replace Kimball Creek bridge on SR 202 that is functionally obsolete with virtually no shoulders on either side and has an inadequate hydraulic opening. The concrete rigid frame structure does not meet current seismic design and detailing standards.							
N		Flood, Earthquake	1, 5, 9, 12	Public Works	Low	General Fund, King County Flood Control District program funding	Short-term, ongoing
S-39—Address stormwater flood problems due to lack of drainage conveyance system on SE Northern Street and Harding Place SE. • Install large diameter storm drain pipe along SE Northern Street, including Harding Place SE, between 380th Ave SE and SR 202.							
N		Flood, Severe Weather	1, 5, 9, 12	Public Works	High	CIP, FEMA Hazard Mitigation Grant Programs	Short-term

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-40—Address stormwater flood problems due to lack of drainage conveyance system on SE Cedar Street. • Install 15 to 18-inch diameter storm drain pipeline along SE Cedar Street from 380th Ave SE to Pine Ave SE.							
N		Flood, Severe Weather	1, 5, 9, 12	Public Works	Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-41—To alleviate stormwater flood problems within the vicinity of SE Newton Street. • Install new 12-inch diameter storm drain pipeline along SE Newton Street from Falls Ave to Park Ave SE. Connect to existing outfall to Snoqualmie River. • Install new 12-inch diameter storm drain pipeline along SE Newton Street from Maple Ave SE to Falls Ave SE. Connect to existing storm drain at Falls Ave SE. • Install new 12-inch diameter storm drain pipeline along Maple Ave SE north of SE Newton St. Connect to existing storm drain at SE Newton St. • Install new 18-inch diameter storm drain pipeline along Falls Ave SE from SE Beta St. to SE Newton St. Connection to existing storm drain at SE Newton St. • Install new 12-inch diameter storm drain pipeline along SE Beta St. from east of Railroad Place SE to Falls Ave SE. Connect to new pipeline at Falls Ave SE. • Install new 12-inch diameter storm drain pipeline along Railroad Place SE. Connect to new pipeline at SE Beta St. • Install new 12-inch diameter storm drain pipeline along SE Alpha St. Connect to new pipeline on Falls Ave SE. • Install new 12-inch diameter along Railroad Ave SE. Connect to existing pipeline at Falls Ave SE.							
N		Flood, Severe Weather	1, 5, 9, 12	Public Works	$729,000 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-42—Address stormwater flood problems due to lack of drainage conveyance system on Railroad Ave between SE King Street and SE River Street. • Install 12-inch diameter storm drain pipeline along Railroad Ave SE at SE King St to SE River St. Connect to existing pipeline at SE River St.							
N		Flood, Severe Weather	1, 5, 9, 12	Public Works	$176,000	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-43—Address stormwater flood problems due to lack of drainage conveyance system on Maple Avenue and Olmstead Avenue • Install 18-inch diameter storm drain pipeline along Maple Ave SE and SE King St to SE River St. Connect to existing pipeline at SE River St. • Install 18-inch diameter storm drain pipeline along Olmstead Ave SE from SE King St. to SE River St. Connect to existing pipeline at SE River St.							
N		Flood, Severe Weather	1, 5, 9, 12	Public Works	$181,422 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term

TABLE 25-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Included in previous plan?	Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
S-44—Stabilize approximately 200 feet of undermined riverbank at the intersection of Park Ave SE and SE River St.							
N		Flood	1, 5, 9, 12	Public Works, King County Flood Control District	$502,500 Medium	CIP, FEMA Hazard Mitigation Grant Programs	Short-term
S-45—Address stormwater flood problems due to lack of drainage conveyance system on Northern Street between 380th and Pickering Court. • Install bio-retention cells, a pervious concrete sidewalk on one side of the street, street trees to aid in canopy interception of rainfall, and a box culvert or pipe feature at the east end of the project to reconnect wetland hydrology.							
N		Flood	1, 5, 9, 12	Public Works	High	CIP, FEMA Hazard Mitigation Grant Programs	Short-term

TABLE 25-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
S-1	3	Low	Low	Yes	Yes	Yes	High
S-2	3	Low	Low	Yes	No	Yes	High
S-3	4	High	Med	Yes	Yes	No	Med
S-4	5	High	High	Yes	Yes	No	High
S-5	7	High	High	Yes	No	Yes	Low
S-6	7	Med	High	No	No	No	Low
S-7	6	Med	Low	Yes	No	Yes	Med
S-8	6	High	Low	Yes	No	Yes	High
S-9	8	Low	Low	Yes	No	Yes	High
S-10	8	Low	Low	Yes	No	Yes	High
S-11	7	Med	Low	Yes	No	Yes	High
S-12	6	High	High	Yes	Yes	Yes	High
S-13	3	Med	Low	Yes	No	Yes	High
S-14	6	Low	Low	Yes	No	Yes	Med
S-15	4	Low	Low	Yes	No	Yes	Med
S-16	8	Low	Low	Yes	No	Yes	High

TABLE 25-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
S-17	3	Med	High	No	Yes	No	Low
S-18	3	Med	Med	Yes	No	Yes	High
S-19	3	Med	Low	Yes	No	Yes	High
S-20	3	Med	Med	Yes	No	Yes	High
S-21	3	Med	Med	Yes	No	Yes	High
S-22	4	Med	Med	Yes	Yes	Yes	High
S-23	4	Med	Med	Yes	Yes	Yes	High
S-24	4	Med	Med	Yes	Yes	Yes	High
S-25	4	Med	Med	Yes	Yes	Yes	High
S-26	4	Med	Med	Yes	Yes	Yes	High
S-27	4	Med	Med	Yes	Yes	Yes	High
S-28	4	Med	Med	Yes	Yes	Yes	High
S-29	4	Med	Med	Yes	Yes	Yes	High
S-30	8	Low	Low	Yes	Yes	Yes	High
S-31	3	Med	Med	Yes	Yes	No	Med
S-32	2	Med	Low	Yes	No	Yes	High
S-33	4	Med	Low	Yes	No	Yes	High
S-34	7	Low	Low	Yes	No	Yes	High
S-35	4	Med	Med	Yes	Yes	Yes	High
S-36	8	Med	Med	Yes	Yes	Yes	High
S-37	4	High	Low	Yes	Yes	No	Med
S-38	4	High	Low	Yes	Yes	No	Med
S-39	4	Med	Med	Yes	No	Yes	High
S-40	4	Med	Med	Yes	No	Yes	High
S-41	4	Med	Med	Yes	No	Yes	High
S-42	4	Med	Med	Yes	No	Yes	High
S-43	4	Med	Med	Yes	No	Yes	High
S-44	4	Med	Med	Yes	No	Yes	High
S-45	4	High	High	Yes	Yes	Yes	High

a. See Introduction for explanation of priorities.

TABLE 25-11.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	--	--	--	--	--	--
Earthquake	2, 19, 20, 34	18, 19, 20, 21, 36, 37	2, 18, 21, 31	2	1,	Not Applicable
Flood	2, 3, 5, 6, 7, 8, 9, 10, 11, 34	3, 4, 10,12, 18, 22, 33, 34, 37	2, 3, 9, 10, 12, 18, 31, 35, 36	2, 5, 10, 11, 12, 34	1, 10, 23, 37,	10, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 39 through 45
Landslide	2, 34	18, 33	2, 18, 33	2	1, 23, 24	32
Severe Weather	2, 11, 34	18, 22, 33, 34	2, 18, 31, 35	2, 11, 34	1,	25, 26, 27, 28, 29, 30, 31, 32, 34, 39 through 45
Severe Winter Weather	2, 11, 34	18, 22, 33, 34	2, 18, 31, 35	2, 11, 34	1,	25, 26, 27, 28, 29, 30, 31, 32, 34, 39 through 45
Tsunami	--	--	--	--	--	--
Volcano	2, 34	18, 33	2, 18, 31	2	1,	Not Applicable
Wildfire	2, 15, 16, 17, 34	17, 33	2, 31	2, 16, 17	1,	

a. See Introduction for explanation of mitigation types.



CITY OF SNOQUALMIE

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

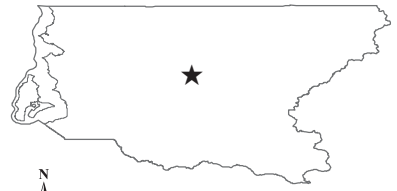
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

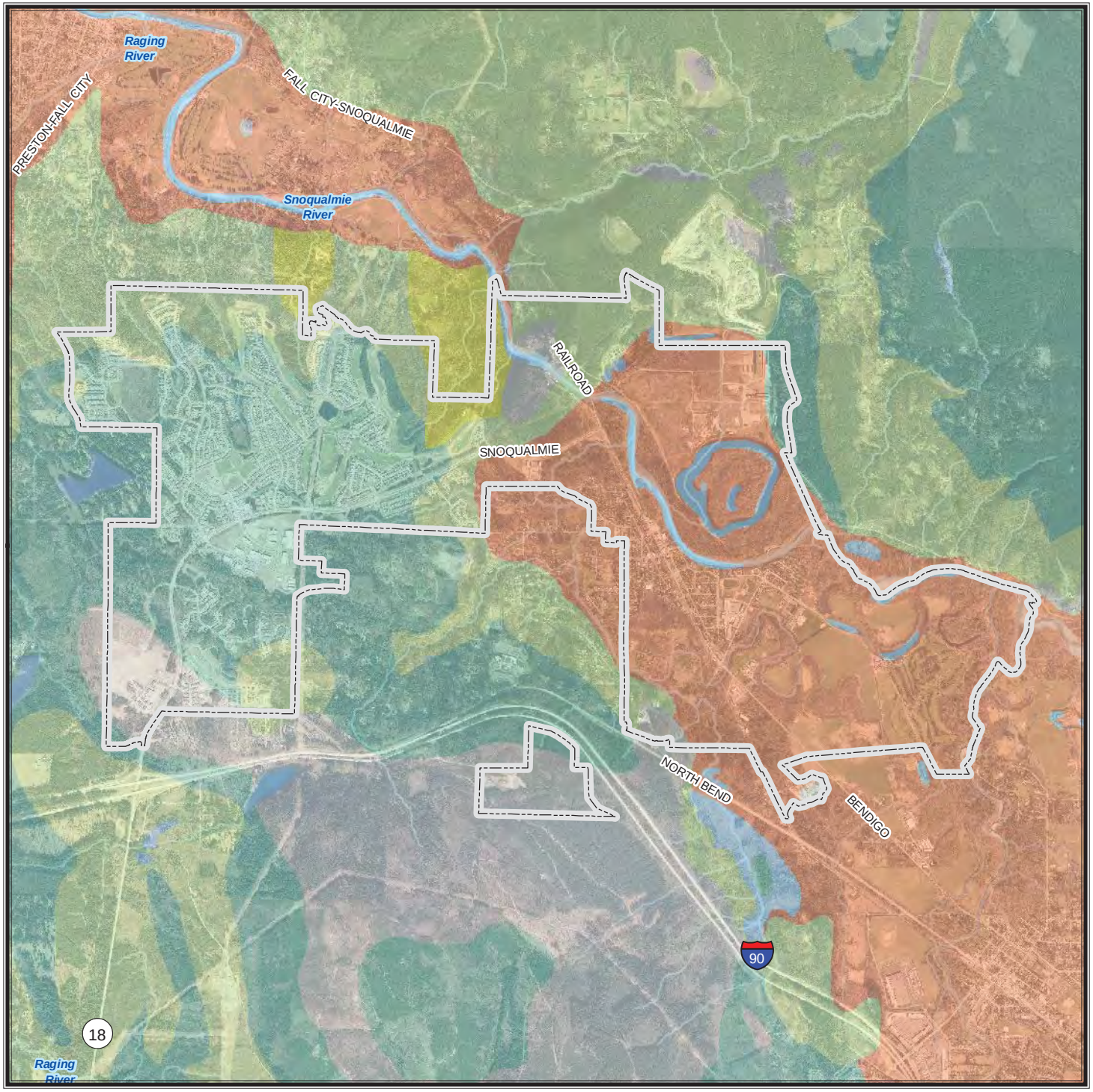
King County

TETRA TECH





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CITY OF SNOQUALMIE

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

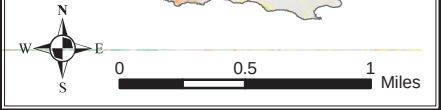
A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

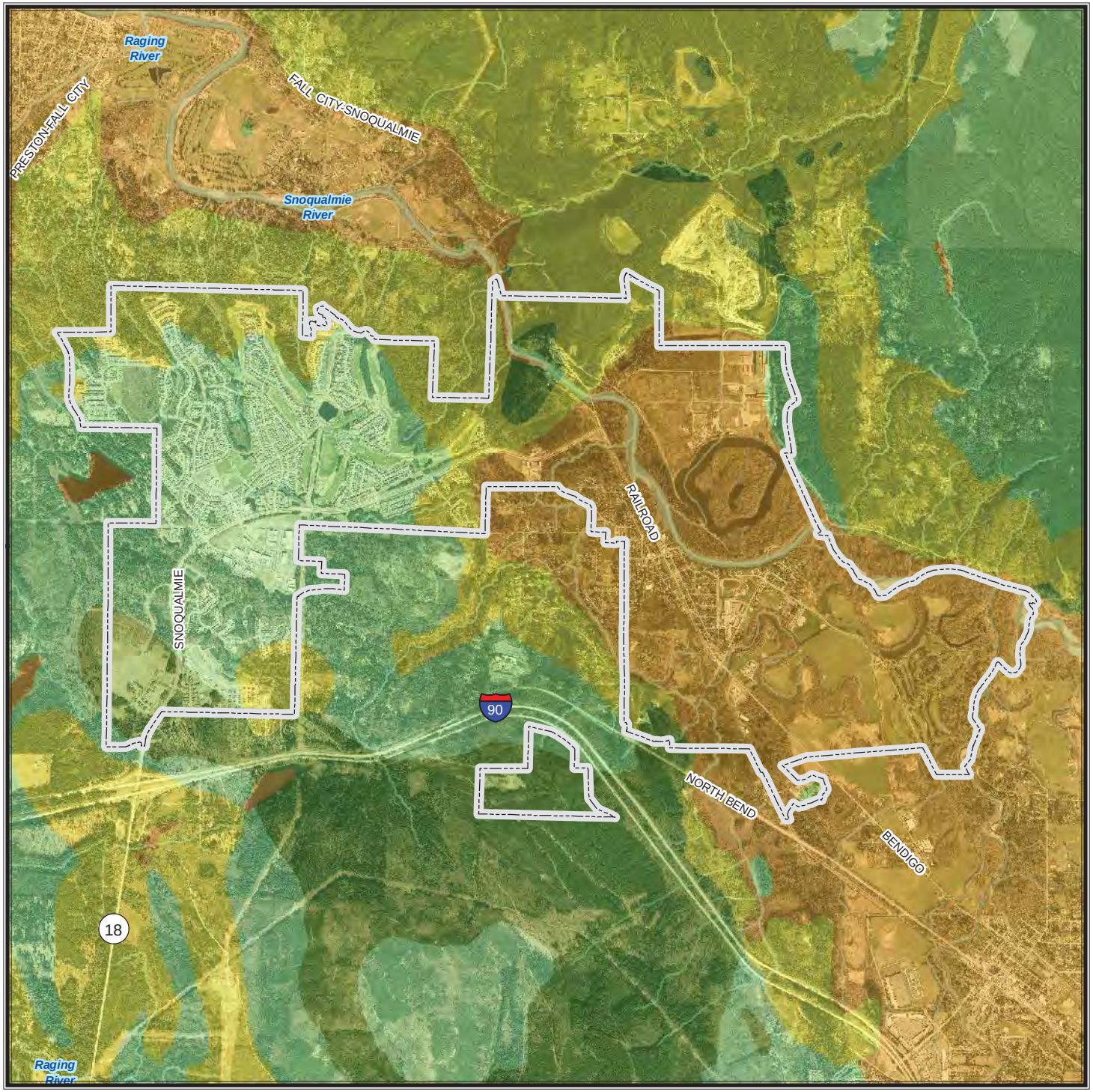
Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF SNOQUALMIE

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

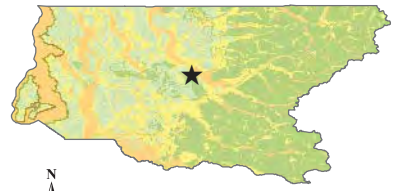
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

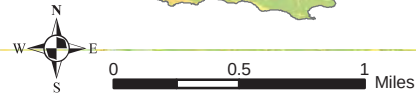
The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

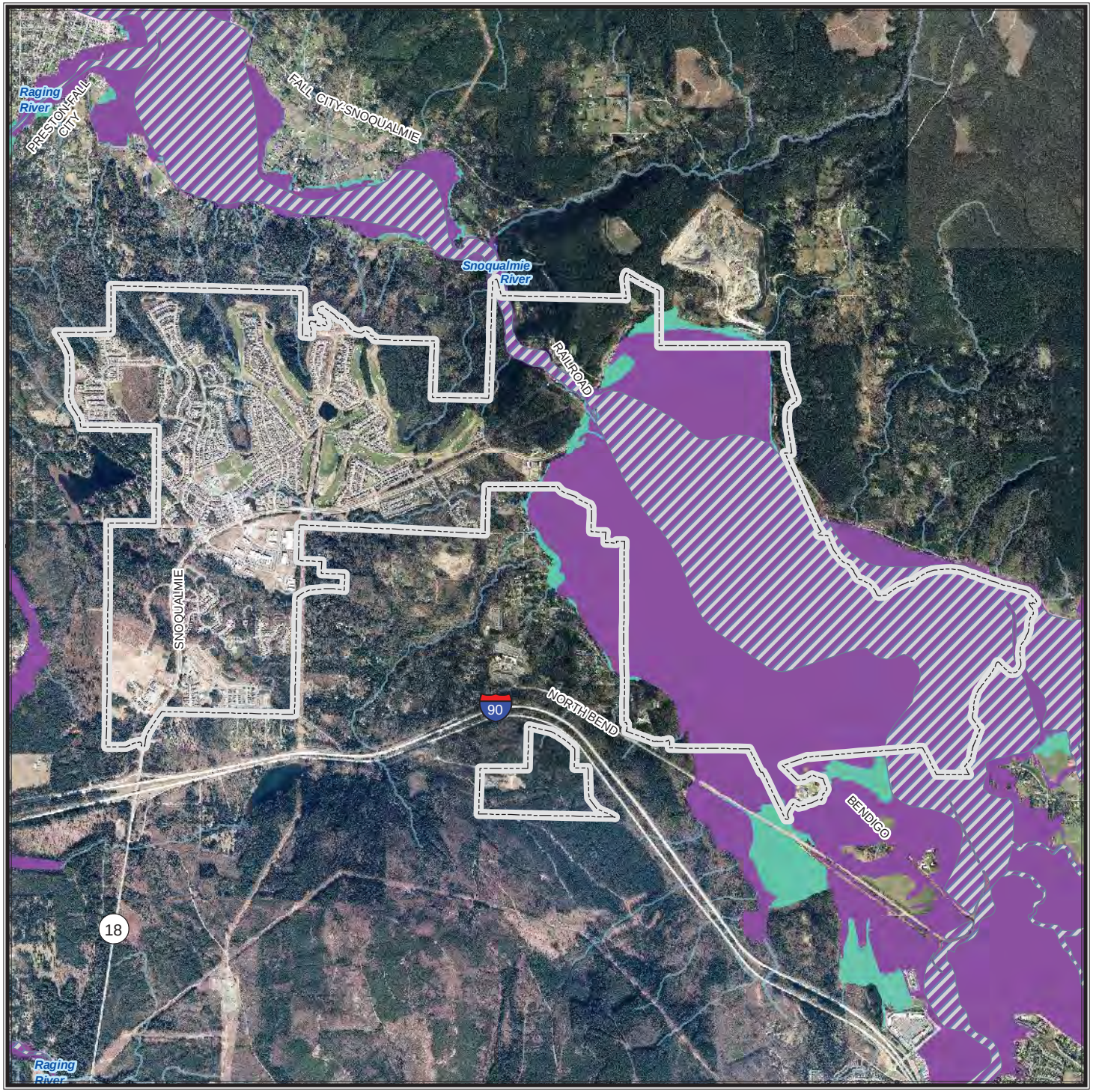
Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF SNOQUALMIE

FEMA DFIRM Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

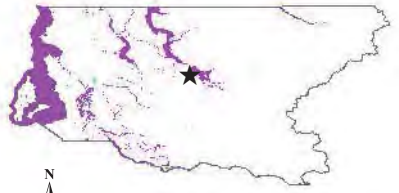
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
King County, U.S. Geological Survey

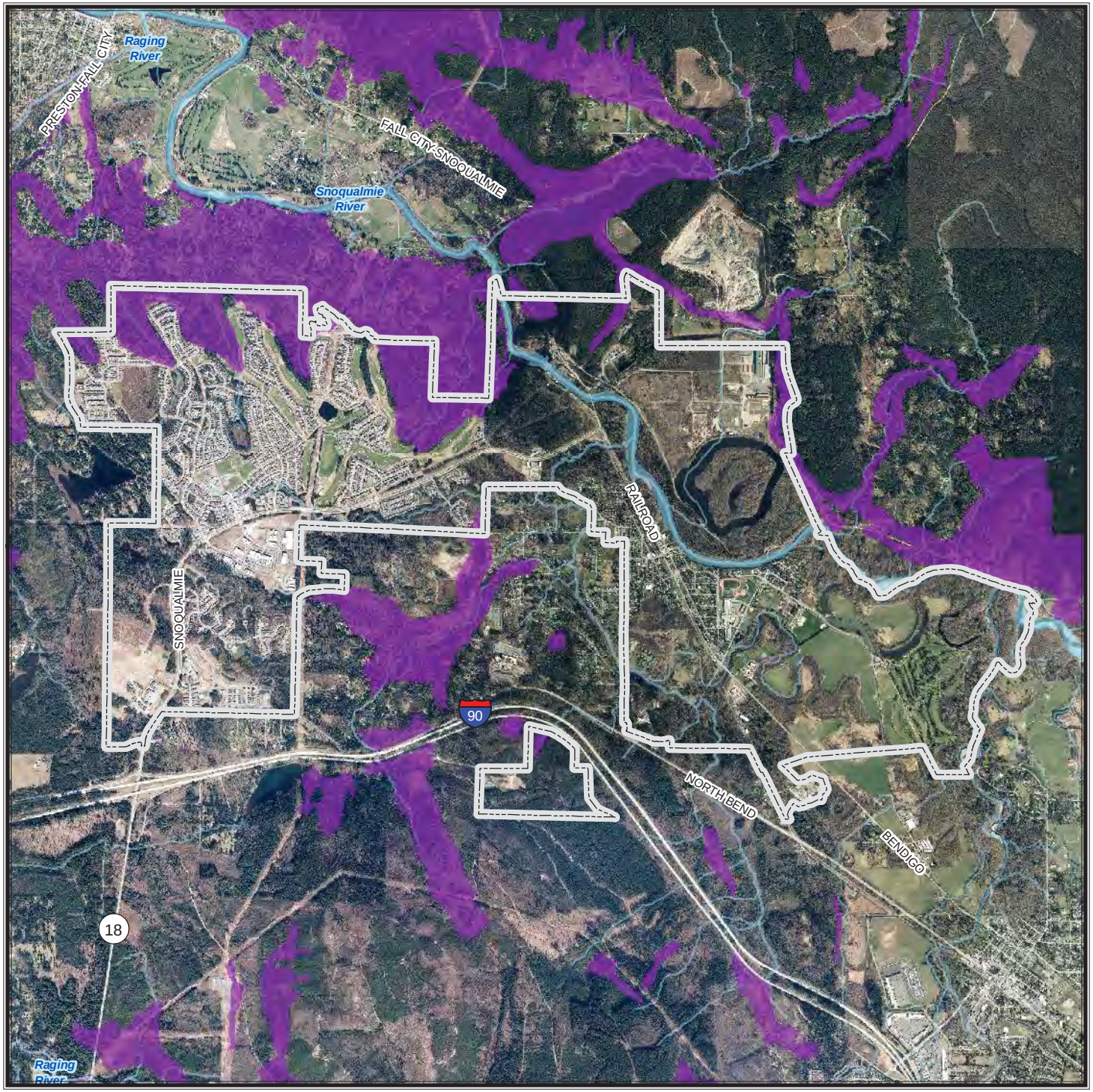
King County

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CITY OF SNOQUALMIE

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

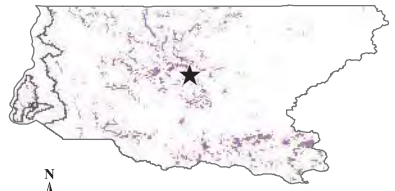
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

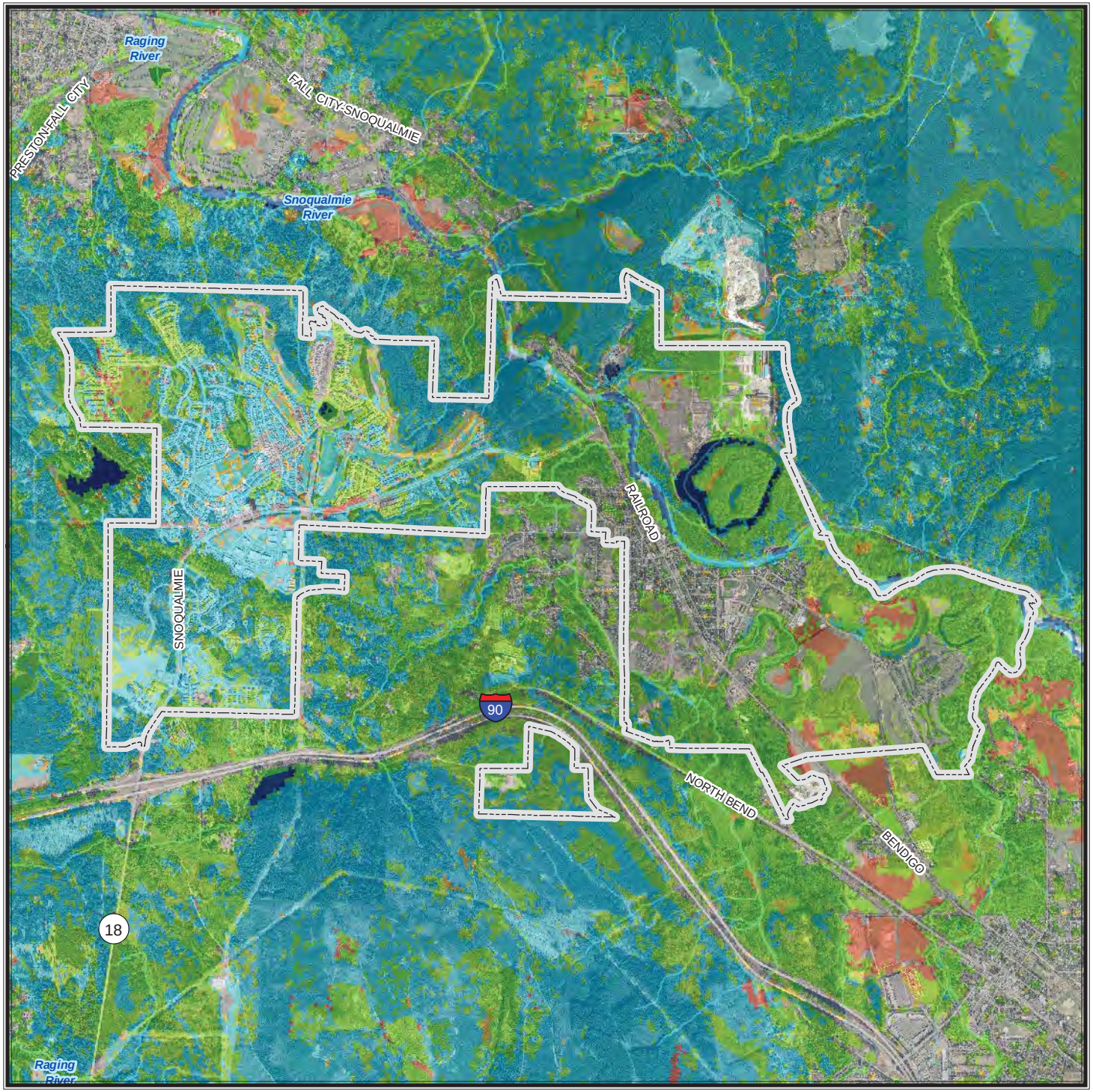
King County

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CITY OF SNOQUALMIE

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CHAPTER 26.
CITY OF TUKWILA UPDATE ANNEX

26.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Marty Grisham Emergency Manager
444 Andover Park East
Tukwila. WA 98188
Telephone: (206) 971-8740
e-mail Address: Marty.grisham@tukwilawa.gov

Alternate Point of Contact

Chris Flores, Director of EM
444 Andover Park East
Tukwila, WA 98188
Telephone: (206) 971-8713
e-mail Address: chris.flores@tukwilawa.gov

26.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**June 23,1908
- **Current Population—**19,160 as of April 1, 2013 WA OFM estimate
- **Population Growth—**Population is on a slow but steady increase. The population increased more than 11 percent between 2000 and 2010. We recently developed approximately 400 acres, known as the Southcenter Parkway extension. This development will include residential units that are projected to increase our population. Although the residential population is less than 20,000, Tukwila's daytime employee and customer population exceeds 100,000 daily and bumps over 150,000 are not uncommon.
- **Location and Description—**Tukwila lies in the heart of the Puget Sound region, sitting 12 miles south of downtown Seattle, 17 miles north of downtown Tacoma, just east of Seattle-Tacoma International Airport, and at the crossroads of two major interstate highways, I-5 and I-405. The City of Kent is our southern border, with SeaTac to our west and Renton on our East. The Green/Duwamish River runs the full length of the city from north to south. The BNSF Railway divides the city from North to South. Tukwila is the home to the state's largest shopping mall, Westfield/Southcenter Mall. Tukwila is a local leader in retail/commercial sales, warehousing and distribution of goods and manufacturing.
- **Brief History—**The earliest people in Tukwila were the Duwamish Tribe who made their homes along the Black and Duwamish Rivers. They named Tukwila for the lush forests of hazelnut trees which grew around them. Pioneer settlers arrived in 1851. Tukwila was incorporated as a city in 1908.
- **Climate—**Weather is generally mild, with a rare seasonal extreme heat or cold event.
  - July is the average warmest month, usually in the mid-70s.
  - The highest recorded temperature was 103°F in 2009.
  - On average, the coolest month is December, usually in the mid-40s.
  - The lowest recorded temperature was 0°F in 1950.
  - The most precipitation on average occurs in November.
- **Governing Body Format—**The City of Tukwila has a Mayor-Council form of Government. Tukwila's Mayor is the chief executive officer of the City, and the Council is the legislative

branch and governing body. The City's management consists of eight department heads, reporting to the City Administrator. Tukwila has over **323** full-time employees, and oversees an annual general operating budget of approximately $**57** million. Emergency Management assumes responsibility for the adoption of this plan; and will oversee its implementation.

- **Development Trends—**Tukwila continues to bring commerce and new development to the City. Our trend is certainly a pattern of growth. The household and job forecasts for Tukwila are for an additional 4,860 households and 15,500 jobs by the year 2030. Most of the growth in jobs and housing is anticipated to occur in Tukwila's Southcenter District, which is one the region's urban centers designated for concentrated growth in jobs and housing. The development of areas in the city has shown an up and down trend, based mostly on the general economy. Permits in 2009 were at 1,714. Permits in 2010 were numbered at 2,252. The Department of Community Development (DCD) reports 2,099 permits were issued in 2013.

26.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 26-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 26-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 26-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 26-4. Classifications under various community mitigation programs are presented in Table 26-5.

TABLE 26-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	TMC, Title 13, adopted 7/1/2013
Zonings	Yes	No	No	Yes	TMC, Title 18, adopted 6/2011
Subdivisions	Yes	No	No	No	TMC, Title 17, adopted 2/2008
Stormwater Management	Yes	No	No	Yes	TMC, Title 14, Chapter 14.30, adopted 2/2010
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	WA State Disclosure Law, RCW 64.06
Growth Management	Yes	No	No	Yes	City of Tukwila Comprehensive Plan
Site Plan Review	Yes	No	No	No	TMC, Title 17, adopted 2/2008
Public Health and Safety	Yes	No	No	No	TMC, Title 12, adopted 2012
Environmental Protection	Yes	No	No	Yes	TMC, Title 21, adopted 2011 TMC, Title 18, Chapter 18.45, Adopted 2010

TABLE 26-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Planning Documents					
General or Comprehensive Plan	Yes	No	No	Yes	Tukwila's Comprehensive Plan was adopted in 1995 and updated in 2004. The plan is going through a major revision/update that should be completed by years end.
Is the plan equipped to provide linkage to this mitigation plan?	Yes, Plan includes land use, environmental and shorelines elements				
Floodplain or Basin Plan	No	No	No	No	
Storm water Plan	Yes	No	No	No	2013 Surface Water Comprehensive Plan
Capital Improvement Plan	Yes	No	No	No	
What types of capital facilities does the plan address?	Water, sewer, roads, drainage				
How often is the plan revised/updated?	6 Year CIP, with biannual updates				
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	No	No	No	No	Currently do not have an actual plan. We are in the process of developing this. Should be completed in 2015.
Shoreline Management Plan	Yes	No	No	Yes	On October 14, 2011, the Department of Ecology approved the City's Shoreline Master Program.
Community Wildfire Protection Plan	N/A	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	Yes	Updated in October 2013, State approved November 15, 2013
Threat and Hazard Identification and Risk Assessment	No	No	No	No	The city, under the direction of our Risk Manager, is beginning our planning and writing of this plan.
Terrorism Plan	Yes	No	No	No	Written as an Annex in the CEMP, Oct 2013.
Post-Disaster Recovery Plan	Yes	No	No	No	Current Plan, August 2011
Continuity of Operations Plan	Yes	No	No	No	Plan is currently out of date. Will be re-written in 2015.
Public Health Plans	No	No	Yes	No	King County Public Health

TABLE 26-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	YES
Capital Improvements Project Funding	YES
Authority to Levy Taxes for Specific Purposes	YES
User Fees for Water, Sewer, Gas or Electric Service	YES
Incur Debt through General Obligation Bonds	YES
Incur Debt through Special Tax Bonds	YES
Incur Debt through Private Activity Bonds	YES
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	YES
Development Impact Fees for Homebuyers or Developers	YES
Other	Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 26-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	YES	PW, DCD, FD/FPO
Engineers or professionals trained in building or infrastructure construction practices	YES	PW, DCD, FD/FPO
Planners or engineers with an understanding of natural hazards	YES	PW, DCD, FD
Staff with training in benefit/cost analysis	YES	All Departments
Surveyors	YES	PW: through outsourcing (memorandum of understanding / memorandum of agreement)
Personnel skilled or trained in GIS applications	YES	PW, FD, DCD
Scientist familiar with natural hazards in local area	NO	EM; would outsource through memorandum of understanding / memorandum of agreement
Emergency Manager	YES	Fire Dept., City of Tukwila, Emergency Manager
Grant writers	YES	Departments write their own… but we do NOT have a professional Grant Writer for the City.

TABLE 26-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	PW
Who is your community's floodplain administrator? (department/position)	PW Surface Water Senior Engineer
Do you have any certified floodplain managers on staff in your community?	Yes.. Surface Water Senior Engineer
What is the date of adoption of your flood damage prevention ordinance?	02-17-2004
When was the most recent Community Assistance Visit or Community Assistance Contact?	Summer 2013
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	NO
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	YES
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Not at this time. This is an ongoing awareness and situational reporting.
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	Not at this time due to staff time issues. Yes, our community is interested in joining the CRS program.

TABLE 26-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	3	Not available
Public Protection	Yes	3	Not available
StormReady	No	N/A	N/A We are 75% complete in getting our certification.
Firewise	N/A	N/A	N/A
Tsunami Ready (if applicable)	No	N/A	N/A

26.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 26-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: None
- Number of FEMA-Identified Severe Repetitive Loss Properties: None
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: None

TABLE 26-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Washington Severe Winter Storm, Flooding, Landslides, and Mudslides	4056	2012	N/A
Washington Severe Winter Storm, Flooding, Landslides, and Mudslides	1963	2011	N/A
Washington Severe Winter Storm and Record and Near Record Snow	1825	2008	N/A
Washington Severe Winter Storm, Landslides, Mudslides, and Flooding	1817	2009	N/A
Washington Severe Storms, Flooding, Landslides, and Mudslides	1734	2007	N/A
Severe Winter Storm, Landslides, and Mudslides	1682	2006	N/A
Washington Severe Storms, Flooding, Landslides, and Mudslides	1671	2006	N/A
Washington Severe Storms and Flooding	1499	2003	N/A
Washington Earthquake	1361	2001	N/A
Storms/Flooding/Landslides/Mudslides	1172	1997	N/A
Severe Winter Storms/Flooding	1159	1997	N/A
Severe Storms/Flooding	1100	1996	N/A
Washington Storms/High Winds/Floods	1079	1995	N/A
Washington Severe Storm, High Winds	981	1993	N/A
Washington High Tides, Severe Storm	896	1990	N/A
Washington Flooding, Severe Storm	883	1990	N/A
Washington Flooding, Severe Storm	852	1990	N/A
Washington severe storms, flooding	784	1986	N/A
Washington severe storms, flooding	757	1986	N/A
Volcanic eruption (Mt. St. Helens)	623	1980	N/A
Washington storms, high tides, mudslides, flooding	612	1979	N/A
Severe storms, mudslides, flooding	545	1977	N/A

TABLE 26-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Washington severe storms, flooding	492	1975	N/A
Washington Heavy Rains, Flooding	328	1972	N/A
Washington Earthquake	196	1965	N/A
Heavy Rains & Flooding	185	1964	N/A

26.5 HAZARD RISK RANKING

Table 26-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE 26-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Earthquake	54
2	Severe Winter Weather	32
3	Landslide	22
4	Severe Weather	20
5	Dam Failure	17
6	Flood	12
7	Wildfire	7
8	Volcano	3
9	Tsunami	0
10	Avalanche	0

26.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 26-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

26.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 26-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 26-10 identifies the priority for each initiative. Table 26-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 26-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
TW-1		**X**		Continuing maintenance and implementation strategies.
TW-2		**X**		Have not started construction yet. We are in budget discussion for several city facilities, including a new EOC. Funding still being identified.
TW-3		**X**		We are in budget discussions for several city facilities, including a new EOC. Funding is still being identified.
TW-4		**X**		Is funded and will begin this summer.
TW-5		**X**		The city is beginning a major road construction project in the summer of 2014. As part of this, there will be a "slide encatchment area" constructed near this slide prone area.

TABLE 26-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
TW-1—Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts							
New	Flood	2,4,10,12	Public Works	Low	General Fund	Ongoing	No
TW-2; Description Construct a new Emergency Operations Center (EOC) to support emergency response and							
New and Existing	All Hazards	1,3,7	PW EM	High	CIP	Short Term	Yes
TW-3; Description: Construct a new city "Maintenance and Operations Center" to support critical City functions including fleet services, facilities maintenance, water, sewer, surface water, streets and traffic control operations.							
New and existing	All Hazards	1,3,13	PW	High	CIP/Grant	Long Term	Yes
TW-4; Description: Replace the existing Boeing Access Road bridge with a concrete and steel bridge structure, 340' long by 110' wide curb to curb with sidewalks on both sides.							
Existing	All Hazards	1,3,9	PW	High	CIP/Grant	Long Term	Yes

TABLE 26-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
TW-5; Description: Construct an engineered reinforced concrete containment wall, (4' high by 275' long) along the west side of Interurban Avenue South							
Existing	All Hazards	1,3,9	PW	High	CIP/Grant	Short Term	Yes
TW-6; Consider participation in the NFIP, Community Rating System (CRS) program							
New and Existing	Flood	2,4,10,12	Public Works	Low	General Fund	Long term	No
TW-7; Integrate the hazard mitigation plain into other plans, ordinances or programs to dictate land uses within the jurisdiction.							
New	All Hazards	2,4,8,10	DCD	Low	General Fund	Short-term	No
TW-8; Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority.							
Existing	All Hazards	5,9,13	DCD	High	FEMA grants, Local sources for local Match	Long-term	No
TW-9; Continue to support the county-wide initiatives identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	City of Tukwila	Low	General Fund	Ongoing	No
TW-10; Actively participate in the plan maintenance strategy identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	King County OEM City of Tukwila	Low	General Fund	Ongoing	No

TABLE 26-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
1	4	Medium	Low	Yes	No	Yes	High
2	3	High	High	Yes	Yes	Yes	High
3	3	High	High	Yes	No	No	Medium
4	3	High	High	Yes	Yes	No	Medium
5	3	High	High	Yes	Yes	Yes	High
6	4	Medium	Low	Yes	No	Yes	Medium
7	4	Medium	Low	Yes	No	Yes	High
8	3	High	High	Yes	Yes	No	Medium
9	7	Medium	Low	Yes	No	Yes	High
10	7	Low	Low	Yes	Yes	Yes	high

a. See Introduction for explanation of priorities.

TABLE 26-11.
ANALYSIS OF MITIGATION INITIATIVES

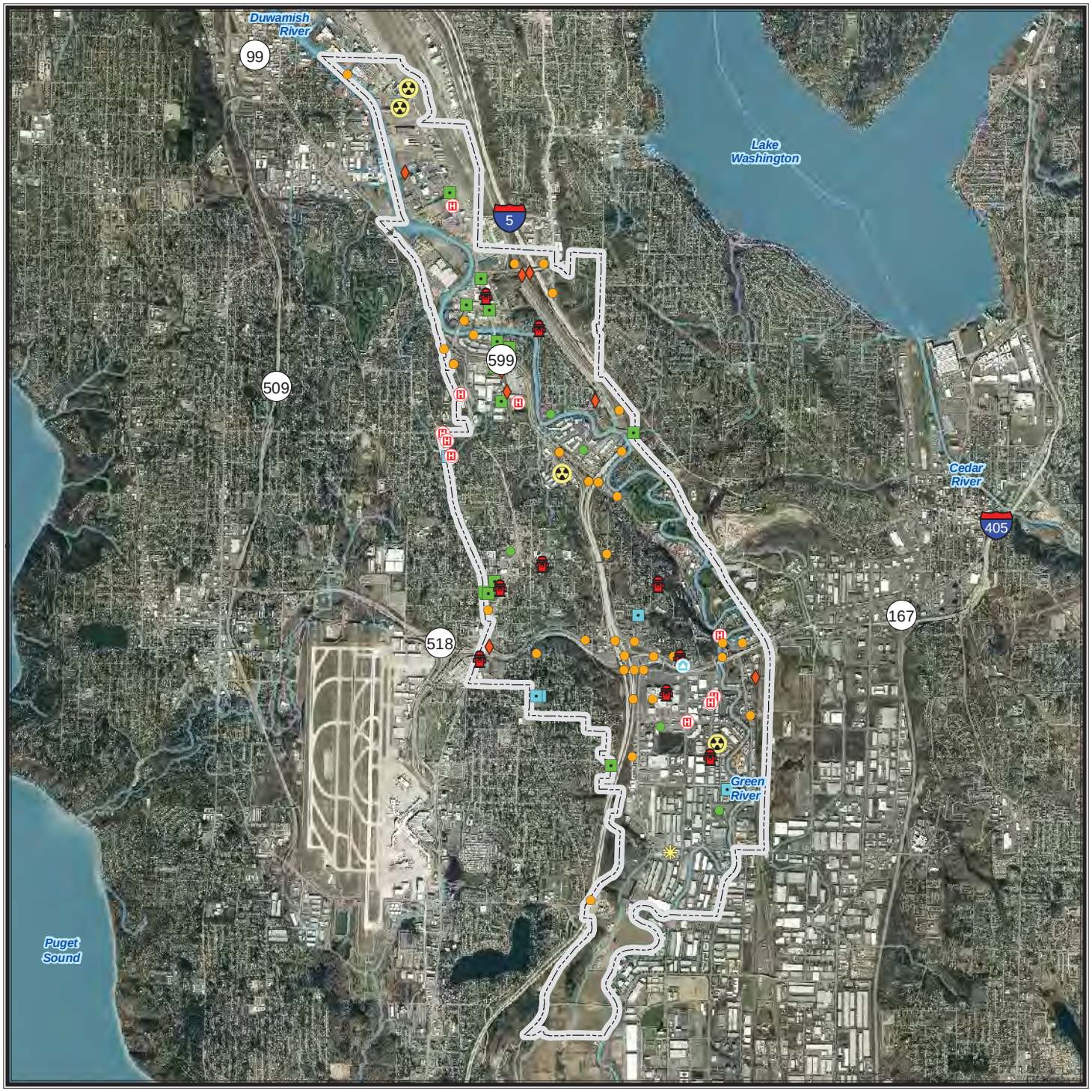
	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	7,10	4,8	9		2,3,9	5
Earthquake	7,10	4,8	9		2,3,9	
Flood	1,6,7,10	1,4,6,8	1,6,9	1,6	1,2,3,6,9	5
Landslide	7,10	4,8	9		2,3,9	5
Severe Weather	7,10	4,8	9		2,3,9	5
Severe Winter Weather	7,10	4,8	9		2,3,9	5
Tsunami	--	--	--	--	--	--
Volcano	7,10	4,8	9		2,3,9	
Wildfire	7,10	4,8	9		2,3,9	

a. See Introduction for explanation of mitigation types.

26.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

The City has entered into a Facilities Study Plan, to include a Needs Assessment, that will look at all city owned structures. The results of this study will certainly have an impact on our long range budgeting to bring all our facilities up to current seismic and energy efficiency standards.

The City's Risk Manager, being supported by Emergency Management, is beginning the process of writing a "Threat and Hazard Identification and Risk Assessment."



CITY OF TUKWILA

Critical Facilities and Infrastructure

Critical Facilities

- Government Function
- HazMat
- Medical Care
- Protective Function
- Schools
- Other Facility

Critical Infrastructure

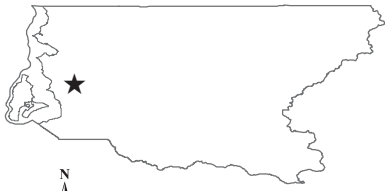
- Bridges
- Communications
- Dams
- Water Supply
- Power
- Transportation
- Wastewater

Locations are approximate.

Base Map Data Sources:
King County, U.S. Geological Survey

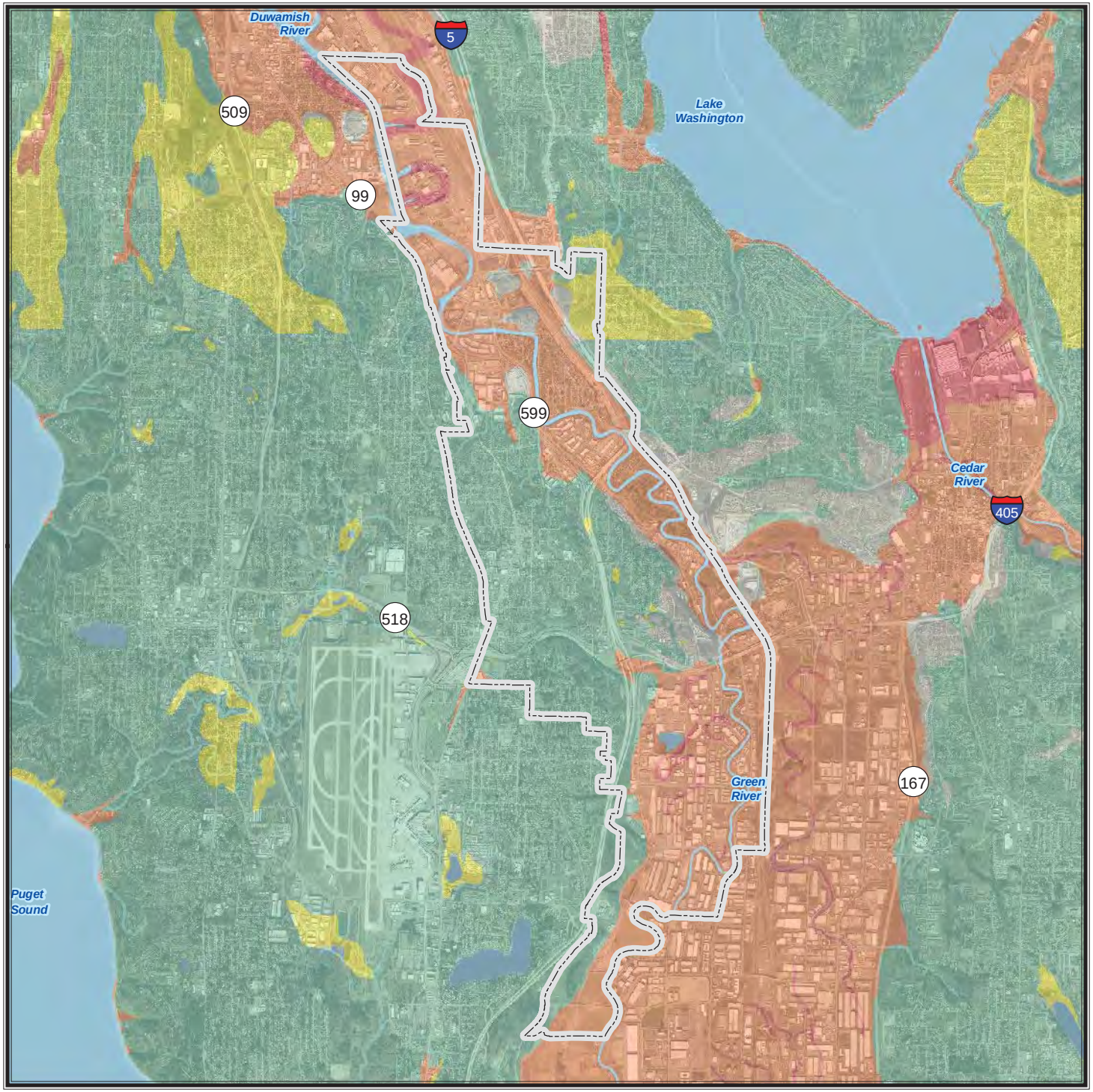
King County

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CITY OF TUKWILA

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

TETRA TECH



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CITY OF TUKWILA

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

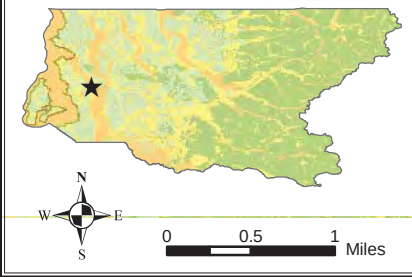
Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

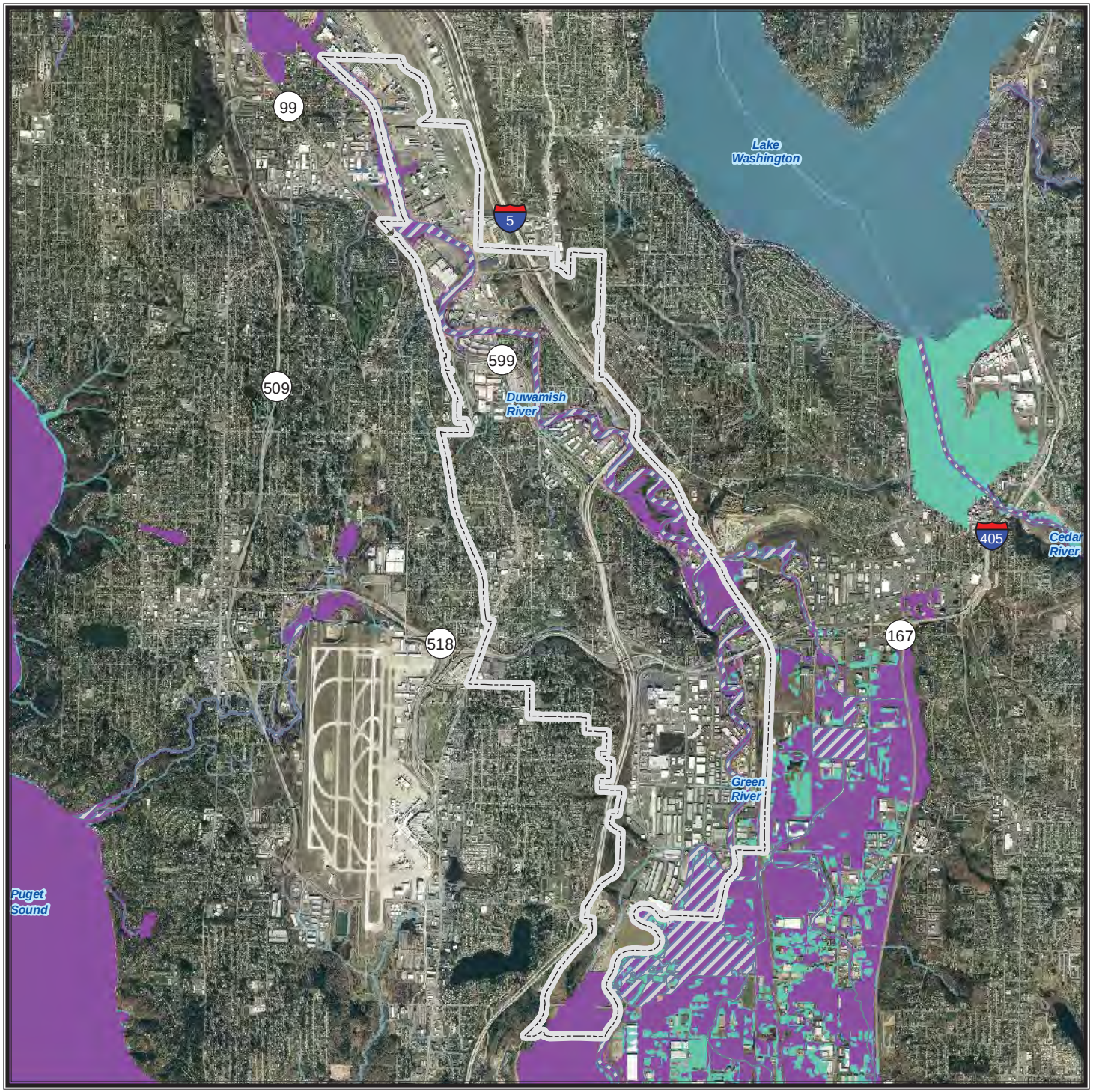
The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF TUKWILA

FEMA DFIRM Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

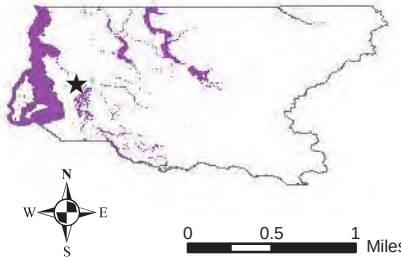
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF TUKWILA

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

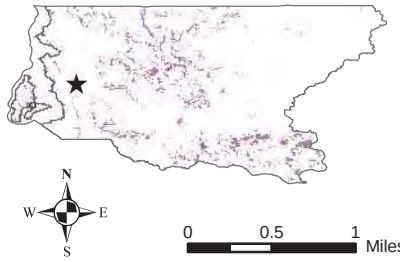
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF TUKWILA

Lahar Hazards (Puyallup Valley)

- Case 1 - Large Lahars
- Case 2 - Moderate Lahars
- Post-Lahar Sedimentation

Lahar hazards data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. These data were produced as part of a project to estimate the potential economic losses from future eruptions of Mount Rainier.

Case 1 - Large Lahars (Recurrence Interval 500–1000 Years)
Shows areas that could be affected by cohesive lahars that originate as enormous avalanches of weak, chemically altered rock from the volcano. Case I lahars can occur with or without eruptive activity. The time interval between Case I lahars on Mount Rainier is about 500 to 1,000 years.

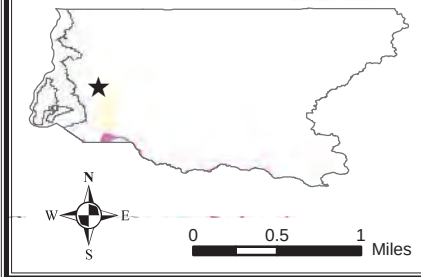
Case 2 - Moderate Lahars (Recurrence Interval 100–500 Years)
Shows areas that could be affected by relatively large noncohesive lahars, which are commonly caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but they can also have a noneruptive origin. The time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year range, making these flows analogous to the so-called "100-year flood" commonly considered in engineering practice.

Post-Lahar Sedimentation Shows areas subject to post-lahar erosion and sedimentation and the ongoing potential for flooding.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF TUKWILA

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CHAPTER 27.
CITY OF WOODINVILLE UPDATE ANNEX

27.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Alexandra Sheeks, Assistant to the City Manager
17301 133rd Ave NE
Woodinville, WA 98072
Telephone: (425) 877-2266
e-mail Address: asheeks@ci.woodinville.wa.us

Alternate Point of Contact

Richard A. Leahy, City Manager
17301 133rd Ave NE
Woodinville, WA 98072
Telephone: (425) 489-2700
e-mail Address: richardl@ci.woodinville.wa.us

27.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**March 31, 1993
- **Current Population—**10,990 as of April 1, 2013
- **Population Growth—**Based on data from the Washington State Office of Financial Management and the US Census Bureau, the City of Woodinville has experienced gradual growth over the last several years. The 2000 US Census population was 9,194 and grew by 19% in the following 10 years, with a 2010 Census population of 10,938. Population growth has slowed considerably in the last five years due to the nationwide economic recession. In the next few years, however, several residential housing units are scheduled to be developed, with an estimated population increase to 18,000 by 2035.
- **Location and Description—**Woodinville is approximately 5.6 square miles and is located in north central King County at the north end of the Sammamish River Valley where Little Bear Creek meets the Sammamish River. Immediately to the west is the intersection of State Route 522 and Interstate 405. The valley is shaped by steep, thickly-wooded slopes.

  Most of Woodinville's residential development is located on the hills overlooking the valley. Commercial, industrial and agricultural activities are mostly clustered on the valley floor, although some light industry is situated on the adjacent slopes. The City's commercial and industrial businesses serve an area containing well over 75,000 people residing in both King County and neighboring Snohomish County.
- **Brief History—**Woodinville was settled in 1871 by its namesake founders, the Woodin family, and was the center of logging and agricultural activity until approximately the mid-20th century. The Seattle-Lake Shore & Eastern Railway arrived in 1888 and became the main transportation route to Woodinville. In a few years, a whole town built up around the railroad and became known as Woodinville. As the automobile became a more commonplace form of transportation, more and more people began moving to Woodinville. From the 1960s through the 1980s, Woodinville continued to grow, with retail and light industrial uses continuing to expand in the commercial center of Woodinville. In March of 1993, as the result of a voter-approved initiative, Woodinville was incorporated as a city.
- **Climate—**Woodinville's climate is typical of the Puget Sound lowlands with temperatures varying from a high of 75 degrees in July to a low of 40 degrees in January, with extreme

variations recorded at -3 degrees to a high of 102 degrees Fahrenheit. Average annual precipitation is about 49 inches with approximately 80% occurring from October through March.

- **Governing Body Format—**Woodinville operates as a Council-Manager form of government. The voters elect seven at-large part-time City Council members on a four-year staggered election cycle. The council chooses a City Manager to oversee the administrative functions of the City. The Mayor, which is largely a ceremonial position, is elected by the City Council to serve a two-year term. The City Council serves as the legislative and governing body of the City of Woodinville and is responsible for establishing City policies and goals, adopting laws, ordinances, and resolutions, and appropriating funds from the City's treasury. The City Council assumes responsibility for the adoption of this plan; the City Manager will oversee its implementation.
- **Development Trends—**Woodinville expects to see increased residential and commercial development in the next 10 years. This includes approximately 800 multifamily units, 240 single family residences, and 510,000 square feet of commercial development. A large portion of this development will occur in the City's downtown core area. The largest single family development of nearly 160 homes will be built in the West Ridge neighborhood on the City's western boundary.

  In 2013, the City began updating its Comprehensive Plan, which will guide the growth and development of the City until 2035 in areas such as land use, transportation, parks and recreation, annexation, and municipal services, and ultimately shaping the character of the Woodinville community.

27.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 27-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 27-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 27-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 27-4. Classifications under various community mitigation programs are presented in Table 27-5.

TABLE 27-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	WMC 15.04, Ord. 567 (2013)
Zoning	Yes	No	No	Yes	WMC 21, Ord. 565 (2013)
Subdivisions	Yes	No	No	Yes	WMC 20, Ord. 533 (2012)
Stormwater Management	Yes	No	No	Yes	Res. 412 (2012)
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	WA State Disclosure Law, RCW 64.06
Growth Management	Yes	No	No	Yes	WMC 21.01, Ord. 400 (2005)
Site Plan Review	Yes	No	No	No	WMC 21.12, Ord. 554 (2013)

TABLE 27-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Public Health and Safety	Yes	No	Yes	No	WMC Title 8, Seattle-King County Public Health
Environmental Protection	Yes	No	No	Yes	WMC 14.04, WAC 197-11
Planning Documents					
General or Comprehensive Plan	Yes	No	No	Yes	WMC 21.01, Ord. 400 (2005)
Is the plan equipped to provide linkage to this mitigation plan?	Yes, Plan includes land use, environment and shorelines elements				
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	Res. 412 (2012)
Capital Improvement Plan	Yes	No	No	Yes	Ord. 573 (2013)
What types of capital facilities does the plan address?	City-owned facilities in Woodinville, including buildings, streets, stormwater facilities, and parks.				
How often is the plan revised/updated?	Biennially				
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	No	No	Res. 347 (2008)
Shoreline Management Plan	Yes	No	No	Yes	WMC 24, Ord. 512 (2011)
Community Wildfire Protection Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	No	Yes	Res. 371 (2009)
Threat and Hazard Identification and Risk Assessment	Yes	No	No	Yes	City of Woodinville Hazard Identification and Vulnerability Assessment (2007)
Terrorism Plan	Yes	No	No	No	Emergency Services Coordinating Agency Hazard Materials and Weapons of Mass Destruction Response Plan
Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	No	No	No	No	
Public Health Plans	No	No	No	No	Public Health Seattle/King County Public Health Emergency Response Plan

TABLE 27-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes – through King County Consortium
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	Surface water utility fee; Real Estate Excise Tax; King County Flood Control District-Basin Opportunity Fund

TABLE 27-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Public Works/Public Works Director Development Services/Development Services Director Development Services/Senior Planner
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Work/Public Works Director, Asst. Public Works Director, Senior Engineer Development Services/Building Inspector Structural engineering contract with Eagle Eye Consulting
Planners or engineers with an understanding of natural hazards	Yes	Public Works/Public Works Director Development Services/Development Services Director Development Services/Senior Planner
Staff with training in benefit/cost analysis	Yes	Executive Department Administrative Services
Surveyors	Yes	Contract with OTAK
Personnel skilled or trained in GIS applications	Yes	Administrative Services/Information Service Mgr. Public Works Developments Services
Scientist familiar with natural hazards in local area	Yes	Contract with Tetra Tech/OTAK
Emergency manager	Yes	Executive Department/Assistant to the City Mgr. Contract with Emergency Services Coordinating Agency
Grant writers	Yes	Development Services

TABLE 27-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	Development Services
Who is your community's floodplain administrator? (department/position)	Development Services/Development Services Director
Do you have any certified floodplain managers on staff in your community?	No
What is the date of adoption of your flood damage prevention ordinance?	4/2009
When was the most recent Community Assistance Visit or Community Assistance Contact?	Community Assistance Contact -1/30/2012 Community Assistance Visit - 4/21/2010
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Staff desires to stay abreast of developments in floodplain management and intends to take advantage of training as necessary.
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	No; not interested at this time.

TABLE 27-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	2	Not available
Public Protection	Yes	3	Not available
StormReady	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready (if applicable)	N/A	N/A	N/A

27.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 27-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 2
- Number of FEMA-Identified Severe Repetitive Loss Properties: None
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties Known to Have Been Mitigated: None

TABLE 27-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe Weather/Heavy Rain	N/A	9/18/2013	$25,000
Severe Weather/Snow	4056	1/12/2012	$54,000
Severe Weather/Snow	1963	1/11/2011	No estimates available
Severe Weather/Snow	1817	1/6/2009	$21,566
Severe Weather/Snow	1825	12/12/2008	$30,000
Severe Weather/ Flooding	1734	12/3/2007	$1,460,000
Severe Weather/Wind	1682	12/14/2006	$48,000
Severe Weather/Flooding	1671	11/6/2006	$35,000
Severe Weather/Flooding	1499	10/20/2003	No estimates available
Earthquake	1361	2/28/2001	$65,000
Severe Weather/Snow	N/A	12/28/1996	No estimates available; collapsed roof on leased building
Severe Weather/Wind	981	1/20/1993	No estimates available

27.5 HAZARD RISK RANKING

Table 27-7 presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

27.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 27-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 27-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Weather	51
2	Severe Winter Weather	51
3	Flood	51
4	Earthquake	51
5	Landslide	24
6	Wildfire	8
7	Volcano	6
8	Dam Failure	0
9	Tsunami	0
10	Avalanche	0

TABLE 27-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

	Action Status			
Action #	Completed	Carry Over to Plan Update	Removed; No Longer Feasible	Comments
WV-01-MH-ST		✓		**Evaluate Old Woodinville Schoolhouse for reconstruction:** City actively seeking future solutions to renovation of the Old Woodinville School; possible ballot measure in April 2014 for bond to fund rehabilitation
WV-02-MH-ST		✓		**Install emergency generator at Carol Edwards Center:** Carol Edwards Center no longer operated by the City; retain as possible emergency shelter, though currently not compliant with ADA shelter requirements
WV-03-MH-ST	✓			**SR 202 Retaining Wall Repair:** Project completed in 2010.
WV-04-MH-ST	✓			**171st Street Slide Repair:** Project completed in 2010.
WV-05-MH-ST	✓			**Code for Undergrounding Electrical Utilities:** City Council passed Ordinance No. 517 in 2010 requiring new development and redevelopment to underground utilities.
WV-06-MH-LT		✓		**Sammamish Bridge Replacement:** City currently at 60% design of new bridge; planning to bid out construction in 2015
WV-07-E-ST		✓		**Conduct non-structural retrofit activities:** Ongoing mitigation activity

TABLE 27-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments
WV-08-F-ST		✓		**171st Storm Drain Installation:** Mitigation actions to occur with new mixed use development planned on NE 171st Street and narrowing of roadway
WV-09-F-ST	✓			**Sammamish River/BNRP Outfall:** Project completed in 2010.
WV-10-F-ST	✓			**Surface Water Master Plan:** Plan adopted in 2010.
WV-11-F-LT		✓		**Little Bear Creek/134th Ave Culvert:** Remove existing culverts and install bridge to reduce urban flooding, improve fish passage, and provide recreational access to creek side; eligible for FEMA funding for replacement, but FEMA-approved project not permittable under State environmental regulatory agencies
WV-12-F-LT		✓		**Woodin Creek Surface Water Improvement:** Combined with WV-08-F-ST in plan update
WV-13-F-LT		✓		**195th Ave Culvert:** Action carried over in updated action plan.

27.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 27-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 27-10 identifies the priority for each initiative. Table 27-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

27.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

In the future, the City would benefit to gain better expertise in conducting benefit-cost analyses, training in NFIP regulations, and grant-writing.

27.9 ADDITIONAL COMMENTS

The City is eligible for FEMA funding for flood-incurred damage in 2007 to culverts on Little Bear Creek and 134th Ave NE. However, the City is virtually unable to use this money due to conflicting regulations and permitting requirements between FEMA and state regulatory agencies. The City, as well as other jurisdictions, would likely benefit if FEMA and local/State environmental agencies found more effective solutions to permitting and resolving conflicting goals so that, ultimately, mitigation projects can be completed and jurisdictions can access FEMA funding for those projects.

Figure 27-1shows mapped sensitive areas in the City of Woodinville.

TABLE 27-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
Initiative #WV-1—National Flood Insurance Program. Continue to maintain compliance and good standing under the National Flood Insurance Program. This will be accomplished through the implementation of floodplain management programs that, at a minimum, will meet the minimum requirements of the NFIP, which include the following: • Enforcement of the adopted flood damage prevention ordinance, • Participating in floodplain identification and mapping updates, and • Providing public assistance/information on floodplain requirements and impacts							
New and Existing	Flood	2,4,10,12	City of Woodinville	Low	General Fund	Ongoing	No
Initiative #WV-2—Old Woodinville Schoolhouse. Evaluate the Old Woodinville School House for reconstruction and/or replacement. Follow up with appropriate replacement or repair/retrofit activities, including the following activities: • Phase 1: Conduct study to address legal issues, identify possible uses for the building, identify rehabilitation and site use alternatives, and identify construction and operating costs associated with each alternative • Phase 2: Identify funding plan based on preferred alternatives • Phase 3: Secure funding for preferred alternative • Phase 4: Design and construction, including retrofitting building to current seismic codes							
Existing	Earthquake	9	City of Woodinville	High	General Fund, Voter-Approved Bond Levy, Private Funding	Short-Term	Yes
Initiative #WV-3—Carol Edwards Emergency Generator. Install emergency generator at Carol Edwards Center for use as possible emergency shelter; dependent on future use of building (currently operated by Northshore YMCA)							
Existing	Multiple Hazards	1	City of Woodinville	Medium	General Fund, Capital project funds, HMGP grants	Long-Term	Yes
Initiative #WV-4—Sammamish Bridge Replacement. As a primary arterial, this is a key route for emergency vehicles and public safety. Project will widen existing bridge, add curb-gutter, sidewalks, and bike lanes for travel and queue storage; retrofit to current seismic standards.							
Existing	Multiple Hazards	1, 5	City of Woodinville	High	Real Estate Excise Tax, Utility Tax, Streamlined Sales Tax Funds, Transportation Improvement Board Grants, SAFETEA-LU Federal grant	Short-Term	Yes

TABLE 27-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
Initiative #WV-5—Conduct structural and non-structural retrofit activities. Conduct structural retrofit activities such as reinforced bracing in City facilities, and non-structural mitigation activities such as securing computers, office equipment and machinery; secure ceiling tiles and light fixtures, ducts and piping; replace untempered glass with tempered glass, etc.							
Existing and New	Earthquake	1, 5	City of Woodinville	Medium	General Funds, Real Estate Excise Tax	Ongoing and Long-Term	Yes/Structural activities not included in previous plan
Initiative #WV-7—Little Bear Creek 134th Culvert. Replace existing culverts on Little Bear Creek at 134th Ave NE with bridge.							
Existing	Flooding	1, 12, 13	City of Woodinville	High	King County flood control and conservation futures grants, Adopt-A-Stream Foundation funding, general funds, other capital project funds	Long-Term	Yes
Initiative #WV-8—Woodin Creek Surface Water Improvement. Sediment from bank erosion and creek bed scour has accumulated in various areas in the Woodin Creek channel along NE 171st St, resulting in decreasing flow capacity in Woodin Creek and has caused road and private property flooding. Address creek sediment flow in conjunction with road narrowing project, mixed-use development along the creek.							
Existing and New	Flooding	1, 2, 4, 12, 13	City of Woodinville	High	Stormwater utility funds, impact fees, developer contributions	Long-Term	Yes
Initiative #WV-9—NE 195th Street Culvert Enhancement. Increase the existing culvert's capacity by constructing a parallel culvert or single pan bridge.							
Existing	Flooding	1, 12	City of Woodinville	High	Stormwater utility funds, capital funds, general funds	Long-Term	Yes
Initiative #WV-10—Regional Stormwater Detention Plan.							
New	Flooding	1, 2, 4, 12, 13	City of Woodinville	Low	Stormwater utility funds	Short-Term	No

TABLE 27-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
Initiative #WV-11—Little Bear Creek/SR 202 Culvert Design. Assist WSDOT with design of new culvert at SR 202/131st Avenue NE under railroad trestle.							
New	Flooding	1, 12	WSDOT	Low	Capital Street Reserve	Short-Term	No
Initiative #WV-12—Replace generators at City Hall, Public Works Facility. Upsize current generator at City Hall to effectively operate all electrical circuits at City Hall, which serves as a primary EOC; move existing City Hall generator to Public Works Facility to ensure continuity of operations during natural hazard events; this facility serves as a secondary EOC.							
New	Multiple Hazards	1	City of Woodinville	Medium	Real Estate Excise Tax, Capital Facilities Reserve	Short-Term	No
Initiative #WV-13—Miscellaneous Property Acquisition. Acquire strategic properties in various locations throughout the City that protect sensitive and hazard-prone areas that would otherwise be unsuitable for development according to State and local regulations.							
New	Flooding, Landslide	12	City of Woodinville	Medium	Real Estate Excise Tax, General Funds, Conservation Futures Funds, HMGP, PDM, other grants	Long-Term	No
Initiative #WV-14—Replace culvert under SR-522. Assist/advise WSDOT on design of new culvert under SR-522 south of NE 195th St.							
New	Flooding	1, 12	WSDOT	High	TBD	Long-Term	No
Initiative #WV-15—Integrate the hazard mitigation plan into other plans, ordinances or programs to dictate land uses within the jurisdiction.							
New	All Hazards	2,4,8,10	DCD	Low	General Fund	Short-term	No
Initiative #WV-16—Continue to support the county-wide initiatives identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	City of Tukwila	Low	General Fund	Ongoing	No
Initiative #WV-17—Actively participate in the plan maintenance strategy identified in this plan.							
New and Existing	All Hazards	4,6,11,12,13, 14, 15	King County OEM City of Tukwila	Low	General Fund	Ongoing	No

TABLE 27-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]
WV-1	4	High	Low	Yes	Yes	Yes	High
WV-2	1	Medium	High	No	Yes	No	Medium
WV-3	1	Medium	Medium	Yes	No	No	Low
WV-4	2	High	High	Yes	No	Yes	High
WV-5	2	High	Low	Yes	Yes	Yes	High
WV-6	5	High	High	Yes	Yes	No	Medium
WV-7	3	High	High	Yes	Yes	No	Medium
WV-8	5	High	High	Yes	Yes	No	Medium
WV-9	2	High	High	Yes	Yes	No	Medium
WV-10	5	Medium	Low	Yes	No	Yes	High
WV-11	2	Medium	Low	Yes	Yes	Yes	High
WV-12	1	Medium	Medium	Yes	No	Yes	High
WV-13	1	Medium	Medium	Yes	Yes	No	Medium
WV-14	1	Medium	Medium	Yes	Yes	No	Medium
WV-15	4	Medium	Low	Yes	No	Yes	High
WV-16	7	Medium	Low	Yes	No	Yes	High
WV-17	7	Low	Low	Yes	Yes	Yes	High

a. See Introduction for explanation of priorities.

TABLE 27-11.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche	--	--	--	--	--	--
Dam Failure	--	--	--	--	--	--
Earthquake	15, 17	2, 5	16		3, 4, 5, 12, 16	2, 5
Flood	1, 13, 15, 17	1, 5, 6, 7. 8, 9, 11, 13, 14	1, 16	1, 6, 7, 8, 9, 11, 13, 14	3, 4, 5, 12, 16	8
Landslide	13, 15, 17	13	16	13	16	
Severe Weather	15, 17		16		3, 4, 5, 12, 16	
Severe Winter Weather	15, 17		16		3, 4, 5, 12,16	
Tsunami	--	--	--	--	--	--
Volcano	15, 17		16		16	
Wildfire	15, 17		16		16	

a. See Introduction for explanation of mitigation types.

Source: City of Woodinville and King County

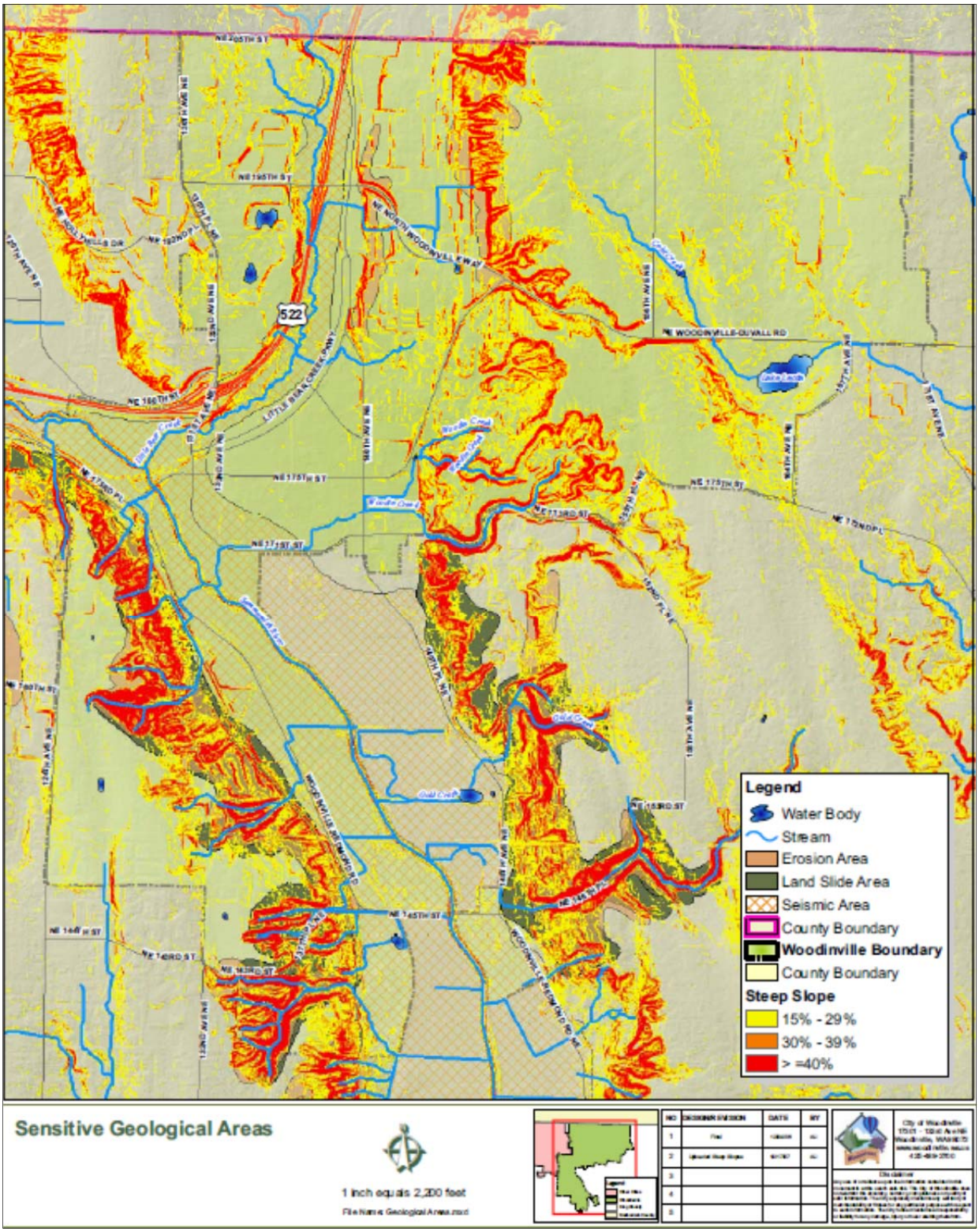
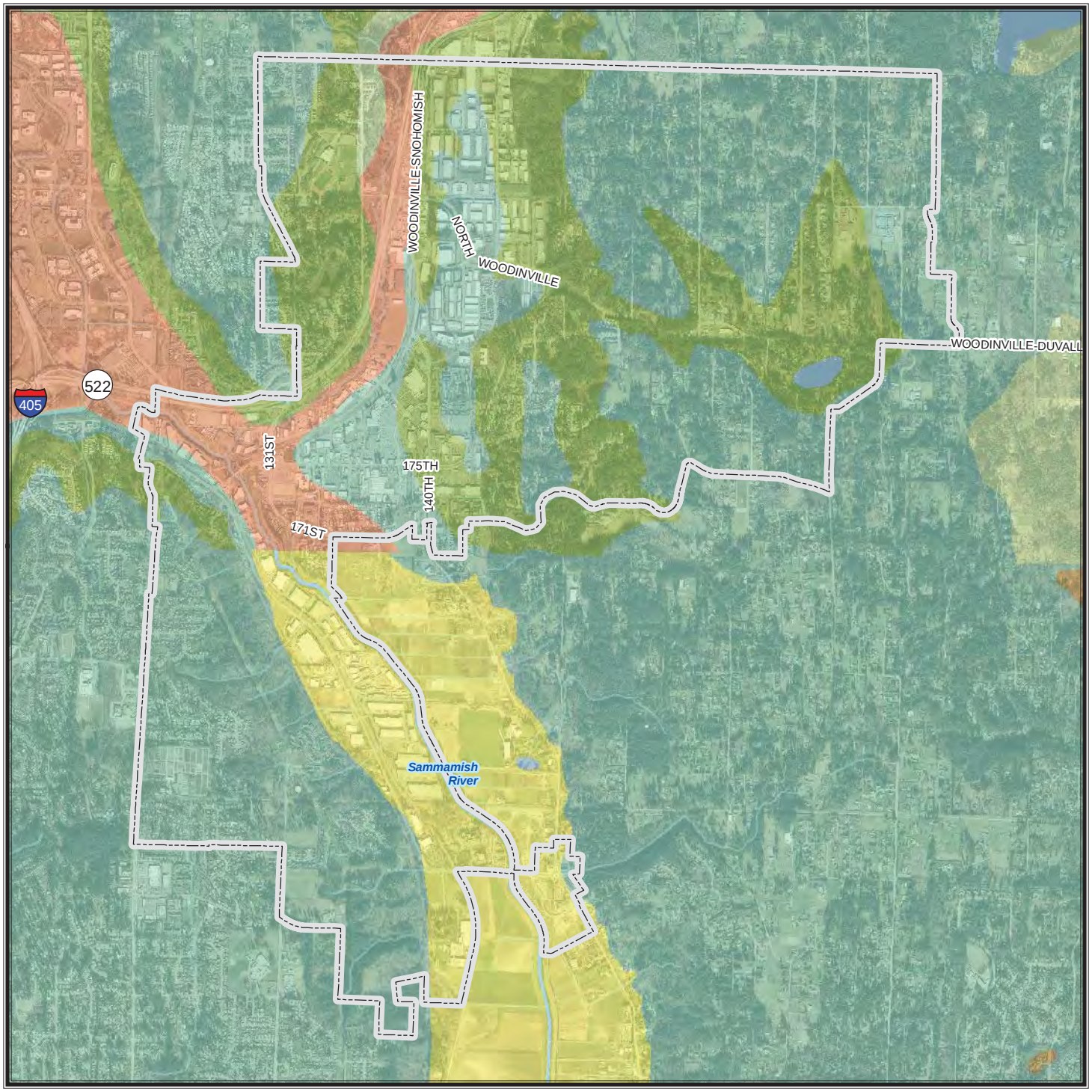


Figure 27-1. Woodinville Sensitive Geological Areas



CITY OF WOODINVILLE

Liquefaction Susceptibility

Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

Liquefaction data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. Data is based solely on surficial geology published at a scale of 1:100,000.

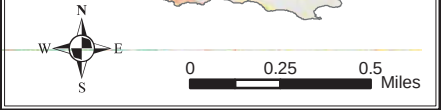
A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

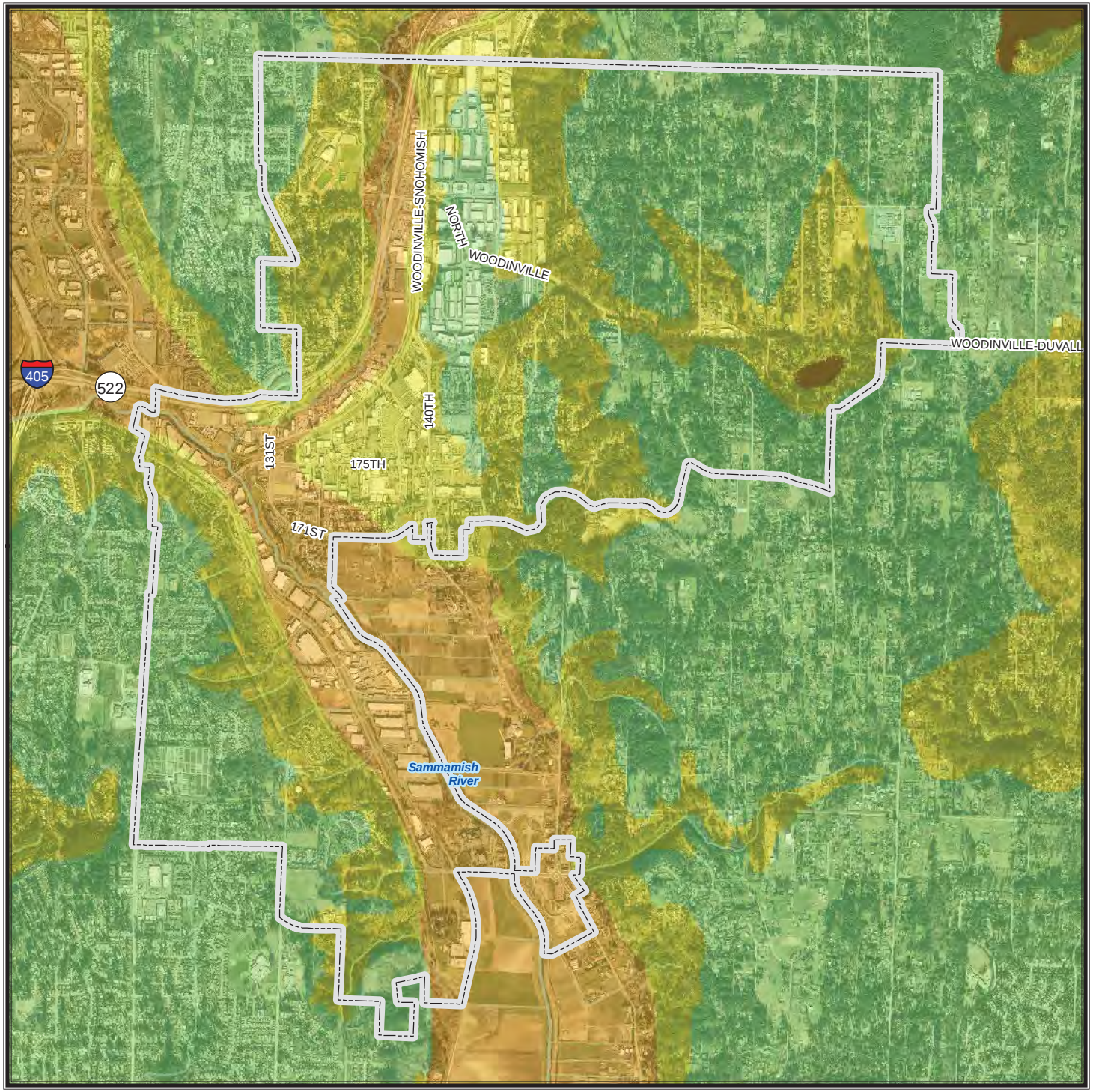
Base Map Data Sources:
King County, U.S. Geological Survey

King County

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CITY OF WOODINVILLE

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

- Site Class B - Rock
- Site Class C - Very Dense Soil, Soft Rock
- Site Class D - Stiff Soil
- Site Class E - Soft Soil

Soil classification data provided by Washington State Department of Natural Resources, Geology and Earth Resources Division.

The dataset identifies site classes for approximately 33,000 polygons derived from the geologic map of Washington. The methodology chosen for developing the site class map required the construction of a database of shear wave velocity measurements. This database was created by compiling shear wave velocity data from published and unpublished sources, and through the collection of a large number of shear wave velocity measurements from seismic refraction surveys conducted for this project. All of these sources of data were then analyzed using the chosen methodologies to produce the statewide site class maps.

Base Map Data Sources:
King County, U.S. Geological Survey

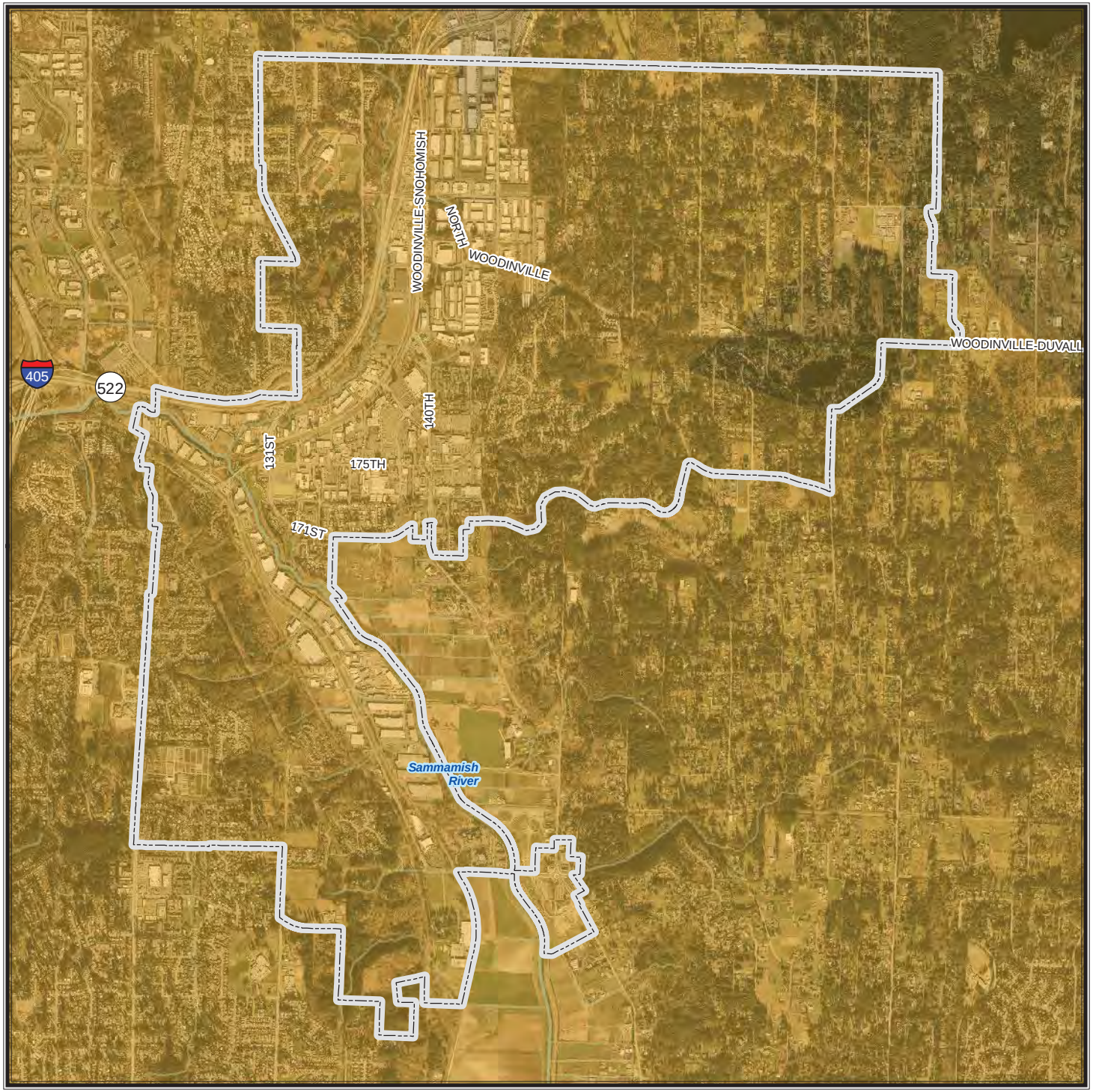
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CITY OF WOODINVILLE

South Whidbey M7.4 Scenario Peak Ground Acceleration

Mercalli Scale, Potential Shaking

- I (Not Felt)
- II - III (Weak)
- IV (Light)
- V (Moderate)
- VI (Strong)
- VII (Very Strong)
- VIII (Severe)
- IX (Violent)
- X+ (Extreme)

Magnitude: 7.4
Epicenter: N48.05 W122.47

A ShakeMap is designed as a rapid response tool to portray the extent and variation of ground shaking throughout the affected region immediately following significant earthquakes. Ground motion and intensity maps are derived from peak ground motion amplitudes recorded on seismic sensors (accelerometers), with interpolation based on both estimated amplitudes where data are lacking, and site amplification corrections. Color-coded instrumental intensity maps are derived from empirical relations between peak ground motions and Modified Mercalli intensity.

Base Map Data Sources:
King County, U.S. Geological Survey

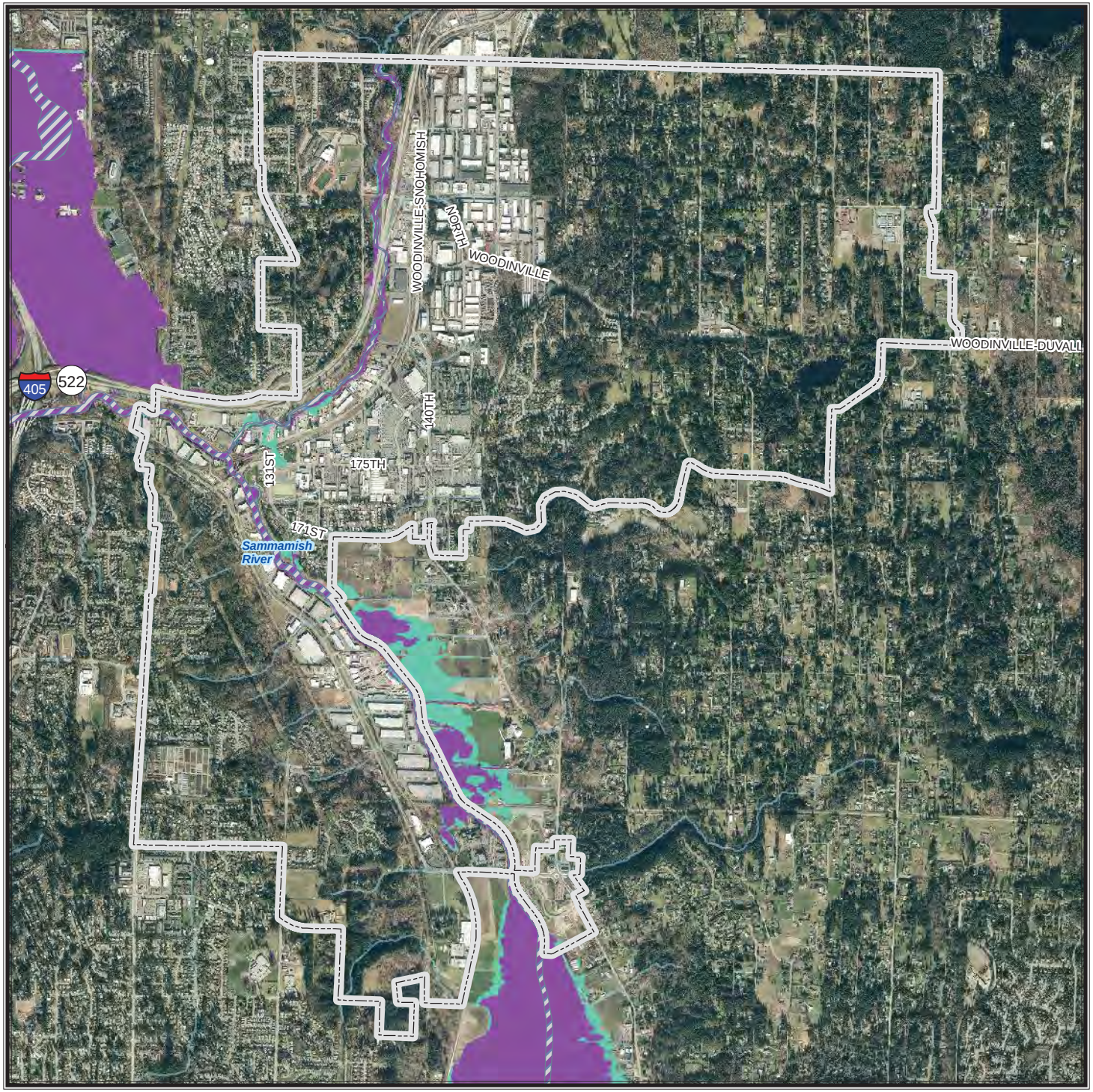
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FEMA DFIRM Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard
- 0.2 Percent Annual Flood Hazard

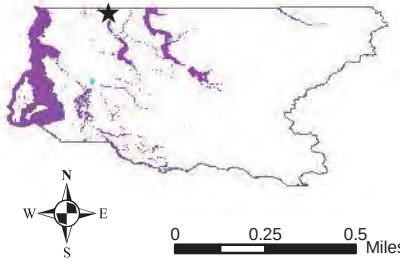
Flood hazard areas as depicted on draft FEMA Digital Flood Insurance Rate Maps (DFIRM).

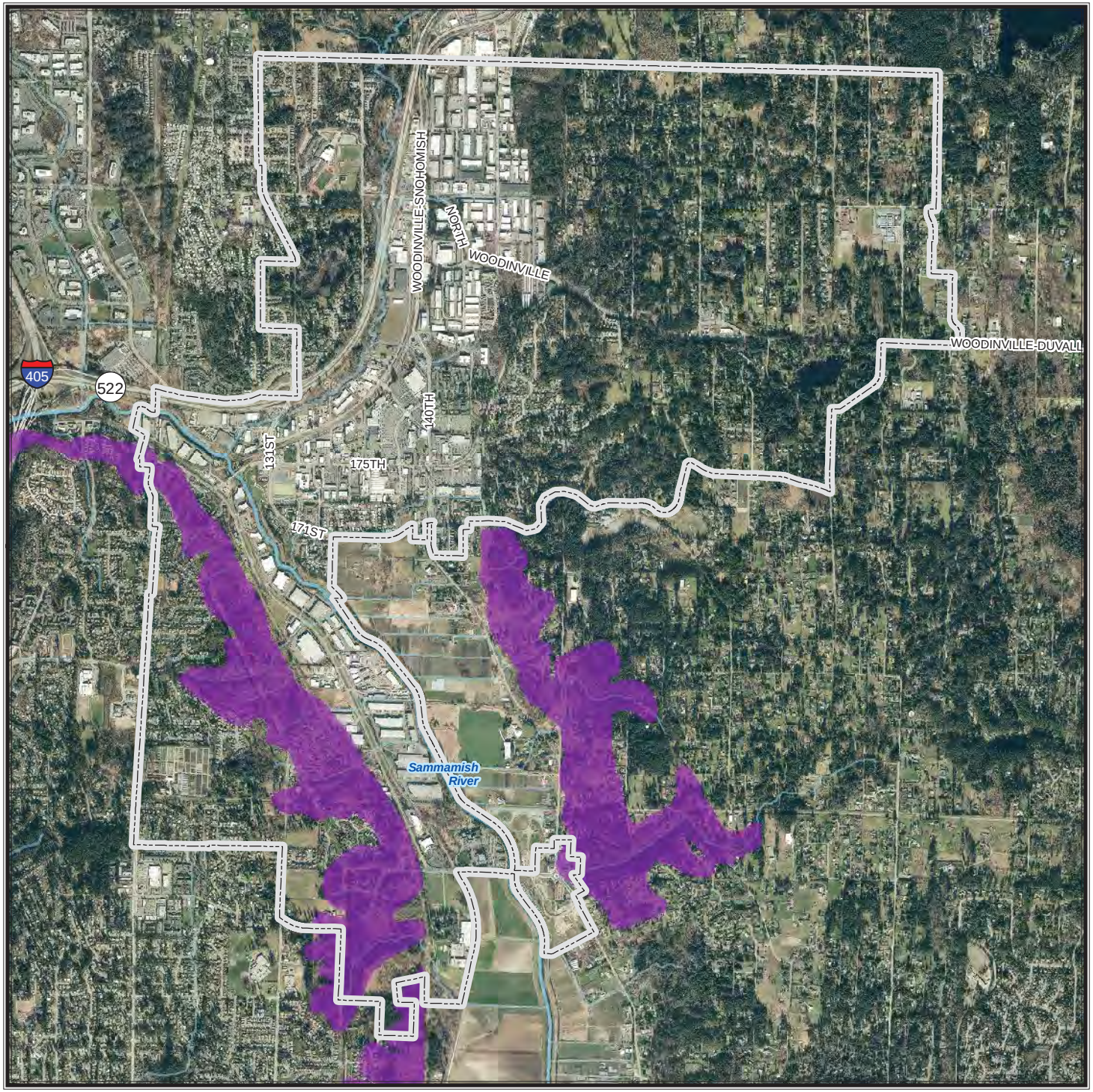
The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain. The 0.2 percent annual flood hazard is commonly referred to as the 500 year floodplain.

Base Map Data Sources:
King County, U.S. Geological Survey

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CITY OF WOODINVILLE

Landslide Hazard Areas

All Hazard Areas

The landslide hazard areas shown have been merged from three assessments for use for planning purposes:

WA DNR Landslide Areas data provided by the Washington State Department of Natural Resources, Division of Geology and Earth Resources. This dataset contains 1:24,000-scale polygons defining the extent of mapped landslides in the state of Washington, compiled chiefly from pre-existing landslide databases created in different divisions of the Washington State Department of Natural Resources to meet a variety of purposes.

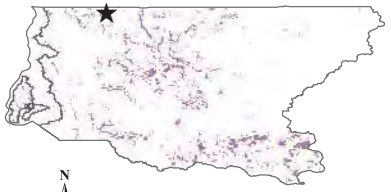
King County Slide Areas - Landslide areas are areas subject to severe landslide risk identified in the Sensitive Areas Ordinance as:
A. Any area with a combination of:
1. Slopes greater than 15 %
2. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominantly sand and gravel)
3. Springs or groundwater seepage.
B. Any area that has shown movement during the Holocene epoch (from 10,000 years ago to present), or that is underlain by mass wastage debris of that epoch.
C. Any area potentially unstable as a result of rapid stream incision, stream bank erosion or undercutting by wave action.
D. Any area that shows evidence of, or is at risk from, snow avalanches.
E. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream-transported deposits.

Slope/Soils Analysis:
1. Areas of slope greater than 40%. Slope determined using a DEM generated from 2002 LiDAR data. Slope data provided by King County DNRP.
2. Areas of Qf (alluvial fans), Qls (discrete landslides), and Qmw (colluvium and the cumulative debris from small indistinct landslides that accumulate on and at the base of unstable slopes) soils as identified in surface geology data provided by King County DNRP.

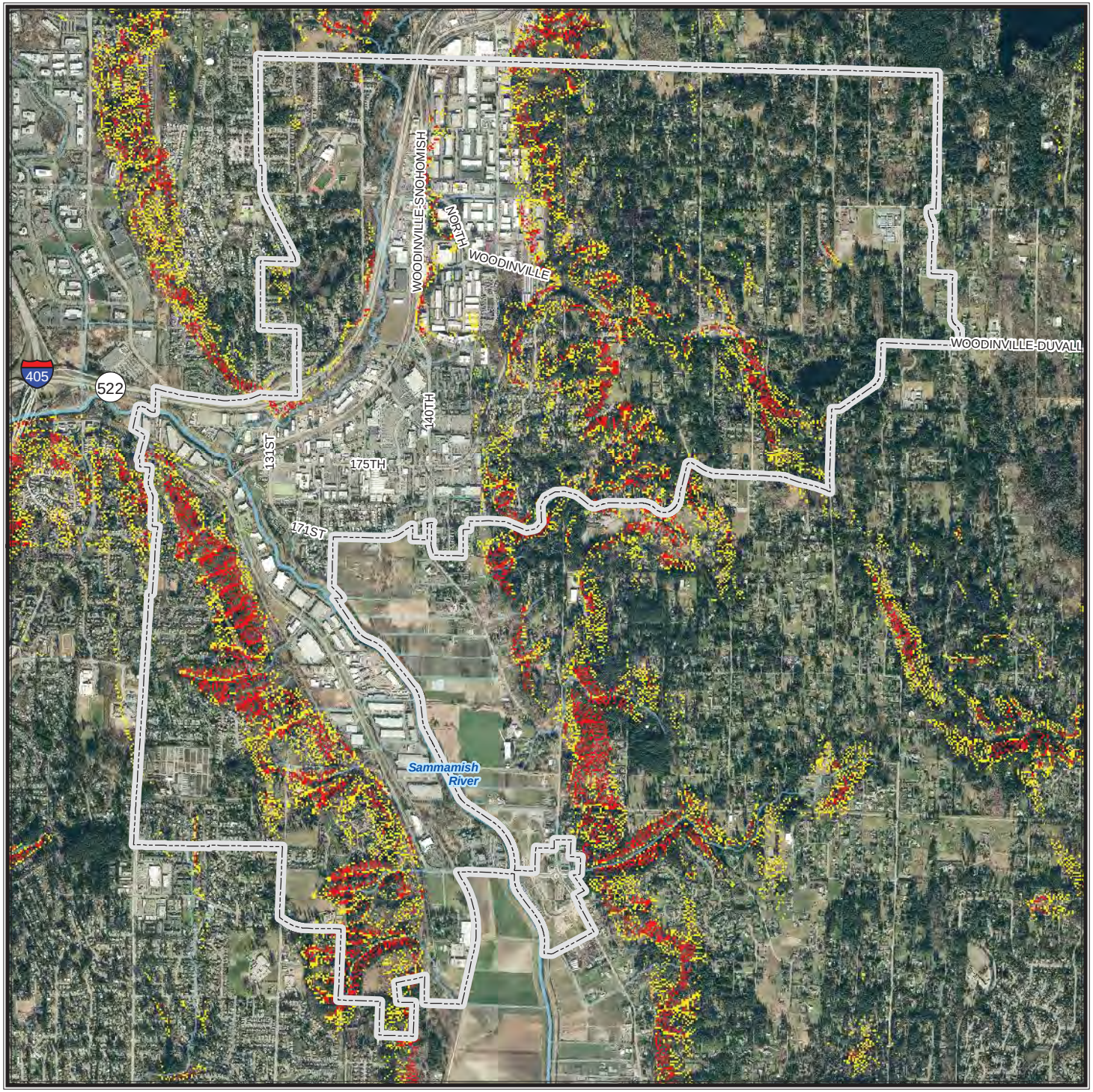
Base Map Data Sources:
King County, U.S. Geological Survey

King County

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Slope Stability

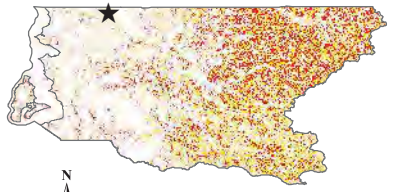
- Low Slope Instability
- Medium Slope Instability
- High Slope Instability

Slope stability data downloaded from the WA State Department of Natural Resources, Forest Practices Division website. This dataset is a predictive layer of shallow-rapid slope stability using one or more calibrated GIS-based models that use DEMs to generate slope and curvature information. The models used are SMORPH and SHALSTAB. Additionally, other information, such as landslide inventories, soils, mass wasting units, geology, and precipitation amounts are used in the calibration of these models to a specific area. These landslide data were collected at a variety of scales, over a large period of years. The horizontal accuracy of the grid coverage is dependent on the resolution of the Digital Elevation Model (DEM) from which it was derived.

Base Map Data Sources:
King County, U.S. Geological Survey

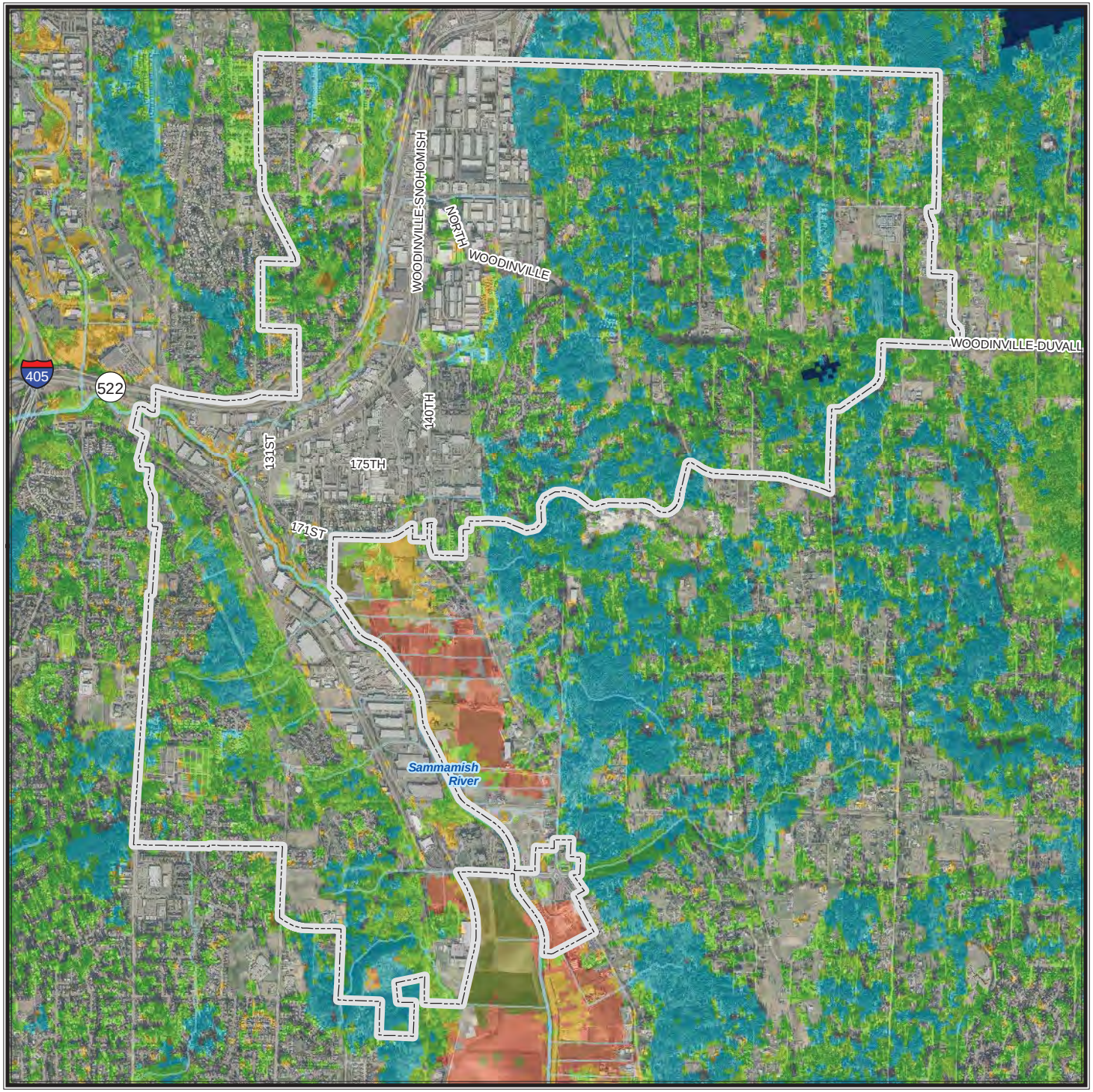
King County

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CITY OF WOODINVILLE

2008 LANDFIRE Fire Behavior Fuel Model

Anderson 13 Fuel Classes

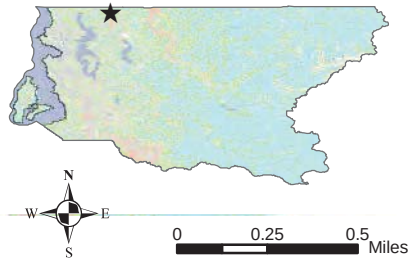
Burnable	Non-Burnable
FBFM1	Developed
FBFM2	Agriculture
FBFM3	Water
FBFM5	Barren
FBFM6	
FBFM8	
FBFM9	
FBFM10	
FBFM11	

Fuel Class data (LANDFIRE REFRESH 2008 (lf_1.1.0)) provided by the Wildland Fire Science, Earth Resources Observation and Science Center, U.S. Geological Survey. The LANDFIRE fuel data describe the composition and characteristics of both surface fuel and canopy fuel. Thirteen typical surface fuel arrangements or "collections of fuel properties" (Anderson 1982) were described to serve as input for Rothermel's mathematical surface fire behavior and spread model (Rothermel 1972). These fire behavior fuel models represent distinct distributions of fuel loadings found among surface fuel components (live and dead), size classes and fuel types. The fuel models are described by the most common fire carrying fuel type (grass, brush, timber litter or slash), loading and surface area-to-volume ratio by size class and component, fuelbed depth and moisture of extinction.

Base Map Data Sources:
King County, U.S. Geological Survey

King County

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APPENDIX A.
PLANNING PARTNER EXPECTATIONS

APPENDIX A.
PLANNING PARTNER EXPECTATIONS

One of the goals of the multi-jurisdictional approach to hazard mitigation planning is to achieve compliance with the Disaster Mitigation Act (DMA) for all participating members in the planning effort. There are several different groups who will be involved in this process at different levels. In order to provide clarity, the following is a general breakdown of those groups: the planning team, which is customarily the Tetra Tech Team and those actually responsible for the plan's written development; the Steering Committee, which represent members from the planning partnership that serve as the oversight body, assuming responsibility for many of the planning milestones prescribed for this process to help reduce the burden of time required by each planning partner; the planning partners are those jurisdictions or special purpose districts that are actually developing an annex to the regional plan; and the planning stakeholders, which are the individuals, groups, businesses, academia, etc., from which the planning team gains information to support the various elements of the plan.

DMA compliance requires that participation be defined in order to maintain eligibility with respect to meeting the requirements which allow a jurisdiction or special purpose district to develop an annex to the base plan. To achieve compliance for all partners, the plan must clearly document how each planning partner that is seeking linkage to the plan participated in the plan's development. The best way to do this is to clearly define "participation." For this planning process, "participation" is defined by the following criteria:

- **Estimated Level of Effort.** It is estimated that the total time commitment to meet these "participation" requirements for a planning partner not participating on the Steering Committee would be approximately 40 hours over the 12 to 14 month period. This time is reduced somewhat for special purpose districts.
- **Participate in the Process.** As indicated, it must be documented in the plan that each planning partner "participated" in the process to the best of your capabilities. There is flexibility in defining "participation," which can vary based on the type of planning partner (i.e.: City or County, vs. a Special Purpose District) involved. However, the level of participation must be defined at the on-set of the planning process, and we must demonstrate the extent to which this level of participation has been met for each partner. This planning process will utilize a Steering Committee that will assume responsibility for many of the planning milestones prescribed for this process to help reduce the burden of time required by each planning partner. This committee will be representative of the whole body and you as a planning partner will have input on its makeup. This committee will meet periodically (frequency to be determined by the committee) throughout the process and provide direction and guidance to the planning team. Steering Committee meetings are not mandatory meetings for all planning partners. If you are not on the committee, your attendance is not required; however, it is our hope that all planning partners will attempt to remain engaged with this process. Each committed planning partner will be notified of the date and time for all scheduled steering committee meetings.The planning team will also request support from the partnership during the public involvement phase of the planning process. Support could be in the form of providing venues for public meetings, attending these meetings as meeting participants, providing technical support, etc.
- **Duration of Planning Process.** This process is anticipated to take 12 to 14 months to complete. It will be easy to become disconnected with the process objectives if you do not participate in some of these meetings to some degree. The planning team will keep all

planning partners apprised of plan development milestones via informational bulletins that will be periodically distributed to the entire partnership.

- **Critical Facility Update.** All planning partners will be requested to update their critical facilities/infrastructure lists for use during the risk assessment. The CDMS extension to Hazaus will be used for this process, and guidance will be provided by the planning team.If the list is not updated, Hazus default data will be used. Updating this list provides a much more detailed analysis.
- **Capability Assessment.** All planning partners will be asked to identify their capabilities during this process. This assessment will look at the regulatory, technical, financial and floodplain management capabilities of each municipal partner. Special purpose districts will perform a different type of capability assessment. These capability assessments will require a review of existing plans, studies, ordinances and programs pertinent to each jurisdiction to identify policies or recommendations that can complement the hazard mitigation initiatives selected (e.g., comprehensive plans, basin plans or hazard-specific plans). This step is important because increasing a jurisdiction's capability is a viable mitigation action.
- **Action/Strategy Review.** All previous planning partners will be required to perform a review of the strategies from their respective prior action plan to: determine those that have been accomplished and how they were accomplished; and why those that have not been accomplished were not completed. The planning team will be available to assist with this task.
- **Action Plan Development.** Each planning partner must identify and prioritize an action plan that they will strive to implement to reduce the risks from hazards they have ranked that impact their jurisdiction.
- **Plan Adoption.** The plan must be adopted by each jurisdiction.

One of the benefits to multi-jurisdictional planning is the ability to pool resources. This means more than monetary resources. Resources such as staff time, meeting locations, media resources, technical expertise will all need to be utilized to generate a successful plan. In addition, these resources can be pooled such that decisions can be made by a peer group applying to the whole and thus reducing the individual level of effort of each planning partner. This will be accomplished by the formation of a steering committee made up of planning partners and other "stakeholders" within the planning area. The size and makeup of this steering committee will be determined by the planning partnership during our kick-off meeting. This body will assume the decision-making responsibilities on behalf of the entire partnership. This will streamline the planning process by reducing the number of meetings that will need to be attended by each planning partner. The assembled Steering Committee for this effort will meet monthly (unless decided otherwise) on an as-needed basis as determined by the planning team, and will provide guidance and decision making during all phases of the plan's development.

With the above participation requirements in mind, each planning partner will be asked to aid this process by being prepared to develop its section of the plan. To be an eligible planning partner in this effort, each Planning Partner will be asked to provide the following:

- A "Letter of Intent to participate" or Resolution to participate to the Planning Team (see exhibit A).
- Designate a lead point of contact for this effort. This designee will be listed as the hazard mitigation point of contact for your jurisdiction in the plan.
- Identify an un-burdened billing rate for this point of contact which will be used to calculate the in-kind match for the grant that is funding this project.

- Approve the Steering Committee.
- If requested, provide support in the form of mailing list, possible meeting space, and public information materials, such as newsletters, newspapers or direct mailed brochures, required to implement the public involvement strategy developed by the Steering Committee.
- Participate in the process. There will be many opportunities as this plan evolves to participate. Opportunities such as:
  - Steering Committee meetings
  - Public meetings or open houses
  - Workshops/ Planning Partner specific training sessions
  - Public review and comment periods prior to adoption

  At each and every one of these opportunities, attendance will be recorded. Attendance records will be used to document participation for each planning partner. No thresholds will be established as minimum levels of participation. However, each planning partner should attempt to attend all possible meetings and events.
- There will be one mandatory workshop that all planning partners will be required to attend. This workshop will cover the proper completion of the jurisdictional annex template, which is the basis for each partner's jurisdictional chapter in the plan. Failure to have a representative at this workshop will disqualify the planning partner from participation in this effort. The schedule for this workshop will be such that all committed planning partners will be able to attend.
- After participation in the mandatory annex workshop, each partner will be required to complete their annex and provide it to the planning team in the time frame established by the Steering Committee. Technical assistance in the completion of these annexes will be available from the planning team. Failure to complete your annex in the required time frame may lead to disqualification from the partnership.
- Each partner will be asked to review the Risk Assessment and identify hazards and vulnerabilities specific to its jurisdiction. Contract resources will provide the jurisdiction specific mapping and technical consultation to aid in this task, but the determination of risk and vulnerability will be up to each partner (through a facilitated process during the mandatory workshop).
- Each partner will be required to create its own action plan that identifies each project, who will oversee the task, how it will be financed and when it is estimated to occur.
- Each partner will be required to formally adopt the plan.

Planning tools and instructions to aid in the compilation of this information will be provided to all committed planning partners. Each partner will be asked to complete their annexes in a timely manner and according to the timeline specified by the Steering Committee.

**** Note**: Once this plan is completed, and FEMA approval has been determined for each partner, maintaining that eligibility will be dependent upon each partner implementing the plan implementation-maintenance protocol identified in the plan.**

Exhibit A
Example Letter of Intent to Participate

King County Hazard Mitigation Planning Partnership
C/O Tetra Tech, Inc.
19803 N. Creek Parkway
Bothell, WA 98011

Via email at: rob.flaner@tetratech.com

Dear King County Planning Partnership,

Please be advised that the _____ (***insert City or district name***) is committed to participating in the update to the King County Regional Multi- Hazard Mitigation Plan. As the _____ (title, e.g., Chief Administrative Official) for this jurisdiction, I certify that I will commit all necessary resources in order to meet Partnership expectations as outlined in the "Planning Partners expectations" document provided by the planning team, in order to obtain Disaster Mitigation Act (DMA) compliance for our jurisdiction.

Mr./Ms. _____ will be our jurisdiction's point of contact for this process and they can be reached at ***(insert: address, phone number and e-mail address)***. We understand that this designated point of contact's time will be applied to the "in-kind" local match for the grant that is funding this project. To aid in the determination of this local match, we have determined that the fully burdened bill rate for our designated point of contact is $_____. The funding source for our point of contact's position within our jurisdiction is _____ / is not_____ through federal funds. If it is through federal funds, what percentage of their salary is federally funded? _____%

Sincerely,

_____

Exhibit B
(Current) Planning Team Contact information

Name	Representing	Address	Phone	e-mail
Janice Rahman	**King County OEM**	**3511 NE 2nd Street** **Renton, WA 98056**	**(206) 205-4061**	**Janice.Rahman@Kingcounty.gov**
Sam Ripley	**King County OEM**	**3511 NE 2nd Street** **Renton, WA 98056**	**(206) 205-4072**	**Sam.Ripley@kingcounty.gov**
Rob Flaner	**Tetra Tech, Inc.**	**90 S. Blackwood Ave** **Eagle, ID 83616**	**(208) 939-4391**	**Rob.flaner@tetratech.com**

APPENDIX B.
PROCEDURES FOR LINKING TO THE REGIONAL HAZARD MITIGATION PLAN UPDATE

APPENDIX B.
PROCEDURES FOR LINKING TO THE REGIONAL HAZARD MITIGATION PLAN UPDATE

Not all eligible local governments in King County are included in the King County Regional Hazard Mitigation Plan Update. Some or all of these non-participating local governments may choose to "link" to the Plan at some point to gain eligibility for programs under the federal Disaster Mitigation Act (DMA). In addition, some current partners may not continue to meet eligibility requirements due to a lack of participation prescribed by the plan. The following "linkage" procedures define the requirements established by the Planning Team for dealing with an increase or decrease in the number of planning partners linked to this plan. No currently non-participating jurisdiction within the defined planning area is obligated to link to this plan. These jurisdictions can chose to do their own "complete" plan that addresses all required elements of Section 201.6 of Chapter 44 of the Code of Federal Regulations (44 CFR).

INCREASING THE PARTNERSHIP THROUGH LINKAGE

Eligible jurisdictions located in the planning area may link to this plan at any point during the plan's performance period. It is expected that linking jurisdictions will complete the requirements outlined below and submit their completed template to the lead agency (King County Office of Emergency Management) for review within three months of beginning the linkage process:

- The eligible jurisdiction requests a "Linkage Package" by contacting the Point of Contact (POC) for the plan:

  Janice Rahman, Project Manager
  King County Office of Emergency Management
  3511 NE 2nd Street
  Renton, WA 98056
  (206) 205-4061
  Janice.Rahman@kingcounty.gov

- The POC will provide a linkage procedure package that includes linkage information and a linkage tool-kit:
  - Linkage Information
    - Procedures for linking to the regional hazard mitigation plan update
    - Planning partner's expectations for linking jurisdictions
    - A sample "letter of intent" to link to the Regional Hazard Mitigation Plan
    - A copy of Section 201.6 of 44 CFR, which defines the federal requirements for a local hazard mitigation plan.
  - Linkage Tool-Kit
    - Copy of Volume 1 and 2 of the plan
    - A special purpose district or city template and instructions
    - A catalog of hazard mitigation alternatives
    - A "request for technical assistance" form
    - An annex review check-list
    - A sample resolution for plan adoption
- The new jurisdiction will be required to review both volumes of the Regional Hazard Mitigation Plan, which include the following key components for the planning area:

  - Goals and objectives
  - The planning area risk assessment
  - Comprehensive review of alternatives
  - Countywide initiatives
  - Plan implementation and maintenance procedures.

  Once this review is complete, the jurisdiction will complete its specific annex using the template and instructions provided by the POC. Jurisdictions can request technical assistance (TA) by completing the TA form provided in the linkage package and submitting it to the POC. The POC will coordinate the provision of the TA based on resources available at the time of the request.

- The development of the new jurisdiction's annex must not be completed by one individual in isolation. The jurisdiction must develop, implement and describe a public involvement strategy and a methodology to identify and vet jurisdiction-specific actions. The original partnership was covered under a uniform public involvement strategy and a process to identify actions that covered the planning area described in Volume 1 and Volume 2 of this plan. Since new partners were not addressed by these strategies, they will have to initiate new strategies and describe them in their annex. For consistency, new partners are encouraged to develop and implement strategies similar to those described in this plan.
- The public involvement strategy must ensure the public's ability to participate in the plan development process. At a minimum, the new jurisdiction must solicit public opinion on hazard mitigation at the onset of the linkage process and hold one or more public meetings to present the draft jurisdiction-specific annex for comment at least two weeks prior to adoption by the governing body. The POC will have resources available to aid in the public involvement strategy, including:
  - The questionnaire utilized in the plan development
  - Presentations from public meeting workshops and the public comment period
  - Flyers and information cards that were distributed to the public
  - Press releases used throughout the planning process
  - The plan website.
- The methodology to identify actions should include a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard and a description of the process by which chosen actions were identified. As part of this process, linking jurisdictions should coordinate the selection of actions amongst the jurisdiction's various departments.
- Once their public involvement strategy and template are completed, the new jurisdiction will submit the completed package to the POC for a pre-adoption review to ensure conformance with the Regional plan format and linkage procedure requirements.
- The POC will review for the following:
  - Documentation of public involvement and action plan development strategies
  - Conformance of template entries with guidelines outlined in instructions
  - Chosen initiatives are consistent with goals, objectives and mitigation catalog of the Regional Hazard Mitigation Plan Update
  - A designated point of contact
- Plans will be reviewed by the POC and submitted to Washington State Emergency Management Division (EMD) for review and approval.

- EMD will review plans for federal compliance. Non-compliant plans are returned to the lead agency for correction. Compliant plans are forwarded to FEMA for review with annotation as to the adoption status.
- FEMA reviews the new jurisdiction's plan in association with the approved plan to ensure DMA compliance. FEMA notifies the new jurisdiction of the results of review with copies to EMD and the approved plan lead agency.
- New jurisdiction corrects plan shortfalls (if necessary) and resubmits to EMD through the approved plan lead agency.
- For plans with no shortfalls from the FEMA review that have not been adopted, the new jurisdiction governing authority adopts the plan and forwards adoption resolution to FEMA with copies to lead agency and EMD.
- FEMA regional director notifies the new jurisdiction's governing authority of the plan's approval.

The new jurisdiction plan is then included with the regional plan, and the new jurisdiction is committed to participate in the ongoing plan implementation and maintenance strategies.

DECREASING THE PARTNERSHIP

The eligibility afforded under this process to the planning partnership can be rescinded in two ways. First, a participating planning partner can ask to be removed from the partnership. This may be done because the partner has decided to develop its own plan or has identified a different planning process for which it can gain eligibility. A partner that wishes to voluntarily leave the partnership shall inform the POC of this desire in writing. This notification can occur any time during the calendar year. A jurisdiction wishing to pursue this avenue is advised to make sure that it is eligible under the new planning effort, to avoid any period of being out of compliance with the Disaster Mitigation Act.

After receiving this notification, the POC shall immediately notify both the Washington State Emergency Management Division and FEMA in writing that the partner in question is no longer covered by the Regional Hazard Mitigation Plan Update, and that the eligibility afforded that partner under this plan should be rescinded based on this notification.

The second way a partner can be removed from the partnership is by failure to meet the participation requirements specified in the "Planning Partner Expectations" package provided to each partner at the beginning of the process, or the plan maintenance and implementation procedures specified under Chapter 21 in Volume 1 of the plan. Each partner agreed to these terms by adopting the plan.

Eligibility status of the planning partnership will be monitored by the POC. The determination of whether a partner is meeting its participation requirements will be based on the following parameters:

- Are progress reports being submitted annually by the specified time frames?
- Are partners notifying the POC of changes in designated points of contact?
- Are the partners supporting the Steering Committee by attending designated meetings or responding to needs identified by the body?
- Are the partners continuing to be supportive as specified in the Planning Partners expectations package provided to them at the beginning of the process?

Participation in the plan does not end with plan approval. This partnership was formed on the premise that a group of planning partners would pool resources and work together to strive to reduce risk within the planning area. Failure to support this premise lessens the effectiveness of this effort. The following procedures will be followed to remove a partner due to the lack of participation:

- The POC will advise the Steering Committee of this pending action and provide evidence or justification for the action. Justification may include: multiple failures to submit annual progress reports, failure to attend meetings determined to be mandatory by the Steering Committee, failure to act on the partner's action plan, or inability to reach designated point of contact after a minimum of five attempts.
- The Steering Committee will review information provided by POC, and determine action by a vote. The Steering Committee will invoke the voting process established in the ground rules established during the formation of this body.
- Once the Steering Committee has approved an action, the POC will notify the planning partner of the pending action in writing via certified mail. This notification will outline the grounds for the action, and ask the partner if it is their desire to remain as a partner. This notification shall also clearly identify the ramifications of removal from the partnership. The partner will be given 30 days to respond to the notification.
- Confirmation by the partner that they no longer wish to participate or failure to respond to the notification shall trigger the procedures for voluntary removal discussed above.
- Should the partner respond that they would like to continue participation in the partnership, they must clearly articulate an action plan to address the deficiencies identified by the POC. This action plan shall be reviewed by the Steering Committee to determine whether the actions are appropriate to rescind the action. Those partners that satisfy the Steering Committee's review will remain in the partnership, and no further action is required.
- Automatic removal from the partnership will be implemented for partners where these actions have to be initiated more than once in a 5-year planning cycle.

APPENDIX C.
ANNEX INSTRUCTIONS AND TEMPLATES

Appendix C1.
Annex Instructions and Templates for Municipalities

INSTRUCTIONS FOR COMPLETING MUNICIPALITY ANNEX TEMPLATE

This document provides instructions for city and county governments participating in multi-partner hazard mitigation planning. These instructions are intended for municipalities that do not have a FEMA approved hazard mitigation plan.

Assistance in completing the template will be available in the form of a workshop for all Planning Partners in November and technical assistance as requested and as funding allows. Any questions on completing the template should be directed to:

Rob Flaner
208. 939.4391
Rob.Flaner@TetraTech.com

Fully completed templates must be completed and returned by:

Friday, January 17, 2014.

Municipality Annex:

This document provides instructions for completing the jurisdictional annex template for city and county governments**.**

Please refer all questions to:
Rob Flaner
208.939.4391
rob.flaner@tetratech.com

Please complete and return by:
Friday, January 17, 2014

Please email completed template to:
Kristen Gelino
425.482.7801
kristen.gelino@tetratech.com

Associated Materials:
Along with the annex template and these instructions, you have been provided with other materials with information that is needed for completing the template. Be sure to review these materials before you begin the process of filling in the template:

- SHELDUS historical event data
- Summary-of-loss matrix for the hazard mitigation plan,
- Results from the hazard mitigation plan questionnaire,
- Catalog of funding programs,
- Catalog of mitigation alternatives, and
- Fact sheet on Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM).

A NOTE ABOUT FORMATTING

The template for the jurisdiction annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner. Partners who do not have Microsoft Word capability may prepare the document in other formats, and the planning team will convert it to the Word format.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering**.**

CHAPTER NUMBER AND TITLE

In the chapter title at the top of page 1, type in the complete official name of your jurisdiction (The City of Metropolis, Jefferson County, etc.), replacing the yellow, highlighted text.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

JURISDICTION PROFILE

Provide information specific to your jurisdiction as indicated, in a style similar to the example provided in the box at right. This should be information that was not provided in the overall mitigation plan document. For population data, use the most current population figure for your jurisdiction based on an official means of tracking (e.g., the U.S. Census or state office of financial management).

Please be sure to include information about who will adopt the Plan and who will oversee plan implementation. Consider using the following sentence: _____ assumes responsibility for the adoption of this plan; _____ will oversee its implementation.

For each bullet point, please replace the highlighted, yellow text with your jurisdiction-specific information.

Example Jurisdiction Profile:

- **Date of Incorporation**—1858
- **Current Population**—17,289 as of July 2006
- **Population Growth—**Based on the data tracked by the California Department of Finance, Arcata has experienced a relatively flat rate of growth. The overall population has increased only 3.4% since 2000 and has averaged 0.74% per year from 1990 to 2007
- **Location and Description**—The City of Arcata is located on California's redwood coast, approximately 760 miles north of Los Angeles and 275 miles north of San Francisco. The nearest seaport is Eureka, five miles south on Humboldt Bay. Arcata is the home of Humboldt State University and is situated between the communities of McKinleyville to the north and Blue Lake to the east. It sits at the intersection of US Highway 101 and State Route 299.
- **Brief History**—The Arcata area was settled during the California gold rush in the 1850s as a supply center for miners. As the gold rush died down, timber and fishing became the area's major economic resource. Arcata was incorporated in 1858 and by 1913 the Humboldt Teachers College, a predecessor to today's Humboldt State University was founded in Arcata. Recently, the presence of the college has come to shape Arcata's population into a young, liberal, and educated crowd. In 1981 Arcata developed the Arcata Marsh and Wildlife sanctuary, an innovative environmentally friendly, sewage treatment enhancement system.
- **Climate**—Arcata's weather is typical of the Northern California coast, with mild summers and cool, wet winters. It rarely freezes in the winter and it is rarely hot in the summer. Annual average rainfall is over 40 inches, with 80% of that falling in the six-month period of November through April. The average year-round temperature is 59ºF. Humidity averages between 72 and 87 percent. Prevailing winds are from the north, and average 5 mph.
- **Governing Body Format**—The City of Arcata is governed by a five-member City Council. The City consists of six departments: Finance, Environmental Services, Community Development, Public Works, Police and the City Manager's Office. The City has 13 Committees, Commissions and Task Forces, which report to the City Council.
- **Development Trends**—Anticipated development levels for Arcata are low to moderate, consisting primarily of residential development. The majority of recent development has been infill. Residentially, there has been a focus on affordable housing and a push for more secondary mother-in-law units on properties.

  The City of Arcata adopted its general plan in July 2000. The plan focuses on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with such a plan. Future growth and development in the City will be managed as identified in the general plan.

CAPABILITY ASSESSMENT

NOTE: Please do not attempt to complete this section of the template by yourself. You will need to reach out to other departments within your jurisdiction to find the answers to these questions. Departments such as, Planning, Public Works/Engineering, and Emergency Services are responsible for the implementation of many of the capabilities listed in this assessment. If you find that your jurisdiction does not have any of the listed capabilities, then ask yourself or the responsible department "why?" Remember, increasing capability is a way to reduce risk and is, therefore, a viable mitigation action.

Legal and Regulatory Capability

Describe the legal authorities available to your jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that can support hazard mitigation initiatives. In Table 1-1, indicate "Yes" or "No" for each listed code, ordinance, requirement or planning document in each of the following columns:

- **Local Authority—**Enter "Yes" if your jurisdiction has prepared or adopted the identified item; otherwise, enter "No." If yes, then enter the code or ordinance number and its date of adoption in the comments column. It is very important that you list the code citation as well as date of adoption. Identification of old codes often are leads to identifying mitigation actions. For example, if your flood damage prevention ordinance has a date of adoption prior to 2004, there is a good chance that the ordinance is out of compliance with the National Flood Insurance Program (NFIP). This should be addressed as an action in your action plan. If a code has been updated since its initial adoption date, please provide the date of the most recent update.

> ***A Note On Planning Documents:***
>
> **Comprehensive Plans** - Jurisdictions that engage in comprehensive planning may wish to link their plan to the hazard mitigation plan. This linkage can occur in many related elements such as the safety element or in the critical areas discussion of the land use element.
>
> **Capital Improvement Programs** – CIPs may address a variety of infrastructure such as sewer, water, drainage, roads and storm water. Capital Facilities Plans are a required element of the Washington State Growth Management Act; however, counties and municipalities may have differing definitions of "capital."

- **State or Federal Prohibitions—**Enter "Yes" if there are any state or federal regulations or laws that would prohibit local implementation of the identified item; otherwise, enter "No."
- **Other Regulatory Authority—**Enter "Yes" if there are any regulations that may impact your initiative that are enforced or administered by another agency (e.g., a state agency or special purpose district); otherwise, enter "No."
- **State Mandated—**Enter "Yes" if state laws or other requirements enable or require the listed item to be implemented at the local level; otherwise, enter "No."

Fiscal Capability

Identify what financial resources (other than the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Grant Program) are available to your jurisdiction for implementing mitigation initiatives.

Complete Table 1-2 by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter "Yes" if the resource is fully accessible to your jurisdiction. Enter "No" if there are limitations or prerequisites that may hinder your eligibility for this resource.

Administrative and Technical Capability

This section requires you to take inventory of the staff/personnel resources available to your jurisdiction to help with hazard mitigation planning and the implementation of specific mitigation actions.

Complete Table 1-3 by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter "Yes" or "No" in the column labeled "Available?" If yes, then enter the department and position title in the right-hand column.

National Flood Insurance Program Compliance

For those communities that participate in the National Flood Insurance program (NFIP), this section will aid in meeting the requirements specified in 44CFR 201.6(c)(3)(ii)), dealing with the maintenance of NFIP compliance. This section asks a series of questions aimed at identifying the community's floodplain management program and any inherent needs within that program. Table 1-4 asks nine questions about the community floodplain management program. To complete this table, you will need to identify the department responsible for floodplain management within your jurisdiction. Guidance on how to respond to each of these questions is as follows:

What department is responsible for floodplain management in your community?	All communities that participate in the NFIP must appoint a department that is responsible for the administration of its floodplain management program. This can be designated in the actual ordinance language. Places to check include; Building Department, Community Development, Public Works or Engineering Department
Who is your Community's Floodplain Administrator? (Department/Position)	This position will be designated in the Community's flood damage prevention ordinance. Please confirm that this position is still acting as the designated Flood Plain Administrator. If it is not, then you will need to amend your ordinance.
Do you have any Certified Floodplain Managers (CFM) on staff within your community?	The Association of State Floodplain Managers has established a national program for professional certification of floodplain managers. The program recognizes continuing education and professional development that enhance the knowledge and performance of local, state, federal, and private-sector floodplain managers. The role of the nation's floodplain managers is expanding due to increases in disaster losses, the emphasis being placed upon mitigation to alleviate the cycle of damage-rebuild-damage, and a recognized need for professionals to adequately address these issues. This certification program lays the foundation for ensuring that highly qualified individuals are available to meet the challenge of breaking the damage cycle and stopping its negative drain on the nation's human, financial, and natural resources.
What is the date of adoption of your flood damage prevention ordinance?	Check the date your floodplain management ordinance was last adopted/amended. Please site the code number and whether this date reflects the initial adoption date or an amendment date.
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	The CAV is the method utilized by FEMA to monitor NFIP compliance. CAV's are supposed to occur every 3 to 5 years. They can be performed by the FEMA Regional Office or by the State Coordinating Agency. The best source for this information is your

	Community Floodplain Administrator. If she or he does not know, you should check with the State NFIP Coordinator: Scott McKinney, Washington Department of Ecology 360-407-6131 scott.mckinney@ecy.wa.gov
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	If any administrative problems or potential violations are identified during a CAV the community will be notified and given the opportunity to correct those administrative procedures and remedy the violations to the maximum extent possible within established deadlines. The best source for this information is your Community Floodplain Administrator. If she does not know, you should check with the State NFIP Coordinator.
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why).	If you believe that the flood hazard maps for your community do not adequately address the flood risk, please provide an explanation. If you believe the maps do adequately address the flood risk within your community, please answer "Yes."
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	What do you need to make your floodplain management program better? Do you need staffing, training, better maps? This is the section where you identify needs. Needs result in actions. If you identify needs here, you should identify an action in your action plan to address those needs. It is plausible to answer "nothing" here. But to do so, you need to have a very well established floodplain management program or little or no floodplain to manage.
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	The CRS program is a part of the National Flood Insurance Program that rewards participating communities for exceeding the minimum requirements of the NFIP by lowering the cost of flood insurance premiums in participating jurisdictions. The CRS provides credit for 18, non-structural flood mitigation activities. The CRS program is voluntary, and communities must be in full compliance and good standing under the NFIP to be eligible to apply.

Community Mitigation Related Classifications

The Planning Team will complete Table 1-5 to indicate your jurisdiction's participation in various national programs related to natural hazard mitigation. You do not need to provide information for this table.

JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Chronological List of Hazard Events

In Table 1-6, list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction since 1975. Include the date of the event and the estimated dollar amount of

damage it caused. Please refer to the summary of natural hazard events in the SHELDUS historical data included in your tool kit. Potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Citizen input.

Repetitive Loss Properties

A repetitive loss property is any property for which FEMA has paid two or more flood insurance claims in excess of $1,000 in any rolling 10-year period since 1978. The Planning Team will provide information regarding repetitive loss properties for your jurisdiction. Please do not worry about completing this portion of the template.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and the economy. A detailed discussion of the concepts associated with risk ranking is provided in the overall hazard mitigation plan. The instructions below outline steps for assessing risk in your jurisdiction to develop results that are to be included in the template.

Determine Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. In Table 1, list the probability of occurrence for each hazard as it pertains to your jurisdiction, along with its probability factor, as follows:

- **High—**Hazard event is likely to occur within 25 years (Probability Factor = 3)
- **Medium—**Hazard event is likely to occur within 100 years (Probability Factor = 2)
- **Low—**Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- **None—**If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

The probability of occurrence of a hazard event is generally based on past hazard events in an area. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category.

TABLE 1. HAZARD PROBABILITY OF OCCURRENCE		
Hazard Type	Probability	Probability Factor

Determine Potential Impacts of Each Hazard

The impact of each hazard was divided into three categories: impacts on people, impacts on property, and impacts on the economy. These categories were also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on the economy was assigned a weighting factor of 1. Steps to assess each type of impact are described below.

Impacts on People

To assess impacts on people, values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. In Table 2, list the potential impact of each hazard on people in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**30% or more of the population is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the population is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the population is exposed to a hazard (Impact Factor = 0)

TABLE 2. HAZARD IMPACT ON PEOPLE			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 3)

Impacts on Property

To assess impacts on property, values are assigned based on the percentage of the total ***property value exposed*** to the hazard event. In Table 3, enter the cost estimates for potential damage to exposed structures, taken from the "Summary of Loss" matrix provided with these instructions.

TABLE 3. COST ESTIMATES FOR POTENTIAL DAMAGE TO STRUCTURES	
Hazard type	Estimate of Potential Dollar Losses to Exposed Structures

In Table 4, list the potential impact of each hazard on property in your jurisdiction, along with its impact factor. Determine impact based on damage estimates from Table 3, as follows:

- **High Impact—**25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)

- **Medium Impact—**10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

TABLE 4.
HAZARD IMPACT ON PROPERTY

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 2)

Impacts on the Economy

To assess impacts on the economy, values are assigned based on the percentage of the total ***property value vulnerable*** to the hazard event. Values represent estimates of the loss from a major event of each hazard in comparison to the total assessed value of property in the county. For some hazards, such as wildland fire, landslide and severe weather, vulnerability is the same as exposure due to the lack of loss estimation tools specific to those hazards. In Table 5, list the potential impact of each hazard on the economy in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**Estimated loss from the hazard is 15% or more of the total assessed property value (Impact Factor = 3)
- **Medium Impact—**Estimated loss from the hazard is 5% to 14% of the total assessed property value (Impact Factor = 2)
- **Low Impact—**Estimated loss from the hazard is 4% or less of the total assessed property value (Impact Factor = 1)
- **No Impact—**No loss is estimated from the hazard (Impact Factor = 0)

TABLE 5. HAZARD IMPACT ON THE ECONOMY			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 1)

Determine Risk Rating for Each Hazard

A risk rating for each hazard is determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and the economy:

- Risk Rating = Probability Factor x Weighted Impact Factor {people + property + economy}

Using the results developed in Tables 1, 2, 4 and 5, complete Table 6 to calculate a risk rating for each hazard of concern.

TABLE 6. HAZARD RISK RATING			
Hazard Type	Probability Factor (P)	Sum of Weighted Impact Factors on People, Property & Economy (I)	Risk Rating (P x I)

Complete Risk Ranking in Template

Once Table 6 has been completed above, complete Table 1-7 in your template. The hazard with the highest risk rating in Table 6 should be listed at the top of Table 1-7 and given a rank of 1; the hazard with the second highest rating should be listed second with a rank of 2; and so on. Two hazards with equal risk ratings should be given the same rank.

It is important to note that this exercise should not override your subjective assessment of relative risk based on your knowledge of the history of natural hazard events in your jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in the comments at the end of the template. Remember, one of the purposes of this exercise is to support the selection and prioritization of initiatives in your plan. If you identify an initiative with a high priority that mitigates the risk of a hazard you have ranked low, that project will not be competitive in the grant arena.

HAZARD MITIGATION ACTION PLAN

Action Plan Matrix

Identify the initiatives your jurisdiction would like to pursue with this plan. Refer to the mitigation catalog for mitigation options you might want to consider. Be sure to consider the following factors in your selection of initiatives:

- Select initiatives that are consistent with the overall goals, objectives and vision of the hazard mitigation plan. The approved goals, objectives and vision are included in your tool kit.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the HMGP and PDM (see fact sheet provided). Listing HMGP or PDM as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP or PDM grant eligible, but do mitigate part or the entire hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- Although you should identify at least one initiative for your highest ranked risk, a hazard-specific project is not required for every hazard. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Wording Your Initiative Descriptions:

Descriptions of your initiatives need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan initiative:

- **Initiative 1—**Address Repetitive Loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Initiative 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Initiative 3—**Acquire floodplain property in the Smith subdivision.
- **Initiative 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

Complete Table 1-8 for all the initiatives you have identified:

- Enter the initiative number and description.

- Indicate whether the initiative mitigates hazards for new or existing assets.
- Identify the specific hazards the initiative will mitigate.
- Identify by number the mitigation plan objectives that the initiative addresses. The approved goals, objectives and vision are included in your tool kit.
- Indicate who will be the lead in administering the project. This will most likely be your governing body.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment (Table 1-2) to identify possible sources of funding.
- Indicate the time line as "short term" (1 to 5 years) or "long term" (5 years or greater).

Technical assistance will be provided upon request.

Prioritization of Mitigation Initiatives

Complete the information in Table 1-9 as follows:

- **Initiative #—**Indicate the initiative number from Table 1-8.
- **# of Objectives Met—**Enter the number of objectives the initiative will meet.
- **Benefits—**Enter "High," "Medium" or "Low" as follows:
  - **High:** Project will have an immediate impact on the reduction of risk exposure to life and property.
  - **Medium:** Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - **Low:** Long-term benefits of the project are difficult to quantify in the short term.
- **Costs—**Enter "High," "Medium" or "Low" as follows:
  - **High:** Would require an increase in revenue via an alternative source (e.g., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - **Medium:** Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - **Low:** Possible to fund under existing budget. Project is part of, or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.
- **Do Benefits Equal or Exceed the Cost?—**Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?—**Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.

- **Can Project Be Funded Under Existing Program Budgets?—**Enter "Yes" or "No." In other words, is this initiative currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Priority—** Enter "High," "Medium" or "Low" as follows:
  - **High:** Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
  - **Medium:** Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
  - **Low:** Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

This prioritization is a simple review to determine that the initiatives you have identified meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs.

Analysis of Mitigation Actions

Complete Table 1-10 by summarizing the mitigation actions by hazard of concern and the following six mitigation types:

- **Prevention—**Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection—**Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness—**Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection—**Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services—**Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects—**Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates such as EPA's Bio-terrorism assessment requirement for water districts.

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template.

As you complete your template, please forward it to:

Kristen Gelino, Tetra Tech, Inc.
425.482.7801
Kristen.Gelino@TetraTech.com

CHAPTER 1.
INSERT JURISDICTION NAME ANNEX

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**Insert Date of Incorporation
- **Current Population—**Insert Population as of Insert Date of Population Count
- **Population Growth—**Insert Discussion of Population Growth
- **Location and Description—**Insert Description of Location, Surroundings, Key Geographic Features
- **Brief History—**Insert Summary Discussion of Jurisdiction's History
- **Climate—**Insert Summary Discussion of Climate
- **Governing Body Format—**Insert Summary Description of Governing Body
- **Development Trends—**Insert Summary Description of Development

1.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 1-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 1-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 1-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 1-4. Classifications under various community mitigation programs are presented in Table 1-5.

TABLE 1-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code					
Zonings					
Subdivisions					
Stormwater Management					
Post Disaster Recovery					
Real Estate Disclosure					
Growth Management					
Site Plan Review					
Public Health and Safety					
Environmental Protection					
Planning Documents					
General or Comprehensive Plan					
Is the plan equipped to provide linkage to this mitigation plan?					__Yes or No___
Floodplain or Basin Plan					
Stormwater Plan					
Capital Improvement Plan					
What types of capital facilities does the plan address?					_____
How often is the plan revised/updated?					__Yes or No___
Habitat Conservation Plan					
Economic Development Plan					
Shoreline Management Plan					
Community Wildfire Protection Plan					
Response/Recovery Planning					
Comprehensive Emergency Management Plan					
Threat and Hazard Identification and Risk Assessment					
Terrorism Plan					
Post-Disaster Recovery Plan					
Continuity of Operations Plan					
Public Health Plans					

TABLE 1-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	
Capital Improvements Project Funding	
Authority to Levy Taxes for Specific Purposes	
User Fees for Water, Sewer, Gas or Electric Service	
Incur Debt through General Obligation Bonds	
Incur Debt through Special Tax Bonds	
Incur Debt through Private Activity Bonds	
Withhold Public Expenditures in Hazard-Prone Areas	
State Sponsored Grant Programs	
Development Impact Fees for Homebuyers or Developers	
Other	

TABLE 1-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices		
Engineers or professionals trained in building or infrastructure construction practices		
Planners or engineers with an understanding of natural hazards		
Staff with training in benefit/cost analysis		
Surveyors		
Personnel skilled or trained in GIS applications		
Scientist familiar with natural hazards in local area		
Emergency manager		
Grant writers		

TABLE 1-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	
Who is your community's floodplain administrator? (department/position)	
Do you have any certified floodplain managers on staff in your community?	
What is the date of adoption of your flood damage prevention ordinance?	
When was the most recent Community Assistance Visit or Community Assistance Contact?	
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	

TABLE 1-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System			
Building Code Effectiveness Grading Schedule			
Public Protection			
Storm Ready			
Firewise			
Tsunami Ready (if applicable)			

1.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: Insert #
- Number of FEMA-Identified Severe Repetitive Loss Properties: Insert #
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: Insert #

TABLE 1-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment

1.5 HAZARD RISK RANKING

Table 1-7 presents the ranking of the hazards of concern.

Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Delete this paragraph if no maps available.

TABLE 1-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

1.6 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 1-8 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 1-9 identifies the priority for each initiative. Table 1-10 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 1-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						

TABLE 1-9.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]

a. See Chapter 1 for explanation of priorities.

TABLE 1-10.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche						
Dam Failure						
Drought						
Earthquake						
Flood						
Landslide						
Severe Weather						
Tsunami						
Volcano						
Wildfire						

a. See Chapter 1 for explanation of mitigation types.

1.7 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Insert text, if any; delete section if not used

1.8 ADDITIONAL COMMENTS

Insert text, if any; delete section if not used

INSTRUCTIONS FOR COMPLETING MUNICIPALITY UPDATE ANNEX TEMPLATE

This document provides instructions for city and county governments participating in multi-partner hazard mitigation planning. These instructions are intended for municipalities that currently have a FEMA approved hazard mitigation plan.

Assistance in completing the template will be available in the form of a workshop for all Planning Partners in November and technical assistance as requested and as funding allows. Any questions on completing the template should be directed to:

Rob Flaner
208. 939.4391
Rob.Flaner@TetraTech.com

Fully completed templates must be completed and returned by:

Friday, January 17, 2014.

Municipality Update Annex:

This document provides instructions for completing the jurisdictional annex template for city and county governments**.**

Please refer all questions to:
Rob Flaner
208.939.4391
rob.flaner@tetratech.com

Please complete and return by:
Friday, January 17, 2013

Please email completed template to:
Kristen Gelino
425.482.7801
kristen.gelino@tetratech.com

Associated Materials:
Along with the annex template and these instructions, you have been provided with other materials with information that is needed for completing the template. Be sure to review these materials before you begin the process of filling in the template:

- SHELDUS historical event data
- Summary-of-loss matrix for the hazard mitigation plan,
- Results from the hazard mitigation plan questionnaire,
- Catalog of funding programs,
- Catalog of mitigation alternatives, and
- Fact sheet on Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM).

A NOTE ABOUT FORMATTING

The template for the municipal jurisdiction annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner. Partners who do not have Microsoft Word capability may prepare the document in other formats, and the planning team will convert it to the Word format.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering**.**

CHAPTER NUMBER AND TITLE

In the chapter title at the top of page 1, type in the complete official name of your jurisdiction (The City of Metropolis, Jefferson County, etc.), replacing the yellow, highlighted text.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

JURISDICTION PROFILE

Provide information specific to your jurisdiction as indicated, in a style similar to the example provided in the box at right. This should be information that was not provided in the overall mitigation plan document. For population data, use the most current population figure for your jurisdiction based on an official means of tracking (e.g., the U.S. Census or state office of financial management).

Please be sure to include information about who will adopt the Plan and who will oversee plan implementation. Consider using the following sentence: _____ assumes responsibility for the adoption of this plan; _____ will oversee its implementation.

For each bullet point, please replace the highlighted, yellow text with your jurisdiction-specific information.

Example Jurisdiction Profile:

- **Date of Incorporation**—1858
- **Current Population**—17,289 as of July 2006
- **Population Growth—**Based on the data tracked by the California Department of Finance, Arcata has experienced a relatively flat rate of growth. The overall population has increased only 3.4% since 2000 and has averaged 0.74% per year from 1990 to 2007
- **Location and Description**—The City of Arcata is located on California's redwood coast, approximately 760 miles north of Los Angeles and 275 miles north of San Francisco. The nearest seaport is Eureka, five miles south on Humboldt Bay. Arcata is the home of Humboldt State University and is situated between the communities of McKinleyville to the north and Blue Lake to the east. It sits at the intersection of US Highway 101 and State Route 299.
- **Brief History**—The Arcata area was settled during the California gold rush in the 1850s as a supply center for miners. As the gold rush died down, timber and fishing became the area's major economic resource. Arcata was incorporated in 1858 and by 1913 the Humboldt Teachers College, a predecessor to today's Humboldt State University was founded in Arcata. Recently, the presence of the college has come to shape Arcata's population into a young, liberal, and educated crowd. In 1981 Arcata developed the Arcata Marsh and Wildlife sanctuary, an innovative environmentally friendly, sewage treatment enhancement system.
- **Climate**—Arcata's weather is typical of the Northern California coast, with mild summers and cool, wet winters. It rarely freezes in the winter and it is rarely hot in the summer. Annual average rainfall is over 40 inches, with 80% of that falling in the six-month period of November through April. The average year-round temperature is 59ºF. Humidity averages between 72 and 87 percent. Prevailing winds are from the north, and average 5 mph.
- **Governing Body Format**—The City of Arcata is governed by a five-member City Council. The City consists of six departments: Finance, Environmental Services, Community Development, Public Works, Police and the City Manager's Office. The City has 13 Committees, Commissions and Task Forces, which report to the City Council.
- **Development Trends**—Anticipated development levels for Arcata are low to moderate, consisting primarily of residential development. The majority of recent development has been infill. Residentially, there has been a focus on affordable housing and a push for more secondary mother-in-law units on properties.

  The City of Arcata adopted its general plan in July 2000. The plan focuses on issues of the greatest concern to the community. City actions, such as those relating to land use allocations, annexations, zoning, subdivision and design review, redevelopment, and capital improvements, must be consistent with such a plan. Future growth and development in the City will be managed as identified in the general plan.

CAPABILITY ASSESSMENT

NOTE: Please do not attempt to complete this section of the template by yourself. You will need to reach out to other departments within your jurisdiction to find the answers to these questions. Departments such as, Planning, Public Works/Engineering, and Emergency Services are responsible for the implementation of many of the capabilities listed in this assessment. If you find that your jurisdiction does not have any of the listed capabilities, then ask yourself or the responsible department "why?" Remember, increasing capability is a way to reduce risk and is, therefore, a viable mitigation action.

Legal and Regulatory Capability

Describe the legal authorities available to your jurisdiction and/or enabling legislation at the state level affecting planning and land management tools that can support hazard mitigation initiatives. In Table 1-1, indicate "Yes" or "No" for each listed code, ordinance, requirement or planning document in each of the following columns:

- **Local Authority—**Enter "Yes" if your jurisdiction has prepared or adopted the identified item; otherwise, enter "No." If yes, then enter the code or ordinance number and its date of adoption in the comments column. It is very important that you list the code citation as well as date of adoption. Identification of old codes often are leads to identifying mitigation actions. For example, if your flood damage prevention ordinance has a date of adoption prior to 2004, there is a good chance that the ordinance is out of compliance with the National Flood Insurance Program (NFIP). This should be addressed as an action in your action plan. If a code has been updated since its initial adoption date, please provide the date of the most recent update.

> ***A Note On Planning Documents:***
>
> **Comprehensive Plans** - Jurisdictions that engage in comprehensive planning may wish to link their plan to the hazard mitigation plan. This linkage can occur in many related elements such as the safety element or in the critical areas discussion of the land use element.
>
> **Capital Improvement Programs** – CIPs may address a variety of infrastructure such as sewer, water, drainage, roads and storm water. Capital Facilities Plans are a required element of the Washington State Growth Management Act; however, counties and municipalities may have differing definitions of "capital."

- **State or Federal Prohibitions—**Enter "Yes" if there are any state or federal regulations or laws that would prohibit local implementation of the identified item; otherwise, enter "No."
- **Other Regulatory Authority—**Enter "Yes" if there are any regulations that may impact your initiative that are enforced or administered by another agency (e.g., a state agency or special purpose district); otherwise, enter "No."
- **State Mandated—**Enter "Yes" if state laws or other requirements enable or require the listed item to be implemented at the local level; otherwise, enter "No."

Fiscal Capability

Identify what financial resources (other than the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Grant Program) are available to your jurisdiction for implementing mitigation initiatives.

Complete Table 1-2 by indicating whether each of the listed financial resources is accessible to your jurisdiction. Enter "Yes" if the resource is fully accessible to your jurisdiction. Enter "No" if there are limitations or prerequisites that may hinder your eligibility for this resource.

Administrative and Technical Capability

This section requires you to take inventory of the staff/personnel resources available to your jurisdiction to help with hazard mitigation planning and the implementation of specific mitigation actions.

Complete Table 1-3 by indicating whether your jurisdiction has access to each of the listed personnel resources. Enter "Yes" or "No" in the column labeled "Available?" If yes, then enter the department and position title in the right-hand column.

National Flood Insurance Program Compliance

For those communities that participate in the National Flood Insurance program (NFIP), this section will aid in meeting the requirements specified in 44CFR 201.6(c)(3)(ii)), dealing with the maintenance of NFIP compliance. This section asks a series of questions aimed at identifying the community's floodplain management program and any inherent needs within that program. Table 1-4 asks nine questions about the community floodplain management program. To complete this table, you will need to identify the department responsible for floodplain management within your jurisdiction. Guidance on how to respond to each of these questions is as follows:

What department is responsible for floodplain management in your community?	All communities that participate in the NFIP must appoint a department that is responsible for the administration of its floodplain management program. This can be designated in the actual ordinance language. Places to check include; Building Department, Community Development, Public Works or Engineering Department
Who is your Community's Floodplain Administrator? (Department/Position)	This position will be designated in the Community's flood damage prevention ordinance. Please confirm that this position is still acting as the designated Flood Plain Administrator. If it is not, then you will need to amend your ordinance.
Do you have any Certified Floodplain Managers (CFM) on staff within your community?	The Association of State Floodplain Managers has established a national program for professional certification of floodplain managers. The program recognizes continuing education and professional development that enhance the knowledge and performance of local, state, federal, and private-sector floodplain managers. The role of the nation's floodplain managers is expanding due to increases in disaster losses, the emphasis being placed upon mitigation to alleviate the cycle of damage-rebuild-damage, and a recognized need for professionals to adequately address these issues. This certification program lays the foundation for ensuring that highly qualified individuals are available to meet the challenge of breaking the damage cycle and stopping its negative drain on the nation's human, financial, and natural resources.
What is the date of adoption of your flood damage prevention ordinance?	Check the date your floodplain management ordinance was last adopted/amended. Please site the code number and whether this date reflects the initial adoption date or an amendment date.
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	The CAV is the method utilized by FEMA to monitor NFIP compliance. CAV's are supposed to occur every 3 to 5 years. They can be performed by the FEMA Regional Office or by the State Coordinating Agency. The best source for this information is your

	Community Floodplain Administrator. If she or he does not know, you should check with the State NFIP Coordinator: Scott McKinney, Washington Department of Ecology 360-407-6131 scott.mckinney@ecy.wa.gov
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	If any administrative problems or potential violations are identified during a CAV the community will be notified and given the opportunity to correct those administrative procedures and remedy the violations to the maximum extent possible within established deadlines. The best source for this information is your Community Floodplain Administrator. If she does not know, you should check with the State NFIP Coordinator.
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why).	If you believe that the flood hazard maps for your community do not adequately address the flood risk, please provide an explanation. If you believe the maps do adequately address the flood risk within your community, please answer "Yes."
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	What do you need to make your floodplain management program better? Do you need staffing, training, better maps? This is the section where you identify needs. Needs result in actions. If you identify needs here, you should identify an action in your action plan to address those needs. It is plausible to answer "nothing" here. But to do so, you need to have a very well established floodplain management program or little or no floodplain to manage.
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	The CRS program is a part of the National Flood Insurance Program that rewards participating communities for exceeding the minimum requirements of the NFIP by lowering the cost of flood insurance premiums in participating jurisdictions. The CRS provides credit for 18, non-structural flood mitigation activities. The CRS program is voluntary, and communities must be in full compliance and good standing under the NFIP to be eligible to apply.

Community Mitigation Related Classifications

The Planning Team will complete Table 1-5 to indicate your jurisdiction's participation in various national programs related to natural hazard mitigation. You do not need to provide information for this table.

JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Chronological List of Hazard Events

In Table 1-6, list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction since 1975. Include the date of the event and the estimated dollar amount of

damage it caused. Please refer to the summary of natural hazard events in the SHELDUS historical data included in your tool kit. Potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Citizen input.

Repetitive Loss Properties

A repetitive loss property is any property for which FEMA has paid two or more flood insurance claims in excess of $1,000 in any rolling 10-year period since 1978. The Planning Team will provide information regarding repetitive loss properties for your jurisdiction. Please do not worry about completing this portion of the template.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and the economy. A detailed discussion of the concepts associated with risk ranking is provided in the overall hazard mitigation plan. The instructions below outline steps for assessing risk in your jurisdiction to develop results that are to be included in the template.

Determine Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. In Table 1, list the probability of occurrence for each hazard as it pertains to your jurisdiction, along with its probability factor, as follows:

- **High—**Hazard event is likely to occur within 25 years (Probability Factor = 3)
- **Medium—**Hazard event is likely to occur within 100 years (Probability Factor = 2)
- **Low—**Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- **None—**If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

The probability of occurrence of a hazard event is generally based on past hazard events in an area. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category.

TABLE 1. HAZARD PROBABILITY OF OCCURRENCE		
Hazard Type	Probability	Probability Factor

Determine Potential Impacts of Each Hazard

The impact of each hazard was divided into three categories: impacts on people, impacts on property, and impacts on the economy. These categories were also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on the economy was assigned a weighting factor of 1. Steps to assess each type of impact are described below.

Impacts on People

To assess impacts on people, values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. In Table 2, list the potential impact of each hazard on people in your jurisdiction, along with its impact factor, as follows:

- **High Impact—3**0% or more of the population is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—1**5% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- **Low Impact—14**% or less of the population is exposed to the hazard (Impact Factor = 1)
- **No impact—**None of the population is exposed to a hazard (Impact Factor = 0)

TABLE 2. HAZARD IMPACT ON PEOPLE			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 3)

Impacts on Property

To assess impacts on property, values are assigned based on the percentage of the total ***property value exposed*** to the hazard event. In Table 3, enter the cost estimates for potential damage to exposed structures, taken from the "Summary of Loss" matrix provided with these instructions.

TABLE 3. COST ESTIMATES FOR POTENTIAL DAMAGE TO STRUCTURES	
Hazard type	Estimate of Potential Dollar Losses to Exposed Structures

In Table 4, list the potential impact of each hazard on property in your jurisdiction, along with its impact factor. Determine impact based on damage estimates from Table 3, as follows:

- **High Impact—25**% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)

- **Medium Impact—**10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
- **Low Impact—9**% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

TABLE 4.
HAZARD IMPACT ON PROPERTY

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 2)

Impacts on the Economy

To assess impacts on the economy, values are assigned based on the percentage of the total ***property value vulnerable*** to the hazard event. Values represent estimates of the loss from a major event of each hazard in comparison to the total assessed value of property in the county. For some hazards, such as wildland fire, landslide and severe weather, vulnerability is the same as exposure due to the lack of loss estimation tools specific to those hazards. In Table 5, list the potential impact of each hazard on the economy in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**Estimated loss from the hazard is 15% or more of the total assessed property value (Impact Factor = 3)
- **Medium Impact—**Estimated loss from the hazard is 5% to 14% of the total assessed property value (Impact Factor = 2)
- **Low Impact—**Estimated loss from the hazard is 4% or less of the total assessed property value (Impact Factor = 1)
- **No Impact—**No loss is estimated from the hazard (Impact Factor = 0)

TABLE 5. HAZARD IMPACT ON THE ECONOMY			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 1)

Determine Risk Rating for Each Hazard

A risk rating for each hazard is determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and the economy:

- Risk Rating = Probability Factor x Weighted Impact Factor {people + property + economy}

Using the results developed in Tables 1, 2, 4 and 5, complete Table 6 to calculate a risk rating for each hazard of concern.

TABLE 6. HAZARD RISK RATING			
Hazard Type	Probability Factor (P)	Sum of Weighted Impact Factors on People, Property & Economy (I)	Risk Rating (P x I)

Complete Risk Ranking in Template

Once Table 6 has been completed above, complete Table 1-7 in your template. The hazard with the highest risk rating in Table 6 should be listed at the top of Table 1-7 and given a rank of 1; the hazard with the second highest rating should be listed second with a rank of 2; and so on. Two hazards with equal risk ratings should be given the same rank.

It is important to note that this exercise should not override your subjective assessment of relative risk based on your knowledge of the history of natural hazard events in your jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in the comments at the end of the template. Remember, one of the purposes of this exercise is to support the selection and prioritization of initiatives in your plan. If you identify an initiative with a high priority that mitigates the risk of a hazard you have ranked low, that project will not be competitive in the grant arena.

STATUS OF PREVIOUS PLAN INITIATIVES

In this section, provide a status report of actions recommended in your previous hazard mitigation plan. You must be able to reconcile your original action plan to meet FEMA requirements for plan updates. Enter all the recommended actions from your previous plan in Table 1-8 and put an ✓ in one of the following three columns for each action to indicate its status:

- **Completed**—If the action has been completed, place a check mark in this column and enter a brief explanation in the "Comments" column (e.g., "Action #WC31 was completed by the Public Works Department on 3/12/2009"). Ongoing actions, such as annual outreach projects or maintenance activities, should also be indicated as "Completed," with a statement about the ongoing nature of the action provided in the "Comments" column (e.g., "Ongoing action, implemented annually by Community Development Department").
- **Carry Over to Plan Update**—If you did not complete an action and want to carry it over to your updated action plan, place a check mark in this column, and enter an explanatory statement in the comment section (e.g., "Action carried over as Action #WC14 in updated action plan").
- **Removed; No Longer Feasible**—If you want to remove an action because you have determined that it is no longer feasible, place a check mark in this column. "No longer feasible" means that you have determined that you do not have the capability to implement the action or that the action does not serve the best interest of your jurisdiction. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible (e.g., "Action no longer considered feasible due to lack of political support to complete it.")

HAZARD MITIGATION ACTION PLAN

Action Plan Matrix

Identify the initiatives your jurisdiction would like to pursue with this plan. Refer to the mitigation catalog for mitigation options you might want to consider. Be sure to consider the following factors in your selection of initiatives:

- Select initiatives that are consistent with the overall goals, objectives and vision of the hazard mitigation plan. The approved goals, objectives and vision are included in your tool kit.

- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the HMGP and PDM (see fact sheet provided). Listing HMGP or PDM as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP or PDM grant eligible, but do mitigate part or the entire hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- Although you should identify at least one initiative for your highest ranked risk, a hazard-specific project is not required for every hazard. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Complete Table 1-9 for all the initiatives you have identified:

- Enter the initiative number and description.
- Indicate whether the initiative mitigates hazards for new or existing assets.
- Identify the specific hazards the initiative will mitigate.
- Identify by number the mitigation plan objectives that the initiative addresses. The approved goals, objectives and vision are included in your tool kit.
- Indicate who will be the lead in administering the project. This will most likely be your governing body.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share. Refer to your fiscal capability assessment (Table 1-2) to identify possible sources of funding.
- Indicate the time line as "short term" (1 to 5 years) or "long term" (5 years or greater).
- Enter "Yes" or "No" to indicate whether this initiative was included in the previous version of this hazard mitigation plan.

Wording Your Initiative Descriptions:

Descriptions of your initiatives need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan initiative:

- **Initiative 1—**Address Repetitive Loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Initiative 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Initiative 3—**Acquire floodplain property in the Smith subdivision.
- **Initiative 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

Technical assistance will be provided upon request.

Prioritization of Mitigation Initiatives

Complete the information in Table 1-10 as follows:

- **Initiative #—**Indicate the initiative number from Table 1-9.
- **# of Objectives Met—**Enter the number of objectives the initiative will meet.
- **Benefits—**Enter "High," "Medium" or "Low" as follows:
  - **High:** Project will have an immediate impact on the reduction of risk exposure to life and property.

  - **Medium:** Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - **Low:** Long-term benefits of the project are difficult to quantify in the short term.

- **Costs—**Enter "High," "Medium" or "Low" as follows:
  - **High:** Would require an increase in revenue via an alternative source (e.g., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - **Medium:** Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - **Low:** Possible to fund under existing budget. Project is part of, or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.

- **Do Benefits Exceed the Cost?—**Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?—**Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.
- **Can Project Be Funded Under Existing Program Budgets?—**Enter "Yes" or "No." In other words, is this initiative currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Priority—** Enter "High," "Medium" or "Low" as follows:
  - **High:** Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
  - **Medium:** Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
  - **Low:** Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

This prioritization is a simple review to determine that the initiatives you have identified meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs.

Analysis of Mitigation Actions

Complete Table 1-11 by summarizing the mitigation actions by hazard of concern and the following six mitigation types:

- **Prevention—**Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection—**Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness—**Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection—**Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services—**Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects—**Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates such as EPA's Bio-terrorism assessment requirement for water districts.

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template.

CHAPTER 1.
INSERT JURISDICTION NAME UPDATE ANNEX

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

1.2 JURISDICTION PROFILE

The following is a summary of key information about the jurisdiction and its history:

- **Date of Incorporation—**Insert Date of Incorporation
- **Current Population—**Insert Population as of Insert Date of Population Count
- **Population Growth—**Insert Discussion of Population Growth
- **Location and Description—**Insert Description of Location, Surroundings, Key Geographic Features
- **Brief History—**Insert Summary Discussion of Jurisdiction's History
- **Climate—**Insert Summary Discussion of Climate
- **Governing Body Format—**Insert Summary Description of Governing Body
- **Development Trends—**Insert Summary Description of Development

1.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 1-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 1-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 1-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 1-4. Classifications under various community mitigation programs are presented in Table 1-5.

TABLE 1-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code					
Zonings					
Subdivisions					
Stormwater Management					
Post Disaster Recovery					
Real Estate Disclosure					
Growth Management					
Site Plan Review					
Public Health and Safety					
Environmental Protection					
Planning Documents					
General or Comprehensive Plan					
Is the plan equipped to provide linkage to this mitigation plan?					__Yes or No___
Floodplain or Basin Plan					
Stormwater Plan					
Capital Improvement Plan					
What types of capital facilities does the plan address?					_____
How often is the plan revised/updated?					__Yes or No___
Habitat Conservation Plan					
Economic Development Plan					
Shoreline Management Plan					
Community Wildfire Protection Plan					
Response/Recovery Planning					
Comprehensive Emergency Management Plan					
Threat and Hazard Identification and Risk Assessment					
Terrorism Plan					
Post-Disaster Recovery Plan					
Continuity of Operations Plan					
Public Health Plans					

TABLE 1-2.
FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	
Capital Improvements Project Funding	
Authority to Levy Taxes for Specific Purposes	
User Fees for Water, Sewer, Gas or Electric Service	
Incur Debt through General Obligation Bonds	
Incur Debt through Special Tax Bonds	
Incur Debt through Private Activity Bonds	
Withhold Public Expenditures in Hazard-Prone Areas	
State Sponsored Grant Programs	
Development Impact Fees for Homebuyers or Developers	
Other	

TABLE 1-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices		
Engineers or professionals trained in building or infrastructure construction practices		
Planners or engineers with an understanding of natural hazards		
Staff with training in benefit/cost analysis		
Surveyors		
Personnel skilled or trained in GIS applications		
Scientist familiar with natural hazards in local area		
Emergency manager		
Grant writers		

TABLE 1-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your community?	
Who is your community's floodplain administrator? (department/position)	
Do you have any certified floodplain managers on staff in your community?	
What is the date of adoption of your flood damage prevention ordinance?	
When was the most recent Community Assistance Visit or Community Assistance Contact?	
To the best of your knowledge, does your community have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	
Do your flood hazard maps adequately address the flood risk within your community? (If no, please state why)	
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	
Does your community participate in the Community Rating System (CRS)? If so, is your community seeking to improve its CRS Classification? If not, is your community interested in joining the CRS program?	

TABLE 1-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System			
Building Code Effectiveness Grading Schedule			
Public Protection			
Storm Ready			
Firewise			
Tsunami Ready (if applicable)			

1.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: Insert #
- Number of FEMA-Identified Severe Repetitive Loss Properties: Insert #
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: Insert #

TABLE 1-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment

1.5 HAZARD RISK RANKING

Table 1-7 presents the ranking of the hazards of concern.

Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Delete this paragraph if no maps available.

TABLE 1-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

1.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 1-8 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 1-8.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments

1.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 1-9 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 1-10 identifies the priority for each initiative. Table 1-11 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 1-9.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							

TABLE 1-10.
MITIGATION STRATEGY PRIORITY SCHEDULE

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]

a. See Chapter 1 for explanation of priorities.

TABLE 1-11.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche						
Dam Failure						
Drought						
Earthquake						
Flood						
Landslide						
Severe Weather						
Tsunami						
Volcano						
Wildfire						

a. See Chapter 1 for explanation of mitigation types.

1.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Insert text, if any; delete section if not used

1.9 ADDITIONAL COMMENTS

Insert text, if any; delete section if not used

Maps to Be Inserted Here, If Any; Delete this page if no maps

Appendix C2.

Annex Instructions and Templates for Special-Purpose Districts

INSTRUCTIONS FOR COMPLETING SPECIAL-PURPOSE DISTRICT ANNEX TEMPLATE

This document provides instructions for special-purpose districts participating in multi-partner hazard mitigation planning. These instructions are intended for districts that do not have a previously approved hazard mitigation plan.

Assistance in completing the template will be available in the form of a workshop for all planning partners in November and technical assistance as requested and as funding allows. Any questions on completing the template should be directed to:

Rob Flaner
208. 939.4391
Rob.Flaner@TetraTech.com

Fully completed templates must be completed and returned by:

Friday, January 17, 2014.

Special District Annex:

This document provides instructions for completing the jurisdictional annex template for special purpose districts.

Please refer all questions to:
Rob Flaner
208.939.4391
rob.flaner@tetratech.com

Please complete and return by:
Friday, January 17, 2014

Please email completed template to:
Kristen Gelino
425.482.7801
kristen.gelino@tetratech.com

Associated Materials:
Along with the annex template and these instructions, you have been provided with other materials with information that is needed for completing the template. Be sure to review these materials before you begin the process of filling in the template:

- SHELDUS historical event data
- Summary-of-loss matrix for the hazard mitigation plan,
- Results from the hazard mitigation plan questionnaire,
- Catalog of funding prograns
- Catalog of mitigation alternatives, and
- Fact sheet on Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM).

A NOTE ABOUT FORMATTING

The template for the jurisdiction annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner. Partners who do not have Microsoft Word capability may prepare the document in other formats, and the planning team will convert it to the Word format.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering.

CHAPTER NUMBER AND TITLE

In the chapter title at the top of page 1, type in the complete official name of your jurisdiction (West County Fire Protection District #1, Burgville Flood Protection District, etc.) replacing the yellow, highlighted text.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

JURISDICTION PROFILE

Narrative Profile

Please provide a brief summary to profile your jurisdiction. Include the purpose of the jurisdiction, the date of inception, the type of organization, the number of employees, the mode of operation (i.e., how operations are funded), the type of governing body, and who has adoptive authority. Describe who the jurisdiction's customers are (if applicable, include number of users or subscribers). Include a geographical description of the service area.

Provide information in a style similar to the example provided in the box at right. This should be information that was not provided in the overall mitigation plan document.

Example Jurisdiction Narrative Profile:

Humboldt Community Services District is a special-purpose district created in 1952 to provide water, sewer, and street lighting to the unincorporated area surrounding the City of Eureka known as Pine Hill & Cutten. The District's designated service areas expanded throughout the years to include other unincorporated areas of Humboldt County known as Myrtletown, Humboldt Hill, Fields Landing, King Salmon, and Freshwater. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. As of April 30, 2007, the District serves 7,305 water connections and 6,108 sewer connections, with a current staff of 21. Funding comes primarily through rates and revenue bonds.

Please be sure to include in this profile description who will assume responsibility for the adoption of the plan and who will oversee the implementation of the plan.

Summary Information

Complete the bulleted list of summary information as follows:

- **Population Served—**List the estimated population that your jurisdiction provides services to. If you do not know this number directly, create an estimate (e.g., the number of service connections times the average household size for the service area based on Census data).
- **Land Area Served—**Enter the service area of your jurisdiction in acres or square miles.
- **Value of Area Served—**Enter the approximate assessed value of your service area. If you do not have this information, the County should be able to provide a number using the County Assessor's database.
- **Land Area Owned—**Enter the area of property owned by the jurisdiction in acres or square miles.
- **List of Critical Infrastructure/ Equipment Owned by the Jurisdiction—**List all infrastructure and equipment that is critical to your jurisdiction's operations and is located in

a natural hazard risk zone. Briefly describe the item and give its estimated replacement-cost value. Examples are as follows:

- Fire Districts—Apparatus and equipment housed in a facility that is located in a natural hazard risk zone. This is the equipment that is essential for you to deliver services to this area should a natural hazard occur. It is not necessary to provide a detailed inventory of each engine and truck and its contents. A summary will suffice, such as "5 Engines, 2 ladders, and their contents". Do not list reserve equipment.
- Dike/Flood Control Districts—Miles of levees, pump stations, retention/detention ponds, tide gates, miles of ditches, etc., within natural hazard risk zones.
- Water Districts—Total length of pipe (it is not necessary to specify size and type), pump stations, treatment facilities, dams and reservoirs, within natural hazard risk zones.
- Public Utility Districts—Miles of power line (above ground and underground), generators, power generating sub-stations, miles of pipeline, etc., within natural hazard risk zones.
- School Districts—Anything within natural hazard risk zones, besides school buildings, that is critical for you to operate (e.g., school buses if you own a fleet of school buses).

- **Total Value of Critical Infrastructure/Equipment—**Enter total replacement-cost value of the critical infrastructure and equipment listed above.
- **List of Critical Facilities Owned by the Jurisdiction—**List all buildings and other facilities that are critical to your jurisdiction's operations and are located in a natural hazard risk zone. Briefly describe the facility and give its estimated replacement-cost value.
- **Total Value of Critical Facilities—** Enter total replacement-cost value of the critical facilities listed above.
- **Current and Anticipated Service Trends—** Enter a brief description on how your jurisdiction's services are projected to expand in the foreseeable future and why. Note any identified capital improvements needed to meet the projected expansion. Examples are as follows:
  - For a Fire District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land uses will represent an increase in population and thus a projected increase in call volume. Our District is experiencing an average annual increase in call volume of 13 percent.
  - For Dike/Drainage/Flood Control District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land use will result in an increase in impermeable surface within our service area and thus increase the demand on control facilities.
  - For a Water District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land use will represent an increase in the number of housing units within the service area and thus represent an expansion of the district's delivery network.

APPLICABLE REGULATIONS AND PLAN

List any federal, state, local or district laws, ordinances, codes and policies that govern your jurisdiction that include elements addressing hazard mitigation. Describe how these laws may support or conflict with the mitigation strategies of this plan. List any other plans, studies or other documents that address hazard mitigation issues for your jurisdiction or may allow you to support or enhance actions identified in this plan. Note whether the documents could have a positive or a negative impact on the mitigation strategies of this plan. Some examples of plans that may be relevant include Emergency Response Plan, Continuity of Operations Plan, Recovery Plan, and Capital Improvement Program. "None applicable" is a possible answer for this section.

JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

In Table 1-1, list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction since 1975. Include the date of the event and the estimated dollar amount of damage it caused. Please refer to the SHELDUS historical event data included on your cd.. Potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives
- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Citizen input.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and operations. A detailed discussion of the concepts associated with risk ranking is provided in the overall hazard mitigation plan. The instructions below outline steps for assessing risk in your jurisdiction in order to develop results that are to be included in the template.

Determine Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. In Table 1, list the probability of occurrence for each hazard as it pertains to your jurisdiction, along with its probability factor, as follows:

- **High—**Hazard event is likely to occur within 25 years (Probability Factor = 3)
- **Medium—**Hazard event is likely to occur within 100 years (Probability Factor = 2)
- **Low—**Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- **None—**If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

The probability of occurrence of a hazard event is generally based on past hazard events in an area. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no

damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category.

TABLE 1.
HAZARD PROBABILITY OF OCCURRENCE

Hazard Type	Probability	Probability Factor

Determine Potential Impacts of Each Hazard

The impact of each hazard was divided into three categories: impacts on people, impacts on property, and impacts on your jurisdiction's operations. These categories were also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on operations was assigned a weighting factor of 1. Steps to assess each type of impact are described below.

Impacts on People

To assess impacts on people, values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. In Table 2, list the potential impact of each hazard on people in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**30% or more of the population is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the population is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the population is exposed to a hazard (Impact Factor = 0)

TABLE 2. HAZARD IMPACT ON PEOPLE			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 3)

Impacts on Property

To assess impacts on property, values are assigned based on the percentage of the total ***value of buildings, equipment and infrastructure that is exposed*** to the hazard event. In Table 3, enter the cost estimates for potential damage to the jurisdiction's exposed buildings, equipment and infrastructure, taken from the "Summary of Loss" matrix provided with these instructions.

TABLE 3. COST ESTIMATES FOR POTENTIAL DAMAGE TO STRUCTURES	
Hazard type	Estimate of Potential Dollar Losses to Jurisdiction-Owned Facilities Exposed to the Hazard

In Table 4, list the potential impact of each hazard on property in your jurisdiction, along with its impact factor. Determine impact based on damage estimates from Table 3, as follows:

- **High Impact—**30% or more of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 3)

- **Medium Impact—**15% to 29% of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the total assessed property value of facilities, equipment and infrastructure is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 0)

TABLE 4.
HAZARD IMPACT ON PROPERTY

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 2)

Impacts on the Jurisdiction's Operations

Impact on operations is assessed based on estimates of ***how long it will take your jurisdiction to become 100-percent operable*** after a hazard event. The estimated functional downtime for critical facilities has been estimated for most hazards within the planning area. In Table 5, list the potential impact of each hazard on the operations of your jurisdiction, along with its impact factor, as follows:

- High = functional downtime of 365 days or more (Impact Factor = 3)
- Medium = Functional downtime of 180 to 364 days (Impact Factor = 2)
- Low = Functional downtime of 180 days or less (Impact Factor = 1)
- No Impact = No functional downtime is estimated from the hazard (Impact Factor = 0)

You will need to consult the risk assessment for this task. The critical facilities exposed to each hazard have been identified, and the impacts on operability have been estimated for most of the hazards within the planning area. If the functional downtime component has not been provided for a hazard in the risk assessment, consider the impact on operability of that hazard to be low.

TABLE 5. HAZARD IMPACT ON OPERATIONS			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 1)

Determine Risk Rating for Each Hazard

A risk rating for each hazard is determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and operations:

- Risk Rating = Probability Factor x Weighted Impact Factor {people + property + operations}

Using the results developed in Tables 1, 2, 4 and 5, complete Table 6 to calculate a risk rating for each hazard of concern.

TABLE 6. HAZARD RISK RATING			
Hazard Type	Probability Factor (P)	Sum of Weighted Impact Factors on People, Property & Operations (I)	Risk Rating (P x I)

Complete Risk Ranking in Template

Once Table 6 has been completed above, complete Table 1-2 in your template. The hazard with the highest risk rating in Table 6 should be listed at the top of Table 1-2 and given a rank of 1; the hazard with the second highest rating should be listed second with a rank of 2; and so on. Two hazards with equal risk ratings should be given the same rank.

It is important to note that this exercise should not override your subjective assessment of relative risk based on your knowledge of the history of natural hazard events in your jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in the comments at the end of the template. Remember, one of the purposes of this exercise is to support the selection and prioritization of initiatives in your plan. If you identify an initiative with a high priority that mitigates the risk of a hazard you have ranked low, that project will not be competitive in the grant arena.

HAZARD MITIGATION ACTION PLAN

Action Plan Matrix

Identify the initiatives your jurisdiction would like to pursue with this plan. Refer to the mitigation catalog for mitigation options you might want to consider. Be sure to consider the following factors in your selection of initiatives:

- Select initiatives that are consistent with the overall goals, objectives and guiding principles of the hazard mitigation plan.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the HMGP and PDM (see fact sheet provided). Listing HMGP or PDM as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP or PDM grant eligible, but do mitigate part or all of the hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- Although you should identify at least one initiative for your highest ranked risk, a hazard-specific project is not required for every hazard. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Wording Your Initiative Descriptions:

Descriptions of your initiatives need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan initiative:

- **Initiative 1—**Address Repetitive Loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Initiative 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Initiative 3—**Acquire floodplain property in the Smith subdivision.
- **Initiative 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

Complete Table 1-3 for all the initiatives you have identified:

- Enter the initiative number and description.
- Indicate whether the initiative mitigates hazards for new or existing assets.
- Identify the specific hazards the initiative will mitigate.

- Identify by number the mitigation plan objectives that the initiative addresses. Approved objectives have been included in your tool kit.
- Indicate who will be the lead in administering the project. This will most likely be your governing body.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share.
- Indicate the time line as "short term" (1 to 5 years) or "long term" (5 years or greater).

Technical assistance will provided upon request.

Prioritization of Mitigation Initiatives

Complete the information in Table 1-4 as follows:

- **Initiative #—**Indicate the initiative number from Table 1-3.
- **# of Objectives Met—**Enter the number of objectives the initiative will meet.
- **Benefits—**Enter "High," "Medium" or "Low" as follows:
  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.
- **Costs—**Enter "High," "Medium" or "Low" as follows:
  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Project is part of, or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.
- **Do Benefits Equal or Exceed the Cost?—**Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?—**Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.
- **Can Project Be Funded Under Existing Program Budgets?—**Enter "Yes" or "No." In other words, is this initiative currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?

- **Priority—** Enter "High," "Medium" or "Low" as follows:
  - High: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
  - Medium: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
  - Low: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

This prioritization is a simple review to determine that the initiatives you have identified meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs.

Analysis of Mitigation Actions

Complete Table 1-5 summarizing the mitigation actions by hazard of concern and the following six mitigation types:

- **Prevention—**Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection—**Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness—**Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection—**Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services—**Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects—**Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates such as EPA's Bio-terrorism assessment requirement for water districts.

ADDITIONAL COMMENTS

Use this section add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template.

As you complete your template, please forward it to:

Kristen Gelino, Tetra Tech, Inc.
425.482.7801
Kristen.Gelino@TetraTech.com

CHAPTER 1.
INSERT JURISDICTION NAME ANNEX

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

1.2 JURISDICTION PROFILE

Insert Narrative Profile Information, per Instructions

The following is a summary of key information about the jurisdiction:

- **Population Served—**Insert Population as of Insert Date of Population Count
- **Land Area Served—**Insert Area
- **Value of Area Served—**The estimated value of the area served by the jurisdiction is Insert Total Value
- **Land Area Owned—**Insert Area
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Infrastructure/Equipment—**The total value of critical infrastructure and equipment owned by the jurisdiction is Insert Total Value
- **List of Critical Facilities Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Facilities—**The total value of critical facilities owned by the jurisdiction is Insert Total Value
- **Current and Anticipated Service Trends—**Insert Summary Description of Service Trends

1.3 APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- Insert Name of Code, Ordinance, Policy or Plan

- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan

1.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-1 lists all past occurrences of natural hazards within the jurisdiction.

TABLE 1-1.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment

1.5 HAZARD RISK RANKING

Table 1-2 presents the ranking of the hazards of concern.

TABLE 1-2.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

1.6 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 1-3 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 1-4 identifies the priority for each initiative. Table 1-5 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 1-3.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						

TABLE 1-4.
MITIGATION STRATEGY PRIORITY

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]

a. See Chapter 1 for explanation of priorities.

TABLE 1-5.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche						
Dam Failure						
Drought						
Earthquake						
Flood						
Landslide						
Severe Weather						
Tsunami						
Volcano						
Wildfire						

a. See Chapter 1 for explanation of mitigation types.

1.7 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Insert text, if any; delete section if not used

1.8 ADDITIONAL COMMENTS

Insert text, if any; delete section if not used

INSTRUCTIONS FOR COMPLETING SPECIAL-PURPOSE DISTRICT UPDATE ANNEX TEMPLATE

This document provides instructions for special-purpose districts participating in multi-partner hazard mitigation planning. These instructions are intended for districts that currently have a previously approved hazard mitigation plan.

Assistance in completing the template will be available in the form of a workshop for all planning partners in November and technical assistance as requested and as funding allows. Any questions on completing the template should be directed to:

Rob Flaner
208. 939.4391
Rob.Flaner@TetraTech.com

Fully completed templates must be completed and returned by:

Friday, January 17, 2014.

Special District Update Annex:

This document provides instructions for completing the jurisdictional annex template for special purpose districts**.**

Please refer all questions to:
Rob Flaner
208.939.4391
rob.flaner@tetratech.com

Please complete and return by:
Friday, January 17, 2014

Please email completed template to:
Kristen Gelino
425.482.7801
kristen.gelino@tetratech.com

Associated Materials:
Along with the annex template and these instructions, you have been provided with other materials with information that is needed for completing the template. Be sure to review these materials before you begin the process of filling in the template:

- SHELDUS historical event data
- Summary-of-loss matrix for the hazard mitigation plan,
- Results from the hazard mitigation plan questionnaire,
- Catalog of funding prograns
- Catalog of mitigation alternatives, and
- Fact sheet on Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM).

A NOTE ABOUT FORMATTING

The template for the jurisdiction annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner. Partners who do not have Microsoft Word capability may prepare the document in other formats, and the planning team will convert it to the Word format.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering.

CHAPTER NUMBER AND TITLE

In the chapter title at the top of page 1, type in the complete official name of your jurisdiction (West County Fire Protection District #1, Burgville Flood Protection District, etc.) replacing the yellow, highlighted text.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

JURISDICTION PROFILE

Narrative Profile

Please provide a brief summary to profile your jurisdiction. Include the purpose of the jurisdiction, the date of inception, the type of organization, the number of employees, the mode of operation (i.e., how operations are funded), the type of governing body, and who has adoptive authority. Describe who the jurisdiction's customers are (if applicable, include number of users or subscribers). Include a geographical description of the service area.

Provide information in a style similar to the example provided in the box at right. This should be information that was not provided in the overall mitigation plan document.

Example Jurisdiction Narrative Profile:

Humboldt Community Services District is a special-purpose district created in 1952 to provide water, sewer, and street lighting to the unincorporated area surrounding the City of Eureka known as Pine Hill & Cutten. The District's designated service areas expanded throughout the years to include other unincorporated areas of Humboldt County known as Myrtletown, Humboldt Hill, Fields Landing, King Salmon, and Freshwater. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. As of April 30, 2007, the District serves 7,305 water connections and 6,108 sewer connections, with a current staff of 21. Funding comes primarily through rates and revenue bonds.

Please be sure to include in this profile description who will assume responsibility for the adoption of the plan and who will oversee the implementation of the plan.

Summary Information

Complete the bulleted list of summary information as follows:

- **Population Served—**List the estimated population that your jurisdiction provides services to. If you do not know this number directly, create an estimate (e.g., the number of service connections times the average household size for the service area based on Census data).
- **Land Area Served—**Enter the service area of your jurisdiction in acres or square miles.
- **Value of Area Served—**Enter the approximate assessed value of your service area. If you do not have this information, the County should be able to provide a number using the County Assessor's database.
- **Land Area Owned—**Enter the area of property owned by the jurisdiction in acres or square miles.
- **List of Critical Infrastructure/ Equipment Owned by the Jurisdiction—**List all infrastructure and equipment that is critical to your jurisdiction's operations and is located in

a natural hazard risk zone. Briefly describe the item and give its estimated replacement-cost value. Examples are as follows:

- Fire Districts—Apparatus and equipment housed in a facility that is located in a natural hazard risk zone. This is the equipment that is essential for you to deliver services to this area should a natural hazard occur. It is not necessary to provide a detailed inventory of each engine and truck and its contents. A summary will suffice, such as "5 Engines, 2 ladders, and their contents". Do not list reserve equipment.
- Dike/Flood Control Districts—Miles of levees, pump stations, retention/detention ponds, tide gates, miles of ditches, etc., within natural hazard risk zones.
- Water Districts—Total length of pipe (it is not necessary to specify size and type), pump stations, treatment facilities, dams and reservoirs, within natural hazard risk zones.
- Public Utility Districts—Miles of power line (above ground and underground), generators, power generating sub-stations, miles of pipeline, etc., within natural hazard risk zones.
- School Districts—Anything within natural hazard risk zones, besides school buildings, that is critical for you to operate (e.g., school buses if you own a fleet of school buses).

- **Total Value of Critical Infrastructure/Equipment—**Enter total replacement-cost value of the critical infrastructure and equipment listed above.
- **List of Critical Facilities Owned by the Jurisdiction—**List all buildings and other facilities that are critical to your jurisdiction's operations and are located in a natural hazard risk zone. Briefly describe the facility and give its estimated replacement-cost value.
- **Total Value of Critical Facilities—** Enter total replacement-cost value of the critical facilities listed above.
- **Current and Anticipated Service Trends—** Enter a brief description on how your jurisdiction's services are projected to expand in the foreseeable future and why. Note any identified capital improvements needed to meet the projected expansion. Examples are as follows:
  - For a Fire District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land uses will represent an increase in population and thus a projected increase in call volume. Our District is experiencing an average annual increase in call volume of 13 percent.
  - For Dike/Drainage/Flood Control District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land use will result in an increase in impermeable surface within our service area and thus increase the demand on control facilities.
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In Table 1-1, list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction since 1975. Include the date of the event and the estimated dollar amount of damage it caused. Please refer to the SHELDUS historical event data included on your cd.. Potential sources of damage information include:

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The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and operations. A detailed discussion of the concepts associated with risk ranking is provided in the overall hazard mitigation plan. The instructions below outline steps for assessing risk in your jurisdiction in order to develop results that are to be included in the template.

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- **Medium**—Hazard event is likely to occur within 100 years (Probability Factor = 2)
- **Low—**Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- **None—**If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

The probability of occurrence of a hazard event is generally based on past hazard events in an area. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no

damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category.

TABLE 1.
HAZARD PROBABILITY OF OCCURRENCE

Hazard Type	Probability	Probability Factor

Determine Potential Impacts of Each Hazard

The impact of each hazard was divided into three categories: impacts on people, impacts on property, and impacts on your jurisdiction's operations. These categories were also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on operations was assigned a weighting factor of 1. Steps to assess each type of impact are described below.

Impacts on People

To assess impacts on people, values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. In Table 2, list the potential impact of each hazard on people in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**30% or more of the population is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the population is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the population is exposed to a hazard (Impact Factor = 0)

TABLE 2. HAZARD IMPACT ON PEOPLE			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 3)

Impacts on Property

To assess impacts on property, values are assigned based on the percentage of the total ***value of buildings, equipment and infrastructure that is exposed*** to the hazard event. In Table 3, enter the cost estimates for potential damage to the jurisdiction's exposed buildings, equipment and infrastructure, taken from the "Summary of Loss" matrix provided with these instructions.

TABLE 3. COST ESTIMATES FOR POTENTIAL DAMAGE TO STRUCTURES	
Hazard type	Estimate of Potential Dollar Losses to Jurisdiction-Owned Facilities Exposed to the Hazard

In Table 4, list the potential impact of each hazard on property in your jurisdiction, along with its impact factor. Determine impact based on damage estimates from Table 3, as follows:

- **High Impact—**30% or more of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 3)

- **Medium Impact—**15% to 29% of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the total assessed property value of facilities, equipment and infrastructure is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 0)

TABLE 4.
HAZARD IMPACT ON PROPERTY

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 2)

Impacts on the Jurisdiction's Operations

Impact on operations is assessed based on estimates of ***how long it will take your jurisdiction to become 100-percent operable*** after a hazard event. The estimated functional downtime for critical facilities has been estimated for most hazards within the planning area. In Table 5, list the potential impact of each hazard on the operations of your jurisdiction, along with its impact factor, as follows:

- High = functional downtime of 365 days or more (Impact Factor = 3)
- Medium = Functional downtime of 180 to 364 days (Impact Factor = 2)
- Low = Functional downtime of 180 days or less (Impact Factor = 1)
- No Impact = No functional downtime is estimated from the hazard (Impact Factor = 0)

You will need to consult the risk assessment for this task. The critical facilities exposed to each hazard have been identified, and the impacts on operability have been estimated for most of the hazards within the planning area. If the functional downtime component has not been provided for a hazard in the risk assessment, consider the impact on operability of that hazard to be low.

TABLE 5. HAZARD IMPACT ON OPERATIONS			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 1)

Determine Risk Rating for Each Hazard

A risk rating for each hazard is determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and operations:

- Risk Rating = Probability Factor x Weighted Impact Factor {people + property + operations}

Using the results developed in Tables 1, 2, 4 and 5, complete Table 6 to calculate a risk rating for each hazard of concern.

TABLE 6. HAZARD RISK RATING			
Hazard Type	Probability Factor (P)	Sum of Weighted Impact Factors on People, Property & Operations (I)	Risk Rating (P x I)

Complete Risk Ranking in Template

Once Table 6 has been completed above, complete Table 1-2 in your template. The hazard with the highest risk rating in Table 6 should be listed at the top of Table 1-2 and given a rank of 1; the hazard with the second highest rating should be listed second with a rank of 2; and so on. Two hazards with equal risk ratings should be given the same rank.

It is important to note that this exercise should not override your subjective assessment of relative risk based on your knowledge of the history of natural hazard events in your jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in the comments at the end of the template. Remember, one of the purposes of this exercise is to support the selection and prioritization of initiatives in your plan. If you identify an initiative with a high priority that mitigates the risk of a hazard you have ranked low, that project will not be competitive in the grant arena.

STATUS OF PREVIOUS PLAN INITIATIVES

In this section, provide a status report of actions recommended in your previous hazard mitigation plan. You must be able to reconcile your original action plan to meet FEMA requirements for plan updates. Enter all the recommended actions from your previous plan in Table 1-3 and put a ✓ in one of the following three columns for each action to indicate its status:

- **Completed**—If the action has been completed, place a check mark in this column and enter a brief explanation in the "Comments" column (e.g., "Action #WC31 was completed by the Public Works Department on 3/12/2009"). Ongoing actions, such as annual outreach projects or maintenance activities, should also be indicated as "Completed," with a statement about the ongoing nature of the action provided in the "Comments" column (e.g., "Ongoing action, implemented annually by Community Development Department").
- **Carry Over to Plan Update**—If you did not complete an action and want to carry it over to your updated action plan, place a check mark in this column, and enter an explanatory statement in the comment section (e.g., "Action carried over as Action #WC14 in updated action plan").
- **Removed; No Longer Feasible**—If you want to remove an action because you have determined that it is no longer feasible, place a check mark in this column. "No longer feasible" means that you have determined that you do not have the capability to implement the action or that the action does not serve the best interest of your jurisdiction. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible (e.g., "Action no longer considered feasible due to lack of political support to complete it.")

HAZARD MITIGATION ACTION PLAN

Action Plan Matrix

Identify the initiatives your jurisdiction would like to pursue with this plan. Refer to the mitigation catalog for mitigation options you might want to consider. Be sure to consider the following factors in your selection of initiatives:

- Select initiatives that are consistent with the overall goals, objectives and guiding principles of the hazard mitigation plan.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the HMGP and PDM (see fact sheet provided). Listing HMGP or PDM as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP or PDM grant eligible, but do mitigate part or all of the hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- Although you should identify at least one initiative for your highest ranked risk, a hazard-specific project is not required for every hazard. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Wording Your Initiative Descriptions:

Descriptions of your initiatives need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan initiative:

- **Initiative 1—**Address Repetitive Loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Initiative 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Initiative 3—**Acquire floodplain property in the Smith subdivision.
- **Initiative 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

Complete Table 1-4 for all the initiatives you have identified:

- Enter the initiative number and description.
- Indicate whether the initiative mitigates hazards for new or existing assets.
- Identify the specific hazards the initiative will mitigate.
- Identify by number the mitigation plan objectives that the initiative addresses. Approved objectives have been included in your tool kit.
- Indicate who will be the lead in administering the project. This will most likely be your governing body.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share.
- Indicate the time line as "short term" (1 to 5 years) or "long term" (5 years or greater).

Technical assistance will provided upon request.

Prioritization of Mitigation Initiatives

Complete the information in Table 1-5 as follows:

- **Initiative #—**Indicate the initiative number from Table 1-4.
- **# of Objectives Met—**Enter the number of objectives the initiative will meet.
- **Benefits—**Enter "High," "Medium" or "Low" as follows:
  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.

  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.

- **Costs—**Enter "High," "Medium" or "Low" as follows:
  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Project is part of, or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.

- **Do Benefits Exceed the Cost?—**Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?—**Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.
- **Can Project Be Funded Under Existing Program Budgets?—**Enter "Yes" or "No." In other words, is this initiative currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Priority—** Enter "High," "Medium" or "Low" as follows:
  - High: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
  - Medium: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
  - Low: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

This prioritization is a simple review to determine that the initiatives you have identified meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs.

Analysis of Mitigation Actions

Complete Table 1-6 summarizing the mitigation actions by hazard of concern and the following six mitigation types:

- **Prevention—**Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection—**Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness—**Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection—**Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services—**Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects—**Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates such as EPA's Bio-terrorism assessment requirement for water districts.

ADDITIONAL COMMENTS

Use this section add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template.

As you complete your template, please forward it to:

Kristen Gelino, Tetra Tech, Inc.
425.482.7801
Kristen.Gelino@TetraTech.com

CHAPTER 1.
INSERT JURISDICTION NAME UPDATE ANNEX

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

1.2 JURISDICTION PROFILE

Insert Narrative Profile Information, per Instructions

The following is a summary of key information about the jurisdiction:

- **Population Served—**Insert Population as of Insert Date of Population Count
- **Land Area Served—**Insert Area
- **Value of Area Served—**The estimated value of the area served by the jurisdiction is Insert Total Value
- **Land Area Owned—**Insert Area
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Infrastructure/Equipment—**The total value of critical infrastructure and equipment owned by the jurisdiction is Insert Total Value
- **List of Critical Facilities Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Facilities—**The total value of critical facilities owned by the jurisdiction is Insert Total Value
- **Current and Anticipated Service Trends—**Insert Summary Description of Service Trends

1.3 APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- Insert Name of Code, Ordinance, Policy or Plan

- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan

1.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-1 lists all past occurrences of natural hazards within the jurisdiction.

TABLE 1-1.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment

1.5 HAZARD RISK RANKING

Table 1-2 presents the ranking of the hazards of concern.

TABLE 1-2.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

1.6 STATUS OF PREVIOUS PLAN INITIATIVES

Table 1-3 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 1-3.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments

1.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 1-4 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 1-5 identifies the priority for each initiative. Table 1-6 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 1-4.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							

TABLE 1-5.
MITIGATION STRATEGY PRIORITY

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]

a. See Chapter 1 for explanation of priorities.

TABLE 1-6.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche						
Dam Failure						
Drought						
Earthquake						
Flood						
Landslide						
Severe Weather						
Tsunami						
Volcano						
Wildfire						

a. See Chapter 1 for explanation of mitigation types.

1.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Insert text, if any; delete section if not used

1.9 ADDITIONAL COMMENTS

Insert text, if any; delete section if not used

Appendix C3.

Annex Instructions and Templates for Fire Districts

INSTRUCTIONS FOR COMPLETING FIRE DISTRICT ANNEX TEMPLATE

This document provides instructions for fire districts participating in multi-partner hazard mitigation planning. These instructions are intended for districts that do not currently have a FEMA approved hazard mitigation plan.

Assistance in completing the template will be available in the form of a workshop for all planning partners in November and technical assistance as requested and as funding allows. Any questions on completing the template should be directed to:

Rob Flaner
208. 939.4391
Rob.Flaner@TetraTech.com

Fully completed templates must be completed and returned by:

Friday, January 17, 2014.

Fire District Annex:

This document provides instructions for completing the jurisdictional annex template for fire districts**.**

Please refer all questions to:
Rob Flaner
208.939.4391
rob.flaner@tetratech.com

Please complete and return by:
Friday, January 17, 2014

Please email completed template to:
Kristen Gelino
425.482.7801
kristen.gelino@tetratech.com

Associated Materials:
Along with the annex template and these instructions, you have been provided with other materials with information that is needed for completing the template. Be sure to review these materials before you begin the process of filling in the template:

- SHELDUS historical event data
- Summary-of-loss matrix for the hazard mitigation plan,
- Results from the hazard mitigation plan questionnaire,
- Catalog of funding programs
- Catalog of mitigation alternatives, and
- Fact sheet on Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM).

A NOTE ABOUT FORMATTING

The template for the jurisdiction annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner. Partners who do not have Microsoft Word capability may prepare the document in other formats, and the planning team will convert it to the Word format.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of the numbering.

CHAPTER NUMBER AND TITLE

In the chapter title at the top of page 1, type in the complete official name of your jurisdiction (West County Fire Protection District #1, Burgville Flood Protection District, etc.) replacing the yellow, highlighted text.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

JURISDICTION PROFILE

Narrative Profile

Please provide a brief summary to profile your jurisdiction. Include the purpose of the jurisdiction, the date of inception, the type of organization, the number of employees, the mode of operation (i.e., how operations are funded), the type of governing body, and who has adoptive authority. Describe who the jurisdiction's customers are (if applicable, include number of users or subscribers). Include a geographical description of the service area.

Provide information in a style similar to the example provided in the box at right. This should be information that was not provided in the overall mitigation plan document.

Example Jurisdiction Narrative Profile:

Humboldt Community Services District is a special-purpose district created in 1952 to provide water, sewer, and street lighting to the unincorporated area surrounding the City of Eureka known as Pine Hill & Cutten. The District's designated service areas expanded throughout the years to include other unincorporated areas of Humboldt County known as Myrtletown, Humboldt Hill, Fields Landing, King Salmon, and Freshwater. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. As of April 30, 2007, the District serves 7,305 water connections and 6,108 sewer connections, with a current staff of 21. Funding comes primarily through rates and revenue bonds.

Please be sure to include who will assume responsibility for the adoption of the plan and who will oversee the implementation of the plan.

Summary Information

Complete the bulleted list of summary information as follows:

- **Population Served—**List the estimated population that your jurisdiction provides services to. If you do not know this number directly, create an estimate (e.g., the number of service connections times the average household size for the service area based on Census data).
- **Land Area Served—**Enter the service area of your jurisdiction in acres or square miles.
- **Value of Area Served—**Enter the approximate assessed value of your service area. If you do not have this information, the County should be able to provide a number using the County Assessor's database.
- **Land Area Owned—**Enter the area of property owned by the jurisdiction in acres or square miles.
- **List of Critical Infrastructure/ Equipment Owned by the Jurisdiction—**List all infrastructure and equipment that is critical to your jurisdiction's operations and is located in a natural hazard risk zone. Briefly describe the item and give its estimated replacement-cost value. Example is as follows:

  - Fire Districts—Apparatus and equipment housed in a facility that is located in a natural hazard risk zone. This is the equipment that is essential for you to deliver services to this area should a natural hazard occur. It is not necessary to provide a detailed inventory of each engine and truck and its contents. A summary will suffice, such as "5 Engines, 2 ladders, and their contents". Do not list reserve equipment.

- **Total Value of Critical Infrastructure/Equipment—**Enter total replacement-cost value of the critical infrastructure and equipment listed above.
- **List of Critical Facilities Owned by the Jurisdiction—**List all buildings and other facilities that are critical to your jurisdiction's operations and are located in a natural hazard risk zone. Briefly describe the facility and give its estimated replacement-cost value.
- **Total Value of Critical Facilities—** Enter total replacement-cost value of the critical facilities listed above.
- **Current and Anticipated Service Trends—** Enter a brief description on how your jurisdiction's services are projected to expand in the foreseeable future and why. Note any identified capital improvements needed to meet the projected expansion. Examples are as follows:
  - For a Fire District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land uses will represent an increase in population and thus a projected increase in call volume. Our District is experiencing an average annual increase in call volume of 13 percent.

APPLICABLE REGULATIONS AND PLAN

List any federal, state, local or district laws, ordinances, codes and policies that govern your jurisdiction that include elements addressing hazard mitigation. Describe how these laws may support or conflict with the mitigation strategies of this plan. List any other plans, studies or other documents that address hazard mitigation issues for your jurisdiction or may allow you to support or enhance actions identified in this plan. Note whether the documents could have a positive or a negative impact on the mitigation strategies of this plan. Some examples of plans that may be relevant include Emergency Response Plan, Continuity of Operations Plan, Recovery Plan, and Capital Improvement Program. "None applicable" is a possible answer for this section.

CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

If you know your jurisdiction's Public Protection number, please enter it under the "Classification" column in Table 1-1. If you do not know if your jurisdiction participates in this program or do not know the number, please leave it blank and the Planning Team will provide this information for you. No entries are needed for the other items in Table 1-1.

JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

In Table 1-2, list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction since 1975. Include the date of the event and the estimated dollar amount of damage it caused. Please refer to the SHELDUS historical event data included on your dvd. Potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives

- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Citizen input.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and operations. A detailed discussion of the concepts associated with risk ranking is provided in the overall hazard mitigation plan. The instructions below outline steps for assessing risk in your jurisdiction in order to develop results that are to be included in the template.

Determine Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. In Table 1, list the probability of occurrence for each hazard as it pertains to your jurisdiction, along with its probability factor, as follows:

- **High—**Hazard event is likely to occur within 25 years (Probability Factor = 3)
- **Medium—**Hazard event is likely to occur within 100 years (Probability Factor = 2)
- **Low—**Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- **None—**If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

TABLE 1.
HAZARD PROBABILITY OF OCCURRENCE

Hazard Type	Probability	Probability Factor

The probability of occurrence of a hazard event is generally based on past hazard events in an area. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category.

Determine Potential Impacts of Each Hazard

The impact of each hazard was divided into three categories: impacts on people, impacts on property, and impacts on your jurisdiction's operations. These categories were also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on operations was assigned a weighting factor of 1. Steps to assess each type of impact are described below.

Impacts on People

To assess impacts on people, values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. In Table 2, list the potential impact of each hazard on people in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**30% or more of the population is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the population is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the population is exposed to a hazard (Impact Factor = 0)

TABLE 2.
HAZARD IMPACT ON PEOPLE

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 3)

Impacts on Property

To assess impacts on property, values are assigned based on the percentage of the total ***value of buildings, equipment and infrastructure that is exposed*** to the hazard event. In Table 3, enter the cost estimates for potential damage to the jurisdiction's exposed buildings, equipment and infrastructure, taken from the "Summary of Loss" matrix provided with these instructions.

TABLE 3.
COST ESTIMATES FOR POTENTIAL DAMAGE TO STRUCTURES

Hazard type	Estimate of Potential Dollar Losses to Jurisdiction-Owned Facilities Exposed to the Hazard

In Table 4, list the potential impact of each hazard on property in your jurisdiction, along with its impact factor. Determine impact based on damage estimates from Table 3, as follows:

- **High Impact—**30% or more of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the total assessed property value of facilities, equipment and infrastructure is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 0)

TABLE 4. HAZARD IMPACT ON PROPERTY			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 2)

Impacts on the Jurisdiction's Operations

Impact on operations is assessed based on estimates of ***how long it will take your jurisdiction to become 100-percent operable*** after a hazard event. The estimated functional downtime for critical facilities has been estimated for most hazards within the planning area. In Table 5, list the potential impact of each hazard on the operations of your jurisdiction, along with its impact factor, as follows:

- High = functional downtime of 365 days or more (Impact Factor = 3)
- Medium = Functional downtime of 180 to 364 days (Impact Factor = 2)
- Low = Functional downtime of 180 days or less (Impact Factor = 1)
- No Impact = No functional downtime is estimated from the hazard (Impact Factor = 0)

TABLE 5. HAZARD IMPACT ON OPERATIONS			
Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 1)

You will need to consult the risk assessment for this task. The critical facilities exposed to each hazard have been identified, and the impacts on operability have been estimated for most of the hazards within the planning area. If the functional downtime component has not been provided for a hazard in the risk assessment, consider the impact on operability of that hazard to be low.

Determine Risk Rating for Each Hazard

A risk rating for each hazard is determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and operations:

- Risk Rating = Probability Factor x Weighted Impact Factor {people + property + operations}

Using the results developed in Tables 1, 2, 4 and 5, complete Table 6 to calculate a risk rating for each hazard of concern.

TABLE 6.
HAZARD RISK RATING

Hazard Type	Probability Factor (P)	Sum of Weighted Impact Factors on People, Property & Operations (I)	Risk Rating (P x I)

Complete Risk Ranking in Template

Once Table 6 has been completed above, complete Table 1-3 in your template. The hazard with the highest risk rating in Table 6 should be listed at the top of Table 1-3 and given a rank of 1; the hazard with the second highest rating should be listed second with a rank of 2; and so on. Two hazards with equal risk ratings should be given the same rank.

It is important to note that this exercise should not override your subjective assessment of relative risk based on your knowledge of the history of natural hazard events in your jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in the comments at the end of the template. Remember, one of the purposes of this exercise is to support the selection and prioritization of initiatives in your plan. If you identify an initiative with a high priority that mitigates the risk of a hazard you have ranked low, that project will not be competitive in the grant arena.

HAZARD MITIGATION ACTION PLAN

Action Plan Matrix

Identify the initiatives your jurisdiction would like to pursue with this plan. Refer to the mitigation catalog for mitigation options you might want to consider. Be sure to consider the following factors in your selection of initiatives:

- Select initiatives that are consistent with the overall goals, objectives and guiding principles of the hazard mitigation plan.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the HMGP and PDM (see fact sheet provided). Listing HMGP or PDM as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP or PDM grant eligible, but do mitigate part or all of the hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.
- Although you should identify at least one initiative for your highest ranked risk, a hazard-specific project is not required for every hazard. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Wording Your Initiative Descriptions:

Descriptions of your initiatives need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan initiative:

- **Initiative 1—**Address Repetitive Loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Initiative 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Initiative 3—**Acquire floodplain property in the Smith subdivision.
- **Initiative 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

Complete Table 1-4 for all the initiatives you have identified:

- Enter the initiative number and description.
- Indicate whether the initiative mitigates hazards for new or existing assets.
- Identify the specific hazards the initiative will mitigate.
- Identify by number the mitigation plan objectives that the initiative addresses. Approved objectives have been included in your tool kit.
- Indicate who will be the lead in administering the project. This will most likely be your governing body.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share.
- Indicate the time line as "short term" (1 to 5 years) or "long term" (5 years or greater).

Technical assistance will provided upon request.

Prioritization of Mitigation Initiatives

Complete the information in Table 1-5 as follows:

- **Initiative #—**Indicate the initiative number from Table 1-4.

- **# of Objectives Met—**Enter the number of objectives the initiative will meet.
- **Benefits—**Enter "High," "Medium" or "Low" as follows:
  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.
- **Costs—**Enter "High," "Medium" or "Low" as follows:
  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Project is part of, or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.
- **Do Benefits Equal or Exceed the Cost?—**Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?—**Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.
- **Can Project Be Funded Under Existing Program Budgets?—**Enter "Yes" or "No." In other words, is this initiative currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Priority—** Enter "High," "Medium" or "Low" as follows:
  - High: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
  - Medium: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
  - Low: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

This prioritization is a simple review to determine that the initiatives you have identified meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs.

Analysis of Mitigation Actions

Complete Table 1-6 summarizing the mitigation actions by hazard of concern and the following six mitigation types:

- **Prevention—**Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection—**Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness—**Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection—**Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services—**Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects—**Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates such as EPA's Bio-terrorism assessment requirement for water districts.

ADDITIONAL COMMENTS

Use this section to add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template.

As you complete your template, please forward it to:

Kristen Gelino, Tetra Tech, Inc.
425.482.7801
Kristen.Gelino@TetraTech.com

CHAPTER 1.
INSERT JURISDICTION NAME ANNEX

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

1.2 JURISDICTION PROFILE

Insert Narrative Profile Information, per Instructions

The following is a summary of key information about the jurisdiction:

- **Population Served—**Insert Population as of Insert Date of Population Count
- **Land Area Served—**Insert Area
- **Value of Area Served—**The estimated value of the area served by the jurisdiction is Insert Total Value
- **Land Area Owned—**Insert Area
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Infrastructure/Equipment—**The total value of critical infrastructure and equipment owned by the jurisdiction is Insert Total Value
- **List of Critical Facilities Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Facilities—**The total value of critical facilities owned by the jurisdiction is Insert Total Value
- **Current and Anticipated Service Trends—**Insert Summary Description of Service Trends

1.3 APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- Insert Name of Code, Ordinance, Policy or Plan

- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan

1.4 CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

The jurisdiction's classifications under various hazard mitigation programs are presented in Table 1-1.

TABLE 1-1.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Public Protection			
Storm Ready			
Firewise			
Tsunami Ready			

1.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-2 lists all past occurrences of natural hazards within the jurisdiction.

TABLE 1-2.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment

1.6 HAZARD RISK RANKING

Table 1-3 presents the ranking of the hazards of concern.

TABLE 1-3.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

1.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 1-4 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 1-5 identifies the priority for each initiative. Table 1-6 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 1-4.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						
Initiative #—Description						

TABLE 1-5.
MITIGATION STRATEGY PRIORITY

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]

a. See Chapter 1 for explanation of priorities.

TABLE 1-6.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche						
Dam Failure						
Drought						
Earthquake						
Flood						
Landslide						
Severe Weather						
Tsunami						
Volcano						
Wildfire						

a. See Chapter 1 for explanation of mitigation types.

1.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Insert text, if any; delete section if not used

1.9 ADDITIONAL COMMENTS

Insert text, if any; delete section if not used

INSTRUCTIONS FOR COMPLETING FIRE DISTRICT UPDATE ANNEX TEMPLATE

This document provides instructions for fire districts participating in multi-partner hazard mitigation planning. These instructions are intended for districts that currently have a previously approved hazard mitigation plan.

Assistance in completing the template will be available in the form of a workshop for all planning partners in November and technical assistance as requested and as funding allows. Any questions on completing the template should be directed to:

Rob Flaner
208. 939.4391
Rob.Flaner@TetraTech.com

Fully completed templates must be completed and returned by Friday, January 17, 2014.

Fire District Update Annex:

This document provides instructions for completing the jurisdictional annex template for fire districts**.**

Please refer all questions to:
Rob Flaner
208.939.4391
rob.flaner@tetratech.com

Please complete and return by:
Friday, January 17, 2014

Please email completed template to:
Kristen Gelino
425.482.7801
kristen.gelino@tetratech.com

Associated Materials:
Along with the annex template and these instructions, you have been provided with other materials with information that is needed for completing the template. Be sure to review these materials before you begin the process of filling in the template:

- SHELDUS historical event data
- Summary-of-loss matrix for the hazard mitigation plan,
- Results from the hazard mitigation plan questionnaire,
- Catalog of funding prograns
- Catalog of mitigation alternatives, and
- Fact sheet on Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Grant Program (PDM).

A NOTE ABOUT FORMATTING

The template for the jurisdiction annex is a Microsoft Word document in a format that will be used in the final plan. Partners are asked to use this template so that a uniform product will be completed for each partner. Partners who do not have Microsoft Word capability may prepare the document in other formats, and the planning team will convert it to the Word format.

Content should be entered within the yellow, highlighted text that is currently in the template, rather than creating text in another document and pasting it into the template. Text from another source will alter the style and formatting of the document.

The numbering in the document will be updated when completed annexes are combined into the final document. Please do not adjust any of this numbering.

CHAPTER NUMBER AND TITLE

In the chapter title at the top of page 1, type in the complete official name of your jurisdiction (West County Fire Protection District #1, Burgville Flood Protection District, etc.) replacing the yellow, highlighted text.

HAZARD MITIGATION PLAN POINT OF CONTACT

Please provide the name, title, mailing address, telephone number, and e-mail address for the primary point of contact for your jurisdiction. This should be the person responsible for monitoring, evaluating and updating the annex for your jurisdiction. This person should also be the principle liaison between your jurisdiction and the Steering Committee overseeing development of this plan.

In addition, designate an alternate point of contact. This would be a person to contact should the primary point of contact be unavailable or no longer employed by the jurisdiction.

JURISDICTION PROFILE

Narrative Profile

Please provide a brief summary to profile your jurisdiction. Include the purpose of the jurisdiction, the date of inception, the type of organization, the number of employees, the mode of operation (i.e., how operations are funded), the type of governing body, and who has adoptive authority. Describe who the jurisdiction's customers are (if applicable, include number of users or subscribers). Include a geographical description of the service area.

Provide information in a style similar to the example provided in the box at right. This should be information that was not provided in the overall mitigation plan document.

Example Jurisdiction Narrative Profile:

Humboldt Community Services District is a special-purpose district created in 1952 to provide water, sewer, and street lighting to the unincorporated area surrounding the City of Eureka known as Pine Hill & Cutten. The District's designated service areas expanded throughout the years to include other unincorporated areas of Humboldt County known as Myrtletown, Humboldt Hill, Fields Landing, King Salmon, and Freshwater. A five-member elected Board of Directors governs the District. The Board assumes responsibility for the adoption of this plan; the General Manager will oversee its implementation. As of April 30, 2007, the District serves 7,305 water connections and 6,108 sewer connections, with a current staff of 21. Funding comes primarily through rates and revenue bonds.

Please be sure to include in this profile description who will assume responsibility for the adoption of the plan and who will oversee the implementation of the plan.

Summary Information

Complete the bulleted list of summary information as follows:

- **Population Served—**List the estimated population that your jurisdiction provides services to. If you do not know this number directly, create an estimate (e.g., the number of service connections times the average household size for the service area based on Census data).
- **Land Area Served—**Enter the service area of your jurisdiction in acres or square miles.
- **Value of Area Served—**Enter the approximate assessed value of your service area. If you do not have this information, the County should be able to provide a number using the County Assessor's database.
- **Land Area Owned—**Enter the area of property owned by the jurisdiction in acres or square miles.
- **List of Critical Infrastructure/ Equipment Owned by the Jurisdiction—**List all infrastructure and equipment that is critical to your jurisdiction's operations and is located in a natural hazard risk zone. Briefly describe the item and give its estimated replacement-cost value. Examples are as follows:

  - Fire Districts—Apparatus and equipment housed in a facility that is located in a natural hazard risk zone. This is the equipment that is essential for you to deliver services to this area should a natural hazard occur. It is not necessary to provide a detailed inventory of each engine and truck and its contents. A summary will suffice, such as "5 Engines, 2 ladders, and their contents". Do not list reserve equipment.

- **Total Value of Critical Infrastructure/Equipment—**Enter total replacement-cost value of the critical infrastructure and equipment listed above.
- **List of Critical Facilities Owned by the Jurisdiction—**List all buildings and other facilities that are critical to your jurisdiction's operations and are located in a natural hazard risk zone. Briefly describe the facility and give its estimated replacement-cost value.
- **Total Value of Critical Facilities—** Enter total replacement-cost value of the critical facilities listed above.
- **Current and Anticipated Service Trends—** Enter a brief description on how your jurisdiction's services are projected to expand in the foreseeable future and why. Note any identified capital improvements needed to meet the projected expansion. Examples are as follows:
  - For a Fire District: Portions of the jurisdiction have experienced a 13 percent growth over the last five years. Land use designations allow for an increase in light commercial and residential land uses within the service area. This increase in density of land uses will represent an increase in population and thus a projected increase in call volume. Our District is experiencing an average annual increase in call volume of 13 percent.

APPLICABLE REGULATIONS AND PLAN

List any federal, state, local or district laws, ordinances, codes and policies that govern your jurisdiction that include elements addressing hazard mitigation. Describe how these laws may support or conflict with the mitigation strategies of this plan. List any other plans, studies or other documents that address hazard mitigation issues for your jurisdiction or may allow you to support or enhance actions identified in this plan. Note whether the documents could have a positive or a negative impact on the mitigation strategies of this plan. Some examples of plans that may be relevant include Emergency Response Plan, Continuity of Operations Plan, Recovery Plan, and Capital Improvement Program. "None applicable" is a possible answer for this section.

CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

If you know your jurisdiction's Public Protection number, please enter it under the "Classification" column in Table 1-1. If you do not know if your jurisdiction participates in this program or do not know the number, please leave it blank and the Planning Team will provide this information for you. No entries are needed for the other items in Table 1-1.

JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

In Table 1-2, list in chronological order (most recent first) any natural hazard event that has caused damage to your jurisdiction since 1975. Include the date of the event and the estimated dollar amount of damage it caused. Please refer to the SHELDUS historical event data included on your cd.. Potential sources of damage information include:

- Preliminary damage estimates your jurisdiction filed with the county or state
- Insurance claims data
- Newspaper archives

- Other plans/documents that deal with emergency management (safety element of a comprehensive plan, emergency response plan, etc.)
- Citizen input.

HAZARD RISK RANKING

The risk ranking performed for the overall planning area is presented in the risk assessment section of the overall hazard mitigation plan. However, each jurisdiction has differing degrees of risk exposure and vulnerability and, therefore, needs to rank risk for its own area, using the same methodology as used for the overall planning area. The risk-ranking exercise assesses two variables for each hazard: its probability of occurrence; and its potential impact on people, property and operations. A detailed discussion of the concepts associated with risk ranking is provided in the overall hazard mitigation plan. The instructions below outline steps for assessing risk in your jurisdiction in order to develop results that are to be included in the template.

Determine Probability of Occurrence for Each Hazard

A probability factor is assigned based on how often a hazard is likely to occur. In Table 1, list the probability of occurrence for each hazard as it pertains to your jurisdiction, along with its probability factor, as follows:

- **High—**Hazard event is likely to occur within 25 years (Probability Factor = 3)
- **Medium—**Hazard event is likely to occur within 100 years (Probability Factor = 2)
- **Low—**Hazard event is not likely to occur within 100 years (Probability Factor = 1)
- **None—**If there is no exposure to a hazard, there is no probability of occurrence (Probability Factor = 0)

TABLE 1.
HAZARD PROBABILITY OF OCCURRENCE

Hazard Type	Probability	Probability Factor

The probability of occurrence of a hazard event is generally based on past hazard events in an area. For example, if your jurisdiction has experienced two damaging floods in the last 25 years, the probability of occurrence is high for flooding and scores a 3 under this category. If your jurisdiction has experienced no

damage from landslides in the last 100 years, your probability of occurrence for landslide is low, and scores a 1 under this category.

Determine Potential Impacts of Each Hazard

The impact of each hazard was divided into three categories: impacts on people, impacts on property, and impacts on your jurisdiction's operations. These categories were also assigned weighted values. Impact on people was assigned a weighting factor of 3, impact on property was assigned a weighting factor of 2 and impact on operations was assigned a weighting factor of 1. Steps to assess each type of impact are described below.

Impacts on People

To assess impacts on people, values are assigned based on the percentage of the total ***population exposed*** to the hazard event. The degree of impact on individuals will vary and is not measurable, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs. In Table 2, list the potential impact of each hazard on people in your jurisdiction, along with its impact factor, as follows:

- **High Impact—**30% or more of the population is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the population is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the population is exposed to a hazard (Impact Factor = 0)

TABLE 2.
HAZARD IMPACT ON PEOPLE

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 3)

Impacts on Property

To assess impacts on property, values are assigned based on the percentage of the total ***value of buildings, equipment and infrastructure that is exposed*** to the hazard event. In Table 3, enter the cost estimates for potential damage to the jurisdiction's exposed buildings, equipment and infrastructure, taken from the "Summary of Loss" matrix provided with these instructions.

TABLE 3.
COST ESTIMATES FOR POTENTIAL DAMAGE TO STRUCTURES

Hazard type	Estimate of Potential Dollar Losses to Jurisdiction-Owned Facilities Exposed to the Hazard

In Table 4, list the potential impact of each hazard on property in your jurisdiction, along with its impact factor. Determine impact based on damage estimates from Table 3, as follows:

- **High Impact—**30% or more of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 3)
- **Medium Impact—**15% to 29% of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 2)
- **Low Impact—**14% or less of the total assessed property value of facilities, equipment and infrastructure is exposed to the hazard (Impact Factor = 1)
- **No Impact—**None of the total assessed property value of facilities, equipment and infrastructure is exposed to a hazard (Impact Factor = 0)

TABLE 4.
HAZARD IMPACT ON PROPERTY

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 2)

Impacts on the Jurisdiction's Operations

Impact on operations is assessed based on estimates of ***how long it will take your jurisdiction to become 100-percent operable*** after a hazard event. The estimated functional downtime for critical facilities has been estimated for most hazards within the planning area. In Table 5, list the potential impact of each hazard on the operations of your jurisdiction, along with its impact factor, as follows:

- High = functional downtime of 365 days or more (Impact Factor = 3)
- Medium = Functional downtime of 180 to 364 days (Impact Factor = 2)
- Low = Functional downtime of 180 days or less (Impact Factor = 1)
- No Impact = No functional downtime is estimated from the hazard (Impact Factor = 0)

TABLE 5.
HAZARD IMPACT ON OPERATIONS

Hazard Type	Impact	Impact Factor	Weighted Impact Factor (Unweighted Factor x 1)

You will need to consult the risk assessment for this task. The critical facilities exposed to each hazard have been identified, and the impacts on operability have been estimated for most of the hazards within the planning area. If the functional downtime component has not been provided for a hazard in the risk assessment, consider the impact on operability of that hazard to be low.

Determine Risk Rating for Each Hazard

A risk rating for each hazard is determined by multiplying the assigned probability factor by the sum of the weighted impact factors for people, property and operations:

- Risk Rating = Probability Factor x Weighted Impact Factor {people + property + operations}

Using the results developed in Tables 1, 2, 4 and 5, complete Table 6 to calculate a risk rating for each hazard of concern.

TABLE 6.
HAZARD RISK RATING

Hazard Type	Probability Factor (P)	Sum of Weighted Impact Factors on People, Property & Operations (I)	Risk Rating (P x I)

Complete Risk Ranking in Template

Once Table 6 has been completed above, complete Table 1-3 in your template. The hazard with the highest risk rating in Table 6 should be listed at the top of Table 1-3 and given a rank of 1; the hazard with the second highest rating should be listed second with a rank of 2; and so on. Two hazards with equal risk ratings should be given the same rank.

It is important to note that this exercise should not override your subjective assessment of relative risk based on your knowledge of the history of natural hazard events in your jurisdiction. If this risk ranking exercise generates results other that what you know based on substantiated data and documentation, you may alter the ranking based on this knowledge. If this is the case, please note this fact in the comments at the end of the template. Remember, one of the purposes of this exercise is to support the selection and prioritization of initiatives in your plan. If you identify an initiative with a high priority that mitigates the risk of a hazard you have ranked low, that project will not be competitive in the grant arena.

STATUS OF PREVIOUS PLAN INITIATIVES

In this section, provide a status report of actions recommended in your previous hazard mitigation plan. You must be able to reconcile your original action plan to meet FEMA requirements for plan updates. Enter all the recommended actions from your previous plan in Table 1-4 and put a ✓ in one of the following three columns for each action to indicate its status:

- **Completed**—If the action has been completed, place a check mark in this column and enter a brief explanation in the "Comments" column (e.g., "Action #WC31 was completed by the Public Works Department on 3/12/2009"). Ongoing actions, such as annual outreach projects or maintenance activities, should also be indicated as "Completed," with a statement about the ongoing nature of the action provided in the "Comments" column (e.g., "Ongoing action, implemented annually by Community Development Department").
- **Carry Over to Plan Update**—If you did not complete an action and want to carry it over to your updated action plan, place a check mark in this column, and enter an explanatory statement in the comment section (e.g., "Action carried over as Action #WC14 in updated action plan").

- **Removed; No Longer Feasible**—If you want to remove an action because you have determined that it is no longer feasible, place a check mark in this column. "No longer feasible" means that you have determined that you do not have the capability to implement the action or that the action does not serve the best interest of your jurisdiction. Lack of funding does not mean that it is no longer feasible, unless the sole source of funding for an action is no longer available. Place a comment in the comment section explaining why the action is no longer feasible (e.g., "Action no longer considered feasible due to lack of political support to complete it.")

HAZARD MITIGATION ACTION PLAN

Action Plan Matrix

Identify the initiatives your jurisdiction would like to pursue with this plan. Refer to the mitigation catalog for mitigation options you might want to consider. Be sure to consider the following factors in your selection of initiatives:

- Select initiatives that are consistent with the overall goals, objectives and guiding principles of the hazard mitigation plan.
- Identify projects where benefits exceed costs.
- Include any project that your jurisdiction has committed to pursuing regardless of grant eligibility.
- Know what is and is not grant-eligible under the HMGP and PDM (see fact sheet provided). Listing HMGP or PDM as a potential funding source for an ineligible project will be a red flag when this plan goes through review. If you have projects that are not HMGP or PDM grant eligible, but do mitigate part or all of the hazard and may be eligible for other grant programs sponsored by other agencies, include them in this section.

Wording Your Initiative Descriptions:

Descriptions of your initiatives need not provide great detail. That will come when you apply for a project grant. Provide enough information to identify the project's scope and impact. The following are typical descriptions for an action plan initiative:

- **Initiative 1—**Address Repetitive Loss properties. Through targeted mitigation, acquire, relocate or retrofit the five repetitive loss structures in the County as funding opportunities become available.
- **Initiative 2—**Perform a non-structural, seismic retrofit of City Hall.
- **Initiative 3—**Acquire floodplain property in the Smith subdivision.
- **Initiative 4—**Enhance the County flood warning capability by joining the NOAA "Storm Ready" program.

- Although you should identify at least one initiative for your highest ranked risk, a hazard-specific project is not required for every hazard. If you have not identified an earthquake related project, and an earthquake occurs that causes damage in your jurisdiction, you are not discounted from HMGP project grant eligibility.

Complete Table 1-5 for all the initiatives you have identified:

- Enter the initiative number and description.
- Indicate whether the initiative mitigates hazards for new or existing assets.
- Identify the specific hazards the initiative will mitigate.
- Identify by number the mitigation plan objectives that the initiative addresses. Approved objectives have been included in your tool kit.
- Indicate who will be the lead in administering the project. This will most likely be your governing body.
- Identify funding sources for the project. If it is a grant, include the funding sources for the cost share.

- Indicate the time line as "short term" (1 to 5 years) or "long term" (5 years or greater).

Technical assistance will provided upon request.

Prioritization of Mitigation Initiatives

Complete the information in Table 1-6 as follows:

- **Initiative #—**Indicate the initiative number from Table 1-5.
- **# of Objectives Met—**Enter the number of objectives the initiative will meet.
- **Benefits—**Enter "High," "Medium" or "Low" as follows:
  - High: Project will have an immediate impact on the reduction of risk exposure to life and property.
  - Medium: Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
  - Low: Long-term benefits of the project are difficult to quantify in the short term.
- **Costs—**Enter "High," "Medium" or "Low" as follows:
  - High: Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.
  - Medium: Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - Low: Possible to fund under existing budget. Project is part of, or can be part of an existing ongoing program.

  If you know the estimated cost of a project because it is part of an existing, ongoing program, indicate the amount.
- **Do Benefits Exceed the Cost?—**Enter "Yes" or "No." This is a qualitative assessment. Enter "Yes" if the benefit rating (high, medium or low) is the same as or higher than the cost rating (high benefit/high cost; high benefit/medium cost; medium benefit/low cost; etc.). Enter "No" if the benefit rating is lower than the cost rating (medium benefit/high cost, low benefit/medium cost; etc.)
- **Is the Project Grant-Eligible?—**Enter "Yes" or "No." Refer to the fact sheet on HMGP and PDM.
- **Can Project Be Funded Under Existing Program Budgets?—**Enter "Yes" or "No." In other words, is this initiative currently budgeted for, or would it require a new budget authorization or funding from another source such as grants?
- **Priority—** Enter "High," "Medium" or "Low" as follows:
  - High: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
  - Medium: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.

– Low: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

This prioritization is a simple review to determine that the initiatives you have identified meet one of the primary objectives of the Disaster Mitigation Act. It is not the detailed benefit/cost analysis required for HMGP/PDM project grants. The prioritization will identify any projects whose probable benefits will not exceed the probable costs.

Analysis of Mitigation Actions

Complete Table 1-7 summarizing the mitigation actions by hazard of concern and the following six mitigation types:

- **Prevention—**Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
- **Property Protection—**Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness—**Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
- **Natural Resource Protection—**Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services—**Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
- **Structural Projects—**Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

This exercise demonstrates that the jurisdiction has selected a comprehensive range of actions.

FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

In this section, identify any future studies, analyses, reports, or surveys your jurisdiction needs to better understand its vulnerability to identified or currently unidentified risks. These could be needs based on federal or state agency mandates such as EPA's Bio-terrorism assessment requirement for water districts.

ADDITIONAL COMMENTS

Use this section add any additional information pertinent to hazard mitigation and your jurisdiction not covered in this template.

As you complete your template, please forward it to:

Kristen Gelino, Tetra Tech, Inc.
425.482.7801
Kristen.Gelino@TetraTech.com

CHAPTER 1.
INSERT JURISDICTION NAME UPDATE ANNEX

1.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

Alternate Point of Contact

Name, Title
Street Address
City, State ZIP
Telephone: Phone #
e-mail Address: email address

1.2 JURISDICTION PROFILE

Insert Narrative Profile Information, per Instructions

The following is a summary of key information about the jurisdiction:

- **Population Served—**Insert Population as of Insert Date of Population Count
- **Land Area Served—**Insert Area
- **Value of Area Served—**The estimated value of the area served by the jurisdiction is Insert Total Value
- **Land Area Owned—**Insert Area
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Infrastructure/Equipment—**The total value of critical infrastructure and equipment owned by the jurisdiction is Insert Total Value
- **List of Critical Facilities Owned by the Jurisdiction:**
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
  - Insert Description of Item Insert Value of Item
- **Total Value of Critical Facilities—**The total value of critical facilities owned by the jurisdiction is Insert Total Value
- **Current and Anticipated Service Trends—**Insert Summary Description of Service Trends

1.3 APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- Insert Name of Code, Ordinance, Policy or Plan

- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan
- Insert Name of Code, Ordinance, Policy or Plan

1.4 CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

The jurisdiction's classifications under various hazard mitigation programs are presented in Table 1-1.

TABLE 1-1.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Public Protection			
Storm Ready			
Firewise			
Tsunami Ready			

1.5 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 1-2 lists all past occurrences of natural hazards within the jurisdiction.

TABLE 1-2.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment

1.6 HAZARD RISK RANKING

Table 1-3 presents the ranking of the hazards of concern.

TABLE 1-3.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

1.7 STATUS OF PREVIOUS PLAN INITIATIVES

Table 1-4 summarizes the initiatives that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

TABLE 1-4.
PREVIOUS ACTION PLAN IMPLEMENTATION STATUS

Action #	Action Status: Completed	Action Status: Carry Over to Plan Update	Action Status: Removed; No Longer Feasible	Comments

1.8 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 1-5 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 1-6 identifies the priority for each initiative. Table 1-7 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

TABLE 1-5.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline	Included in Previous Plan?
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							
Initiative #—Description							

TABLE 1-6.
MITIGATION STRATEGY PRIORITY

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/ Budgets?	Priority[a]

a. See Chapter 1 for explanation of priorities.

TABLE 1-7.
ANALYSIS OF MITIGATION INITIATIVES

	Initiative Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Avalanche						
Dam Failure						
Drought						
Earthquake						
Flood						
Landslide						
Severe Weather						
Tsunami						
Volcano						
Wildfire						

a. See Chapter 1 for explanation of mitigation types.

1.9 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

Insert text, if any; delete section if not used

1.10 ADDITIONAL COMMENTS

Insert text, if any; delete section if not used