RESOLUTION NO. 1672

A RESOLUTION OF THE OF THE CITY COUNCIL OF THE CITY OF FIFE, PIERCE COUNTY, WASHINGTON ADOPTING THE REGION 5 ALL HAZARD MITIGATION PLAN – 2015-2020 EDITION AND THE CITY OF FIFE ADDENDUM TO THE REGION 5 HAZARD MITIGATION PLAN; AND UPDATING THE 2004 PIERCE COUNTY NATURAL HAZARD MITIGATION PLAN.

WHEREAS, the Federal Disaster Mitigation Act of 2000 requires that for all disasters declared on or after November 1, 2004, applicants for sub-grants following any disaster must have an approved Natural Hazard Mitigation Plan in accordance with 44CFR 201.6 prior to receipt of Hazard Mitigation Grant Program project funding; and

WHEREAS, the Federal Disaster Mitigation Act of 2000 requires that for Pre-Disaster Mitigation grant program project funding on or after November 1, 2003, applicants must have an approved Natural Hazard Mitigation Plan in accordance with 44CFR 201.6 prior to receipt of project funding; and

WHEREAS, the All Hazard Mitigation Plan Update represents the commitment of the City of Fife along with other surrounding government entities to reduce the risks from natural, man-made and technological hazards, serving as a guide for decision makers as they commit resources to reducing the affects of hazards, and it is in the public interest to proceed with the planning process in a timely manner; and

WHEREAS, the City of Fife has participated with the Pierce County Department of Emergency Management in the development of the City of Fife's All Hazard Mitigation Plan Update, and recognizes the economic loss, personal injury, and damage that can arise from these hazards; and

WHEREAS, reduction of these impacts can be achieved through a comprehensive coordinated planning process which includes an updated risk assessment that provides the factual basis for activities proposed in the mitigation strategies to reduce losses and vulnerabilities, a five-year cycle for plan maintenance, and documentation of formal adoption by the City of Fife; and

WHEREAS, the 2015-2020 Region 5 All Hazard Mitigation Plan Edition has been completed and approved by the State and the Federal Emergency Management Agency; and

WHEREAS, the City of Fife could risk not receiving future disaster funding if the All Hazard Mitigation Plan Update is not adopted;

WHEREAS, the City Council reviewed the All Hazard Mitigation Plan Update;

NOW, THEREFORE the City Council of City of Fife hereby resolves as follows:

Section 1. The Region 5 Hazard Mitigation Plan, 2015-2020 Edition, is hereby adopted as set forth in Exhibit A, which is attached.

Section 2. The City of Fife Addendum to the Region 5 Hazard Mitigation Plan, an update to the City of Fife Natural Hazard Mitigation Plan is hereby adopted and shall be in full force and effect upon passage and signatures hereon.

ADOPTED by the City Council at an open public meeting held on the 28th day of July, 2015.

Tim Curtis, Mayor

Attest:

Carol Etgen, City Clerk

CITY OF FIFE
ADDENDUM A-5
REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION

Prepared for:

City of Fife
3737 Pacific Highway East
Fife, WA 98424

In Cooperation with:

Pierce County Department of Emergency Management
2501 S. 35th Street, Suite D
Tacoma, WA 98409

ADDENDUM A-5

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE

Table of Contents

SECTION 1 – PROCESS 1-1
SECTION 2 – PROFILE 2-1
SECTION 3 – CAPABILITY IDENTIFICATION 3-1
SECTION 4 – RISK ASSESSMENT 4-1
SECTION 5 – MITIGATION STRATEGY 5-1
SECTION 6 – INFRASTRUCTURE 6-1
SECTION 7 – MAINTENANCE 7-1

Appendices

Plan Adoption ..... A
Planning Team ..... B
Plan Revisions C
Fife and Pierce County Hazus-MH Hazard Scenarios ..... D

(This page intentionally left blank)

Section 1

Plan Process Requirements

Planning Process---Requirement §201.6(b):

An open public involvement process is essential to the development of an effective plan.

Documentation of the Planning Process---Requirement §201.6(b):

In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Documentation of the Planning Process---Requirement §201.6(c)(1):

[The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

- Does the plan provide a narrative description of the process followed to prepare the new or updated plan?
- Does the new or updated plan indicate who was involved in the current planning process? (Who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)
- Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)
- Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
- Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?

SECTION 1

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
PROCESS SECTION

Table of Contents

PLAN PROCESS REQUIREMENTS **1**
TABLE OF CONTENTS **2**
CHANGES TO JURISDICTION PLAN IN THIS DOCUMENT **3**
CHANGE MATRIX **3**
PLAN PROCESS **6**
PUBLIC INVOLVEMENT PROCESS 6
PLANNING TEAM 7
JOINT PLANNING REQUIREMENT 11
ENDNOTES **12**

Changes To Jurisdiction Plan in this Document

This Process Section for the City of Fife Hazard Mitigation Plan includes the following changes that are documented as a result of a complete review and update of the existing plan. The purpose of the following change matrix is to advise the reader of these changes updating this plan from the original document approved in November 2008.

The purpose for the changes is three-fold: 1) the Federal Law (Code of Federal Regulations (CFR), Title 44, Part 201.4) pertaining to Mitigation Planning has changed since the original Plan was undertaken; 2) the Local Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 201.6 (d) (3) Plan Review states Plans **must** be reviewed, revised if appropriate, and resubmitted for approval within five years in order to continue to be eligible for HMGP project grant funding. This document when completed and approved will become the City of Fife Hazard Mitigation Plan.

Change Matrix

This Matrix of Changes documents the pertinent changes made from the November 2008 City of Fife Plan for the Region 5 All Hazard Mitigation Plan; 2015-2020 Edition. Most of the changes are a matter of additional detail, more information provided, some reformatting to the current Pierce County DEM format and in some cases a response to new requirements. This 2015 version represents a complete review and update by Pierce County Department of Emergency Management using a detailed process for development and following an established format. During this procedure, all web links have been verified and updated.

Change Matrix – City of Fife Region 5 Hazard Mitigation Plan 2015 Edition

Section 1 – Plan Development, Process Section	
Section or Part of Plan	**New in 2015 Plan**
Section 1 – Process Section	Section 1 – Process Section
	The 2015 Process Section contains this Change Matrix Table.
	The 2015 Process Section contains a revised Risk Section to include nine (9) Technological Hazards.
	The 2015 Process Section contains a description of the new process to define goals and objectives for this jurisdiction in the Mitigation Strategy.

Section 1 – Plan Development, Process Section (Continued)	
	The 2015 Process Section contains a Mitigation Measure Matrix that reviews all the prior Mitigation Measures and shows those complete, those still viable and those no longer retained for further action.

Section 2 – Participating Jurisdiction Profiles		
Section or Part of Plan	**Previous**	**2015 Plan**
Section 2 – Profile	Information was current as of 2000 Census Data.	The 2013 version of the Profile has been updated using 2010 Census Data and most current GIS information from Pierce County.

Section 3 – Capability Identification		
Section or Part of Plan	**Previous**	**2015 Plan**
Section 3 – Capability	The Capability Tables shown in the previous plan are in a similar format.	The 2015 Capability Section has been improved and updated to show current information from the jurisdiction.

Section 4 – Vulnerability, Risk Analysis	
Section or Part of Plan	**2015 Plan**
The previous version of the plan contained a chart for previous history of disaster declarations broken down into Geological and Meteorological Hazards.	The 2015 Risk Section includes this same chart but it has been updated to show all additional declarations and expanded to include Technological Hazards as well.
The previous version of the plan contained four hazard maps.	The 2015 Risk Section includes updated maps and may contain additional hazard maps according to the specific jurisdiction's hazards.
The previous version included specific analysis showing vulnerability of population, land and infrastructure according to Census 2000.	The 2015 Risk Section includes completely updated tables showing vulnerability of population, land and infrastructure using Census 2010 data.

Section 5 – Mitigation Strategy	
Section or Part of Plan	**2015 Plan**
The previous document used the standard goals as outlined for the entire project.	The 2015 Mitigation Section was drafted using specific goals and objectives written by the jurisdictions to their specific hazards and concerns.
The previous document contained a Mitigation Measure Matrix chart followed by written descriptions of each individual measure.	The new document uses the same format as the original plan but with emphasis on new goals and objectives. New measures have been added to both the Matrix and the individual measure descriptions. Measures completed in the past five years have been deleted with explanation of same in the Process Section.

Section 6 – Infrastructure	
Section or Part of Plan	**2015 Plan**
The previous plan used a full table with detail on each piece of infrastructure as well as summary information on hazards and dependencies.	The 2015 plan uses the same table but with additional technological hazards now included. This table has been completely updated as have the accompanying tables.

Section 7 – Plan Maintenance	
Section or Part of Plan	**2013 Plan**
The previous Plan Maintenance for the jurisdiction was very similar in format to the newer version for 2015.	The 2015 version of the Plan Maintenance borrows from the format and content of the original; however the entire document has been reviewed and updated to current information.

Section 8 – Other Changes	
Section or Part of Plan	**2015 Plan**
The previous document contained three Appendices.	The 2015 Plan contains four Appendices including place for the final resolution and approval letter from FEMA and also the team members for the jurisdiction and a chart for any changes. The Acronym list appears in the Base Plan for the entire project. In addition, there is a Hazus-MH analysis for flood and

	earthquake scenarios.

Plan Process

The Region 5 Hazard Mitigation Plan Process Section is a discussion of the planning process used to update the Region 5 Hazard Mitigation Plan (Pierce County is Region 5 for Homeland Security (HLS) in Washington State, including how the process was prepared, who aided in the process, and the public involvement.

The Plan update is developed around all major components identified in 44 CFR 201.6, including:

- **Public Involvement Process**;
- **Jurisdiction Profile**;
- **Capability Identification**;
- **Risk Assessment;**
- **Mitigation Strategy**;
- **Infrastructure Section**; and,
- **Plan Maintenance Procedure**.

Below is a summary of those elements and the processes involved in their development.

Public Involvement Process

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions.

> "Involving stakeholders who are not part of the core team in all stages of the process will introduce the planning team to different points of view about the needs of the community. It will also provide opportunities to educate the public about hazard mitigation, the planning process, and findings, and could be used to generate support for the mitigation plan."[1]

In order to accomplish this goal and to ensure that the updated Region 5 Hazard Mitigation Plan be comprehensive, the seven planning groups in conjunction with Pierce County Department of Emergency Management developed a public participation process of three components:

1. A Planning Team comprised of knowledgeable individual representatives of HLS Region 5 area and its hazards;
2. Hazard Meetings to target the specialized knowledge of individuals working with populations or areas at risk from all hazards; and
3. Public meetings to identify common concerns and ideas regarding hazard mitigation and to discuss specific goals, objectives and measures of the mitigation plan.

This section discusses each of these components in further detail below with public participation outlined in each. Integrating public participation into the development of the Region 5 Hazard Mitigation Plan update has helped to ensure an accurate depiction of the Region's risks, vulnerabilities, and mitigation priorities.

Planning Team

The Planning Team was organized early in 2012. The individual Region 5 Hazards Mitigation Planning Team members have an understanding of the portion of Pierce County containing their specific jurisdiction, including how residents, businesses, infrastructure, and the environment may be affected by all hazard events. The members are experienced in past and present mitigation activities, and represent those entities through which many of the mitigation measures would be implemented. The Planning Team guided the update of the Plan, assisted in reviewing and updating goals and measures, identified stakeholders, and shared local expertise to create a more comprehensive plan. The Planning Team was comprised of:

Table 1-1 Planning Team – City and Town Group

NAME	TITLE	JURISDICTION
Brian Hartsell	Executive Assistant	City of Bonney Lake
Don Morrison		City of Bonney Lake
Alan Predmore	Fire Chief/Emergency Manager	City of Buckley
Jim Arsanto	Chief of Police	City of Buckley
Bob Sheehan	Fire Chief	City of DuPont
Ed Knutson	Chief of Police	City of Edgewood
Kevin Stender	Community Development Senior Planner	City of Edgewood
Mark Mears	Assistant Police Chief	City of Fife
John Cheesman	Chief of Police	City of Fircrest
Mike Davis	Chief of Police	City if Gig Harbor
Paul Rice	Building and Fire Safety Director	City of Gig Harbor
Christine Badger	Emergency Management Coordinator	City of Lakewood
Dana Herron	Building Official	City of Milton
Jim Jaques	Assistant Chief	City of Milton/East Pierce Fire and Rescue
Mark Bethune	City Manager	City of Orting
Karen Yates	Mayor	City of Roy
Bill Llewellyn	Council Member	City of Roy
Ryan Windish	Planning Manager	City of Sumner
Ute Weber	Emergency Manager	City of Tacoma
Tricia Tomaszewski	Clerk-Treasurer	Town of Carbonado
Daillene Argo	Town Clerk	Town of Carbonado
Bob Hudspeth	Fire Chief	Town of Eatonville
Doug Beagle	Town Administrator	Town of Eatonville
Kerry Murphy	Public Works	Town of Eatonville
Peggy Levesque	Mayor	Town of South Prairie
Marla Nevil	Town Clerk	Town of South Prairie

Paul Loveless	Town Administrator	Town of Steilacoom
Melanie Kohn	Clerk/Treasurer	Town of Wilkeson

The Planning Team held 10 Planning Team Meetings for the following Planning Groups: City and Town Group, Fire Group, School Group, Special Purpose Group, and Utility Group for a total of 50 meetings from March of 2012 to February of 2013.

Table 1-2 Planning Team Meetings – Cities and Towns Group

Planning Team Meeting #1 – Pierce County Library Administration Bldg-March 21, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: Introduction of Planning Team, Review of the history of the Grant Application, Defining the Planning Requirements, How We Establish the In-Kind Match, Benefits of Developing a Plan, Defining the Planning Process, Establishing the Planning Team Meetings, Elected Official Meetings and Public Comment Meetings, reviewing each jurisdiction's profile information, and defining next steps.
Planning Team Meeting #2 – Pierce County Emergency Operations Center-May 1, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: Introduction of Planning Team as there were new members present, review of items presented at previous meeting, Defining the Planning Requirements, Defining the Process, Establishing the Planning Team Meetings, Elected Official Meetings and Public Comment Meetings, and explaining the next steps. This meeting focused on continuing review of the Profile Section, an introduction to begin thinking about mitigation strategies to include a review of what measures from their original plan have already been completed and thinking about new measures they may like to add, and a review of existing infrastructure for accuracy or necessary changes. It was explained how the Homeland Security sectors correlate with the information on the Infrastructure Forms and the potential uses of the information as a means of populating a database of resources for future use. There was also information handed out on dependencies and how important it is to know who depends on you and who you depend on. Everyone was reminded to set up their Elected Official meetings. Everyone was given a copy of their original Section 6 – Infrastructure Information.

Planning Team Meeting #4 – Pierce County Emergency Operations Center-July 10, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: Reminder to set up Elected Official meetings. There was a recap of the Infrastructure Forms and the information necessary and some forms were collected at the meeting. Because this group missed one meeting in April, there were two areas of focus for this meeting; the Capability Section and the Risk Section. There was a discussion on how to recognize capabilities that already exist within the jurisdiction. Copies of existing Capability Sections were handed out and a discussion followed regarding making this section more comprehensive for everyone. The discussion continued, focusing on an explanation of the Risk Assessment and beginning to look at the local hazards for each jurisdiction. There was also some discussion about hazard maps and jurisdiction hazard maps were shown for the first time since they were updated. These now include technological hazards.

THERE WERE NO PLANNING TEAM MEETINGS IN JUNE OF 2012
Planning Team Meeting #5 – Pierce County Emergency Operations Center-Aug 7, 2012
Planning Team members Katie Gillespie and Debbie Bailey, along with special guest Casey Broom from State EMD, conducted the meeting and the Planning Team discussed the following items: State EMD Mitigation Coordinator, Casey Broom was present at this meeting to lead the discussion on goals and objectives. The primary discussion for this meeting was a review of how to write goals and how to move forward in developing objectives to address the goals as a part of the Mitigation Strategy for the project.
Planning Team Meeting #6 – Pierce County Emergency Operations Center-Sept 4, 2012
Planning Team members Katie Gillespie and Debbie Bailey, along with Casey Broom, conducted the meeting and the Planning Team discussed the following items: Casey led the discussion continuing with Goals and Objectives for each jurisdiction. There was also a lot of discussion regarding good mitigation measures and how they need to address the objectives identified.
Planning Team Meeting #7 – Pierce County Emergency Operations Center-Oct 2, 2012
Planning Team members Katie Gillespie and Debbie Bailey, along with Casey Broom, conducted the meeting and the Planning Team discussed the following items: The jurisdiction hazard maps (base map as well as hazard maps) and other administrative items were discussed. The majority of the meeting was dedicated to a discussion revolving around developing new mitigation measures and having 'shovel-ready' projects included in all plans. A general discussion was productive in finding new measures that others might also be able to include.
Planning Team Meeting #8 – Pierce County Emergency Operations Center-Nov 6, 2012
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: There was a call for questions on all sections completed thus far and any final cleanup of sections as necessary. The majority of the meeting was dedicated to continuing discussions about mitigation measures and answering all the questions regarding new measures and how they will be added to the plans. The jurisdictions were briefed and given guidance on how to prioritize their mitigation measures.
THERE WERE NO PLANNING TEAM MEETINGS IN DECEMBER OF 2012
The month of December was dedicated allowing the Plan Coordinators time to catch up on documentation for the 78 jurisdictions.
REGIONAL PLANNING MEETINGS WERE HELD IN JANUARY OF 2013 (See Table 1-15)
The month of January was dedicated to eight Regional Meetings where the groups were divided into geographical districts rather than their normal groups in order to develop potential regional measures together.
Planning Team Meeting #9 – Pierce County Emergency Operations Center-Feb 5, 2013
Planning Team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team discussed the following items: The primary discussion, besides a general review once more, was about the Plan Maintenance section and how that will be updated by the jurisdictions. Each jurisdiction was given copies of their existing section and we discussed possible changes and improvements. Those jurisdictions that still had outstanding sections of documentation brought those forward at this time.
Planning Team Meeting #10 – Pierce County Emergency Operation Center-March 5, 2013

Planning team members Katie Gillespie and Debbie Bailey conducted the meeting and the Planning Team was able to discuss any final questions or concerns regarding the final sections of the plans and any updates or changes that will still need to be made before the plans are complete.

Joint Planning Requirement

The City of Fife has the following identified plan which must collaborate with the mitigation plan; these plans are identified in the table below and must be updated within the predetermined timeline.

Plan	Next Update
Comprehensive Plan	2015

Endnotes

[1] State and Local Mitigation Planning How-to Guide, Getting Started: building support for mitigation planning. FEMA 386-1, September 2002, p. 3-1.

SECTION 2

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
PROFILE SECTION

Table of Contents

TABLE OF CONTENTS **1**
MISSION STATEMENT **2**
SERVICES SUMMARY **2**
GEO-POLITICAL SUMMARY **3**
POPULATION SUMMARY **5**

DEMOGRAPHICS 5
SPECIAL POPULATIONS 5
DEMOGRAPHIC ANALYSIS 5

INFRASTRUCTURE SUMMARY **6**

JURISDICTION INFRASTRUCTURE 7

ECONOMIC SUMMARY **9**
RESOURCE DIRECTORY **10**

REGIONAL 10
NATIONAL 10

ENDNOTES **11**

Mission Statement

The mission of the City of Fife is as follows:

Fife will be a city where there is balance between residential, commercial, and industrial growth and a city with a wholesome, restful, neighborhood-like atmosphere.

Services Summary

The City of Fife was incorporated in the year 1957.

The jurisdiction provides the following services through their own capabilities:

Table 2-1 City Services[1]

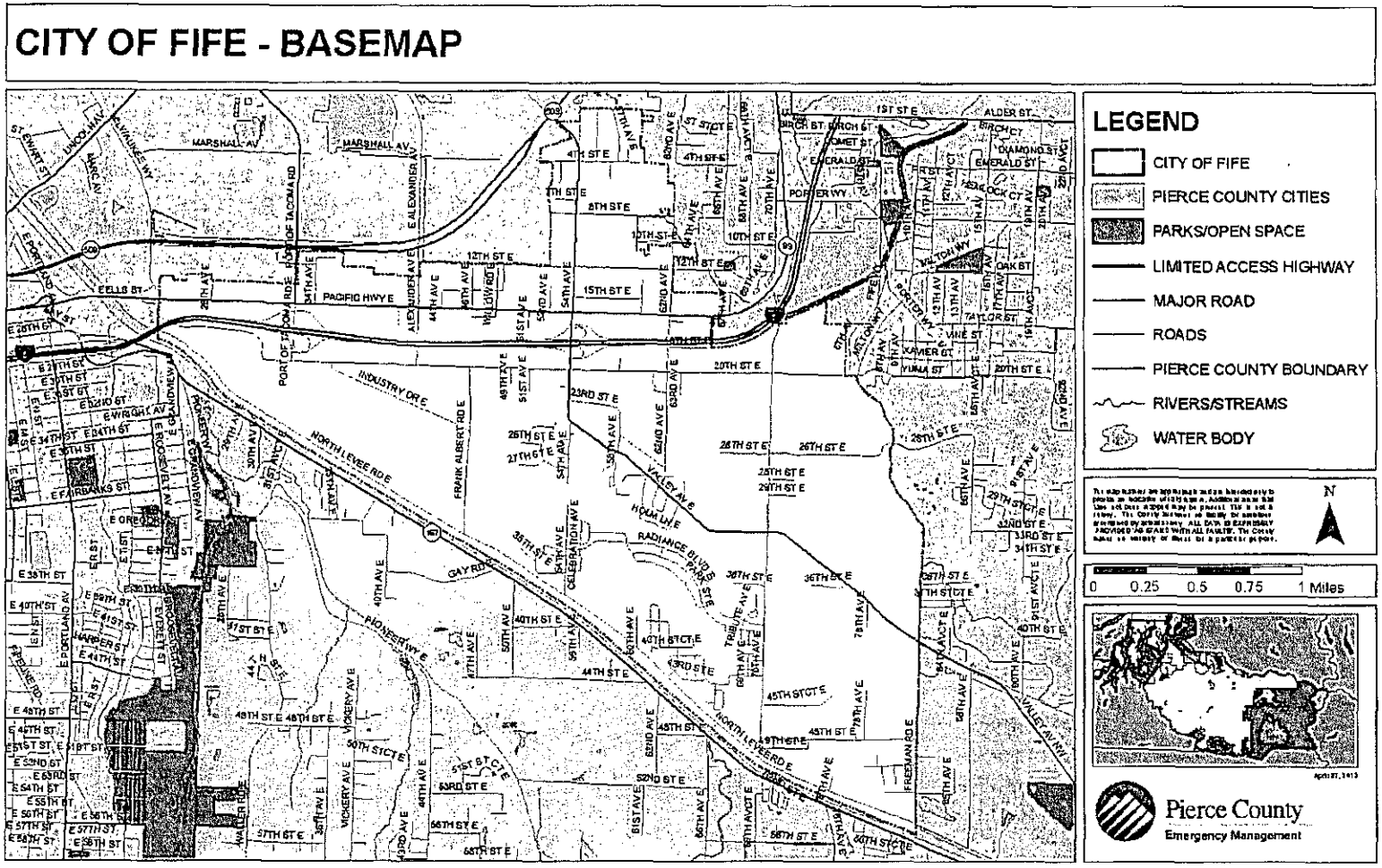
CITY SERVICES			
Service	**Yes**	**Service**	**Yes**
Mayor/City Manager	Yes	Municipal Airport	No
City Attorney	Yes	Municipal Court	Yes
City Clerk	Yes	Public Works/Improvements	Yes
City Treasurer	Yes	Comprehensive Planning	Yes
Sheriff or Police	Yes	Parking Meter Revenue	No
Parks Commissioners	Yes	Construction and Operation of Boat Harbors, Marinas, Docks, etc.	No
City Council	Yes	Issue Bonds and Levies of General Tax	Yes
License and Tax Fees	Yes	Fire Department/EMS	No
Non-Polluting Power Generation	No	Parking, Off-street Facilities	Yes
Hydroelectric Resources	No	Sanitary Landfill/Refuse Service	No
Radio Communications	No	Sidewalks	Yes
Streets	Yes	Storm Drains	Yes
Waste Water Treatment	No	Streets/Alleys	Yes
Water Utility	Yes	Parks and Parkways	Yes
Public Transportation Systems	No	Water Pollution Abatement	No
Residential Care Facilities	No	Local Improvement Districts	Yes
Child Care Facilities	No	Lahar Sirens	Yes

Geo-Political Summary

Table 2-2 Geo-Political Summary[2]

Jurisdiction	Area (sq mi)	Elevation Range (ft)	Major Water Features	Regional Partners	
				Shared Borders	Land Use Authorities
City of Fife	5.7943	20-220	• Puyallup Watershed • 3-Clear/Clarks Creek Basin • 4-Hylebos Basin • 23-Mid Puyallup River Basin	• Tacoma • Edgewood • Milton • Puyallup • Unincorporated Pierce County • Puyallup Tribe	• Fife • Tacoma • Edgewood • Milton • Puyallup • Unincorporated Pierce County • Puyallup Tribe • WA DOT

Map 2- 1 City of Fife - Basemap



Population Summary

Demographics

Table 2-3 Population[3, 4, 5, 6]

Jurisdiction	Population	Population Density (people/sq mi)	Population Served	Projected Year 2022 Population Change (%)	Projected Population Density	Projected 2022 Population Served
City of Fife	9,173	1,583	9,173	-2.98%	1,536	8,900
Region 5	795,225	440	795,225	-18.39%	359	648,895

Special Populations

Table 2-4 Special Populations[7]

Jurisdiction	Population	Population 65 Plus	% of Total	Population Under 20	% of Total
City of Fife	9,173	594	6%	2,570	28%
Region 5	795,225	87,770	11%	220,351	28%

Demographic Analysis

The City of Fife has grown in area, increasing from 4.66 to 5.70 square miles due to the annexation of much of their designated agriculture. The overall population has nearly doubled in size since the last update. On the other hand, the 65+ population has decreased 2% of the total population. With the rise in population density, the City of Fife has an identified increase in their population vulnerability in comparison to the last update.

Infrastructure Summary

Table 2-5 Parcel Summary[8]

Jurisdiction	# Parcels	Land Value	Average Land Value	Improvement Value Total ($)	Avg Improvement Value ($/parcel)
City of Fife	3,133	$910,252,800	$290,537	$959,368,700	$306,214
Region 5	319,165	$29,742,651,792	$93,189	$49,650,950,160	$155,577

Jurisdiction	Total Assessed Value	Average Assessed Value
City of Fife	$1,869,621,500	$596,751
Region 5	$79,393,601,952	$248,766

Table 2-6 Housing Summary[9]

Jurisdiction	# Houses	Housing Density	Avg Year Built	Avg Year Built (%)
City of Fife	3,895	672	• <1939: 132 • 1940 – 1979: 1,059 • 1980 – 2004: 1,533 • 2005> 1,163	• <1939: 3.4% • 1940 – 1979: 27.2% • 1980 – 2004: 39.4% • 2005< 29.9%
Region 5	291,983	162	• <1939: 34,368 • 1940 – 1979: 126,363 • 1980 – 2004: 139,894 • 2005> 22,830	• <1939: 10.6% • 1940 – 1979: 39% • 1980 – 2004: 43.2% • 2005>7.1%

Jurisdiction Infrastructure

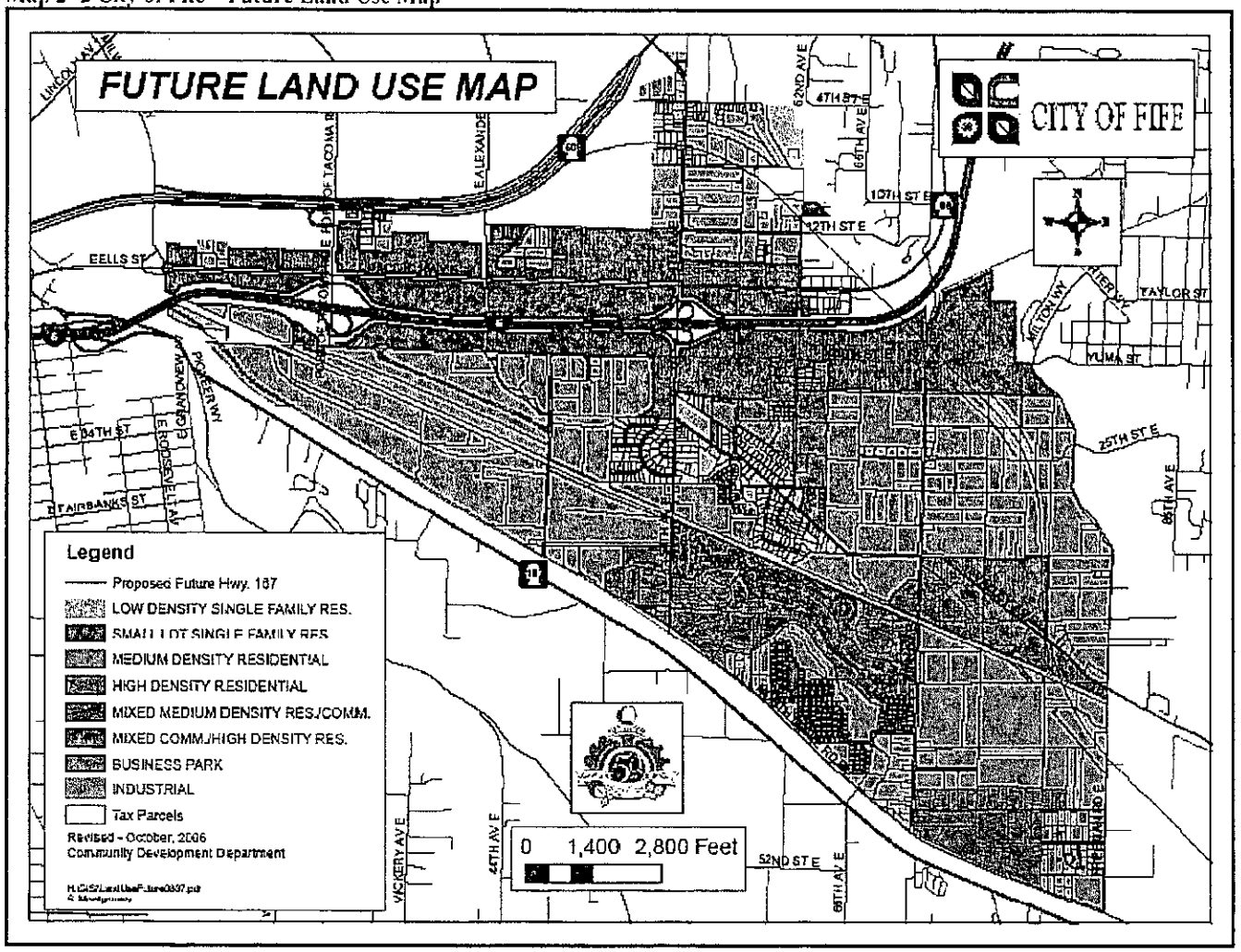
The following table shows the overview of infrastructure owned by the City of Fife. The infrastructure is categorized according to the infrastructure sectors as designated by the Department of Homeland Security. This chart is intended as a summary only.

For further details on Department of Homeland Security infrastructure sectors, please see the Process Section 1.

Table 2-7 Owned Infrastructure[10]

Total Infrastructure	Emerg. Services	Tele-comm	Transpor-tation	Water	Energy	Govern-ment	Commer-cial	Total Value ($)
47	0	0	6	21	0	20	0	$9.427.887

Map 2- 2 City of Fife – Future Land Use Map



Economic Summary

Table 2-8 Fiscal Summary[11]

Jurisdiction	Operating Costs (per month)	Operating Budgeted Revenues[12]	Operating Budgeted Expenditures[13]	Fund Balance as % of Operating Cost	Avg Fund Balance (5 yrs)
City of Fife	Ave-$1,080,000 (General Fund)	$16,900,000 (Annual-General Fund)	$13,000,000 (Annual-General Fund)	17%	$1,200,000

Table 2-9 Employment Profile[14]

Employment Category (SIC)	City of Fife	Pierce County
Agriculture, Forestry, Fishing, Mining and Hunting	3	2,532
Construction	313	29,441
FIRES (Finance, Insurance, Real Estate, and Services)	234	21,862
Wholesale Trade	296	13,064
Transportation and Warehousing and Utilities	426	21,796
Manufacturing	454	35,050
Retail	554	43,247
Education, Health and Social Services	740	76,821
Professional, Scientific, Management, Administrative, Waste Management	421	31,890
Public Administration	283	22,860

Table 2-10 Unemployment Rate[15]

Jurisdiction	Unemployment Rate
City of Fife	9.9%
Region 5	9.6%
WA State	8.4%

Resource Directory

Regional

- **City of Fife**
  http://www.cityoffife.org/

- **Pierce County Government**
  http://www.piercecountywa.org/PC/

- **Pierce County DEM**
  http://www.piercecountywa.org/pc/abtus/ourorg/dem/abtusdem.htm

- **Pierce County PALS**
  http://www.co.pierce.wa.us/pc/abtus/ourorg/pals/palshome.htm

- **Municipal Research & Services Center of Washington (MRSC)**
  http://www.mrsc.org/

National

- **US Census**
  www.census.gov/

Endnotes

[1] Information from a survey compiled by the City.
[2] Information from Pierce County GIS application. CountyView Pro (2013/14).
[3] "Population" information from Census 2010. Office of Financial Management. It should be noted that current (as of July 2013) population for the City of Fife is reported by the Office of Financial Management as 7,180.
[4] "Projected Population Change (%)" from Pierce County Buildable Lands Report, Dec. 2007.
[5] "Projected Population Density" is based on an assumption of the jurisdiction maintaining the same geographic area and boundaries. It does not consider changes in annexation, district mergers, etc.
[6] "Projected 2022 Population" from Pierce County Buildable Lands Report, Dec. 2007.
[7] "Special Population" from Census 2010. Office of Financial Management.
[8] Information from Pierce County GIS application. CountyView Pro projected for 2013/14.
[9] Information from Census 2010. Office of Financial Management.
[10] Information obtained from Jurisdiction from Infrastructure Matrix.
[11] Information provided by Finance Director, Treasurer, City of Fife.
[12] Non-Capital
[13] Non-Capital
[14] Information from Census 2010. Office of Financial Management.
[15] Information from Census 2010. Office of Financial Management.

(This page left blank intentionally)

Section 3

Capability Identification Requirements

Planning Process---Requirement §201.6(b):
An open public involvement process is essential to the development of an effective plan.

Documentation of the Planning Process---Requirements §201.6(b):
In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?

Assessing Vulnerability: Analyzing Development Trends---Requirement §201.6(c)(2)(ii)(C):
[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.]

- Does the plan describe land uses and development trends?

Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance---Requirement §201.6(c)(3)(ii):
[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?

SECTION 3

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
CAPABILITY IDENTIFICATION SECTION

Table of Contents

CAPABILITY IDENTIFICATION REQUIREMENTS 1
TABLE OF CONTENTS 2
LEGAL AND REGULATORY 3
ADMINISTRATIVE CAPABILITY 4
TECHNICAL CAPABILITY 6
FISCAL CAPABILITY 7
SPECIFIC CAPABILITIES 8

Legal and Regulatory

Table 3-1 Legal and Regulatory

Regulatory Tools (Ordinances and Codes)	Yes or No
Jurisdiction Capabilities	
Building Construction/Design Construction Codes	Yes
Flood Damage Prevention Ordinance	Yes
Growth Management Ordinance	Yes
Critical Area Ordinance	Yes
Hazard Setback Requirements	Yes
Hillside and Steep Slope Ordinance	Yes
Land Use and Regulatory Codes	Yes
Mechanical Codes	Yes
Plan Review Requirements	Yes
Plumbing Codes	Yes
Real Estate Disclosure Requirements	Yes
Storm Water Management	Yes
Subdivision Ordinance or Regulations	Yes
Tax and License Codes	Yes
Wildfire Ordinance	No
Zoning Ordinance	Yes

Administrative Capability

Table 3-2 Administrative Capability

Administrative Tools (Agency, Departments or Programs)	Yes or No
Jurisdiction Capabilities	
Architectural Review Board/Historic Review	No
Board of Adjustments/Hearing Examiner	Yes
Building Official	Yes
Chamber of Commerce	Yes
City/Town Council	Yes
City/Town Meetings	Yes
City/Town Planning Commission	Yes
City/Town Website	Yes
Commercial Fire Safety/Code Inspection Program	Yes
Community CPR/First Aid Program	Yes
Community Emergency Response Teams	Yes
Downtown Revitalization Committee	No
Economic Development Board	Yes
Emergency Manager	Yes
Engineers	Yes
Families First Coalition	No
Fire and Injury Prevention Program	No
Fire Chief	No
Fire Safety & Disaster Classes in Schools	No
Flood Plan Manager	No
Government TV Access	Yes
Grant Writers	No
Home Safety Council	No
Information included in Utility Bills	Yes
Lahar Warning System	Yes
Planners	No
Planning Commission	Yes
Police Chief	Yes
Police Department	Yes
Public Utility	Yes
Public Works Department	Yes
Safe Streets Program	No
Safety Fairs	No
Stream Team	Yes
Surveyors	No

Table 3-3 Administrative Capability (Cont)

Administrative Tools (Agency, Departments or Programs)	Yes or No
Regional Capabilities	
Local Business Districts	No
Local Department of Emergency Management	Yes
Local Fire Agencies plus Mutual Aid with others	Yes
Local Hospitals	No
Local Law Enforcement Agencies and Mutual Aid with others	Yes
Local Neighborhood Associations	Yes
Local Neighborhood Emergency Teams (NET)	No
Local Newspapers	Yes
Local Parks Commission/Board	Yes
Local Power Companies	No
Local Parent Teacher's Association	Yes
Local School Board	Yes
Neighboring Counties	Yes
Pierce County Department of Emergency Management	Yes
Pierce County Fire Chiefs Association	Yes
Pierce County Neighborhood Emergency Teams (PCNET)	No
Pierce County Police Chiefs Association	Yes
Pierce County Safe Kids Coalition	Yes
Pierce County Sheriffs Department	Yes
Puget Sound Clean Air Agency	Yes
Puget Sound Energy	Yes
Puget Sound Regional Council	Yes
Puget Sound Water Quality Management Plan	Yes
Service Organizations	Yes
Tacoma/Pierce County Health Department	Yes
Tribes	Yes

Technical Capability

Table 3-4 Technical Capability

Technical Tools (Plans and Other)	Yes or No
Jurisdiction Capabilities	
After Action Reports of Any Incident	Yes
Capital Improvement Plan	Yes
Comprehensive Emergency Management Plan	Yes
Comprehensive Plan	Yes
Continuity of Governmental Services and Operations Plan (COOP and COG)	Yes
Critical Facilities Plan	Yes
Drainage Master Plan	Yes
Economic Development Plan	Yes
Emergency Evacuation Plan	Yes
Emergency Response Plan	Yes
Generator Placement Plan	Yes
Habitat Plan	Yes
Hazardous Materials Response Plan	Yes
Lahar Evacuation Plan	Yes
Pandemic Flu Plan	No
Post-Disaster Recovery Plan	Yes
Sewer/Wastewater Comprehensive Plan	Yes
Storm Comprehensive Plan	Yes
Water Comprehensive Plan	Yes
Regional Capabilities	
Coordinated Water System Plan and Regional Supplement 2001	
Local and Regional Emergency Exercises – All Types	Yes

Fiscal Capability

Table 3-5 Fiscal Capability

Fiscal Tools (Taxes, Bonds, Fees, and Funds)	Yes or No
Jurisdiction Capabilities	
TAXES:	
Authority to Levy Taxes	Yes
BONDS:	
Authority to Issue Bonds	Yes
FEES:	
Fees for Water, Sewer, Gas or Electric Service	Yes
Impact Fees for Homebuyers/Developers for New Developments/Homes	Yes
Local Improvement District (LID)	Yes
FUNDS:	
Capital Improvement Project Funds	Yes
Enterprise Funds	Yes
General Government Fund (Departments)	Yes
Internal Service Funds	Yes
Special Revenue Funds	Yes
Withhold Spending in Hazard-Prone Areas	No
Regional Capabilities	
Pierce County Land Conservancy	No
Cascade Land Conservancy	No

Specific Capabilities

Table 3-6 Specific Capabilities

Jurisdiction Specific Capabilities
Legal & Regulatory
Administrative & Technical
Emergency Management Exercises and Drills
Fife School District Emergency Plan
"Map Your Neighborhood" Program
Milton Police Department
Sumner Police Department
Puyallup Police Department
Puyallup Tribal Police Department
Fiscal

Section 4

Risk Assessment Requirements

Identifying Hazards--- Requirement §201.6(c)(2)(i):
[The risk assessment **shall** include a] description of the type ... of all natural hazards that can affect the jurisdiction.

- Does the new or updated plan include a **description** of the types of **all natural hazards** that affect the jurisdiction?

Profiling Hazards---Requirement §201.6(c)(2)(i):
[The risk assessment **shall** include a] description of the ... location and extent of all natural hazards that can affect the jurisdiction. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.

- Does the risk assessment identify (i.e., geographic area affected) of each hazard being addressed in the new or updated plan?
- Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?
- Does the plan provide information on previous occurrences of each hazard addressed in the new or updated plan?
- Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the new or updated plan?

Assessing Vulnerability: Overview---Requirement §201.6(c)(2) (ii):
[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.

- Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
- Does the new or updated plan address the impacts of each hazard on the jurisdiction?

Assessing Vulnerability: Addressing Repetitive Loss Properties---Requirement §201.6(c)(2) (ii):
[The risk assessment] **must** also address the National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

- Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?

Assessing Vulnerability: Identifying Structures---Requirement §201.6(c)(2) (ii)(A):
The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas...

- Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

Assessing Vulnerability: Estimating Potential Losses---Requirement §201.6(c)(2) (ii)(B):
[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate...

- Does the new or updated plan estimate potential dollar losses for vulnerable structures?
- Does the new or updated plan describe the methodology used to prepare the estimate?

Assessing Vulnerability: Analyzing Development Trends---Requirement §201.6(c)(2) (ii)(c):
[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

- Does the new or updated plan describe land uses and development trends?

SECTION 4

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
RISK ASSESSMENT SECTION

Table of Contents

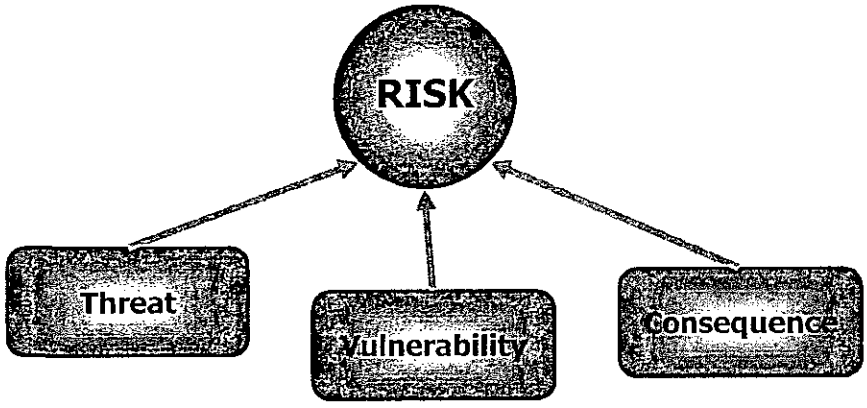
RISK ASSESSMENT REQUIREMENTS **1**
TABLE OF CONTENTS **3**
SECTION OVERVIEW **4**

Table 4-1a Region 5 Hazard Identification Summary – Geological *6*
Table 4-1b Region 5 Hazard Identification Summary – Meteorological and Technological *7*
Map 4-1 City of Fife – Flood Hazard Map *9*
Map 4-2 City of Fife – Lahar Hazard Map *10*
Map 4-3 City of Fife – Landslide Hazard Map *11*
Map 4-4 City of Fife – Seismic Hazard Map *12*
Map 4-5 City of Fife – Dam Failure –Mud Mt. Dam Hazard Area Map *13*
Map 4-6 City of Fife – Tsunami Hazard Map *14*
Map 4-7 City of Fife – Hazardous Material Hazard Area Map *15*
Map 4-8 City of Fife – Pipeline Hazard Area Map *16*
Table 4-2 Vulnerability Analysis: General Exposure *17*
Table 4-3 Vulnerability Analysis: Population Exposure *18*
Table 4-4 Vulnerability Analysis: General Infrastructure Exposure *19*
Table 4-5a Consequence Analysis Chart – Geological *21*
Table 4-5b Consequence Analysis Chart – Meteorological *22*
Table 4-6c Consequence Analysis Chart – Technological *23*

SUMMARY OF VULNERABILITY AND IMPACT ANALYSIS **24**
ENDNOTES **25**

Section Overview

The Risk Assessment portrays the threats of natural hazards, the vulnerabilities of a jurisdiction to the hazards, and the consequences of hazards impacting communities. Each hazard is addressed as a threat and is identified and profiled in the Hazard Identification. The vulnerabilities to and consequences of a given hazard are addressed in the Vulnerability Analysis. Vulnerability is analyzed in terms of exposure of both population and infrastructure to each hazard. Consequences are identified as anticipated, predicted, or documented impacts caused by a given hazard when considering the vulnerability analysis and the characteristics of the hazard as outlined in its identification.



The WA Region 5 **Hazard Identification** was used for this plan. Each jurisdiction's Vulnerability and Consequence Analysis are based on the Region 5 Hazard Identification. The Region 5 Hazard Identification can be found in the Base Plan. Each hazard is identified in subsections. The subsections are grouped by hazard-type (i.e., geological and meteorological hazards) and then alphabetically within each type. A summary table of the WA Region 5 Hazard Identification is included in this section as Table 4-1a and Table 4-1b.

The **Vulnerability Analysis** is displayed in six tables:

- **Table 4-2 General Exposure**
- **Table 4-3 Population Exposure**
- **Table 4-4 General Infrastructure Exposure**
- **Table 4-5a Consequence Analysis Chart – Geological**
- **Table 4-5b Consequence Analysis Chart – Meteorological**
- **Table 4-5c Consequence Analysis Chart – Technological**

Each jurisdiction has its own Vulnerability Analysis, and it is included in this section.

The **Consequence Identification** is organized by Threat. Each threat page summarizes the hazard, graphically illustrates exposures from the Vulnerability Analysis, and lists corresponding Consequences. Each jurisdiction has its own Consequence Identification and it is included in this section: avalanche, earthquake, landslide, tsunami, volcanic, drought, flood, severe weather, and wildland/urban interface fire.

Specific information and analysis of a jurisdiction's owned (public) infrastructure is addressed in the Infrastructure Section of its Plan.

Table 4-1a Region 5 Hazard Identification Summary – Geological

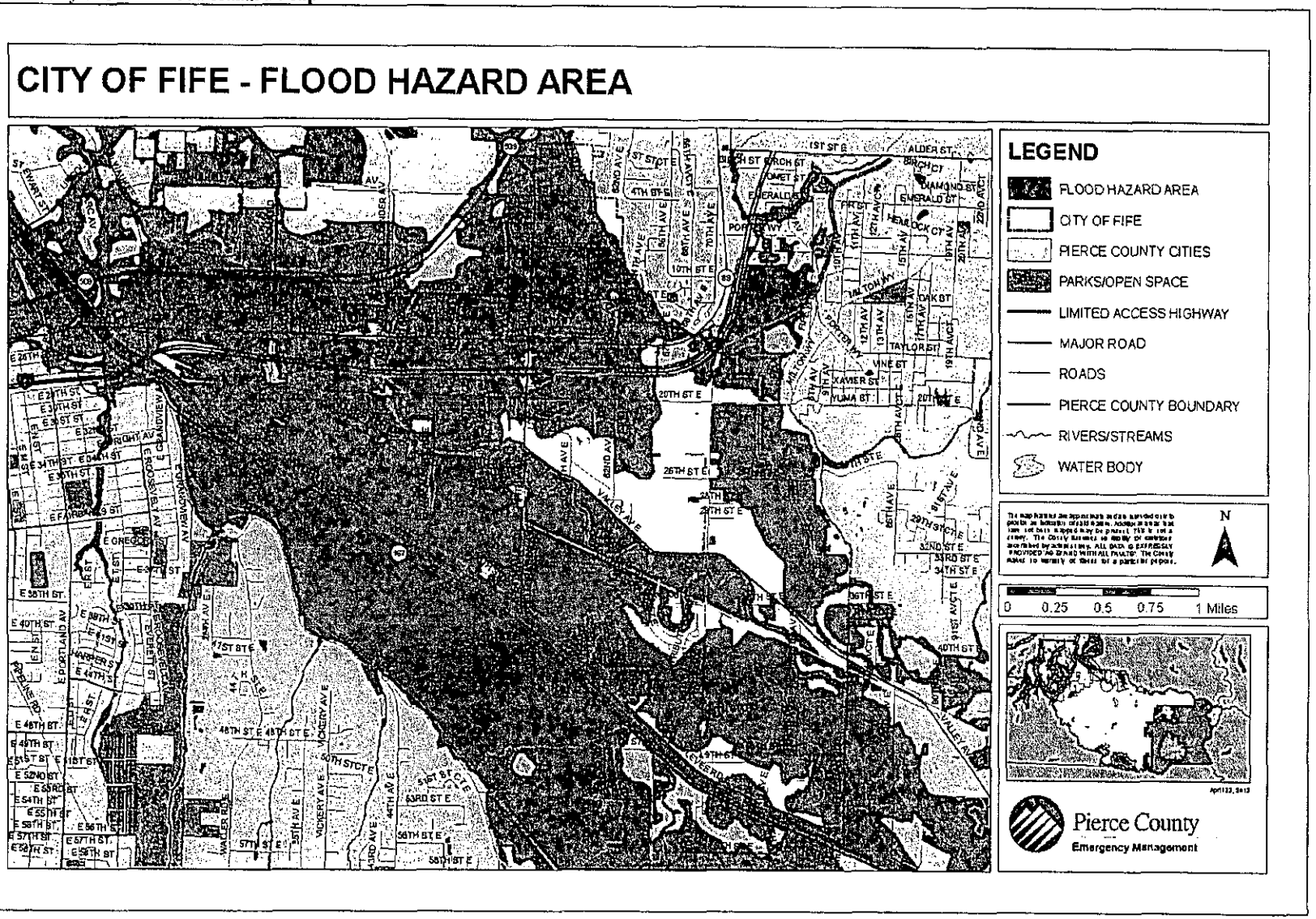
	THREAT	DECLARATION # DATE/PLACE	PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Geological	**AVALANCHE**	Not Applicable	Yearly in the mountainous areas of the County including Mt. Rainier National Park and the Cascades.	*Slab Avalanche* Areas Vulnerable to Avalanche Pierce County Avalanches of Record
	EARTHQUAKE	N/A--7/22/2001 Nisqually Delta N/A--6/10/2001 Satsop DR-1361-WA--2/2001 Nisqually N/A--7/2/1999 Satsop DR-196-WA--4/29/1965 Maury Island, *South Puget Sound* N/A--4/13/1949 South Puget Sound N/A--2/14/1946 Maury Island	Magnitude 4.3 Magnitude 5.0—Intraplate Earthquake Magnitude 6.8—Intraplate Earthquake Magnitude 5.8—Intraplate Earthquake Magnitude 6.5—Intraplate Earthquake Magnitude 7.0—Intraplate Earthquake Magnitude 6.3 40 years or less occurrence Historical Record—About every 23 years for intraplate earthquakes	Types of Earthquakes Major Faults in the Puget Sound Basin Seattle and Tacoma Fault Segments Pierce County Seismic Hazard Major Pacific Northwest Earthquakes Notable Earthquakes Felt in Pierce County Salmon Beach, Tacoma Washington following Feb 2001 Earthquake Liquefaction Niigata Japan-1964 Lateral Spreading – March 2001
	LANDSLIDE	DR-1159-WA--12/96-2/1997 DR-852-WA--1/1990 DR-545-WA--12/1977	Slides with minor impact (damage to 5 or less developed properties or $1,000,000 or less damage) 10 years or less. Slides with significant impact (damage to 6 or more developed properties or $1,000,000 or greater damage) 100 years or less.	Northeast Tacoma Landslide January 2007 Pierce County Landslide and Soil Erosion Hazard Pierce County Shoreline Slope Stability Areas Notable Landslides in Pierce County *Ski Park Road – Landslide January 2003* SR-165 Bridge Along Carbon River – Landslide February 1996 Aldercrest Drive - Landslide
	TSUNAMI	N/A--1894 Puyallup River Delta N/A--1943 Puyallup River Delta (did not induce tsunami) N/A--1949 Tacoma Narrows	Due to the limited historic record, until further research can provide a better estimate a recurrence rate of 100 years plus or minus will be used.	Hawaii 1957 – Residents Explore Ocean Floor Before Tsunami Hawaii 1949 – Wave Overtakes a Seawall Puget Sound Fault Zones, Vertical Deformation and Peak Ground Acceleration Seattle and Tacoma Faults Tsunami Inundation and Current Based on Earthquake Scenario Puget Sound Landslide Areas and Corresponding Tsunamis Puget Sound River Deltas, Tsunami Evidence and Peak Ground Acceleration Salmon Beach, Pierce County 1949 – Tsunamigenic Subaerial Landslide Puyallup River Delta – Submarine Landslides Puyallup River Delta – Submarine Landslides and Scarp Damage in Tacoma from 1894 Tsunami
	VOLCANIC	DR-623-WA--5/1980	The recurrence rate for either a major lahar (Case I or Case II) or a major tephra eruption is 500 to 1000 years. The recurrence rate for either a major lahar (Case I or Case II) or a major tephra eruption is 500 to 1000 years.	Volcano Hazards Debris Flow at Tahoma Creek – July 1988 Douglas Fir Stump – Electron Lahar Deposit in Orting Landslide from Little Tahoma Peak Covering Emmons Glacier Tephra Types and Sizes Lahars, Lava Flows and Pyroclastic Hazards of Mt. Rainier Estimated Lahar Travel Times for Lahars 10_7 to 10_8 Cubic Meters in Volume Ashfall Probability from Mt. Rainier Annual Probability of 10 C meters or more of Tephra Accumulation in the Pacific NW Cascade Eruptions Mt. Rainier Identified Tephra, last 10,000 years Pierce County River Valley Debris Flow History

Table 4-1b Region 5 Hazard Identification Summary – Meteorological and Technological

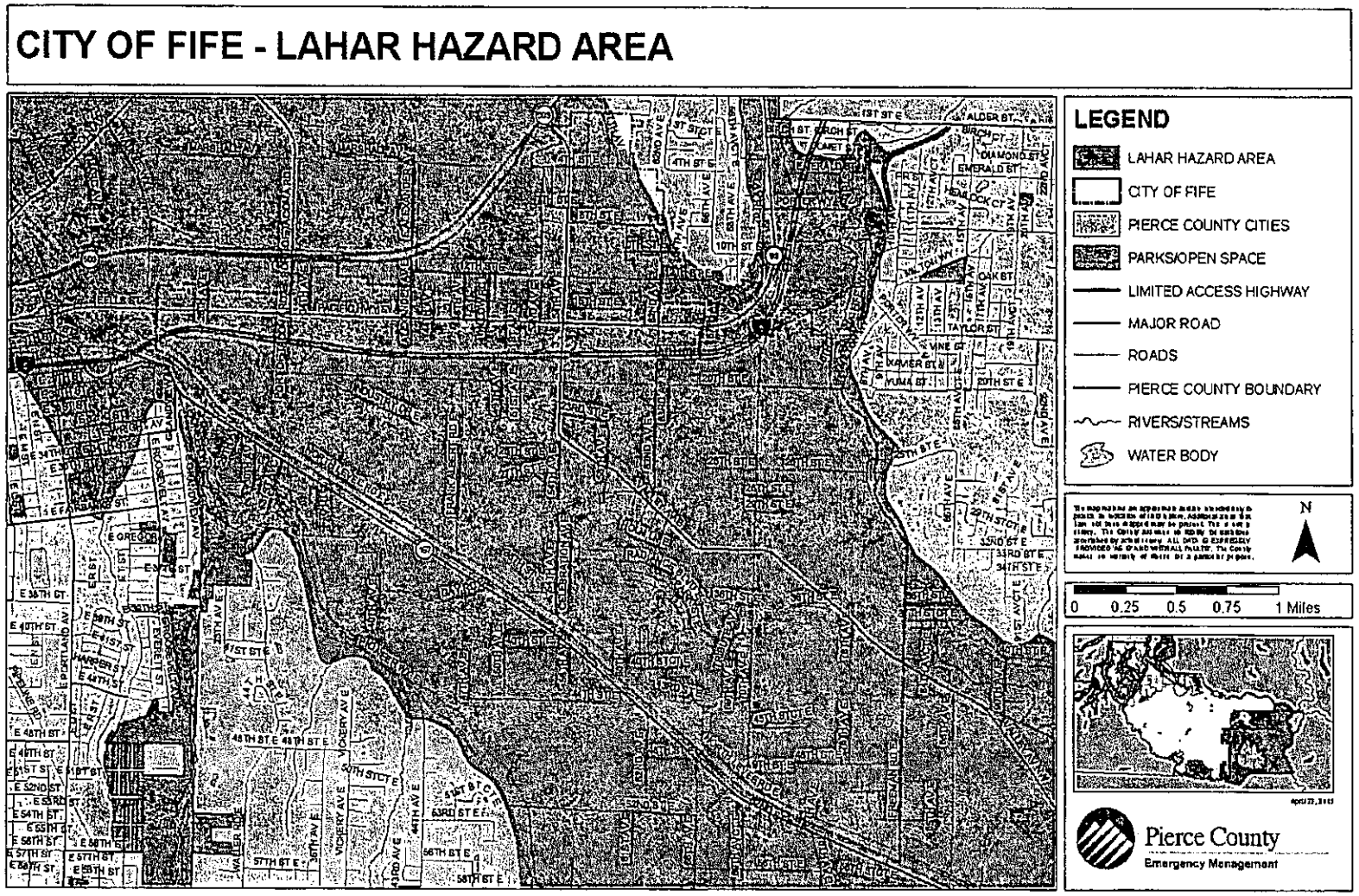
	HAZARD	FEMA DECLARATION # DATE/PLACE		PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Meteorological	**CLIMATE CHANGE**	Not Applicable		Not Applicable	Global Temperature Change: 1850 to 2006 Recent and Projected Temperatures for the Pacific Northwest Comparison of the South Cascade Glacier: 1928 to 2003 Lower Nisqually Glacier Retreat: 1912 to 2001
	DROUGHT	Many dry seasons but no declarations		50 years or less occurrence	Sequence of Drought Impacts Palmer Drought Severity Index Pierce County Watersheds %Area of Basin in Drought Conditions Since 1895 %Time in Severe to Extreme Drought: 1895-1995 %Time in Severe to Extreme Drought: 1985-1995 Notable Droughts Affecting Pierce County Columbia River Basin USDA Climate Zones – Washington State
	FLOOD Since 1978 3 Repetitive Loss Areas have produced 83 Claims totaling Nearly $1.78 Million Dollars.	DR-WA 1817--01/2009 NA-11/2008 DR-1734-WA--12/2007 DR-1671-WA--11/2006 DR-1499-WA--10/2003 DR-1159-WA--12/96-2/97 DR-1100-WA--1-2/1996 DR-1079-WA--11-12/1995 DR-896-WA--12/1990 DR-883-WA--11/1990	DR-852-WA--1/1990 DR-784-WA--11/1986 DR-545-WA--12/1977 DR-492-WA--12/1975 DR-328-WA--2/1972 DR-185-WA--12/1964	5 years or less occurrence Best Available Science--The frequency of the repetitive loss claims indicates there is approximately a 33 percent chance of flooding occurring each year.	Pierce County Watersheds Pierce County Flood Hazard Pierce County Repetitive Loss Areas Clear Creek Basin Repetitive Flood Loss Aerial Photo Flood Hazard Declared Disasters Feb 8, 1996 Flooding – Del Rio Mobile Homes Along Puyallup River Nov 2006 Flooding River Park Estates – Along Puyallup River Nov 2006 Flooding State Route 410 – Along Puyallup River Nov 2006 Flooding Rainier Manor – Along Puyallup River
	SEVERE WEATHER	DR-4056-WA – 01/2012 DR-1825- WA – 12/2008 – 01/2009 DR-1682-WA--12/2006 DR-1159-WA--12/96-2/1997 DR-1152-WA--11/19/1996	DR-981-WA--1/1993 DR-137-WA--10/1962	The recurrence rate for all types of severe storms is 5 years or less.	Fujita Tornado Damage Scale Windstorm Tracks Pierce County Severe Weather Wind Hazard – South Wind Event Pierce County Severe Weather Wind Hazard – East Wind Event Notable Severe Weather in Pierce County Snowstorm January 2004 Downtown Tacoma Satellite Image – Hanukkah Eve Windstorm Before/After Tornado Damage Greensburg KS May 2007 Public Works Responds 2005 Snowstorm Downed Power Pole February 2006 Windstorm County Road December 2006 Windstorm Tacoma Narrows Bridge – November 1940 Windstorm
	WUI FIRE	Not Applicable		Based on information from WA DNR the probability of recurrence for WUI fire hazard to Pierce County is 5 years or less.	Washington State Fire Hazard Map Pierce County Forest Canopy Industrial Fire Precaution Level Shutdown Zones Carbon Copy Fire August 2006 Washington State DNR Wildland Fire Statistics: 1973-2007 DNR Wildland Response South Puget Sound Region: 2002-2007 Pierce County DNR Fires

	HAZARD	FEMA DECLARATION# DATE/PLACE	PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Technological	**ABANDONED MINES**	Not Applicable	Based on Information from WA DNR The Pierce County Sheriff's Department reports that they have had very few incidents of citizens entering the abandoned mines in east Pierce Co. Isolated issues of minor subsidence have occurred, typically following flood events in 2009/2010	Pierce County – Mine Hazard Areas MapBased on WA DNR Information Schasse, Koler, Eberle, and Christie, The Washington State Coal Mine Map Collection: A Catalog, Index, and User's Guide, Open File Report 94-7, June 1984 Pierce County 2009 HIRA
	CIVIL DISTURBANCE	Not Applicable	Looking at the historical record, major civil unrest is a rare occurrence. Movement of military supplies from Port of Tacoma to Joint Base Lewis McChord	Pierce County Civil Disturbance Map Pierce County 2009 HIRA Hilltop Riots Tacoma 1969, 1991
	DAM FAILURE	Not Applicable	No occurrences in Pierce County 50+ years recurrence	Table D-1 PC Dams that Pose a High or Significant Risk, Pierce County 2009 HIRA Table D-2 Dam Failures in WA State
	ENERGY EMERGENCY	Not Applicable	• January 2009 Loss of electricity to Anderson Island (underground [water] cable) Power Outage is the most frequent energy incident, via natural hazards (storms, ice) Recurrence Rate – 5 years (storms) Recurrence Rate – 50+ years (major)	Pierce County 2009 HIRA Tacoma Power Outage 1929, USS Lexington provide power Anderson Island January 2009 Underwater power cable broke
	EPIDEMIC	Not Applicable	Pandemics • 2009-2010 "Swine Flu Recurrence Rate – 20 years	Pierce County 2009 HIRA Tacoma Pierce County Health District Pan Flu Plan Measles, State of WA, 1990 E Coli, January 1993, September 1998
	HAZARDOUS MATERIALS	Not Applicable	• Dalco Passage oil spill of October 13, 2004 • Chlorine Spill Port of Tacoma February 12, 2007 Large Incidents 5 year recurrence Small Incidents 1 week recurrence	Pierce County 2009 HIRA Table HM-1 Reported Releases (in lbs.)of all chemicals, for Pierce Co. in 2008, all industries Chlorine Spill in the Port of Tacoma (February 12, 2007) Dalco Passage oil spill (October 13, 2004) Illegal methamphetamine sites (A high of 258 sites in 2001-56 sites in 2009
	PIPELINE FAILURE	Not Applicable	• Northwest Pipeline Corporation natural gas incident May 1st 2003, in Sumner 10 years recurrence	Map P-1 Pierce County Pipelines Pierce County 2009 HIRA
	TERRORISM	Not Applicable	Minor PC Incident –Recurrence 1-year Major Incident – Recurrence 100 years	Pierce County 2009 HIRA Tacoma's Model Cities and Human Rights Offices burned 1972 African American church burned 1993 White Supremacy Group Hate Crimes, 1998 Westgate Family Medicine Clinic bombed, 2011
	TRANSPORTATION ACCIDENT	Not Applicable	Minor Incidents occur daily Major Incidents rare Recurrence Rate – 10 years	Pierce County 2009 HIRA Rail: Freight Derailment, Steilacoom 1996 Freight Train Derailment, Chambers Bay, 2011

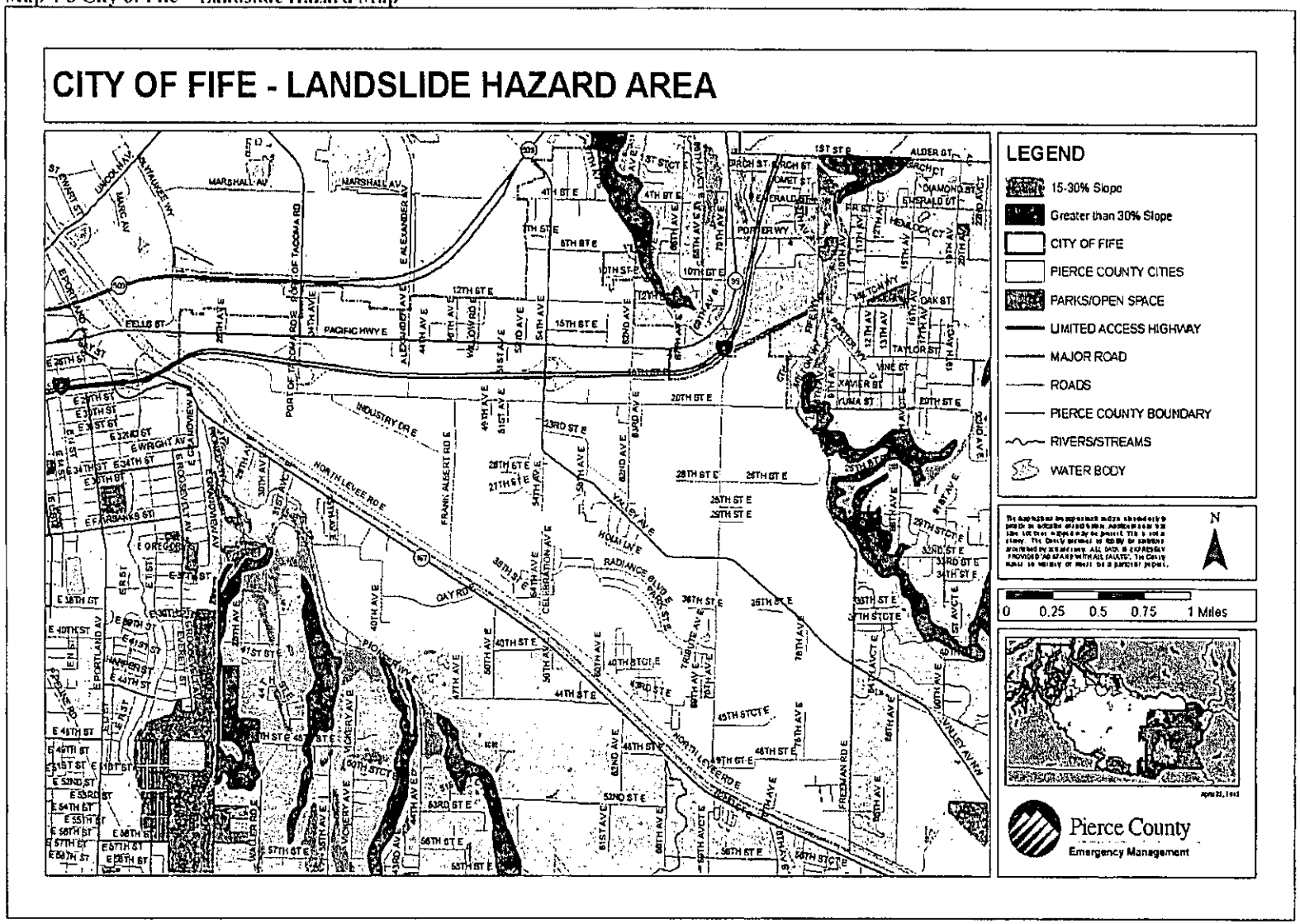
Map 4-1 City of Fife – Flood Hazard Map



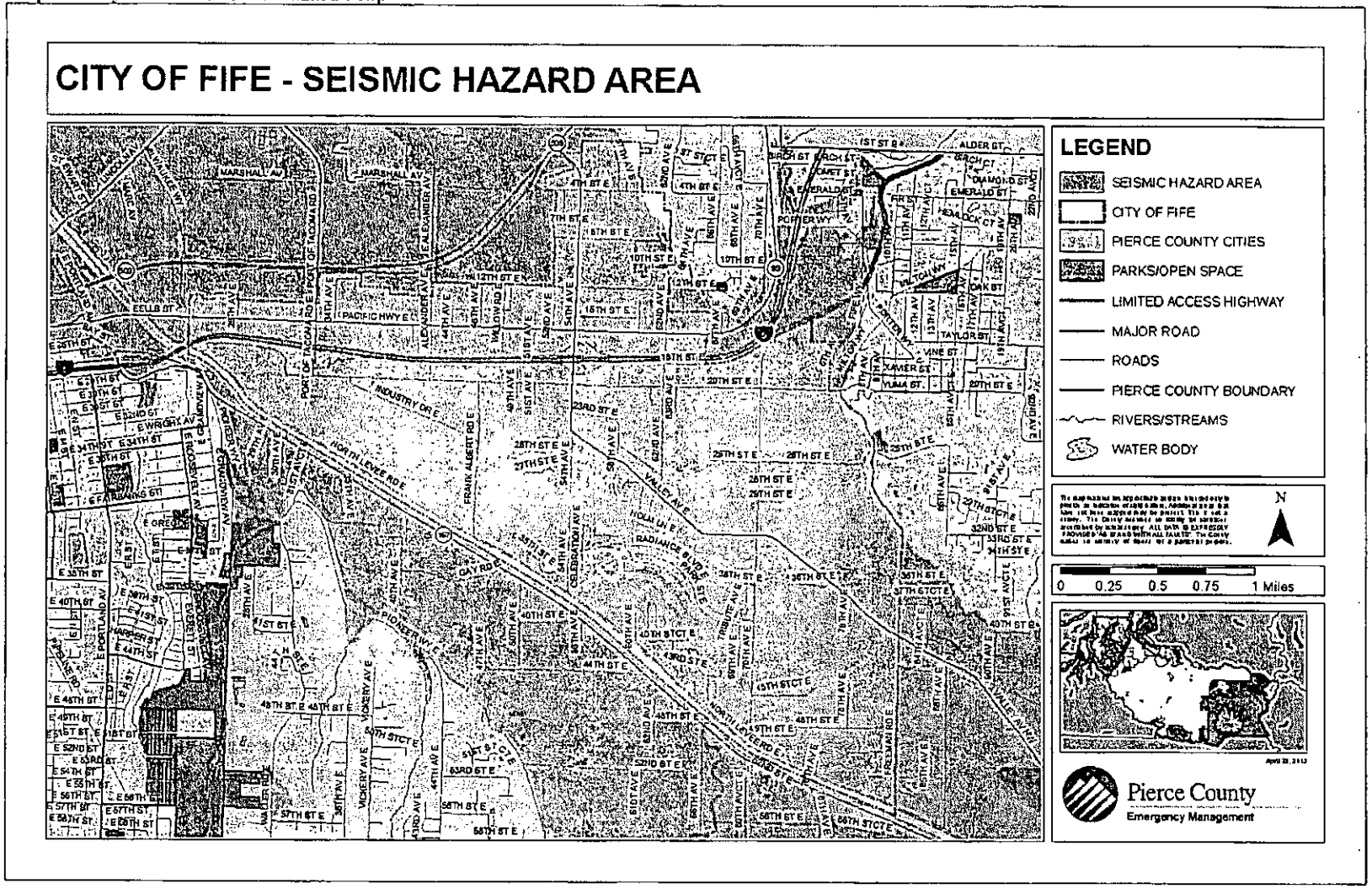
Map 4-2 City of Fife – Lahar Hazard Map



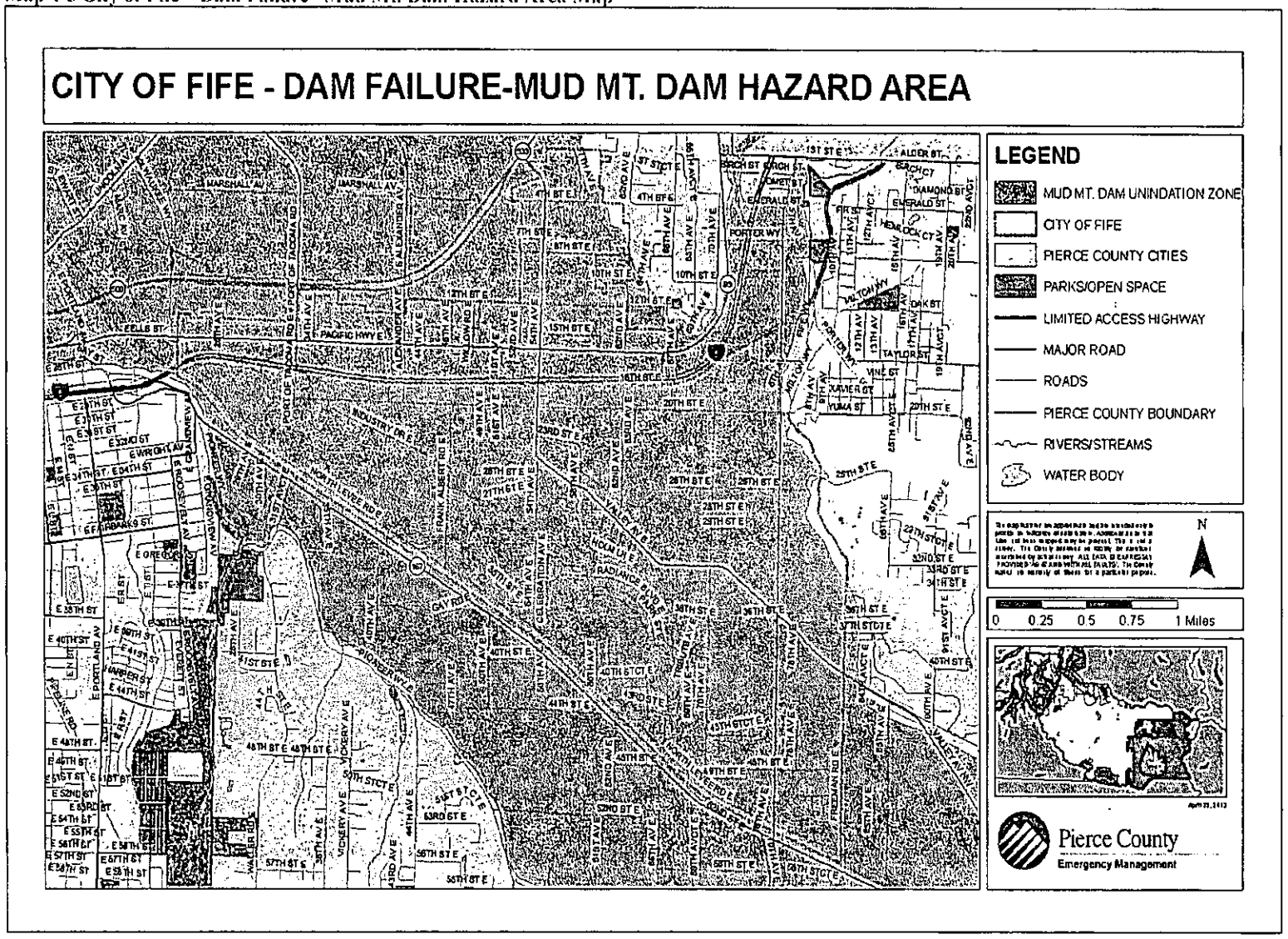
Map 4-3 City of Fife – Landslide Hazard Map



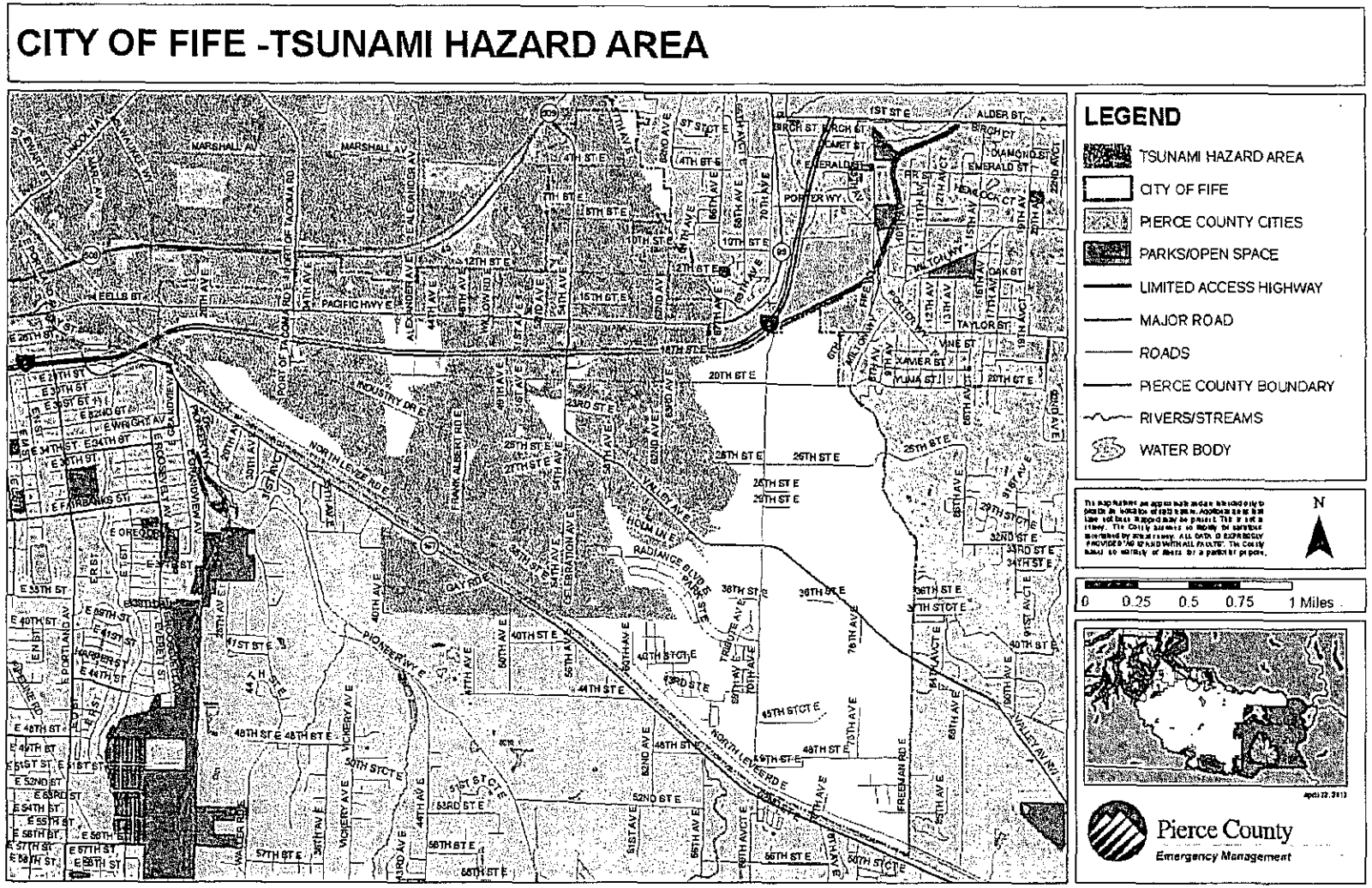
Map 4-4 City of Fife – Seismic Hazard Map



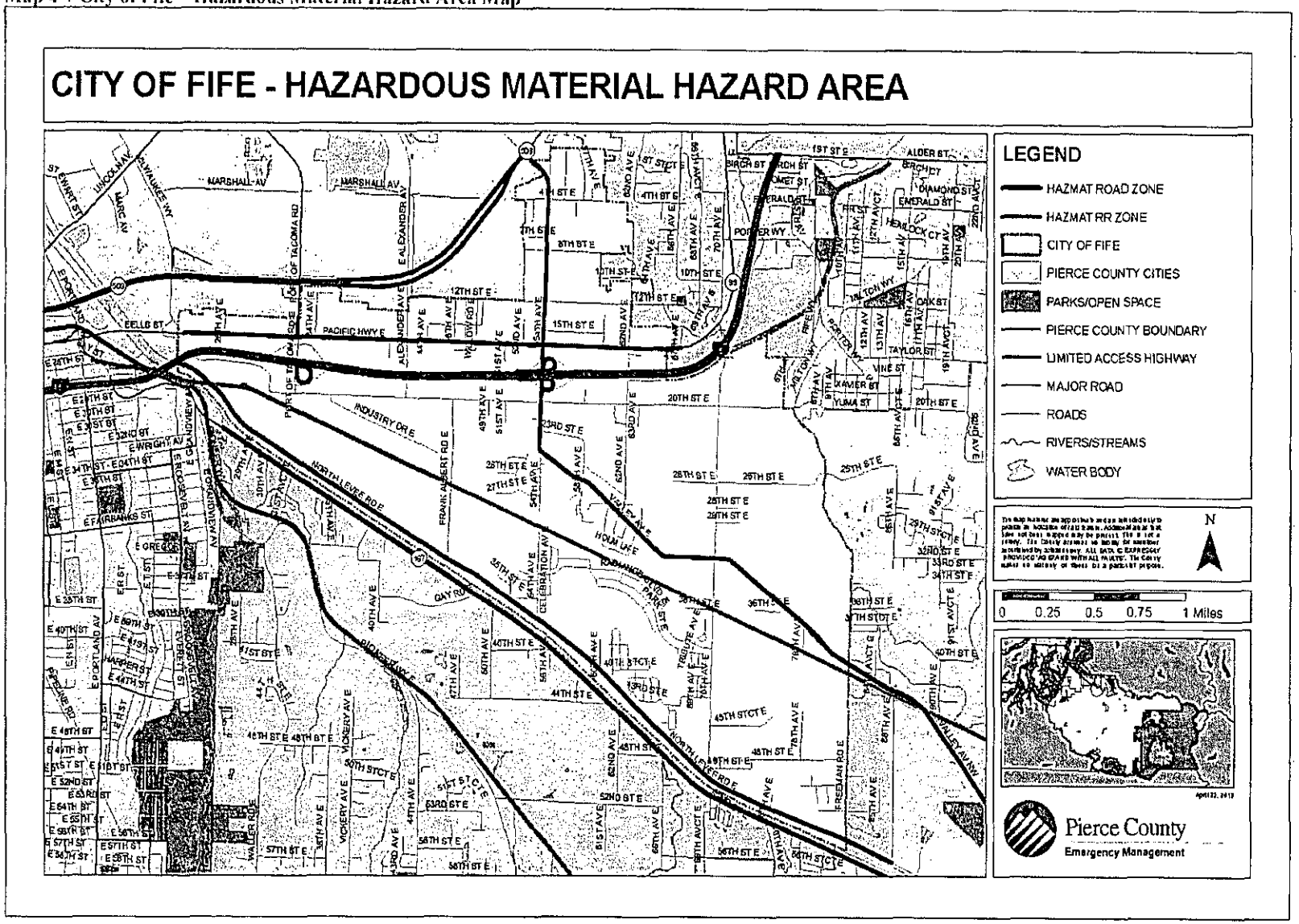
Map 4-5 City of Fife – Dam Failure –Mud Mt. Dam Hazard Area Map



Map 4-6 City of Fife – Tsunami Hazard Map



Map 4-7 City of Fife – Hazardous Material Hazard Area Map



Map 4-8 City of Fife – Pipeline Hazard Area Map

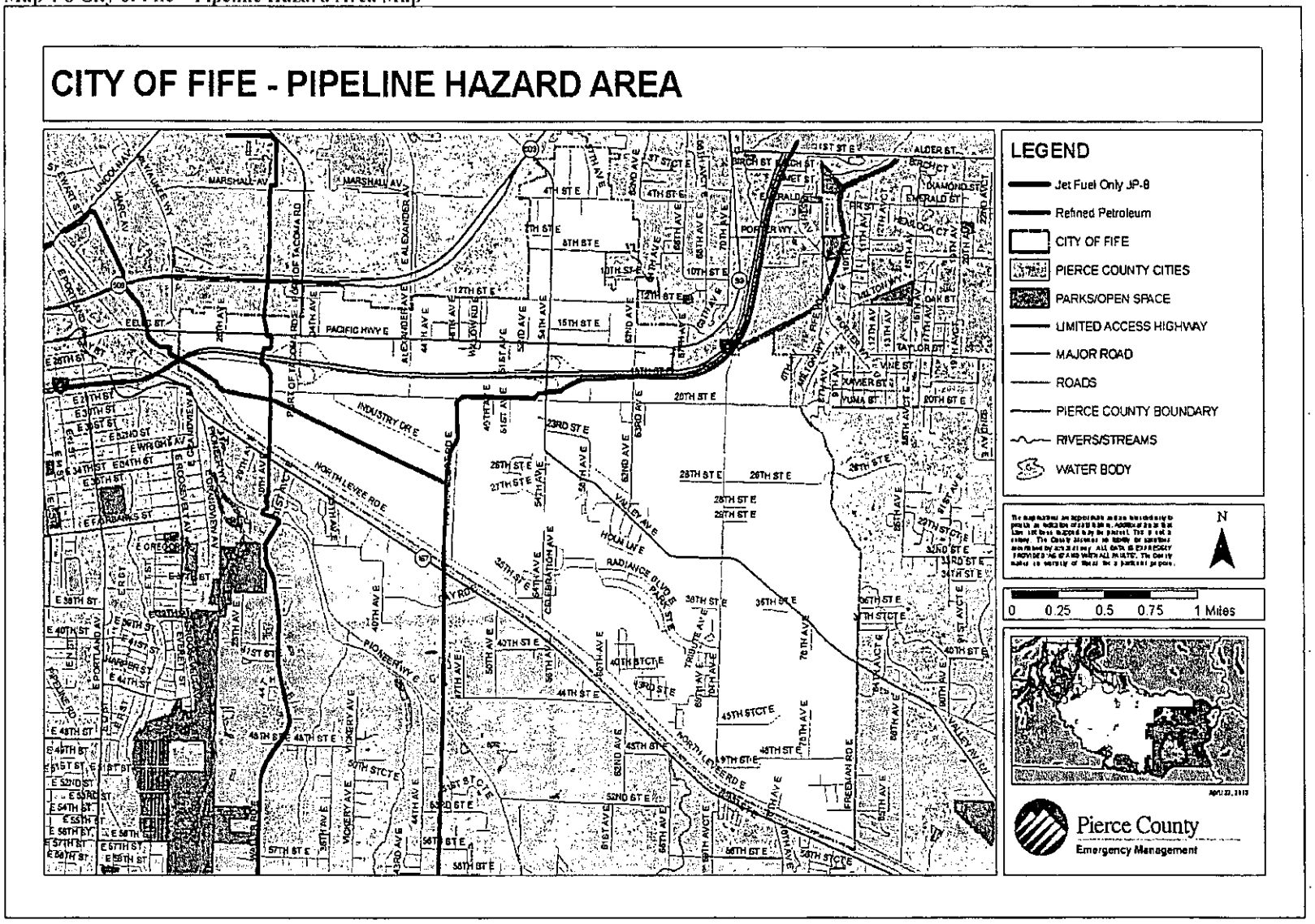


Table 4-2 Vulnerability Analysis: General Exposure[1]

	THREAT[2]	AREA (SQ MI)		PARCELS	
		Total	% Base	Total	% Base
	BASE	4.77	100%	3,133	100%
Geological	Avalanche[3]	NA	NA	NA	NA
	Earthquake[4]	4.77	100%	3131	99.9%
	Landslide	2.48	51.9%	2.113	28.0%
	Tsunami	2.95	61.8%	1.611	51.4%
	Volcanic[5]	4.77	100%	3.133	100%
Meteorological	Drought[6]	4.77	100%	3.133	100%
	Flood	4.47	93.7%	2.721	86.8%
	Severe Weather	4.77	100%	3.133	100%
	WUI Fire[7]	NA	NA	NA	NA
Technological	Abandoned Mines[8]	NA	NA	NA	NA
	Civil Disturbance[9]	4.77	100%	3.133	100%
	Dam Failure[10]	4.75	99.5%	3131	99.94%
	Energy Emergency[11]	4.77	100%	3.133	100%
	Epidemic[12]	4.77	100%	3.133	100%
	Hazardous Material[13]	4.73	99.1%	2.750	99.7%
	Pipeline Hazard[14]	1.48	31%	334	10.6%
	Terrorism[15]	4.77	100%	3.133	100%
	Transportation Accidents[16]	4.73	99.1%	2.750	99.7%

Table 4-3 Vulnerability Analysis: Population Exposure

	THREAT[2]	POPULATION			SPECIAL POPULATIONS (OF TOTAL EXPOSED POPULATION)			
		Total	% Base	Density (pop/sq mi)	65+ yrs		20- yrs	
					#	%	#	%
	BASE	9,173	100%	1,925	594	100%	2,267	100%
Geological	Avalanche	NA	NA	NA	NA	NA	NA	NA
	Earthquake	9,173	100%	1,925	594	6%	2,267	28%
	Landslide	10	.1%	186.43	0	0.0%	2	.1%
	Tsunami	6,634	72.3%	2,246	466	78.5%	1,867	72.6%
	Volcanic	354	2.0%	156.76	24	2.1%	113	2.1%
Meteorological	Drought	9,173	100%	1,925	594	100%	2,267	100%
	Flood	9,086	99.1%	2,030.7	581	97.8%	2,545	99%
	Severe Weather	9,173	100%	1,925	594	100%	2,267	100%
	WUI Fire	NA	NA	NA	NA	NA	NA	NA
Technological	Abandoned Mines	NA	NA	NA	NA	NA	NA	NA
	Civil Disturbance	9,173	100%	1,925	594	100%	2,267	100%
	Dam Failure	9,173	100%	1,930.39	594	100%	2,570	100%
	Energy Emergency	9,173	100%	1,925	594	100%	2,267	100%
	Epidemic	9,173	100%	1,925	594	100%	2,267	100%
	Hazardous Material	9,173	100%	1,940	594	100%	2,267	100%
	Pipeline Hazard	4,170	45%	2,813.88	326	55%	1,123	44%
	Terrorism	9,173	100%	1,925	594	100%	2,267	100%
	Transportation Accidents	9,173	100%	1,940	594	100%	2,267	100%

Table 4-4 Vulnerability Analysis: General Infrastructure Exposure

	THREAT[2]	LAND VALUE			IMPROVED VALUE			TOTAL ASSESSED VALUE		
		Total ($)	% Base	Avg. Value ($)	Total ($)	% Base	Avg. Value ($)	Total ($)	% Base	Avg. Value ($)
	BASE	$910,525,800	100%	$290,537	$959,368,700	100%	$306,214	$1,869,621,500	100%	$596,751
Geological	Avalanche	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Earthquake	$23,850,000	3.7%	$140,294	$23,947,800	2.2%	$140,869	$47,797,800	2.7%	$281,164
	Landslide	$781,500	.1%	$60,115	$803,900	.1%	$61,838	$1,585,400	.1%	$121,954
	Tsunami	$683,926,400	70.2%	$396,602.36	$687,053,900	71.6%	$726,476.66	$1,325,980,300	70.9%	$823,079
	Volcanic	$4,945,100	.42%	$109,891	$1,955,700	.17%	$43,460	$6,900,800	.30%	$153,351
Meteorological	Drought	$1,171,223,100	100%	$155,914	$1,136,618,500	100%	$151,307	$2,307,841,600	100%	$307,221
	Flood	$848,191,000	93.2%	$311,720	$840,216,600	87.6%	$308,790	$1,688,407,600	90.3%	$620,510
	Severe Weather	$1,171,223,100	100%	$155,914	$1,136,618,500	100%	$151,307	$2,307,841,600	100%	$307,221
	WUI Fire	NA	NA	NA	NA	NA	NA	NA	NA	NA
Technological	Abandoned Mines	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Civil Disturbance	$910,525,800	100%	$290,537	$959,368,700	100%	$306,214	$1,869,621,500	100%	$596,751
	Dam Failure	$909,607,400	100%	$290,609	$597,130,200	100%	$305,792	$1,866,737,600	100%	$596,211
	Energy Emergency	$910,525,800	100%	$290,537	$959,368,700	100%	$306,214	$1,869,621,500	100%	$596,751
	Epidemic	$910,525,800	100%	$290,537	$959,368,700	100%	$306,214	$1,869,621,500	100%	$596,751

	Hazardous Material	$904,912,800	99.4%	$289,572	$957,643,000	99.8%	$306,446	$1,862,555,800	99.6%	$596,017.86
	Pipeline Hazard	$334,166,700	37%	$1,000,499	$297,162,700	31%	$889,709	$631,329,400	34%	$1,890,207.78
	Terrorism	$910,525,800	100%	$290,537	$959,368,700	100%	$306,214	$1,869,621,500	100%	$596,751
	Transportation Accidents	$904,912,800	99.4%	$289,572	$957,643,000	99.8%	$306,446	$1,862,555,800	99.6%	$596,017.86

Table 4-5a Consequence Analysis Chart – Geological[17,18]

	THREAT[2]	CONSEQUENCE	YES OR NO
Geological	Avalanche	Impact to the Public	No
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	No
		Impact to the Environment	No
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No
	Earthquake	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	Yes
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes
	Landslide	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes
	Tsunami	Impact to the Public	No
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	No
		Impact to the Environment	No
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No
	Volcanic[19]	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No

Table 4-5b Consequence Analysis Chart – Meteorological

	THREAT	CONSEQUENCE	YES OR NO
Meteorological	Drought	Impact to the Public	Yes
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	No
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No
	Flood	Impact to the Public	Yes
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No
	Severe Weather	Impact to the Public	Yes
		Impact to the Responders	Yes
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	Yes
		Impact to the Environment	Yes
		Impact to the Jurisdiction Economic Condition	Yes
		Impact to Reputation or Confidence in Jurisdiction	Yes
	WUI Fire	Impact to the Public	No
		Impact to the Responders	No
		Impact to COG and/or COOP in the Jurisdiction	No
		Impact to Property, Facilities and Infrastructure	No
		Impact to the Environment	No
		Impact to the Jurisdiction Economic Condition	No
		Impact to Reputation or Confidence in Jurisdiction	No

Table 4-6c Consequence Analysis Chart – Technological[20]

	THREAT	CONSEQUENCE	YES OR NO
Technological	Abandoned Mines	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Civil Disturbance	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Dam Failure	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Energy Emergency	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Epidemic	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Hazardous Materials	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Pipeline Hazards	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Terrorism	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	

		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	
	Transportation Accident	Impact to the Public	
		Impact to the Responders	
		Impact to COG and/or COOP in the Jurisdiction	
		Impact to Property, Facilities and Infrastructure	
		Impact to the Environment	
		Impact to the Jurisdiction Economic Condition	
		Impact to Reputation or Confidence in Jurisdiction	

Summary of Vulnerability and Impact Analysis

The City of Fife lies in the northern portion of Pierce County. The City is highly susceptible to fourteen of the eighteen hazards we considered in this plan. The risks are Earthquake, Landslide, Tsunami, Lahar, Drought, Flood, Severe Weather, Civil Disturbance, Dam Failure, Energy Emergency, Epidemic, Hazardous Materials, Terrorism, and Transportation Accidents. The risks greatly impact the critical infrastructure within the City of Fife most of the hazards severely impact Interstate 5, Pacific Highway 99, and Highway 167 and the essential facilities which are located in these areas. Due to the cross-county transportation, this area could be easily blocked by any number of hazards. In addition, the City is at risk of a dike failure from Lake Tapps and Mud Mountain Dam.

Endnotes

[1] Info obtained from Pierce County GIS application. CountyView Pro (13/14).

[2] Currently the expanding body of empirical data on climate change supports its basic premise that the long term average temperature of the earth's atmosphere has been increasing for decades *(1850 to 2008)*. This trend is continuing and will create dramatic changes in the local environment of Pierce County. Today, questions revolve around the overall increase in local temperature and its long term effects. Climate change today refers to variations in either regional or global environments over time. Time can refer to periods ranging in length from a few decades to other periods covering millions of years. A number of circumstances can cause climate change. Included herein are such diverse factors as solar cycles, volcanic eruptions, changing ocean current patterns, or even something as unusual as a methane release from the ocean floor. Over the past 150 years good temperature records have allowed comparisons to be made of global temperatures from year-to-year. This has shown an overall increase of approximately 0.7° C during this period. An increasing body of scientific evidence implies that the primary impetus driving climate change today is an increase in atmospheric green house gases.

[3] Jurisdiction is not vulnerable to this hazard, therefore it is marked NA or non-applicable.

[4] It should be noted here that although all residents, all property and all infrastructure of the City of Fife are vulnerable to earthquake shaking, not all are subject to the affects of liquefaction and liquefiable soils which is what is represented here.

[5] The threat of volcanic ashfall affects the entire Region 5 however some jurisdictions are specifically threatened by lahar flows directly from Mt. Rainier; an active volcano.

[6] The entire jurisdiction is vulnerable to drought. There are three things that must be understood about the affect of drought on the jurisdiction: 1) Drought is a Region wide event. When it does affect Pierce County, it will affect every jurisdiction, 2) Drought will gradually develop over time. It is a gradually escalating emergency that may take from months to years to affect the jurisdiction. Initially lack of water may not even be noticed by the citizens. However, as the drought continues, its effects will be noticed by a continually expanding portion of the community until it is felt by all, and 3) Jurisdictions will be affected differently at different times as a drought develops. This will vary depending on the needs of each local jurisdiction. Some examples are: jurisdictions that have industry that requires a continuous supply of a large quantity of water; others have agriculture that requires water, but may only require it at certain times of the year; and, some jurisdictions have a backup source of water while others do not.

[7] According to the most recent information from the Department of Natural Resources, the City of Fife while undergoing development does not have large areas of forested land that could develop into a wildland/urban interface fire. Further study is needed to determine the extent of the area that could be affected.

[8] The definition of Abandoned Mines comes from the 2010 Pierce County HIRA: Abandoned mines are any excavation under the surface of the earth, formerly used to extract metallic ores, coal, or other minerals, and that are no longer in production.

[9] The definition of Civil Disturbance comes from the 2010 Pierce County HIRA: Civil Disturbance (unrest) is the result of groups or individuals within the population feeling, rightly or wrongly, that their needs or rights are not being met, either by the society at large, a segment thereof, or the current overriding political system. When this results in community disruption of a nature where intervention is required to maintain public safety it has become a civil disturbance. Additionally, the Region 5 Strategic Plan includes Operational Objectives 3 & 4: Intelligence Gathering, Indicators, Warnings, etc: and Intelligence and Information Sharing.

[10] The definition of Dam Failure comes from the 2010 Pierce County HIRA: A dam is any "barrier built across a watercourse for impounding water.[10]" Dam failures are catastrophic events "characterized by the sudden, rapid, and uncontrolled release of impounded water. The vulnerability analysis was based on the potential dam failure from Mud Mountain Dam and Lake Tapps using Pierce County's GIS data which originated from each of the dams emergency plans inundation maps.

[11] The definition of an Energy Emergency comes from the 2010 Pierce County HIRA: Energy emergency refers to an out-of-the-ordinary disruption, or shortage, of an energy resource for a lengthy period of time. Additionally the Region 5 Strategic Plan addresses Energy Emergencies in its Operational Objective 32, Restoration of Lifelines which addresses the restoration of critical services such as oil, gas, natural gas, electric, etc.

[12] The definition of epidemic comes from the TPCHD Flu Plan of 2005: A Pandemic is an epidemic occurring over a very wide area and usually affecting a large proportion of the population. Pandemics occur when a wholly new

subtype of influenza A virus emerges. A "novel" virus can develop when a virulent flu strain that normally infects birds or animals infects a human who has influenza; the two viruses can exchange genetic material, creating a new, virulent flu virus that can be spread easily from person-to-person. Unlike the flu we see yearly, no one would be immune to this new flu virus, which would spread quickly, resulting in widespread epidemic disease – a pandemic. (DOH Plan & U.S. Dept. of HHS).

[13] The definition of Hazardous Materials comes from the 2010 Pierce County HIRA: Hazardous materials are materials, which because of their chemical, physical or biological properties, pose a potential risk to life, health, the environment, or property when not properly contained. A hazardous materials release then is the release of the material from its container into the local environment. A general rule of thumb for safety from exposure to hazardous material releases is 1000ft; the Emergency Response Guidebook 2008, established by the US Dept of Transportation, contains advice per specific materials. The vulnerability analysis was broken into two sub sections for a better understanding of the hazard using Pierce County's GIS data with a 500 foot buffer on either side of the railroads and major roadways.

[14] The definition of Pipeline Emergency comes from the 2010 Pierce County HIRA: While there are many different substances transported through pipelines including sewage, water and even beer, pipelines, for the purpose of this chapter, are transportation arteries carrying liquid and gaseous fuels. They may be buried or above ground

[15] The definition of Terrorism comes from the 2010 Pierce County HIRA: Terrorism has been defined by the Federal Bureau of Investigation as, "the unlawful use of force or violence against persons or property to intimidate or coerce a Government, the civilian population or any segment thereof, in furtherance of political or social objectives." These acts can vary considerably in their scope, from cross burnings and the spray painting of hate messages to the destruction of civilian targets. In some cases, violence in the schools has also been labeled as a form of terrorism.

[16] The definition of Transportation Accident comes from the 2010 Pierce County HIRA: Transportation accidents as used in this assessment include accidents involving a method of transportation on the road, rail, air, and maritime systems within the confines of Pierce County. The vulnerability analysis was broken into three sub sections for a better understanding of the hazard using Pierce County's GIS data; Commencement Bay to include inland rivers and streams, railroads, and roads. A 200 foot buffer was applied to all the shorelines and a 500 foot buffer on either side of the railroads and roadways.

[17] In the Impact to Property, Facilities and Infrastructure, both Tables 4-5a and 4-5b, look at the impact to all property, facilities and infrastructure existing in the jurisdiction, not just to that owned by the jurisdiction.

[18] The consideration for each of these hazards, in both Tables 4-5a and 4-5b, as to whether an individual hazard's consequences exist or not, is based on a possible worst case scenario. It must also be understood that a "yes" means that there is a good possibility that the consequence it refers to could happen as a result of the hazard, not that it will. Conversely "No" means that it is highly unlikely that consequence will have a major impact, not that there will be no impact at all.

[19] While the major volcanic hazard from Mt. Rainier is from a lahar descending the main river valleys surrounding the mountain, it is not the only problem. Most jurisdictions could receive tephra in greater or lesser amounts, sometimes with damaging results. Consequence analyses in this section take into account the possibility of tephra deposition in addition to a lahar.

[20] The Technological Consequences are added herein to acknowledge the role of human-caused hazards in the health and safety of unincorporated Pierce County. The consequences noted are under the same criteria as natural hazards given their impacts to the departmental assets.

Section 5

Mitigation Strategy Requirements

Mitigation Strategy---Requirement §201.6(c)(3):
The plan **shall** include a strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

Local Hazard Mitigation Goals---Requirement §201.6(c)(3)(i):
[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

- Does the new or updated plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?

Identification and Analysis of Mitigation Actions---Requirement §201.6(c)(3)(ii):
[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.
Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance---Requirement §201.6(c)(3)(ii):
[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

- Does the new or updated plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?
- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

Implementation of Mitigation Actions---Requirement: §201.6(c)(3) (iii):
[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

- Does the new or updated mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)
- Does the new or updated mitigation strategy address how the actions will be **implemented and administered**, including the responsible department, existing and potential resources and the timeframe to complete each action?
- Does the new or updated prioritization process include an emphasis on the use of **cost-benefit review to** maximize benefits?
- Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?

SECTION 5

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
MITIGATION STRATEGY SECTION

Table of Contents

MITIGATION STRATEGY REQUIREMENTS **1**
TABLE OF CONTENTS **2**
STARTUP MITIGATION MEASURES **6**

EXISTING MITIGATION ACTIONS 6
PLAN MAINTENANCE 6

HAZARD MITIGATION FORUM **7**

PIERCE COUNTY HAZARD MITIGATION FORUM 7

CITY GOVERNMENT MITIGATION MEASURES **8**

CAPABILITY IDENTIFICATION AND EVALUATION 8
EMERGENCY RADIO SYSTEM 8
SIREN UPGRADE 9
CONTINUITY OF OPERATIONS PLAN (COOP) 9
CONTINUITY OF GOVERNMENT PLAN (COG) 10
NEW CONSTRUCTION WEATHER RADIO PROGRAM 10
HOME SALE WEATHER RADIO PROGRAM 11
IMPROVE EMERGENCY NOTIFICATION 11
COMMUNITY RATING SYSTEM/FLOOD INSURANCE 12
ASSIST WITH BARRICADES AND TRAFFIC CONTROL WITH EVACUATION 12
REPAIR AND CLEAR DEBRIS FROM SIDEWALKS 13
CLEAR DEBRIS FROM CITY BUILDING GROUNDS 13
CLEAR DEBRIS FROM STREETS / REPAIR LEVEES/ MAINTAIN ACCESS 14
GIS HAZARD IDENTIFICATION 14
MAINTAIN GIS SYSTEM 15
INSPECT AND REPAIR DD21 INFRASTRUCTURES 15
INSPECT AND REPAIR DD23 INFRASTRUCTURE 16
MAINTAIN ALL BRIDGES TO CARRY DESIGN LOADS 16
MAINTAIN DRINKING WATER STANDARDS IN WATER SYSTEM 17
MAINTAIN FIRE FLOW THROUGH WATER DISTRIBUTION SYSTEM 17
MAINTAIN SEWER FLOWS IN SYSTEM WITHOUT BACK-UP 18
MAINTAIN TRAFFIC CONTROL DEVICES 18
MAINTAIN VEHICLE AND EQUIPMENT FLEET 19
CREATE FULL ACCOUNTING RECORDS FOR UTILITY PLANT INFRASTRUCTURES 19
MAINTAIN DRAINAGE OF STREETS, DITCHES & STREAMS 20
NATIONAL FLOOD INSURANCE PROGRAM 20

PUBLIC EDUCATION MITIGATION MEASURES 21

FIFE EMERGENCY PUBLIC EDUCATION PROGRAM 21
EVACUATION AND SHELTER IN PLACE BROCHURES 21
UPDATED LAHAR INFORMATION DISTRIBUTION 22
HISPANIC LAHAR HAZARD EDUCATION 22

MITIGATION MEASURE MONITORING 23
ENDNOTES 26

Table 5-1 City of Fife Mitigation Strategy Matrix

Implementation Mechanism	Mitigation Measure *(Hazard(s))*	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
Startup	1. Existing Mitigation Actions *(E,L,T,V,D,F,WUI,SW,MM)*	Fife - Administration	Ongoing	✓	✓	✓	✓	✓	✓
	2. Plan Maintenance *(E,L,T,V,D,F,WUI,SW,MM)*	Fife - Administration	Ongoing	✓	✓	✓	✓	✓	✓
HMF	1. Pierce County Hazard Mitigation Forum *(E,L,T,V,D,F,WUI,SW,MM)*	PC DEM; Fife - Administration	Ongoing	✓	✓	✓	✓	✓	✓
City Government	1. Capability Identification and Evaluation *(E,L,T,V,D,F,WUI,SW,MM)*	Fife - Administration	1-2	N/A					
	2. Emergency Radio System *(E,L,T,V,F,SW,MM)*	Fife - City Manager and Police Department	1-2	✓	✓			✓	
	3. Siren Upgrade *(V,F)*	Fife - Public Works and Police Department	5	✓	✓				
	4. Continuity of Operations Plan (COOP) *(E,L,T,V,D,F,SW,MM)*	Fife - All Departments	1-2	✓	✓				✓
	5. Continuity of Government Plan (COG) *(E,L,T,V,D,F,SW,MM)*	Fife - City Manager	5	✓	✓				✓
	6. New Construction Weather Radio Program *(E,L,T,V,F,SW,MM)*	Fife - Communications	Ongoing	✓	✓			✓	✓
	7. Home Sale Weather Radio Program *(E,L,T,V,F,SW,MM)*	Fife - City Manager	5	✓				✓	✓
	8. Improve Emergency Notification *(T,V,F)*	Fife - Police Department	Ongoing	✓				✓	
	9. Community Rating System / Flood Insurance *(F)*	Fife - Community Development Department	Ongoing	✓				✓	✓
	10. Assist with Barricades and Traffic Control with Evacuation *(E,L,T,V,F,SW)*	Fife - Public Works and Police Department	Ongoing	✓	✓			✓	✓
	11. Repair and Clear Debris from Sidewalks *(E,L,T,V,F,SW)*	Fife - Public Works Department	1-2	✓	✓			✓	✓
	12. Clear Debris from City Building Grounds *(E,L,T,V,F,SW,WUI)*	Fife - Public Works Department	Ongoing	✓				✓	✓
	13. Clear Debris from Streets / Repair Levees / Maintain Access *(E,L,T,V,F,SW)*	Fife - Public Works Department	5	✓	✓			✓	✓

Implementation Mechanism	Mitigation Measure *(Hazard(s))*	Lead Jurisdiction(s)/ Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations Continuity	Partnerships	Natural Resources	Preparedness	Sustainable Economy
	14. GIS Hazard Identification *(E,L,T,V,F,SW,WUI,MM)*	Fife	Ongoing	✓	✓	✓			
	15. Maintain GIS System *(E,L,T,V,F,SW,WUI,MM)*	Fife - Public Works Department	Ongoing	✓	✓				
	16. Inspect and Repair DD21 Infrastructures *(E,L,T,V,F,SW)*	Fife - Public Works Department/Drainage District #21	Ongoing	✓	✓	✓	✓	✓	✓
	17. Inspect and Repair DD23 Infrastructures *(E,L,T,V,F,SW)*	Fife - Public Works Department/Drainage District #23	Ongoing	✓	✓	✓	✓	✓	✓
	18. Maintain All Bridges to Carry Design Loads *(E,L,T,V,F,SW,WUI)*	Fife - Public Works/Pierce County Public Works	Ongoing	✓	✓	✓		✓	✓
	19. Maintain Drinking Water Standards in Water System *(E,L,T,V,F,SW)*	Fife - Public Works & Water Department	Ongoing	✓	✓		✓	✓	✓
	20. Maintain Fire Flow through Water Distribution System *(E,L,D,F)*	Fife - Public Works Department	Ongoing	✓	✓	✓	✓	✓	✓
	21. Maintain Sewer Flows in System without Back-Up *(E,L,T,V,F,SW)*	Fife - Public Works/ WA State DOH/TPCHD	Ongoing	✓	✓		✓	✓	✓
	22. Maintain Traffic Control Devices *(E,L,T,V,F,SW)*	Fife - Public Works Department	Ongoing	✓	✓			✓	✓
	23. Maintain Vehicle and Equipment Fleet *(E,L,T,V,F,SW,WUI)*	Fife - Public Works Fleet Department	Ongoing	✓	✓	✓	✓	✓	✓
	24. Create Full Accounting Records for Utility Plant Infrastructures *(E,L,T,V,F,SW,MM)*	Fife - Finance Department	Ongoing						✓
	25. Maintain Drainage of Streets, Ditches & Streams *(E,L,T,V,F,SW,WUI,MM)*	Fife - Public Works Department	Ongoing	✓	✓	✓	✓	✓	✓
	26. National Flood Insurance Program *(F)*	Fife – Public Works; PC DEM	Ongoing	✓	✓	✓	✓	✓	
Public Education	1. Fife Emergency Public Education Program *(E,L,T,V,D,F,WUI,SW,MM)*	Fife - Police Department	1-2	✓		✓		✓	
	2. Education and Shelter In Place Brochures *(E,T,V,F,MM)*	Fife - Police Department	1-2	✓				✓	
	3. Updated Lahar Information Distribution *(V)*	Fife - Police Department	1-2	✓				✓	
	4. Hispanic Lahar Hazard Education *(V)*	Fife - Police Department	1-2	✓				✓	

Startup Mitigation Measures

Existing Mitigation Actions

Hazards: E, L, T, V, D, F, WUI, SW[1], MM[2]

The City of Fife will integrate the hazard mitigation plan into existing plans, ordinances, and programs to dictate land uses within the jurisdiction. Further, Fife will continue to implement existing programs, policies, and regulations as identified in the Capability Identification Section of this Plan. This includes such actions as updating the Critical Area Regulations and any ensuing land use policies with best available science. It also includes continuing those programs that are identified as technical capabilities.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Preserve or Restore Natural Resources; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be accomplished with local budgets or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Administration).
5. **Timeline** = Ongoing
6. **Benefit** = City-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Plan Maintenance

Hazards: E, L, T, V, D, F, WUI, SW[1], MM[2]

Fife will adopt those processes outlined in the Plan Maintenance Section of this Plan.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Preserve or Restore Natural Resources; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s)** = City of Fife - Administration).
5. **Timeline** = Ongoing
6. **Benefit** = City-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Hazard Mitigation Forum

Pierce County Hazard Mitigation Forum

Hazards: E, L, T, V, D, F, WUI, SW[1], MM[2]

Fife will work in conjunction with the County through the Pierce County Hazard Mitigation Forum (HMF). The Forum will continue as a means of coordinating mitigation planning efforts among all jurisdictions within the County that have completed a mitigation plan. This ensures efficient use of resources and a more cooperative approach to making a disaster resistant county. The HMF meets annually; every October. This is addressed in the Plan Maintenance Section of this Plan.

1. **Goal(s) Addressed** = Protect Life and Property; Promote A Sustainable Economy; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Preserve or Restore Natural Resources; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = Minor
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s)** = PC DEM; City of Fife
5. **Timeline** = Ongoing
6. **Benefit** = Regional
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

City Government Mitigation Measures

Capability Identification and Evaluation

Hazards: E, L, T, V, D, F, WUI, SW[1], MM[2]

Fife will develop a consistent and replicable system for evaluating the City's capabilities. A comprehensive evaluation will lead to specific policy recommendations to more effectively achieve disaster resistant communities. Further, a capability evaluation involves measurable variables so that capabilities may eventually be tracked in conjunction with the implementation of all mitigation measures. This is a key component in evaluating the success of the City's overall mitigation strategy.

1. **Goal(s) Addressed** = N/A. Goals addressed are contingent upon the mitigation measures resulting from this priority.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s)** = City of Fife
5. **Timeline** = Short-term
6. **Benefit** = City-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Emergency Radio System

Hazards: E, L, T, V, F, SW[1], MM[2]

One of the major problems confronting emergency responders is the inability to communicate across disciplines. Historically, police, fire, ambulance, utilities and public works have not been able to talk to each other, much less responders from neighboring jurisdictions. Fife will develop and implement a communication networking system to allow cross-banding between the various City Departments and adjacent jurisdictions.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through grants.
4. **Lead Jurisdiction(s)** = City of Fife - City Managers with assistance from Police Department
5. **Timeline** = Short-term
6. **Benefit** = First responders, citizens and visitors
7. **Life of Measure** = 10 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Siren Upgrade

Hazards: V, F[1]

Fife has been proactive in developing good siren coverage for the lahar warning system within the City. However many of the sirens are old and outdated. The City will replace the older lahar sirens and redistribute the sirens for a better coverage of the population.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations.
2. **Cost of Measure** = 3 sirens at $70.000 each = $210.000
3. **Funding Source and Situation** = Funding could be obtained through grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works and Police Department
5. **Timeline** = Long-term
6. **Benefit** = City of Fife citizens, businesses, Puyallup Tribe, visitors and first responders
7. **Life of Measure** = 20 years
8. **Community Reaction** = the proposal would be somewhat controversial.

Continuity of Operations Plan (COOP)

Hazards: E, L, T, V, D, F, SW[1], MM[2]

A key to a jurisdiction having the ability to rebound from a catastrophic incident is to have plans in place on how the individual departments will continue operations afterwards. Where will they operate from if their facilities are unusable? How will they fulfill their public obligations if their equipment is damaged or their staff is ill? In order to prepare for these types of eventualities, Fife will develop and implement a COOP for each different department in the City of Fife.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s)** = City of Fife – All Departments
5. **Timeline** = Short-term
6. **Benefit** = City of Fife Individual Departments, staff and citizens
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Continuity of Government Plan (COG)

Hazards: E, L, T, V, D, F, SW[1], MM[2]

City government as a whole may have problems functioning in the post disaster climate. In order to make sure the City can fulfill its obligations to the citizens, the City of Fife will develop and implement a plan on how to keep the City operational and responsive to the needs of the citizens in the post disaster environment.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Promote A Sustainable Economy.
2. **Cost of Measure** = Staff time and materials
3. **Funding Source and Situation** = Funding could be obtained through local budgets.
4. **Lead Jurisdiction(s)** = City of Fife - City Manager
5. **Timeline** = Long-term
6. **Benefit** = City of Fife staff and employees, Citizens of Fife, Regional Partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

New Construction Weather Radio Program

Hazards: E, L, T, V, F, SW[1], MM[2]

A major problem that arises again and again is the difficulty in notifying the public during times of emergency or disaster. One key method that can be used to assist with this process is to distribute emergency information over NOAA Weather Radio. However, if the public does not have access to weather radios they will be unable to receive warnings or other emergency information. In order to increase the number of families receiving this information the City of Fife will actively pursue programs to increase the number of weather radios in the jurisdiction. The first of these programs is to require that new construction be hard wired for NOAA Weather Radios.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Promote A Sustainable Economy.
2. **Cost of Measure** = $3,000
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Communications Department
5. **Timeline** = Ongoing
6. **Benefit** = Citizens of Fife, Businesses, Puyallup Tribe and First Responders
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected with no adverse reaction from others.

Home Sale Weather Radio Program

Hazards: E, L, T, V, F, SW[1], MM[2]

The second program that the City of Fife will develop is to require that all homes being sold within the City limits be certified that they have a NOAA Weather Radio wired into the house. The City will do this through developing and passing an ordinance that all homes must fulfill that requirement.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness for Disasters. Promote A Sustainable Economy.
2. **Cost of Measure** = $3,000
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s)** = City of Fife - Manager's Office
5. **Timeline** = Long-Term
6. **Benefit** = City of Fife citizens who live in the valley
7. **Life of Measure** = 30 years
8. **Community Reaction** = the proposal would be somewhat controversial.

Improve Emergency Notification

Hazards: T, V, F[1]

In order to assist citizens who do not currently have weather radios within their homes the City will procure NOAA weather/all hazard radios and distribute them to homes constructed prior to the ordinance requiring their installation.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = $10,000.00
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Police Department
5. **Timeline** = Ongoing
6. **Benefit** = 2,000-5,000 residents
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Community Rating System/Flood Insurance

Hazards: F[1]

The City of Fife joined the National Flood Insurance Program's Community Rating System (CRS) on May 1, 2006. Currently, having a rating of 7 which gives properties in the Special Flood Hazard Areas (SFHA) a 15% decrease in their flood insurance premiums and those outside the SFHAs a 5% decrease. Fife will attempt to increase the deductions available for citizens through proactively working to increase the City's rating from its current 7 to a 6 or 5.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = Initiate: $15,000.00 Maintain: $3,000.00 annually
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Community Development Department
5. **Timeline** = Ongoing
6. **Benefit** = All citizens/property owners in City of Fife
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Assist with Barricades and Traffic Control with Evacuation

Hazards: E, L, T, V, F, SW[1]

During emergencies or disasters the Fife Police Department will oversee traffic control and evacuation if necessary. In order to facilitate the movement of traffic and if necessary evacuation of the City, the Public Works Department and other departments if necessary will place and maintain barricades for traffic control as directed by Fife Police Department.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works & Police Department
5. **Timeline** = Ongoing
6. **Benefit** = City of Fife citizens and the community
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Repair and Clear Debris from Sidewalks

Hazards: E, L, T, V, F, SW[1]

The ability of citizens to evacuate with ease and without obstruction on foot from homes, places of work and commercial areas is necessary. Therefore the City of Fife will emphasize the continued repair and maintenance of sidewalks and other pathways for safe pedestrian travel.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations: Increase Public Preparedness for Disasters: Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets.
4. **Lead Jurisdiction(s)** = City of Fife - Public Work Department
5. **Timeline** = Short-term
6. **Benefit** = Pedestrians and motoring public
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would be somewhat controversial.

Clear Debris from City Building Grounds

Hazards: E, L, T, V, F, SW, WUI[1]

In the post disaster environment debris will be a major problem. Primarily to remove life safety debris and secondarily to remove aesthetic and non-aesthetic debris.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Department
5. **Timeline** = Ongoing
6. **Benefit** = Infrastructure patrons
7. **Life of Measure** = 90 days
8. **Community Reaction** = the proposal would be somewhat controversial.

Clear Debris from Streets / Repair Levees/ Maintain Access

Hazards: E, L, T, V, F, SW[1]

Provide safe passable roadways starting with arterials.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Department
5. **Timeline** = Long-term
6. ***Benefit*** = *All motoring and transitory public*
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would be somewhat controversial.

GIS Hazard Identification

Hazards: E, L, T, V, F, SW, WUI[1], MM[2]

Identify locations and information about hazardous substances and plan for protection of these to reduce risk of environmental pollution and life/safety risk.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife
5. **Timeline** = Ongoing
6. **Benefit** = City of Fife Individual Departments, staff, businesses and citizens
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain GIS System

Hazards: E, L, T, V, F, SW, WUI[1], MM[2]

With the heavy reliance on Geographic Information Systems (GIS) today it is imperative that the City's capability to define and locate critical facilities, lifelines, hazardous chemicals, etc. be maintained and protected to the highest possible standard.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works
5. **Timeline** = Ongoing
6. **Benefit** = City of Fife Individual Departments, staff and citizens
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Inspect and Repair DD21 Infrastructures

Hazards: E, L, T, V, F, SW[1]

Maintain drainage and basins served by Drainage District 21.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Department/Drainage District 21
5. **Timeline** = Ongoing
6. **Benefit** = All drainage District customers and up-stream communities
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would be somewhat controversial.

Inspect and Repair DD23 Infrastructure

Hazards: E, L, T, V, F, SW[1]

Maintain drainage and basins served by Drainage District 23.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Department/Drainage District 23
5. **Timeline** = Ongoing
6. **Benefit** = Drainage District #23 customers and up-stream communities
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would be somewhat controversial.

Maintain All Bridges to Carry Design Loads

Hazards: E, L, T, V, F, SW, WUI[1]

Establish procedures to maintain bridges and to verify that the bridges are capable of carrying design loads. Contract with Pierce County Public Works for routine and emergency bridge inspection services.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works/Pierce County Public Works
5. **Timeline** = Ongoing
6. **Benefit** = City of Fife and emergency jurisdictions
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain Drinking Water Standards in Water System

Hazards: E, L, T, V, F, SW[1]

A major problem after many disasters is having enough potable water for the routine and supplemental testing of public water system.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. ***Lead Jurisdiction(s)*** = City of Fife - Public Works & Water Department
5. **Timeline** = Ongoing
6. **Benefit** = All customers and transitory populations
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain Fire Flow through Water Distribution System

Hazards: E, L, D, F[1]

A key to controlling the fires that erupt after major incidents, especially earthquakes is to have adequate fire flow at all times. Therefore the City of Fife will maintain system for optimal readiness as well as having a call in system with manned phones for leaks and the inspection of wells and interties.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works
5. **Timeline** = Ongoing
6. **Benefit** = All employees and business populations
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain Sewer Flows in System without Back-Up

Hazards: E, L, T, V, F, SW[1]

Assess and maintain sanitary sewer collection and delivery.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Dept/WA State Dept. of Health/TPCHD
5. **Timeline** = Ongoing
6. **Benefit** = All sewer system customers and property owners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Maintain Traffic Control Devices

Hazards: E, L, T, V, F, SW[1]

Verify and maintain operation of all traffic control devices.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Department
5. **Timeline** = Ongoing
6. **Benefit** = All motoring public and the transitory population
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain Vehicle and Equipment Fleet

Hazards: E, L, T, V, F, SW, WUI[1]

Maintain fleet vehicles and equipment in a manner consistent with the needs of the city.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Fleet Department
5. **Timeline** = Ongoing
6. **Benefit** = All city employees and customers
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would be somewhat controversial.

Create Full Accounting Records for Utility Plant Infrastructures

Hazards: E, L, T, V, F, SW[1], MM[2]

Within two years create full accounting records for all utility plant infrastructures for water, sewer and storm utilities and update GIS system to show what is in the files.

1. **Goal(s) Addressed** = Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Finance Department
5. **Timeline** = Ongoing
6. **Benefit** = City of Fife Finance Dept and businesses
7. **Life of Measure** = 2 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Maintain Drainage of Streets, Ditches & Streams

Hazards: E, L, T, V, F, SW, WUI[1], MM[2]

Keep storm water utilities maintained and improved as necessary.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Preserve or Restore Natural Resources; Increase Public Preparedness for Disasters; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants and state or federal grants.
4. **Lead Jurisdiction(s)** = City of Fife - Public Works Department
5. **Timeline** = Ongoing
6. **Benefit** = All City Employees
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

National Flood Insurance Program

Hazards: F

Fife will ensure that the City is compliant with the National Flood Insurance Program by updating floodplain identification and mapping, enforcing the flood damage prevention ordinance, and providing public education on floodplain requirements and impacts. The City of Fife will be an active participant in the Pierce County Flood Control District.

1. **Goal(s) Addressed** = Protect life and property; Ensure Continuity of Operations; Increase Public Preparedness; Increase and Strengthen Partnerships; Protect the Environment; Increase Public Preparedness
2. **Cost of Measure** = Staff time, special materials required, permits
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants
4. **Lead Jurisdiction(s)** = Fife (Community Development); PC PWU
5. **Timeline** = On-going
6. **Benefit** = City-wide; Regional
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Public Education Mitigation Measures

Fife Emergency Public Education Program

Hazards: E, L, T, V, D, F, WUI, SW[1], MM[2]

Fife will develop a Public Education and Citizen Preparedness Program covering threats, both natural and manmade, to the community. This will be conducted under the auspices of the Fife Police Department.

1. **Goal(s) Addressed** = Protect Life and Property; Establish and Strengthen Partnerships for Implementation; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = $50,000
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Police Department
5. **Timeline** = Short-term
6. **Benefit** = City of Fife Citizens, Business Community Puyallup Tribe and Responders
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community but there could be some controversy.

Evacuation and Shelter in Place Brochures

Hazards: E, T, V, F, MM[2]

Fife is located adjacent to the large industrial base on the Tacoma tide flats. In addition there are rail lines that transport hazardous cargo through the City as well as being bisected by a major highway and freeway system. The result is that there could be a large chemical spill either independent of other incidents or as a result of another incident such as an earthquake. To prepare the citizens for this the City of Fife will distribute information to the public that explains both emergency evacuation and "shelter in place" procedures.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budgets.
4. **Lead Jurisdiction(s)** = City of Fife - Police Department
5. **Timeline** = Short-Term
6. **Benefit** = City of Fife citizens, businesses, Puyallup Tribe and Responders
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Updated Lahar Information Distribution

Hazards: V[1]

One of the greatest hazards facing the citizens of Fife is a lahar from Mt. Rainier. The City is built on a foundation of old lahar deposits. Realizing that the geologists predict that Mt. Rainier will once again send lahars down the Puyallup Valley into Fife the City will develop and distribute lahar information to the general public within the Fife City limits. This will include information on the hazard, the lahar warning system, how to prepare for a lahar, and the evacuation routes out of the City.

1. **Goal(s) Addressed** = Protect life and property; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget
4. **Lead Jurisdiction(s)** =City of Fife - Police Department
5. **Timeline** = Short-term
6. **Benefit** = City of Fife Citizens and First Responders
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Hispanic Lahar Hazard Education

Hazards: V[1]

Due to the large number of Spanish speaking citizens within the City boundaries, the City of Fife will develop and promulgate lahar hazard materials to the Hispanic population in the City. This will include information on the hazard, the lahar warning system, how to prepare for a lahar, and the evacuation routes out of the City.

1. **Goal(s) Addressed** = Protect Life and Property; Increase Public Preparedness for Disasters.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = *Funding could* be obtained through local budget or grants.
4. **Lead Jurisdiction(s)** = City of Fife - Police Department
5. **Timeline** = Short-term
6. **Benefit** = Spanish speaking population, first responders and other citizens
7. **Life of Measure** = 10 years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others.

Mitigation Measure Monitoring

In comparison to the last update, the City of Fife has no new projects and is continuing all of the mitigation strategies as seen below in the table.

Mitigation Strategy	New	Continuing	Accomplished	Removed from update (if applicable)
Existing Mitigation Actions *(All)*		X		
Plan Maintenance *(All)*		X		
Pierce County Hazard Mitigation Forum *(E,L,T,V,D,F,WUI,SW,MM)*		X		
Capability Identification and Evaluation *(E,L,T,V,D,F,WUI,SW,MM)*		X		
Emergency Radio System *(E,L,T,V,F,SW,MM)*		X		
Siren Upgrade *(V,F)*		X		
Continuity of Operations Plan (COOP) *(E,L,T,V,D.F,SW,MM)*		X		
Continuity of Government Plan (COG) *(E,L,T,V,D,F,SW,MM)*		X		
New Construction Weather Radio Program *(E,L,T,V,F,SW,MM)*		X		
Home Sale Weather Radio Program *(E,L,T,V,F,SW,MM)*		X		
Improve Emergency Notification *(T,V,F)*		X		
Community Rating System / Flood Insurance *(F)*		X		
Assist with Barricades and Traffic Control with Evacuation *(E,L,T,V,F,SW)*		X		
Repair and Clear Debris from Sidewalks *(E,L,T,V,F,SW)*		X		
Clear Debris from City Building Grounds *(E,L,T,V,F,SW,WUI)*		X		
Clear Debris from Streets /		X		

Repair Levees / Maintain Access *(E,L,T,V,F,SW)*				
GIS Hazard Identification *(E,L,T,V,F,SW,WUI,MM)*		X		
Maintain GIS System *(E,L,T,V,F,SW,WUI,MM)*		X		
Inspect and Repair DD21 Infrastructures *(E,L,T,V,F,SW)*		X		
Inspect and Repair DD23 Infrastructures *(E,L,T,V,F,SW)*		X		
Maintain All Bridges to Carry Design Loads *(E,L,T,V,F,SW,WUI)*		X		
Maintain Drinking Water Standards in Water System *(E,L,T,V,F,SW)*		X		
Maintain Fire Flow through Water Distribution System *(E,L,D,F)*		X		
Maintain Sewer Flows in System without Back-Up *(E,L,T,V,F,SW)*		X		
Maintain Traffic Control Devices *(E,L,T,V,F,SW)*		X		
Maintain Vehicle and Equipment Fleet *(E,L,T,V,F,SW,WUI)*		X		
Create Full Accounting Records for Utility Plant Infrastructures *(E,L,T,V,F,SW,MM)*		X		
Maintain Drainage of Streets, Ditches & Streams *(E,L,T,V,F,SW,WUI,MM)*		X		
National Flood Insurance Program *(F)*		X		
Fife Emergency Public Education Program *(E,L,T,V,D,F,WUI,SW,MM)*		X		
Education and Shelter In Place Brochures *(E,T,V,F,MM)*		X		
Updated Lahar Information Distribution *(V)*		X		

Hispanic Lahar Hazard Education *(V)*		X		

Endnotes

[1] Hazard Codes:
Where necessary, the specific hazards addressed are noted as follows:

A:	Avalanche
E:	Earthquake
F:	Flood
D:	Drought
T:	Tsunami
V(L OR T):	Volcanic (lahar or tephra-specific)
SW:	Severe Storm (wind-specific)
L:	Landslide
WUI:	Wildland/Urban Interface Fire
MM:	Manmade to include terrorism
ALL:	All hazards, including some man made. Where only natural hazards are addressed, it is noted.

[2] While this Plan is strictly a *Natural* hazard mitigation plan, where a measure stems from a facility recommendation (Infrastructure Section) that deals specifically with terrorism, the mitigation strategy will use that analysis. Other measures, such as those that deal with multi-hazard community preparedness or recovery planning, mitigate man-made hazards and are noted as such. It is not the intent of this notation to imply that all measures were analyzed with regards to man-made hazards or that measures were identified with that in mind. Rather, the notation merely illustrates the potential on this template for the inclusion of man-made hazard analysis.

Section 6

Infrastructure Requirements

Assessing Vulnerability: Identifying Structures---Requirement §201.6(c)(2) (ii)(A):
The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

- Does the new or updated plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?

Assessing Vulnerability: Estimating Potential Losses---Requirement §201.6(c)(2) (ii)(B):
The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

- Does the new or updated plan estimate **potential dollar losses** to vulnerable structures?
- Does the new or updated plan describe the **methodology** used to prepare the estimate?

SECTION 6

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
INFRASTRUCTURE SECTION

Table of Contents

INFRASTRUCTURE REQUIREMENTS **1**
TABLE OF CONTENTS **2**

Table 6-1 Infrastructure Summary *3*
Table 6-2 Infrastructure Category Summary *3*
Table 6-3 Infrastructure Vulnerability – Dependency Summary *3*
Table 6-4 Infrastructure Vulnerability – Hazard Summary *3*
Table 6-5 Infrastructure Dependency Matrix *4*
Table 6-6 Infrastructure Table *5*
Table 6-7 Infrastructure Table Key – Hazard Ratings *8*
Table 6-8 Infrastructure Table Key – Dependency Ratings *10*

ENDNOTES **12**

The **Infrastructure** for the **City of Fife** is displayed in following tables and graphics:

- **Table 6-1 Infrastructure Summary**
- **Table 6-2 Infrastructure Category Summary**
- **Table 6-3 Infrastructure Vulnerability – Dependency Summary**
- **Table 6-4 Infrastructure Vulnerability – Hazard Summary**
- **Table 6-5 Infrastructure Dependency Matrix**
- **Table 6-6 Infrastructure Table**

The tables and graphics show the overview of infrastructure owned by the City of Fife. The infrastructure is categorized according to the infrastructure sectors as designated by the Department of Homeland Security. These tables are intended as a summary only. For further details on Department of Homeland Security infrastructure sectors, please see the Process Section 1.

Table 6-1 Infrastructure Summary

INFRASTRUCTURE SUMMARY[1]	
TOTAL INFRASTRUCTURE (#)	51
TOTAL VALUE ($)	$9,739,887

Table 6-2 Infrastructure Category Summary

INFRASTRUCTURE CATEGORY SUMMARY[2]	
EMERGENCY SERVICES	0
TELECOMMUNICATIONS	0
TRANSPORTATION	6
WATER	21
ENERGY	0
GOVERNMENT	24
COMMERCIAL	0

Table 6-3 Infrastructure Vulnerability – Dependency Summary

DEPENDENCE	# DEPENDENT ON SERVICE	%
RELIANCE ON EMERGENCY SERVICES	4 of 51	7.8%
RELIANCE ON POWER	11 of 51	22%
RELIANCE ON SEWER	6 of 51	12%
RELIANCE ON TELECOMMUNICATION	4 of 51	7.8%
RELIANCE ON TRANSPORTATION	4 of 51	7.8%
RELIANCE ON WATER	6 of 51	12%

Table 6-4 Infrastructure Vulnerability – Hazard Summary

HAZARD	# IN HAZARD ZONE	%
DROUGHT	51 of 51	100%
EARTHQUAKE	51 of 51	100%
FLOOD	46 of 51	90%
LANDSLIDE	6 of 51	12%
VOLCANIC	51 of 51	100%
WEATHER	51 of 51	100%
WILDLAND/URBAN FIRE	0 of 51	0%

Table 6-5 Infrastructure Dependency Matrix

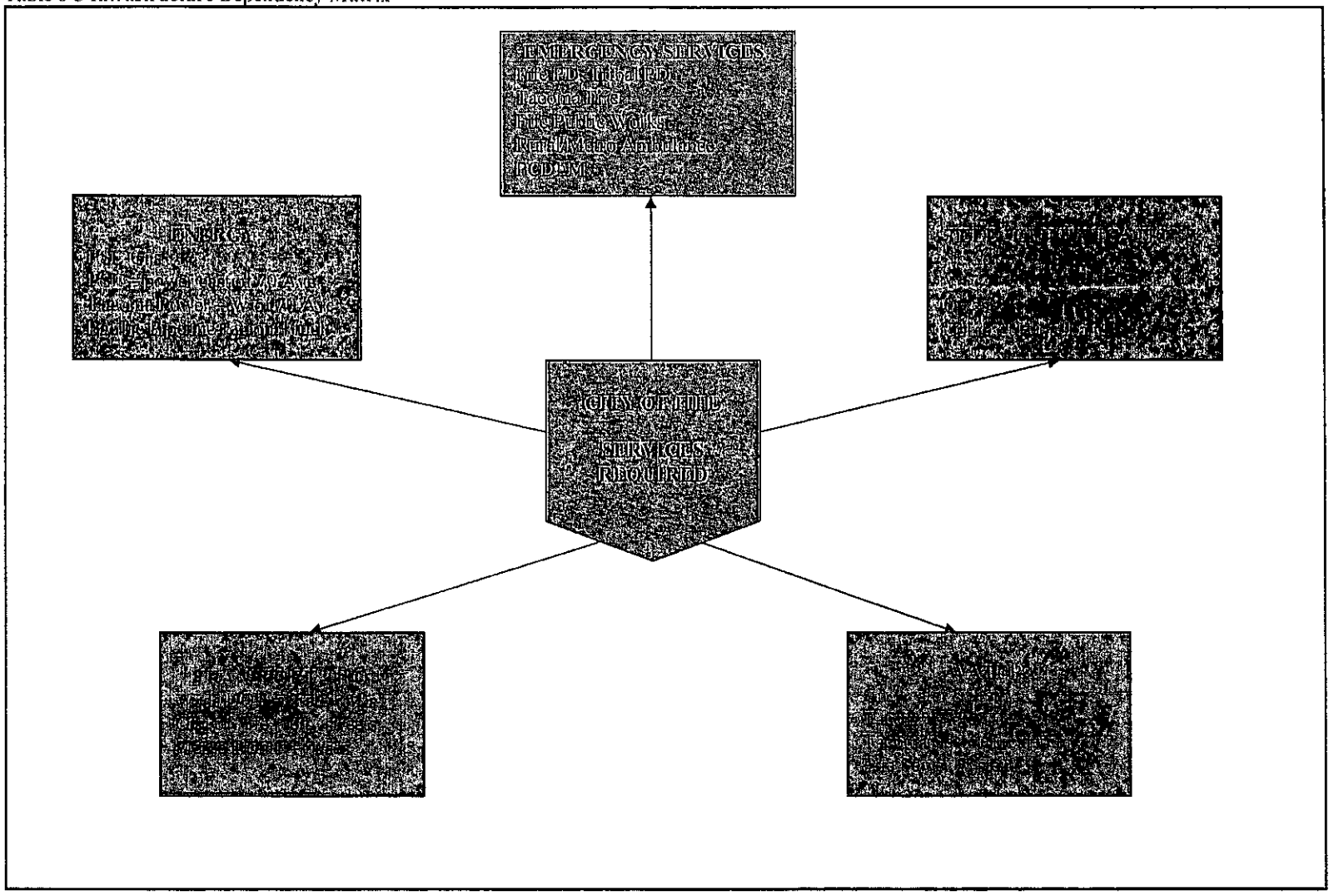


Table 6-6 Infrastructure Table

INFRASTRUCTURE[3]	BUILT[4]	FLOORS	UPGRADES[5]	VALUE	OCCUPANCY	HAZARD									RELIANCE					
						AVALANCHE	DROUGHT	EARTHQUAKE	WILDFIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Police Station/Municipal Courts (C,AP,14)	1997	One		2,356,995	56	0	1	3	0	1	0	0	3	1	2	0	2	1	2	2
City Hall (C,AP,14)	1997	One		1,569,900	45	0	1	2	0	1	0	0	3	1	1	1	1	1	1	1
PW Storage Facility (14)	1996	One		34,720		0	1	2	0	1	0	0	3	1	1	1	1	1	1	1
Water System (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
100,000 storage tank (14)		NA		78,030		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Two pressure reduction valves (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Fife City Well 1 (14)		NA				0	1	2	0	1	1	0	3	1	0	1	0	0	0	0
Fife City Well 2 (14)		NA				0	1	2	0	1	0	0	3	1	0	1	0	0	0	0
Sewer System (C,AP,14)	1968	NA	16 Million Upg.			0	1	2	0	1	0	0	3	1	0	1	0	0	0	0
10 Lift Stations (AP,14)		NA				0	1	2	0	3	0	0	3	1	0	1	0	0	0	0
Public Works Bldg (C,AP,14)	1989	One +		242,554	15	0	1	2	0	1	0	0	3	2	1	0	1	2	2	1
3 Pole Buildings (14)	1997	1	2005	117,072		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Large Shop Bldg (C,AP,14)	1997	One		964,972		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Vehicle Wash Rack (14)		One		901,200		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Fife Ditch Pump Station (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Erdahl Pump Station (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Erdhal Ditch Drainage System (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
[1]Fife Ditch Drainage System (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Hylebos Creek Drainage System (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Wapato Creek Drainage System/Irrigation (14)	2005	NA		20,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Mid Puyallup River Drainage System (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
10-15 miles of Pipe for drainage (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
250 Catch Basins (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Fife Community Ctr (C,14,S)	1979	One		1,160,897		0	1	2	0	1	0	0	3	1	0	1	2	0	0	2

INFRASTRUCTURE[3]	BUILT[4]	FLOORS	UPGRADES[5]	VALUE	OCCUPANCY	HAZARD								RELIANCE					
						AVALANCHE	DROUGHT	EARTHQUAKE	WILDFIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Fife Swim Center (14)	1985	One		2,134,762		0	1	2	0	1	0	0	3	1	0	0	2	0	0	2
Park at Swim Center (14)	1995	NA		Irrigation Sys. 10,000		0	1	1	0	0	0	0	3	1	0	0	0	0	0	0
Dacca Park Sports Field/History Museum (14)	1951	NA		413,175		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Wedge Park (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Colburn Park (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Centennial Park (14)	2003	NA		Irrigation Sys. 3,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Fountain Memorial Park (14)		NA		Irrigation Sys. 7,500		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Wapato Creek Nature Area/Habitat (14)	2005	NA		structures 18,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Lower Hylebos Nature Area (14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Overpass (C,14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Traffic Signal Cabinets (14)	Various	NA		150,000		0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
Street Bridge (C,14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Street Bridge (C,14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Street Bridge (C,14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
1/2 jurisdiction of river bridge (C,14)		NA				0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Fife City Well 3 (C,14)		NA				0	1	2	0	1	1	0	3	1	0	1	0	0	0	0
Fife City Well 4 (C,14)	1993	NA		35,121	NA	0	1	2	0	1	1	0	3	1	0	1	0	0	0	0
Fife City Well 5 (C,14)	1993	NA		0	NA	0	1	2	0	1	1	0	3	1	0	1	0	0	0	0
Fife City Well 6 (C,14)	1993	NA		0	NA	0	1	2	0	1	1	0	3	1	0	1	0	0	0	0
Water Tank-inactive (14)	1980	NA		78,030	NA	0	1	2	0	1	1	0	3	1	0	0	0	0	0	0
Utility Building (14)	1970	One		55,650	NA	0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Utility Garage (14)	1965	One		16,009	NA	0	1	2	0	1	0	0	3	1	0	0	0	0	0	0

INFRASTRUCTURE[3]	BUILT[4]	FLOORS	UPGRADES[5]	VALUE	OCCUPANCY	HAZARD									RELIANCE					
						AVALANCHE	DROUGHT	EARTHQUAKE	WILDFIRE	FLOOD	LANDSLIDE	TSUNAMI	VOLCANIC	WEATHER	EMERGENCY	POWER	SEWER	TELECOMM	TRANSPORT	WATER
Yatsuuye Property, house, garage, sheds (14)						0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Police Station – Parking Structure	2008	One		40,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Police Wellness Center	2008	One		22,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Police Equipment Garage	2012	One		20,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0
Police Swat	2012	One		30,000		0	1	2	0	1	0	0	3	1	0	0	0	0	0	0

Table 6-7 Infrastructure Table Key – Hazard Ratings

HAZARD CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
Avalanche	0	The infrastructure is not located in a known avalanche prone area.
	1	The infrastructure is in an avalanche prone area but has no prior history of avalanche damage.
	2	The infrastructure is in an avalanche prone area and has experienced some limited avalanche damage in the past.
	3	The infrastructure is in an avalanche prone area and has experienced significant avalanche damage.
Drought	0	The infrastructure would not suffer any damage or operational disruption from a drought.
	1	The infrastructure could suffer some damage or minor operational disruption from a drought.
	2	The infrastructure has suffered damages or significant operational disruption from past droughts.
	3	The infrastructure has suffered damages or significant disruption from past droughts which has had serious community economic or health consequences.
Flood	0	The infrastructure is not located in a known flood plain or flood prone area.
	1	The infrastructure is in a flood plain or flood prone area but has no prior history of flood damage.
	2	The infrastructure is in a flood plain or flood prone area and has experienced some flood damage in the past.
	3	The infrastructure is in a flood plain or flood prone area and has experienced significant flood damage, or the property is an NFIP repetitive loss property.
Earthquake	0	The infrastructure is not located in an area considered to have any significant risk of earthquake
	1	The infrastructure is in an area considered as at risk to earthquakes but has no prior history of earthquake damage.
	2	The infrastructure is in an area considered as at risk to earthquakes, is located on soft soils, and has no history of damage OR In an area considered as at risk to earthquakes and has experienced some limited earthquake damage.
	3	The infrastructure is in an area considered as at risk to earthquakes, is located on soft soils and experienced significant earthquake damage.
Landslide	0	The infrastructure is not located in a known area considered vulnerable to landslides.
	1	The infrastructure is in area vulnerable to landslides but has no prior history of landslides.
	2	The infrastructure is in area vulnerable to landslides area and infrastructure has experienced some landslide damage.
	3	The infrastructure is in area vulnerable to landslides and infrastructure has experienced significant landslide damage.
Major U/I Fire	0	The infrastructure meets the current fire code, has adequate separation from other structures and good access, and is not close to heavily vegetated areas.
	1	The infrastructure meets the current code, is not close to heavily vegetated areas, but access and/or separation from nearby structures increase fire risk.
	2	The infrastructure does not meet current fire code, is in or adjacent to large vegetated areas, and has inadequate access and/or separation from other structures.

HAZARD CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
	3	The infrastructure does not meet the current code, is in or adjacent to vegetated areas, with access limitations or structure separation making fire suppression difficult.
Severe Weather	0	The infrastructure would not suffer any damage or operational disruption from severe weather.
	1	The infrastructure could suffer some damage or minor operational disruption from severe weather.
	2	The infrastructure has suffered damages or significant operational disruption from past severe weather.
	3	The infrastructure has suffered damages or significant disruption from past severe weather which has had serious community economic or health consequences.
Tsunami/or Seiche	0	The infrastructure is not located in or near a known area considered to be a tsunami or seiche inundation area.
	1	The infrastructure is located at the edge of a designated tsunami or seiche risk zone.
	2	The infrastructure is located just inside a designated tsunami or seiche risk zone, but has no prior damage.
	3	The infrastructure is located well inside a designated tsunami or seiche risk zone, and/or has experienced prior tsunami or seiche damage.
Volcanic	0	The infrastructure is not located in or near a known area with significant risk from volcanic hazards.
	1	The infrastructure is in or near an area that could receive some ashfall, but has no structural features, equipment or operations considered vulnerable to ash.
	2	The infrastructure is in or near an area where heavy ashfall or a debris flow could occur.
	3	The infrastructure is in an area known to have experienced heavy ashfall, debris flow or blast effects from past volcanic activity.

Table 6-8 Infrastructure Table Key – Dependency Ratings

EXTERNAL DEPENDENCY CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
Emergency Services	0	The infrastructure can maintain essential functions without emergency services.
	0	The infrastructure has ability to independently provide emergency services to all essential functions of infrastructure.
	1	The infrastructure would have to curtail operations somewhat without emergency services with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without emergency services with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without emergency services and significant economic/environmental/safety/health consequences will occur.
Power Outage	0	The infrastructure can maintain essential functions without electricity or gas supply.
	0	Infrastructure has ability to independently provide power to all essential functions of infrastructure.
	1	The infrastructure would have to curtail operations somewhat without gas or electrical supply, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without gas or electrical supply, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without gas or electrical supply and significant economic/environmental/safety/health consequences will occur.
Sewer Out	0	The infrastructure can maintain essential functions without sewer service
	0	The infrastructure has ability to independently provide wastewater or septic service to support essential functions.
	1	The infrastructure would have to curtail operations somewhat without wastewater service, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without wastewater service, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without wastewater service and significant economic/environmental/safety/health consequences will occur.
Telecomm Failure	0	The infrastructure can maintain essential functions without telecommunications.
	0	The infrastructure has ability to independently provide phone service or alternate/redundant communications systems to support essential functions.
	1	The infrastructure would have to curtail operations somewhat without telecommunication service, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without telecommunication service, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without telecommunication service and significant economic/environmental/safety/health consequences will occur.
Transportation	0	The infrastructure can maintain essential functions without transportation routes.
	0	Infrastructure has ability to independently provide alternate transportation, in the absence of transportation routes, to ensure all essential functions.
	1	The infrastructure would have to curtail operations somewhat without transportation routes with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without transportation routes with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.

EXTERNAL DEPENDENCY CATEGORY	RATING	SELECTION FACTOR OR DESCRIPTION
	3	The infrastructure would have to stop its operations without transportation routes and significant economic/environmental/safety/health consequences will occur.
Water Supply	0	The infrastructure can maintain essential functions without its water supply.
	0	The infrastructure has ability to independently provide water to support essential functions.
	1	The infrastructure would have to curtail operations somewhat without water supply, with no direct economic/environmental/safety/health consequences.
	2	The infrastructure would have to curtail operations somewhat without water supply, with some direct economic/environmental/safety/health consequences. OR stop operations with no direct economic/environmental/safety/health consequences.
	3	The infrastructure would have to stop its operations without its water supply and significant economic/environmental/safety/health consequences will occur.

Endnotes

[1] This is a total of infrastructure and the approximate value provided by the jurisdiction. If no value, then value was not provided or not available.
[2] These are the Homeland Security Infrastructure Categories which were used in completing the Infrastructure Tables in the plan.
[3] The following table explains the codes used in this column:

Code	Explanation
C	Infrastructure critical in first 72 hours after disaster
AP	Infrastructure has auxiliary or backup power
(#)	Homeland Security Infrastructure Category Number
S	Infrastructure is a designated community shelter

[4] The "built" column refers to the year in which the original infrastructure was constructed.
[5] This column addresses major remodels, upgrades or additions to the infrastructure in dollar amount and/or year of changes.

Section 7

Plan Maintenance Procedures Requirements

Monitoring, Evaluating, and Updating the Plan—Requirement §201.6(c)(4)(i):
[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

- Does the new or updated plan describe the method and schedule for **monitoring** the plan, including the responsible department?
- Does the new or updated plan describe the method and schedule for **evaluating** the plan, including how, when and by whom (i.e. the responsible department)?
- Does the new or updated plan describe the method and schedule for **updating** the plan within the five-year cycle?

Incorporation into Existing Planning Mechanisms—Requirement §201.6(c)(4) (ii):
[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

- Does the new or updated plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?
- Does the new or updated plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?
- Does the updated plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?

Continued Public Involvement—Requirement §201.6(c)(4) (iii):
[The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.

- Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)

SECTION 7

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE
PLAN MAINTENANCE SECTION

Table of Contents

PLAN MAINTENANCE PROCEDURES REQUIREMENTS 1
PLAN ADOPTION 3
MAINTENANCE STRATEGY 3
IMPLEMENTATION 4
PLAN EVALUATION AND UPDATE 7
CONTINUED PUBLIC INVOLVEMENT 8
ENDNOTES 10

The planning process undertaken in the last two years is just the foundation of breaking the disaster cycle by planning for a disaster resistant City of Fife and Pierce County Region 5. This Section details the formal process that will ensure the City of Fife Hazard Mitigation Plan remains an active and relevant document. The Plan Maintenance Section includes a description of the documentation citing the Plan's formal adoption by the Administration. The Section also describes: the method and schedule of monitoring, evaluating, and updating within a five-year cycle; the process for incorporating the mitigation strategy into existing mechanisms; and, the process for integrating public participation throughout the plan maintenance. The Section serves as a guide for implementation of the hazard mitigation strategy.

Plan Adoption

Upon completion of the City of Fife Plan, it will be submitted to Washington State Emergency Management Division (EMD) for a Pre-Adoption Review. The EMD has 30 days to then take action on the Plan and forward it to the Federal Emergency Management Agency (FEMA) Region X for review. This review, which is allowed 45 days by law, will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201.6. In completing this review there may be revisions requested by the EMD and/or FEMA. Revisions could include changes to background information, editorial comments, and the alteration of technical content. Pierce County Department of Emergency Management (PC DEM) will call a Planning Team Meeting to address any revisions needed and resubmit the changes.

The City of Fife Administration is responsible for the Cities adoption of the Plan after the Pre-Adoption Review is completed. Once the Administration adopts the Plan, the Program Coordinator of the Mitigation and Recovery Division of Emergency Management will be responsible for submitting it, with a copy of the resolution, to the State Hazard Mitigation Officer at the Washington State EMD. EMD will then take action on the Plan and forward it to the FEMA Region X for final approval. Upon approval by FEMA, the City will gain eligibility for both Hazard Mitigation Grant Program and Pre-Disaster Mitigation Grant Program funds.

Appendix A will list the dates and include a copy of the signed Resolution from the jurisdiction as well as a copy of the FEMA approval of the jurisdiction's Plan. In future updates of the Plan, Appendix C will be used to track changes and/or updates. This plan will have to be re-adopted and re-approved prior to the five year deadline of February 10, 2020.

Maintenance Strategy

The Cities maintenance strategy for implementation, monitoring, and evaluation provides a structure that encourages collaboration, information transference, and innovation. Through a multi-tiered implementation method, the City will provide its staff and students a highly localized approach to loss reduction while serving their needs through coordinated policies and programs. The method's emphasis on all levels of participation promotes public involvement and adaptability to changing risks and vulnerabilities. Finally, it will provide a

tangible link between staff, students and the various levels of government service, ranging from community action to the Department of Homeland Security. Through this strategy, the City will attempt to break the disaster cycle and achieve a more disaster resistant community.

Implementation

In order to ensure efficient and effective implementation, City of Fife will make use of its capabilities, infrastructure, and dedicated population. The City will implement its mitigation strategy over the next five years primarily through its annual budget process and varying grant application processes.

The Emergency Programs Office will work in conjunction with those organizations identified under each mitigation measure to initiate the overall mitigation strategy. Each department or office responsible for carrying out the measures will play a role in self-monitoring and evaluating achievement of measures and objectives. Because the City has no land use or regulatory authority, it must rely heavily on collaboration with neighboring jurisdictions. For example, for density-related issues the City will work with partners Pierce County, and the Hazard Mitigation Forum to implement recommendations into the existing Pierce County Comprehensive Plan. Other measures will be implemented through collaboration with the identified jurisdictions/departments listed under each measure's evaluation.

These efforts fall under a broader implementation strategy that represents a county-wide effort. This strategy must be adaptable to change while being consistent in its delivery.

The mitigation implementation strategy is a three-tiered method that emphasizes localized needs and vulnerabilities while addressing City and multi-jurisdictional policies and programs. The first tier is implementation through individual citizen level—existing public education programs in the City. For example, programs at the individual level through safety presentations and evacuation drills). The second is a City-wide mechanism for implementation comprised of City employees implementing strategies from the Emergency Programs Office, Construction Management Office, Facilities Management Office, and Computing & Telecommunications through an ambitious building construction and remodel plan. This perhaps offers the greatest opportunity to implement mitigation opportunities. The third tier is a more external and multi-jurisdictional mechanism, the Hazard Mitigation Forum (HMF).

This method ensures that implementation speaks to unique vulnerabilities at the most local level, allows for coordination among and between levels, and promotes collaboration and innovation. Further, it provides a structured system of monitoring implementation. Finally, it is a method that can adapt to the changing vulnerabilities of the City, the region, and the times. These three levels and their means of implementation and collaboration are described below.

Public Education Programs

At the individual citizen level, Public Education Programs provide the City with a localized mechanism for implementation. This approach to mitigation can adapt to the varying vulnerabilities and needs within a growing region. Public Education Programs are also a means for involving the public in mitigation policy development. Currently the City pursues a variety of mitigation-related programs that help students, staff and citizens to better prepare for and respond to disasters.

Jurisdiction-Wide: Emergency Programs Office

The Emergency Programs Office will coordinate the maintenance and implementation actions with those departments and offices that must carry out the mitigation measures. The Emergency Planning Team, consisting of departments or offices with emergency responsibilities will review the direction of the Plan's implementation. The Emergency Planning Team will ultimately provide a mechanism for coordination among those groups engaged in mitigation to ensure that a comprehensive and efficient approach be undertaken in the Cities efforts at all-hazards mitigation. The Emergency Planning Team will be coordinated by the Emergency Programs Office.

The Emergency Programs Office will be responsible for the overall review of the plan and will designate mitigation measures to those departments responsible for their implementation. The Emergency Planning Team will monitor and evaluate the plan's implementation throughout the year. Recommendations will be made to coincide with the normal budgeting processes and provide an ample time period for review and adoption of any necessary changes to the implementation schedule. Members of the Emergency Planning Team and President's Council sit on the budgeting and projects committees and can advance mitigation measures through these annual processes.

The plan will be updated every five years with coordination from the Emergency Programs Office, participation by the Emergency Planning Team and approval from the Administration.

Hazard Mitigation Forum

The PC Hazard Mitigation Forum (HMF) represents a broader and multi-jurisdictional approach to mitigation implementation. The PC HMF will be comprised of representatives from unincorporated Pierce County and all jurisdictions, partially or wholly, within its borders, that have undertaken mitigation planning efforts. The PC HMF will serve as coordinating body for projects of a multi-jurisdictional nature and will provide a mechanism to share successes and increase the cooperation necessary to break the disaster cycle and achieve a disaster resistant Pierce County. Members of the PC HMF will include the following jurisdictions who have completed, or who have begun the process of completing, DMA compliant plans:

- City of Bonney Lake
- City of DuPont
- City of Fife
- City of Gig Harbor
- City of Milton
- City of Roy
- City of Tacoma
- Town of Eatonville
- Town of Steilacoom
- Pierce County
- East Pierce Fire and Rescue
- Graham Fire and Rescue
- Orting Valley Fire and Rescue
- Pierce County Fire District 14
- Pierce County Fire District 27
- West Pierce Fire and Rescue
- Clover Park School District
- Eatonville School District
- Franklin Pierce School District
- Pacific Lutheran University
- Puyallup School District
- Sumner School District
- University Place School District
- Crystal River Ranch HOA
- Herron Island HOA
- Pierce Transit
- Raft Island HOA
- Taylor Bay Beach Club
- Firgrove Mutual Water Company
- Graham Hill Mutual Water Company
- Lakewood Water District
- Ohop Mutual Light Company
- Spanaway Water Company
- Tanner Electric
- Cascade Regional Blood Services
- Dynamic Partners
- Group Health
- MultiCare Health System
- 76 Jurisdictions in this effort
- City of Buckley
- City of Edgewood
- City of Fircrest
- City of Lakewood
- City of Orting
- City of Sumner
- Town of Carbonado
- Town of South Prairie
- Town of Wilkeson
- Central Pierce Fire and Rescue
- Gig Harbor Fire and Medic One
- Key Peninsula Fire Department
- Pierce County Fire District 13
- Pierce County Fire District 23
- South Pierce Fire and Rescue
- Carbonado School District
- Dieringer School District
- Fife School District
- Orting School District
- Peninsula School District
- Steilacoom School District
- Tacoma School District
- American Red Cross
- Crystal Village HOA
- Metropolitan Park District
- Port of Tacoma
- Riviera Community Club
- Clear Lake Water District
- Fruitland Mutual Water Company
- Lakeview Light and Power
- Mt. View-Edgewood Water Company
- Peninsula Light Company
- Summit Water and Supply Company
- Valley Water District
- Community Health Care
- Franciscan Health System
- Madigan Hospital
- Western State Hospital

PC HMF will meet annually in August and will be coordinated by PC DEM. The City will be an active participant in the PC HMF, and will be represented by the Emergency Programs

Manager. Only through this level of cooperation can these jurisdictions meet all of their mitigation goals.

Plan Evaluation and Update

It should be noted this planning process began in early 2012 following the then current CFR 201.6 Hazard Mitigation Planning Requirements. Based on new requirements in the Stafford Act, the City of Fife will evaluate and update the plan to incorporate these new requirements as necessary. Furthermore, if there are additional Stafford Act changes affecting CFR 201.6 in the coming years, the planning process will incorporate those as well.

The City of Fife Plan will guide the Cities mitigation efforts for the foreseeable future. City of Fife Representatives on the Planning Team has developed a method to ensure that regular review and update of the Plan occur within a five year cycle.

PC DEM will collaborate with the Emergency Programs Office and the PC HMF to help monitor and evaluate the mitigation strategy implementation. PC DEM will track this implementation through Pierce County's GIS database. Findings will be presented and discussed at the annual meeting.

The Emergency Programs Office will coordinate reporting of the Plan's implementation to the Emergency Planning Team which meets at least twice each year. Minutes of these meetings will be prepared and will include:

- Updates on implementation throughout the City;
- Updates on the PC HMF and mitigation activities undertaken by neighboring jurisdictions;
- Changes or anticipated changes in hazard risk and vulnerability at the City, county, regional, State, FEMA and Homeland Security levels;
- Problems encountered or success stories;
- Any technical or scientific advances that may alter, make easier, or create measures.

The Emergency Programs Office will decide on updates to the strategy based on the above information and a discussion of:

- The various resources available through budgetary means as well as any relevant grants;
- The current and expected political environment and public opinion;
- Meeting the mitigation goals with regards to changing conditions.

PC DEM will work with the Emergency Programs Office or the City to review the Risk Assessment Section to determine if the current assessment should be updated or modified based on new information. This will be done during the regularly scheduled reviews of the regional partners' Hazard Identification and Vulnerability Analyses and their Comprehensive Emergency Management Plans.

Additional reviews of this Plan will be required following disaster events and will not substitute for the annual meeting. Within ninety days following a significant disaster or an emergency event impacting the City, the Emergency Programs Office will provide an assessment that captures any "success stories" and/or "lessons learned." The assessment will detail direct and indirect damages to the City and its critical facilities, response and recovery costs, as part of the standard recovery procedures that use EMD Forms 129, 130, and 140. This process will help determine any new mitigation initiatives that should be incorporated into the Plan to avoid or reduce similar losses due to future hazard events. In this manner, recovery efforts and data will be used to analyze mitigation activities and spawn the development of new measures that better address any changed vulnerabilities or capabilities. Any updates to the Plan will be addressed at the ensuing regularly scheduled City Council Meeting.

As per 44 CFR 201.6, the City of Fife must re-submit the Plan to the State and FEMA with any updates every five years. This process will be coordinated by PC DEM through the Pierce County Hazard Mitigation Forum. In 2020 and every five years following at the Hazard Mitigation Forum, City of Fife and the Emergency Programs Office will submit the updated plan to PC DEM. PC DEM's Mitigation and Recovery Program Coordinator will collect updates from the Region 5 Plan jurisdictions and submit them to the State EMD and FEMA.

Continued Public Involvement

City of Fife is dedicated to continued public involvement and education in review and updates of the Plan. The City will retain copies of the Plan and will post it on the City of Fife website.[1] Announcements regarding the Plan's adoption and the annual updates to the Plan will be advertised on the City of Fife website.

The three-tiered implementation method provides an opportunity for continuous public involvement. Public Education campaigns are a means of informing the public on updates and implementation activities. Further, prior to submitting the Plan to WA EMD and FEMA for the five year review, the Emergency Programs Office and the Emergency Management Team will hold public information and comment meeting. These meetings will be advertised in the City through a variety of media, including the City webpage Continued Public Involvement

The City of Fife is dedicated to continued public involvement and education in review and updates of this plan. The City of Fife Emergency Management Department and the Planning Department will retain copies of the plan and will make it available to the public.

Prior to submitting the plan to WA EMD and FEMA for the five-year review, the City of Fife will hold public information and comment meeting. This meeting will provide citizens a forum during which they can express their concerns, opinions, or ideas about the City of Fife Hazard Mitigation Plan. This meeting will be advertised by the City through a variety of media, including the local newspaper and our City Town Topics and a posting on the website.

The City of Fife will conduct a review on a yearly basis to ensure all elements of the mitigation plan are updated and accurate. Each of the 76 jurisdictions has been tasked with having to provide documentation on public involvement including a brief description for each public hearing held, a summary on attendance, any feedback received from the public and the an overall description of what was accomplished. Even further, the City of Fife will provide proof of their attempts for public involvement such as screenshots of websites including date ranges, flyers and other relevant material documenting the public involvement process. Lastly, the City of Fife will look for new innovative ways for public involvement.

Endnotes

[1] http://www.cityoffife.org

APPENDIX A

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE

Plan Adoption

The "*Region 5 Hazard Mitigation Plan*" was adopted by the City of Fife's City Council on XXX by resolution number XXX. The following page shows a copy of that resolution.

Fife Resolution Letter inserted here

Fife Resolution Letter inserted here

The plan was reviewed and approved as follows:

AGENCY	REPRESENTATIVE	DATE
Washington State Military Dept., Emergency Management Division	Tim Cook Hazard Mitigation Programs Manager	Approved—
FEMA Region X	Tamra Biasco Chief, Risk Analysis Branch Mitigation Division	Approved— February 2, 2015

FEMAs Pre-Approval and Approval letter follows below.

U.S. Department of Homeland Security
FEMA Region X
Federal Regional Center
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

February 2, 2015

Mr. Tim Cook
Hazard Mitigation Programs Manager
Washington State Emergency Management Division
Building 20, MS TA-20
Camp Murray, Washington 98430-5122

Dear Mr. Cook:

As requested, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has completed a pre-adoption review of the ***Region 5 Hazard Mitigation Plan.*** The plan successfully contains the required criteria, excluding the adoption, for hazard mitigation plans, as outlined in 44 CFR Part 201. This letter serves as Region 10's commitment to approve the plan upon receiving documentation of its adoption by the participating jurisdictions.

The plan will not be formally approved by FEMA until it is adopted. Each jurisdiction is not eligible for mitigation project grants until the plan is formally approved by FEMA.

Please contact our Regional Mitigation Planning Manager, Kristen Meyers, at (425) 487-4543 with any questions.

Sincerely,

Tamra Biasco
Chief, Risk Analysis Branch
Mitigation Division

KM:bb

www.fema.gov

FEMA approval letter inserted here

FEMA approval letter inserted here

APPENDIX A

REGION 5 HAZARD MITIGATION PLAN
2008-2013 EDITION
CITY OF FIFE

Plan Adoption

The "*Region 5 Hazard Mitigation Plan*" was adopted by the City of Fife's City Council on November 12, 2008 by resolution number 1256. The following page shows a copy of that resolution.

RESOLUTION NO. 1256

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF FIFE, PIERCE COUNTY, WASHINGTON ADOPTING A NATURAL HAZARD MITIGATION PLAN FOR THE CITY.

WHEREAS, hazard mitigation is any action taken to permanently eliminate or reduce the long-term risk to human life and property from natural hazards and is an essential element of emergency management along with preparedness, response and recovery; and

WHEREAS, Fife's geology and natural history demonstrate its vulnerability to natural hazards and disasters arising from its physical features; and

WHEREAS, the City Council realizes the importance of reducing or eliminating those vulnerabilities for the overall good and welfare of the community, and;

WHEREAS, reduction of the impacts from natural disasters can be achieved through a comprehensive, coordinated planning process identifying hazards and vulnerabilities and pairing them with mitigation strategies; and

WHEREAS, pursuant to the Disaster Mitigation Act of 2000, and in connection with the Hazard Mitigation Grant Program (HMGP), the Federal Emergency Management Agency (FEMA) has mandated that all local and state governmental entities develop and submit for approval a Natural Hazard Mitigation Plan to address pre-disaster planning issues; now therefore

BE IT RESOLVED that the City Council hereby approves the City of Fife's Natural Hazard Mitigation Plan, set forth in Exhibit A.

ADOPTED by the City Council at an open public meeting held on the 12th day of November, 2008.

Barry D. Johnson, Mayor

Attest:

Steve Marcotte, City Clerk

RESOLUTION NO. 1256
Page #1 of #1

The plan was reviewed and approved as follows:

AGENCY	REPRESENTATIVE	DATE
FEMA Region X	Mark Carey Mitigation Division Director	Approved—November 24, 2008

Letter of approval follows below.

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

January 30, 2009

Mr. Steven C. Bailey, Director
Pierce County Department of Emergency Management
2501 South 35th Street
Tacoma, Washington 98409-7405

Dear Mr. Bailey:

On November 28, 2008, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) approved the ***Region 5 Hazard Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through November 28, 2013:

Cities and Towns:	Fire Districts:	School Districts:	Utilities:
City of Buckley	Lakewood Fire Department (PCFD #2)	Carbonado SD	Clear Lake Water District
City of Dupont	*Gig Harbor Fire & Medic One (PCFD #5)*	Dieringer SD	*Fruitland Mutual Water Company*
City of Edgewood	*Central Pierce Fire & Rescue (PCFD #6)*	*Eatonville SD*	*Graham Hill Mutual Water Company*
City of Fife	PCFD #8	Fife SD	*Lakeview Light and Power*
City of Fircrest	*PCFD #13*	*Franklin Pierce SD*	Lakewood Water District
City of Gig Harbor	*South Pierce Fire & Rescue (PCFD #15)*	*Orting SD*	Mt. View-Edgewood Water Company
City of Orting	*Key Peninsula Fire Department (PDFD #16)*	*Peninsula SD*	*Port of Tacoma*
Town of Eatonville	*Graham Fire and Rescue (PCFD #21)*	*University Place SD*	*Summit Water and Supply Company*
Town of South Prairie	PCFD #23	*White River SD*	
Town of Wilkeson		*Pacific Lutheran University*	

The list of approved jurisdictions has been updated to include the jurisdictions in italics above, which have recently adopted the Region 5 Hazard Mitigation Plan. To continue eligibility, the plan must be reviewed, revised as appropriate, and resubmitted within five years of the original approval date.

www.fema.gov

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact our State counterpart, Washington Emergency Management Division, which coordinates and administers these efforts for local entities.

Sincerely,

Mark Carey, Director
Mitigation Division

cc: Mark Stewart, Washington Emergency Management Division

KM:bb

(This page intentionally left blank)

APPENDIX B

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE

Region 5 Hazard Mitigation Planning Team

City of Fife

NAME	TITLE	JURISDICTION-DEPARTMENT
Mark Mears	Assistant Police Chief	City of Fife – Police Department

(This page intentionally left blank)

APPENDIX C

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE

Plan Revisions

RECORD OF CHANGES			
Change Number	Description of Change (with page numbers)	Date	Authorized by:

(This page intentionally left blank)

APPENDIX D

REGION 5 ALL HAZARD MITIGATION PLAN
2015-2020 EDITION
CITY OF FIFE HAZUS RISK ASSESSMENT
FLOOD AND EARTHQUAKE SCENARIO

HAZUS-MH

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose to the Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

Appendix D contains the loss estimation maps for all 18 City and Town groups within the Region 5 Mitigation Plan for earthquake for their essential facilities and flood modeling for the City of Fife, the City of Orting and the City of Sumner. Hazus has the capability to model a wide variety of loss estimates and this Appendix does not cover all of Hazus modeling capabilities. Further loss estimation will be incorporated into future updates of the mitigation plans.

Hazus-MH Flood

The spatial results from the Hazus Flood Scenario maps are included. These Hazus flood maps are based on a 0.1% chance of a flood event occurring on the Puyallup River. The study region included all of Pierce County but Flood Spatial Analysis outcomes focused specifically on the City of Fife, City of Orting and the City of Sumner. The results from this Flood Scenario will be discussed in this section of the plan as opposed to the Risk Section as this time. With future updates of the jurisdictional mitigation plans and further flood analysis the methodology will be discussed within the Risk Section of the Region 5 Base Plan.

As a disclaimer for the data below, the *Totals* only reflect data for those census tracts/blocks included within the Pierce County study region. The estimates of social and economic impacts contained within the below report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results below and the actual social and economic losses following a specific Flood.

General Description of Region for Analysis

The flood loss estimates provided were first based on Pierce County and then brought down to a jurisdictional level for the City of Fife, City of Orting and the City of Sumner. The total geographical size of the study region is 1,640 square miles and contains 11,683 census blocks. Hazus estimates losses based on census tracts/blocks and further analysis using *User Defined Facilities* can be incorporated into the model for a detailed building specific study. For this report the analysis was kept on a census block level and the estimate totals were aggregated based on the census blocks. The maps depict the total estimate amounts per census block. The region contains over 292 thousand households and has a total population of 795,147 people (2010 Census bureau data).

There are an estimated 255,988 buildings in the region with a total building replacement value (excluding contents) of 45,413 million dollars. Approximately 95.46% of the buildings (and 75.72% of the building value are associated with residential housing.

General Building Stock

Hazus estimates that there are 255,988 buildings in the Pierce County region which have an aggregate total replacement value of 45,413 million (2013 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Pierce County and the Scenario based on the probability of a 0.1% chance of flooding on the Puyallup River.

Table 1: Building Exposure by Occupancy Type for Pierce County

Occupancy	Exposure ($1000)	Percent of Total
Residential	34,384,947	75.70%
Commercial	6,667,405	14.7%
Industrial	521,117	1.10%
Agricultural	59,762	0.10%
Religion	500,163	1.10%
Government	1,223,025	2.70%
Education	2,056,956	4.50%
Total	**45,413,375**	**100.00%**

Table 2: Building Exposure by Occupancy Type for the Puyallup River 0.1% Scenario Flood Event

Occupancy	Exposure ($1000)	Percent of Total
Residential	1,865,321	57.1%
Commercial	844,508	25.8%
Industrial	215,651	6.60%

Agricultural	10,053	0.30%
Religion	25,355	0.80%
Government	140,212	4.30%
Education	166,297	5.10%
Total	**3,267,397**	**100.00%**

Essential Facility Inventory

For essential facilities, there are 7 hospitals in the region with a total bed capacity of 1,990 beds. There are 299 schools, 47 fire stations, 28 police stations.

Flood Scenario Parameters

To define the flood loss estimate for this scenario, Hazus used a 100 Year Return Period. Future analysis will include a 500 Year Return Period and a possible 10 Year Return Period for compared analysis. The depth grid used to generate this analysis included a 1/3 Arc Second DEM from USGS and the reaches were built using a 2.0 square miles search radius.

Building Damage

Hazus estimates that about 4,692 buildings will be at least moderately damaged. This is over 82% of the total number of buildings in the scenario. There are an estimated 245 building that will be completely destroyed.

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 1,900 hospital beds available for use. On the day of the scenario flood event, the model estimates that 1,900 hospital beds are available in the region. The table below describes the potential damages.

Table 3: Expected Damage to Essential Facilities

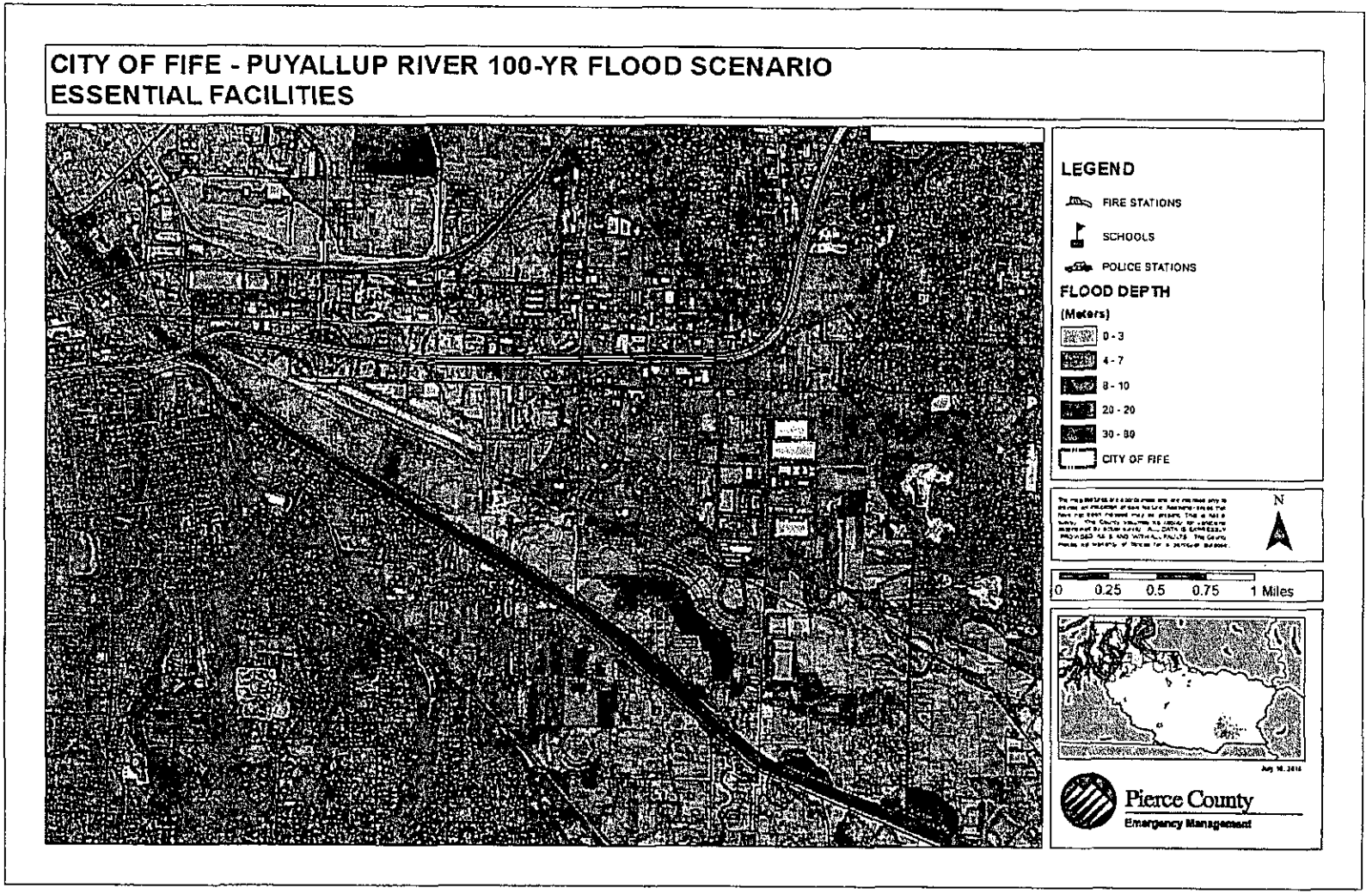
		# Facilities		
Classification	Total	At Least Moderated	At Least Substantial	Loss of Use
Fire Stations	47	5	0	4
Hospitals	7	0	0	0
Police Stations	28	3	0	3
Schools	299	12	0	12

Table 4: Expected Damage to the City of Fife Essential Facilities

	Number of Critical Facilities Exposure in the 0.1% Annual Chance Floodplain		
	Total Building Inventory within Pierce County	Building Exposure in the 0.0% Annual Chance Floodplain	City of Fife's Building Exposure in the 0.1% Annual Chance Floodplain
Fire Stations	47	4	0
Hospitals	7	0	0
Police Stations	28	3	1
Schools	299	12	0

Table 4 indicates that the City of Fife has one Essential Facilities that are located within the 0.1% Annual Chance of flooding on the Puyallup River. There is one Police Station located inside of the City of Fife's city limits and can be seen on Map Appendix D-1.

Map Appendix D -1: City of Fife Essential Facilities



Induced Flood Damage

Debris Generation

Hazus estimated the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.) This distinction is made because of the different types of material handling equipment required to handle the debris.

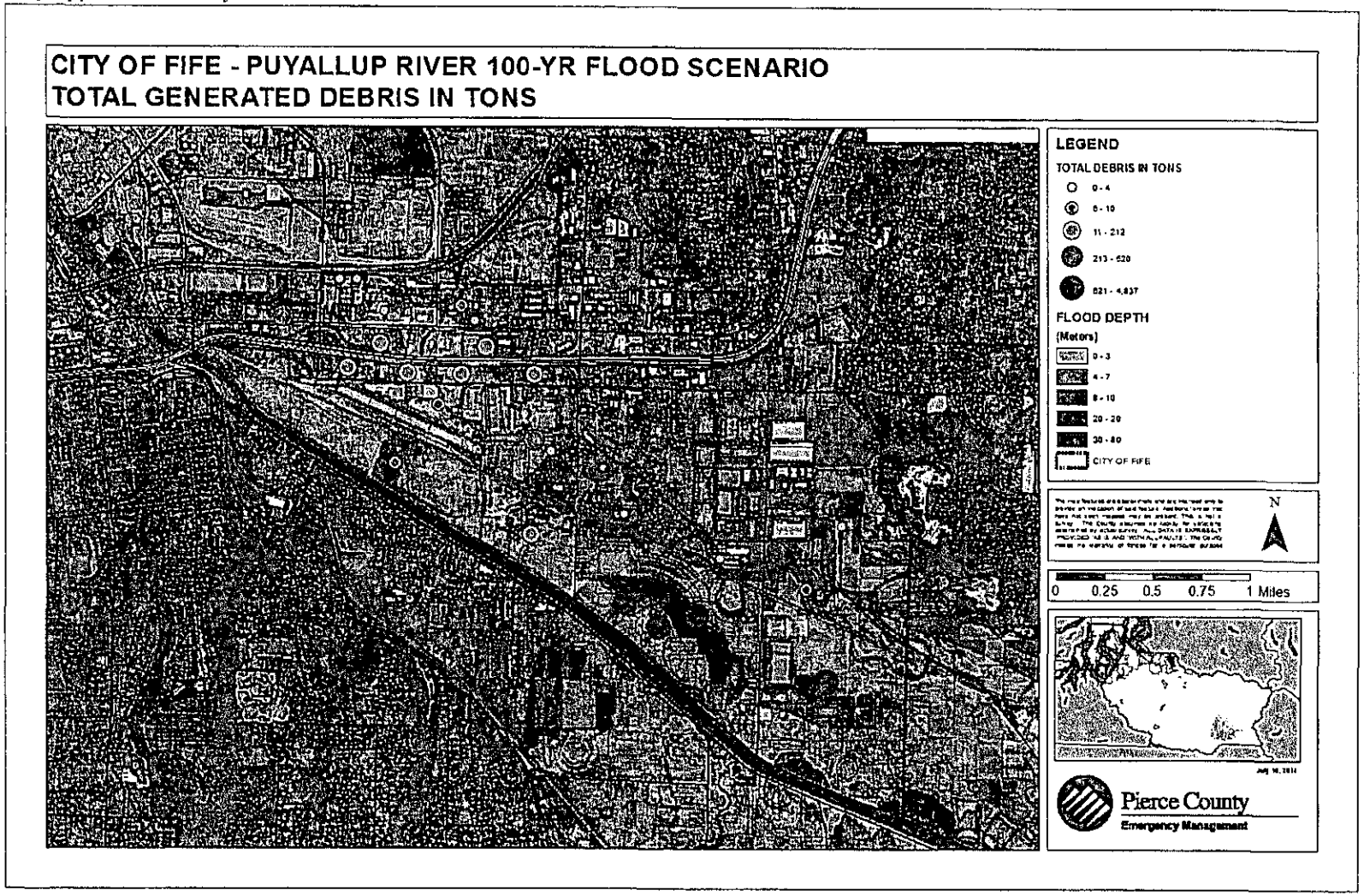
The model estimates that a total of 88,195 tons of debris will be generated from the entire Study Region. Of the total amount, Finishes comprises 47% of the total, Structure comprises 29% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 3,528 truckloads @ 25 tons/truck to remove the debris generated by the flood.

For the City of Fife the model estimated that a total of 12,244.5 tons of debris will be generated. Of the total amount, Finishes comprises 6,418.8 tons and the Structure comprises 3,044.2 tons. Map Appendix D-2 indicates the census blocks and total debris in tonnage amounts.

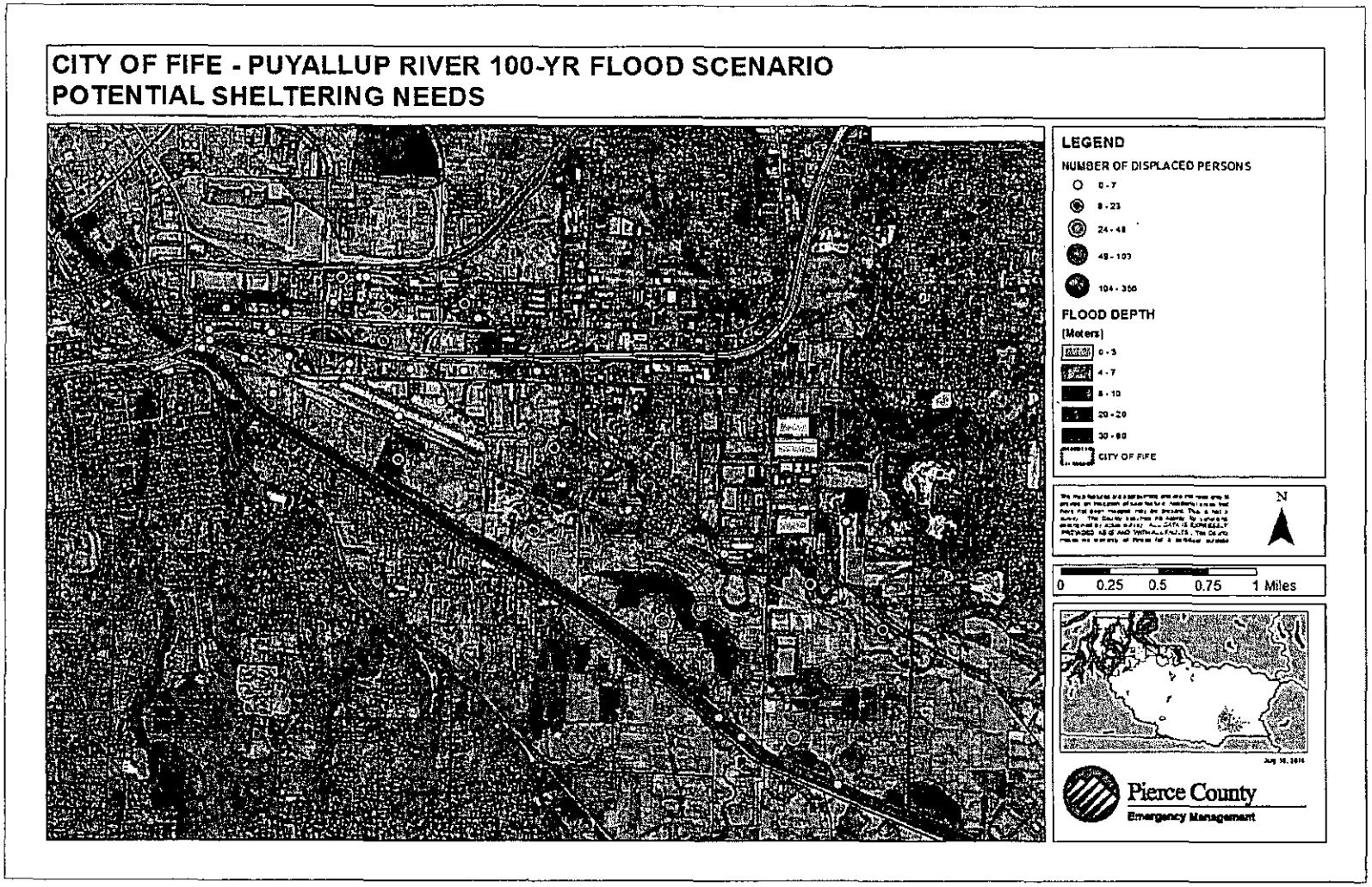
Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 5,783 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 15,584 people (out of a total population of 795,147) will seek temporary shelter in public shelters. The City of Fife will have a total of 1,131 displaced persons and from this number 1,016 who may seek short term shelters. Map Appendix D-3 indicated the location within the census blocks and number of displace persons.

Map Appendix D -2: City of Fife Debris Generation



Map Appendix D -3: City of Fife Shelter Requirements



Economic Loss

The total economic loss estimated for the flood is 969.85 million dollars, which represents 29.68% of the total replacement value of the flood scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displace from their homes because of the flood.

The total building-related losses were 955.56 million dollars for Pierce County. 1% of the estimated losses were related to the business interruption of the regions. The residential occupancies made up 50.89% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates - (Millions of dollars)

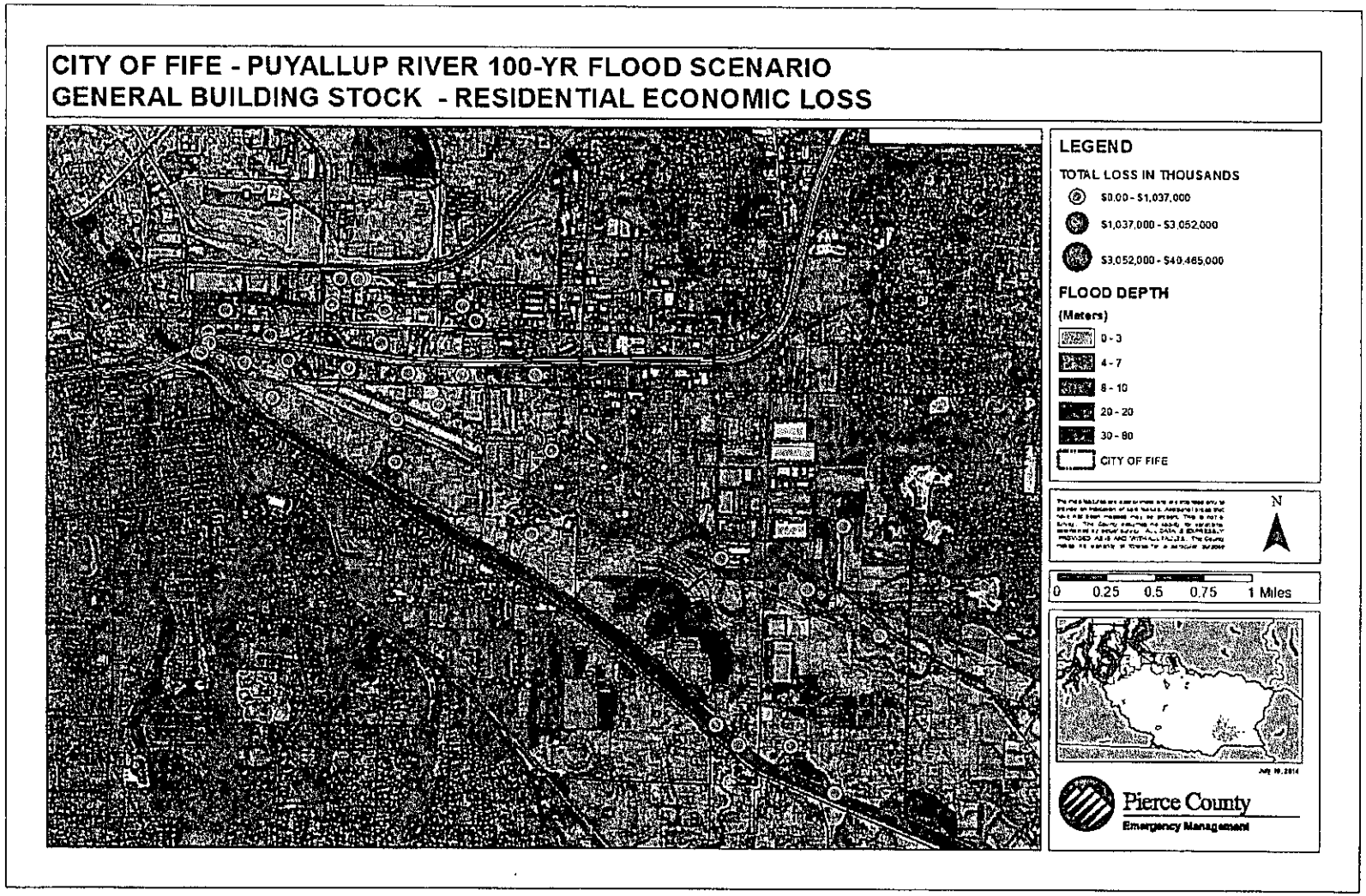
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	302.6	125.46	17.46	26.72	472.23
	Content	198.58	162.96	189.25	68.15	438.94
	Inventory	0	30.89	12.46	1.03	44.38
	Subtotal	**492.17**	**319.31**	**48.17**	**95.9**	**955.56**
Business Interruption						
	Income	0.13	1.76	0.04	0.39	2.31
	Relocation	0.64	0.96	0.04	0.24	1.87
	Rental Income	0.30	0.66	0	0.02	0.99
	Wage	**0.32**	**2.58**	0.04	6.19	9.13
	Subtotal	**1.38**	**5.96**	**0.13**	**6.83**	**14.3**
ALL	Total	493.55	325.27	**48.3**	**102.73**	**969.85**

The table below describes the total economic losses for the City of Fife. Analysis was only done for economic loss estimates for residential and commercial areas in Fife. Map Appendix 4 and Map Appendix 5 are the total combined economic losses for the census block of these two occupancies.

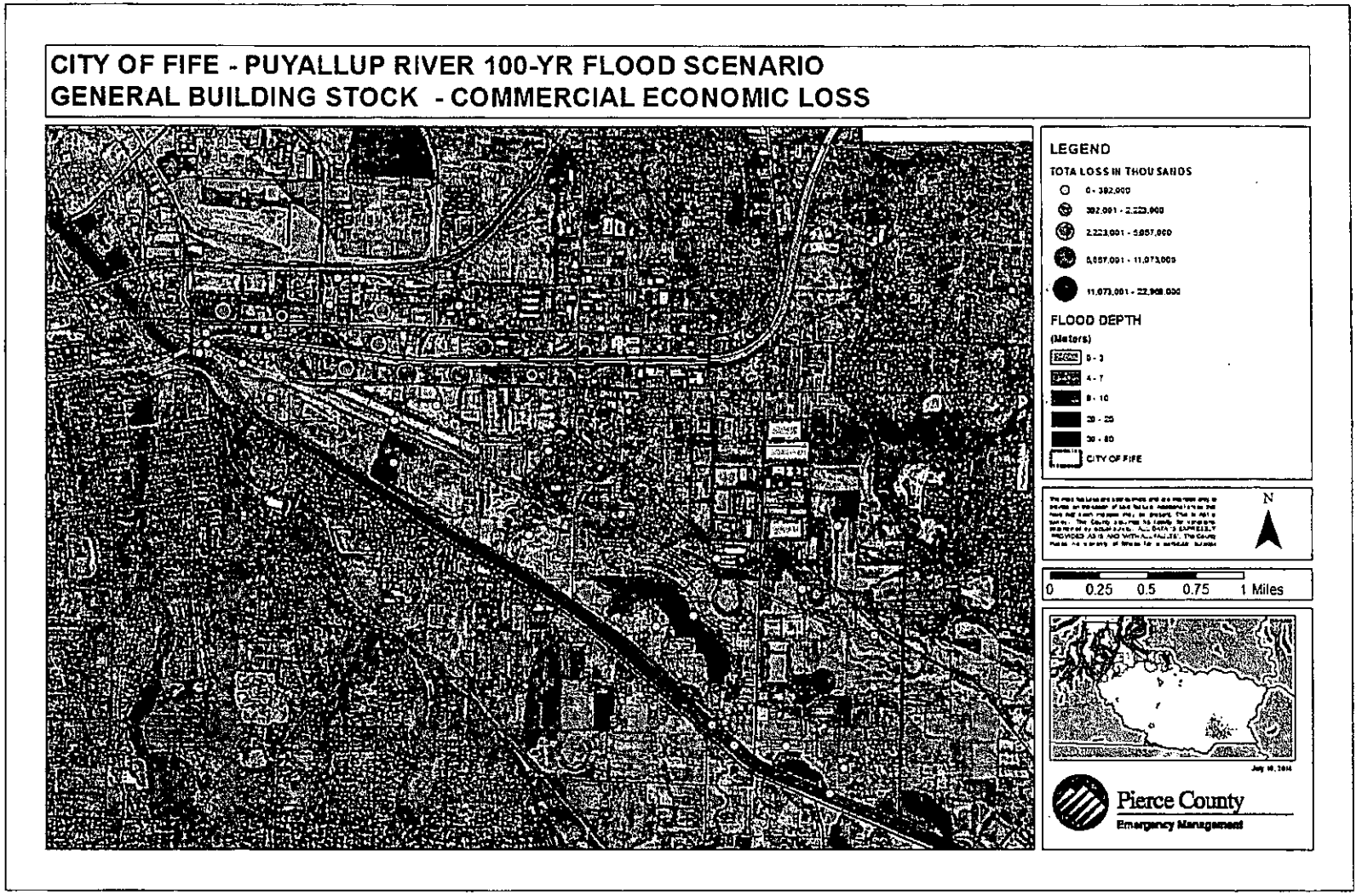
Table 6: Building-Related Economic Loss Estimates for the City of Fife (Millions of dollars)

Category	Area	Residential	Commercial	Total
Building Loss				
	Building	49,983	31,966,000	472,232
	Content	32,064	48,510,000	438,942
	Inventory	0	10,193,000	44,382
	Subtotal	**82,047**	**90669,000**	**955,556**
Business Interruption				
	Income	57	362	2,313
	Relocation	180	245	1,869
	Rental Income	163	176	990
	Wage	140	626	9,126
	Subtotal	**540**	**1,409**	**14,298**
ALL	Total	**82,587**	**90,670,409**	**969,854**

Map Appendix D -4: City of Fife Residential Economic Loss



Map Appendix D -5: City of Fife Commercial Economic Loss



Hazus-MH Earthquake

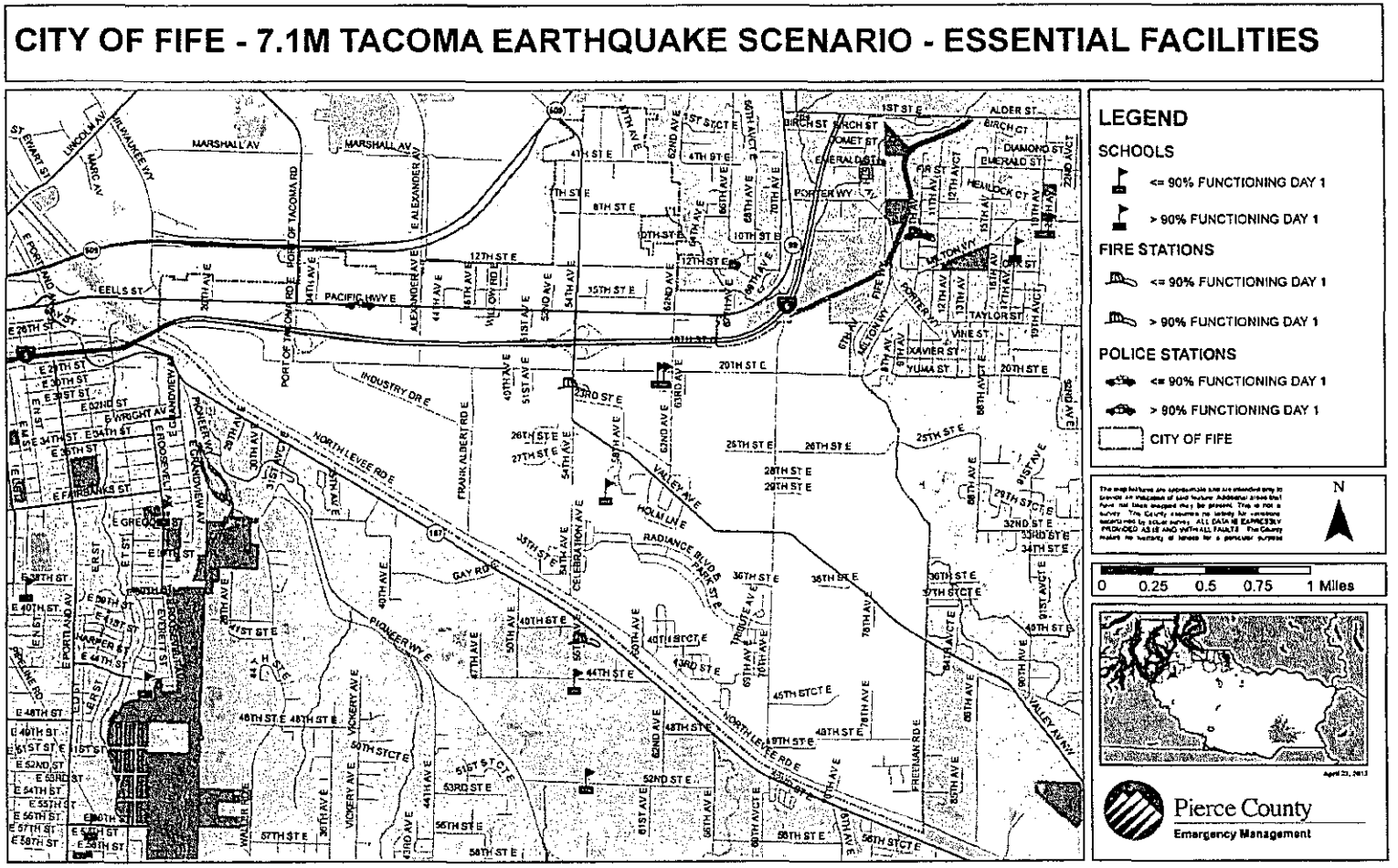
This appendix also contains the spatial results from the Hazus Earthquake Scenario results showing the Essential Facilities for 90% functionality for Day 1 and Day 7 following an earthquake event based on three earthquakes scenarios. Information was based on ShakeMaps developed by U.S. Geological Survey for a 7.1M earthquake occurring on the Tacoma Fault, 7.2M earthquake on the Nisqually Fault and a 7.2M earthquake on the SeaTac Fault. There was a total of four Essential Facilities that were modeled; fire stations, police stations, schools and hospitals. Additional information can be found in the Risk Assessment Section of the Region 5 All Hazard Mitigation Plan.

Inherit Errors

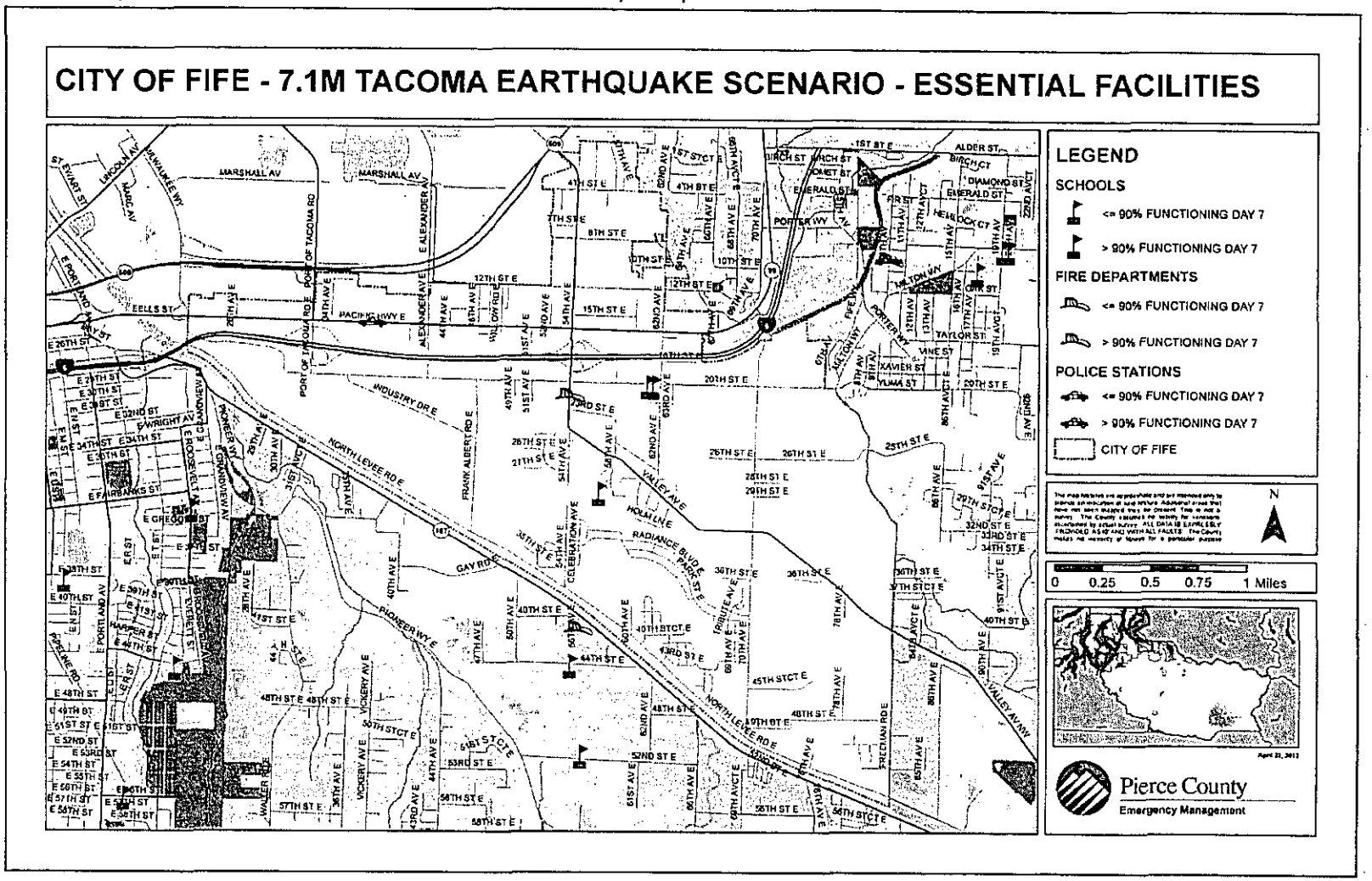
As a special note to the Gig Harbor and Key Peninsula areas St. Anthony's Hospital is not identified on Maps D-13, D-14, D-22, D-23, D-31 or D-32 due to the recent construction of St. Anthony's Hospital and lack of data. With future updates of the Region 5 All Hazard Mitigation Plan, St. Anthony's Hospital will be included in the scenario analysis. If this information becomes available prior to the five-year update in 2020, revised analysis will be done and the revised maps will be distributed to the City of Gig Harbor, Gig Harbor Fire & Medic One and the Key Peninsula Fire Department.

Additionally, it has been identified that the police station located to the west side of Orting is not in the correct location. The police department shares a building with the Fire District #18 at 401 Washington Ave S, which is located in the middle of town. As Hazus-MH is updated the police station will show a co-location with the fire station at this same location. If this information becomes available prior to the five-year update in 2020, revised analysis will be done and the revised maps will be distributed to the City of Orting and to Fire District #18.

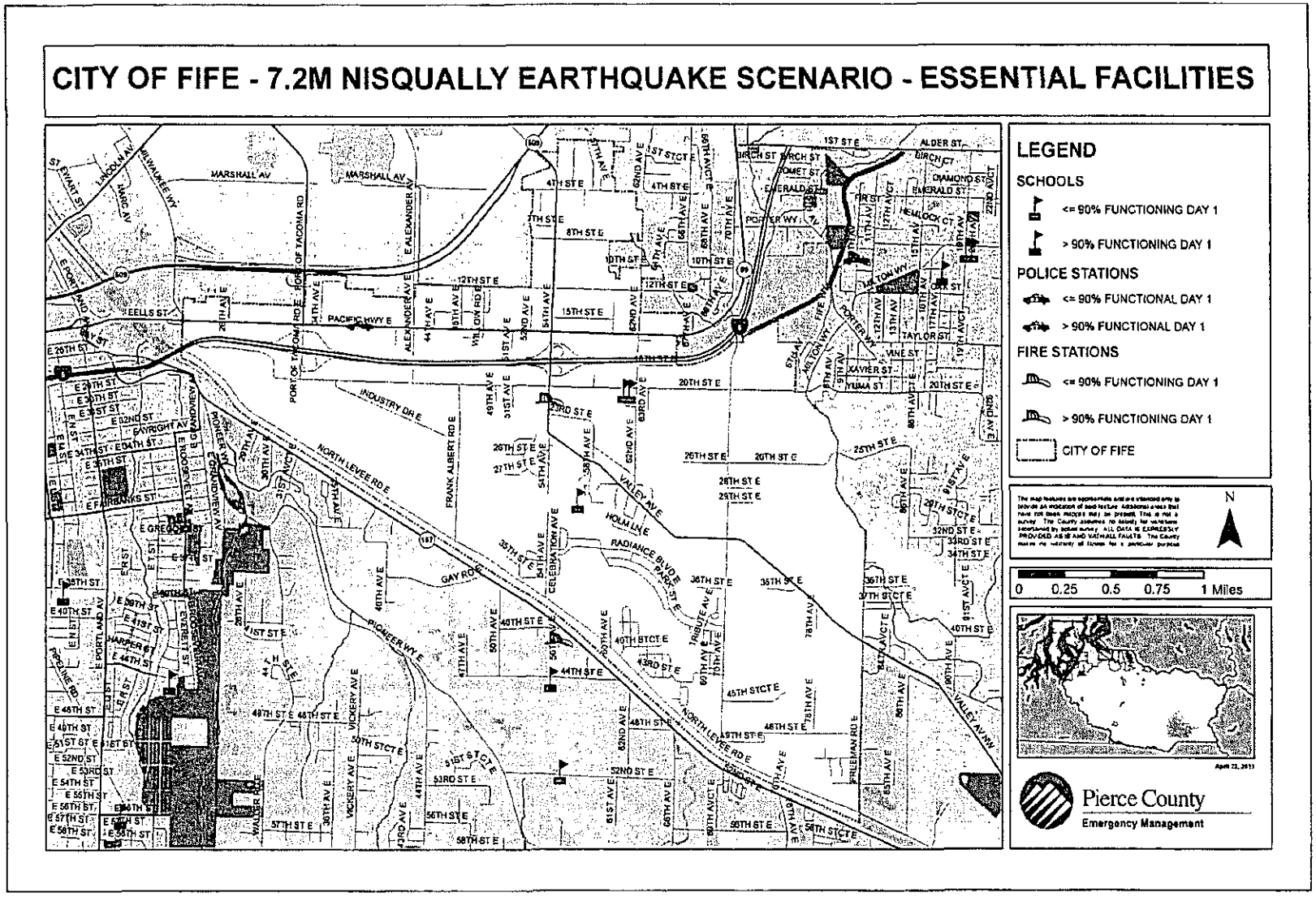
Map D-6 City of Fife Tacoma Fault Scenario Essential Facilities Day 1 Map



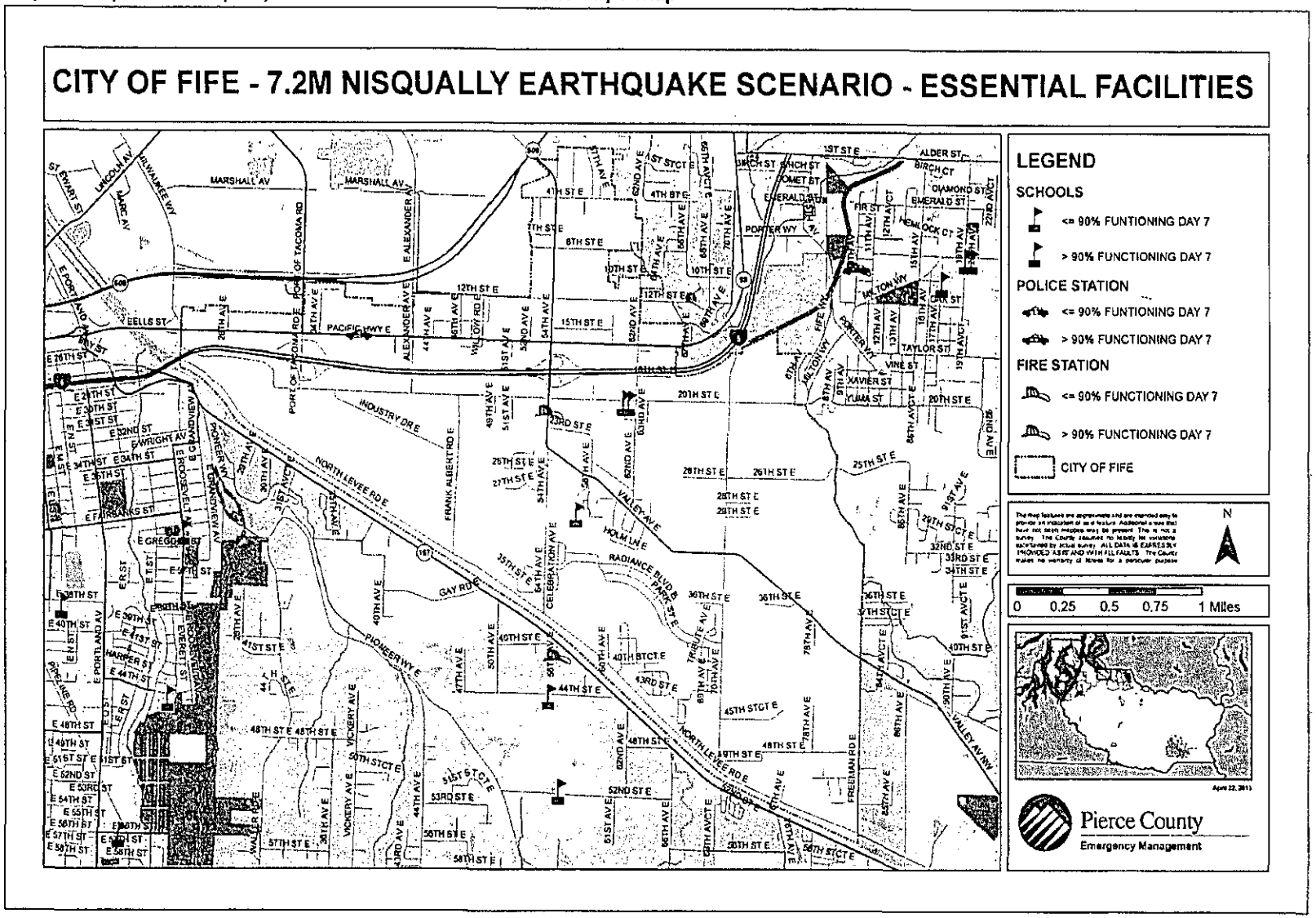
Map D-7 City of Fife Tacoma Fault Scenario Essential Facilities Day 7 Map



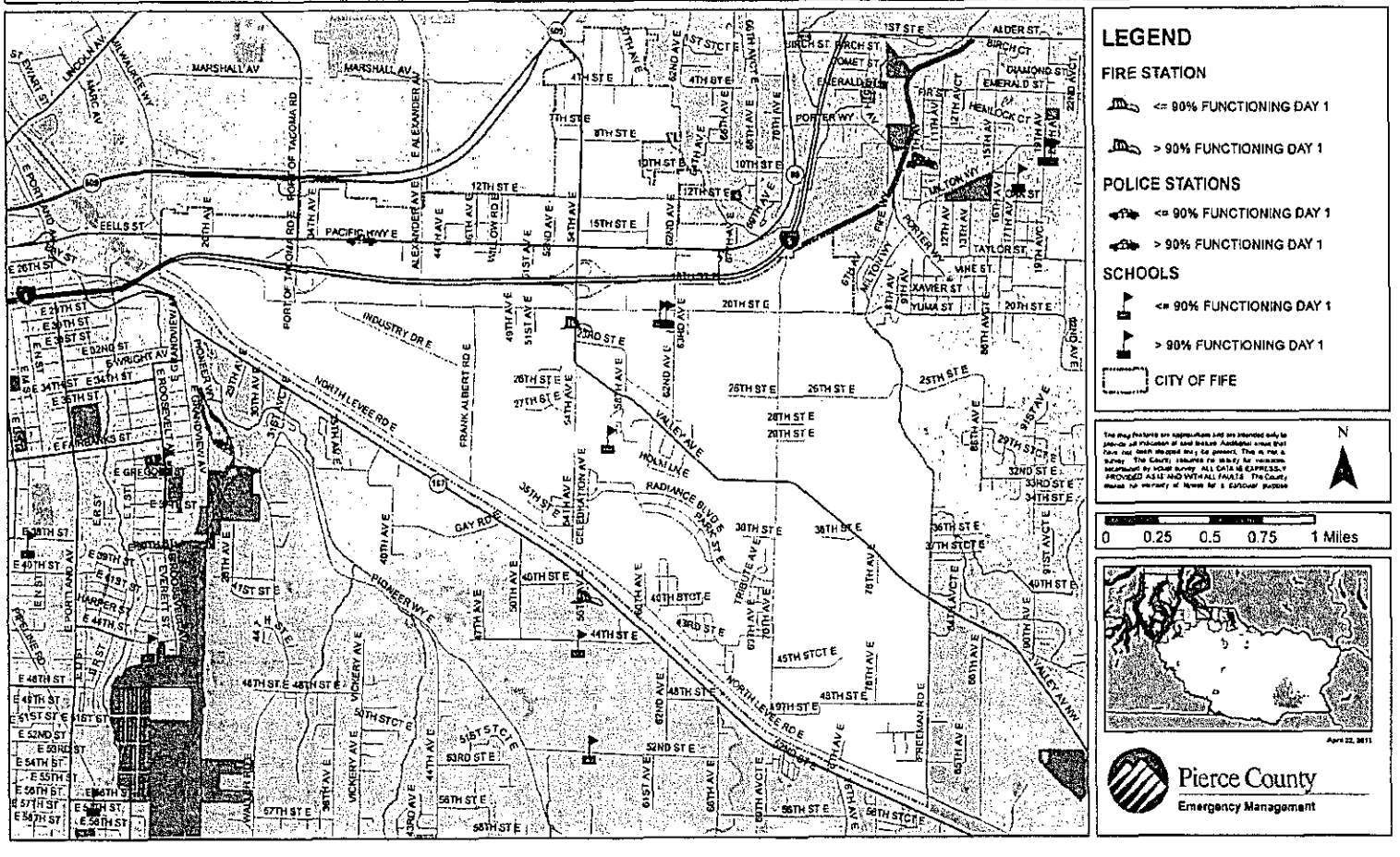
Map D-8 City of Fife Nisqually Fault Scenario Essential Facilities Day 1 Map



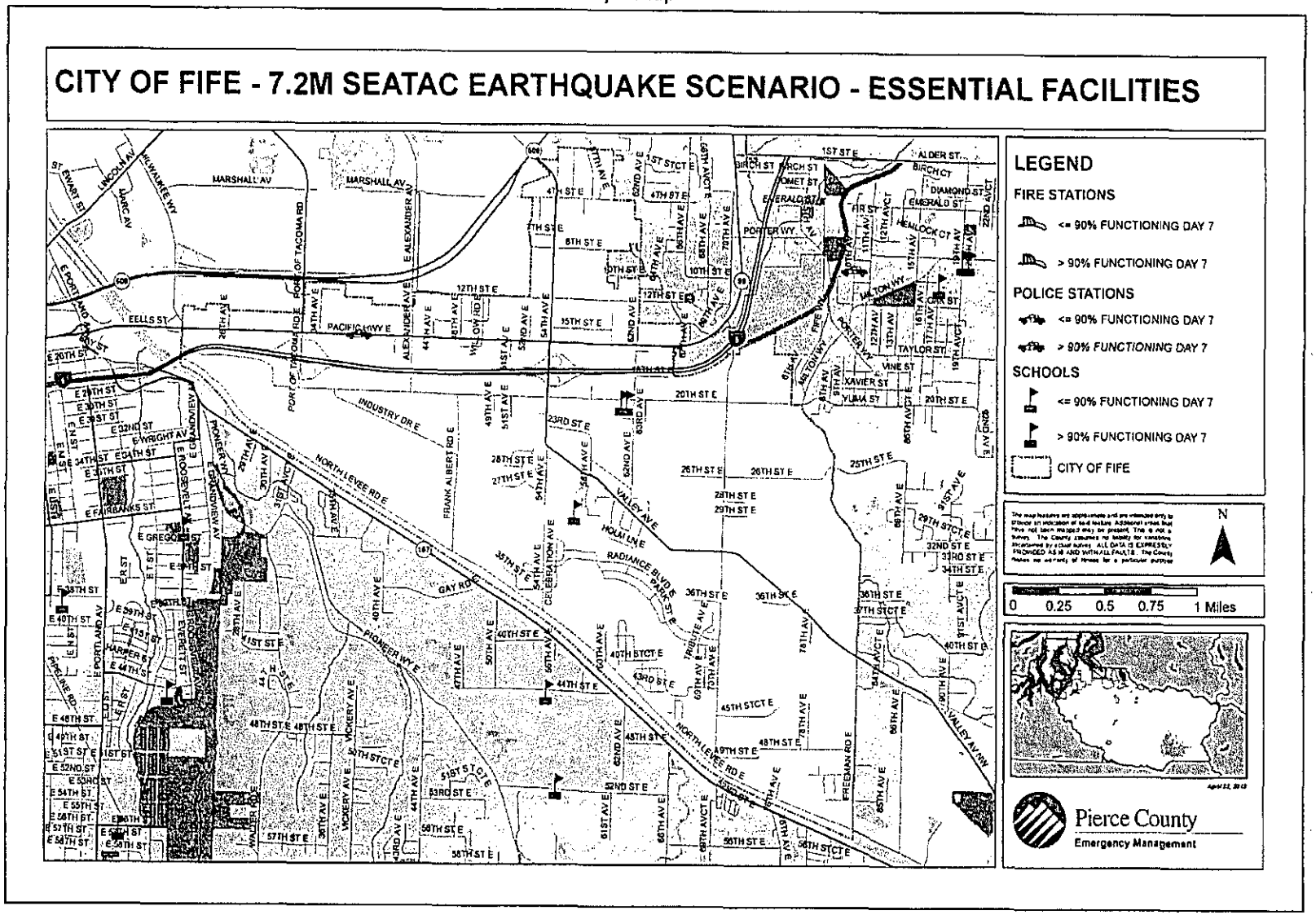
Map D-9 City of Fife Nisqually Fault Scenario Essential Facilities Day 7 Map



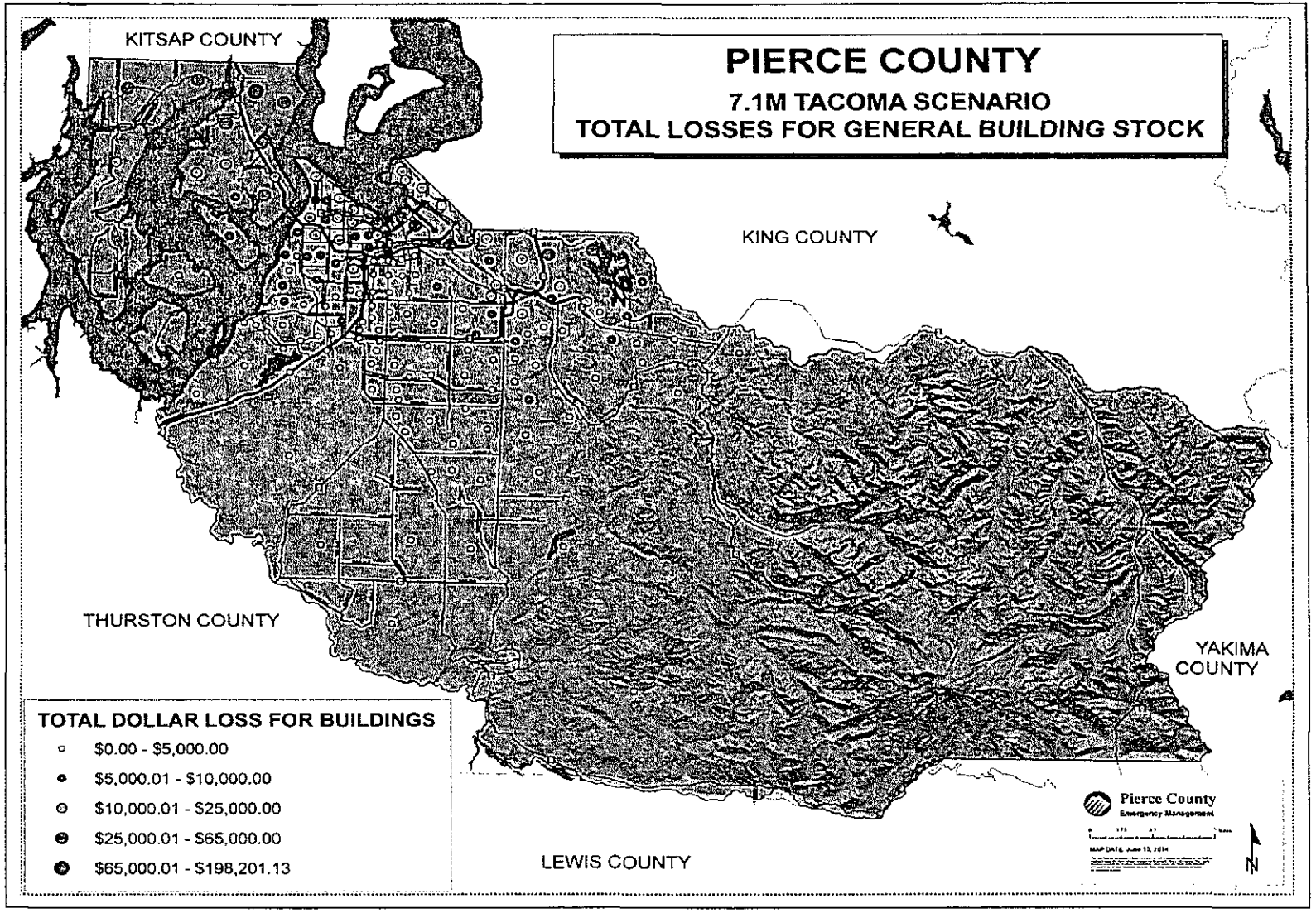
Map D-10 City of Fife Sea Tac Fault Scenario Essential Facilities Day 1 Map



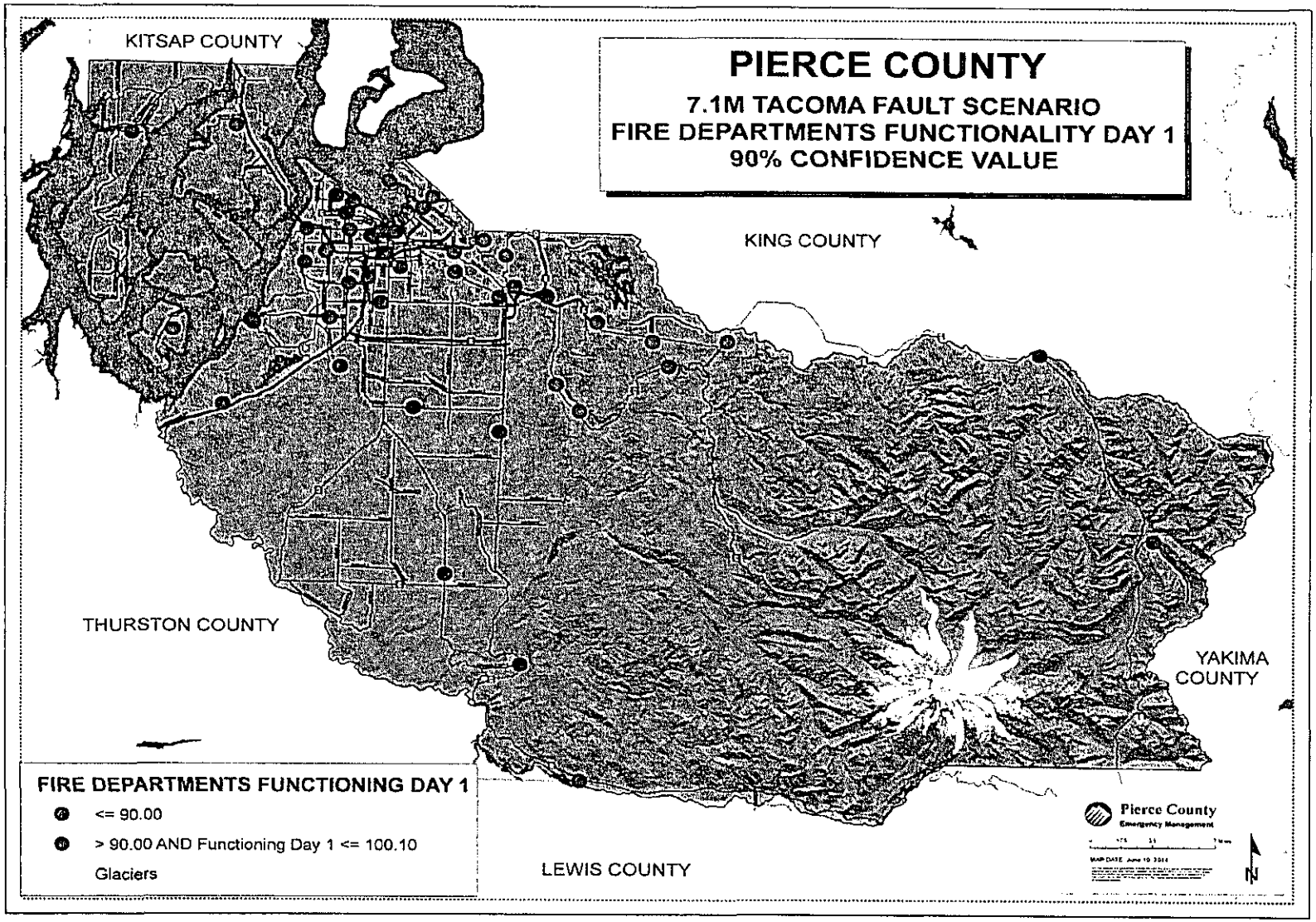
Map D-11 City of Fife Sea Tac Fault Scenario Essential Facilities Day 7 Map



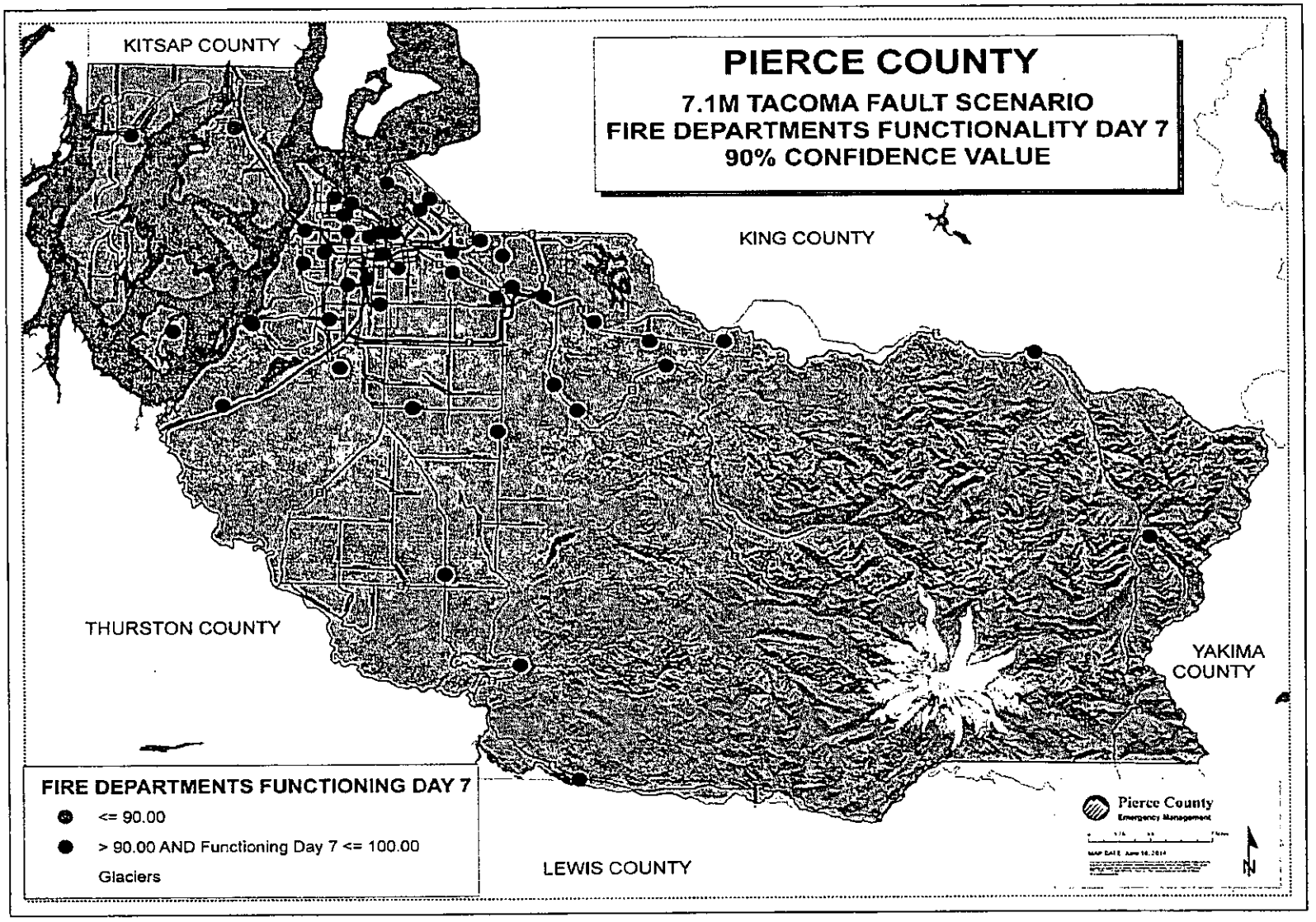
Map D-12 Pierce County Tacoma Fault Scenario Total Losses Map



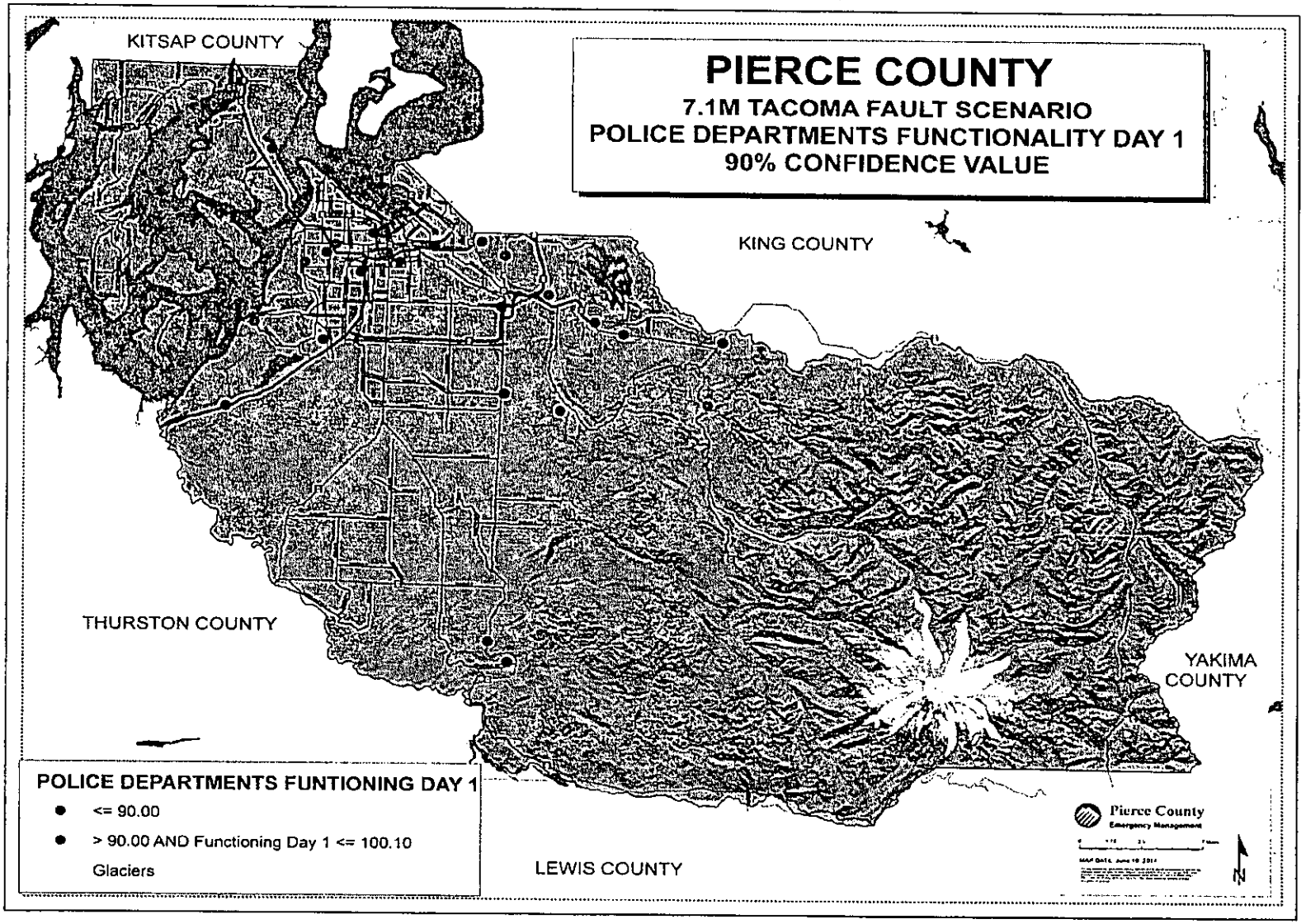
Map D-13 Pierce County Tacoma Fault Scenario Fire Department Functionality Day 1 Map



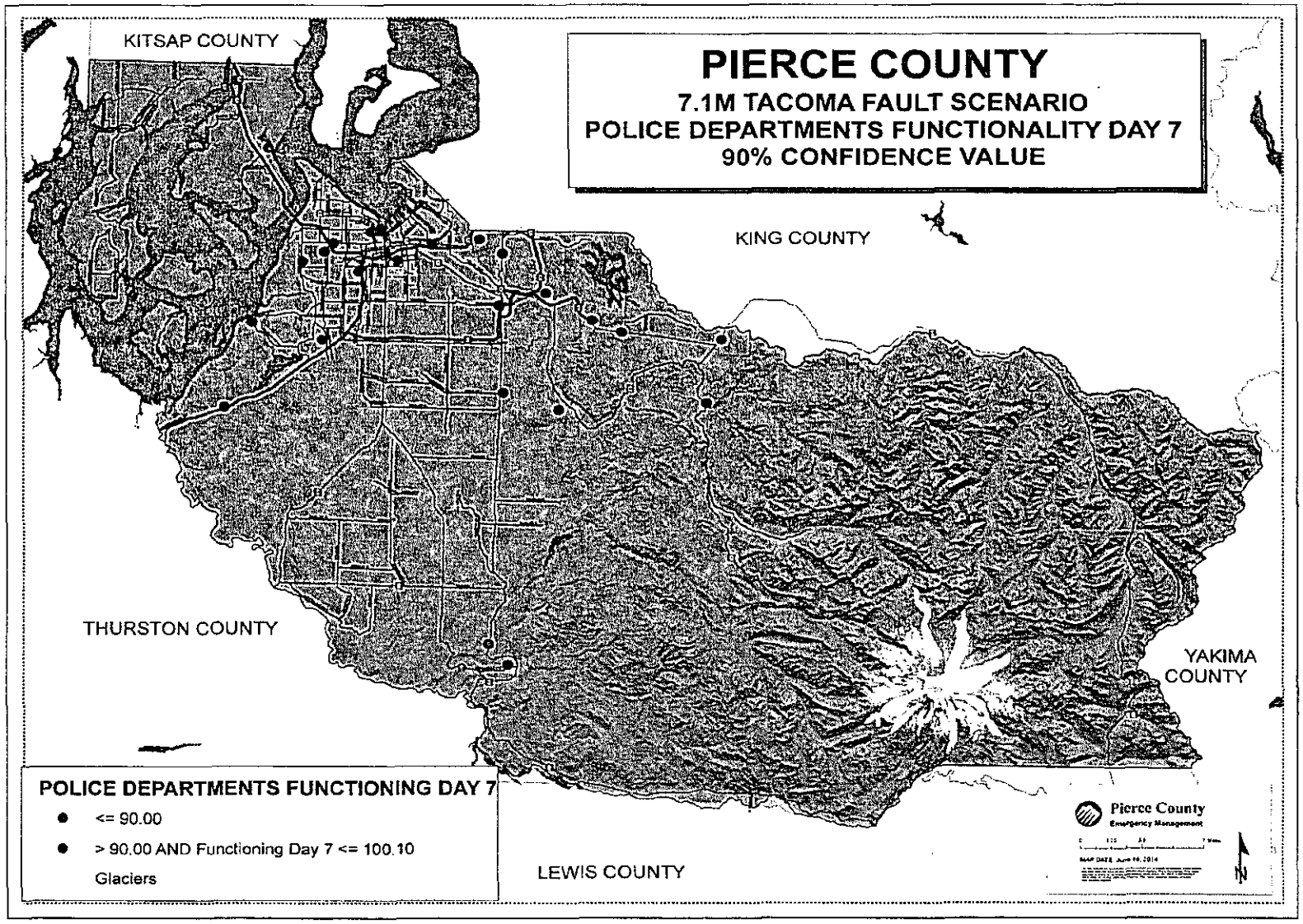
Map D-14 Pierce County Tacoma Fault Scenario Fire Department Functionality Day 7 Map



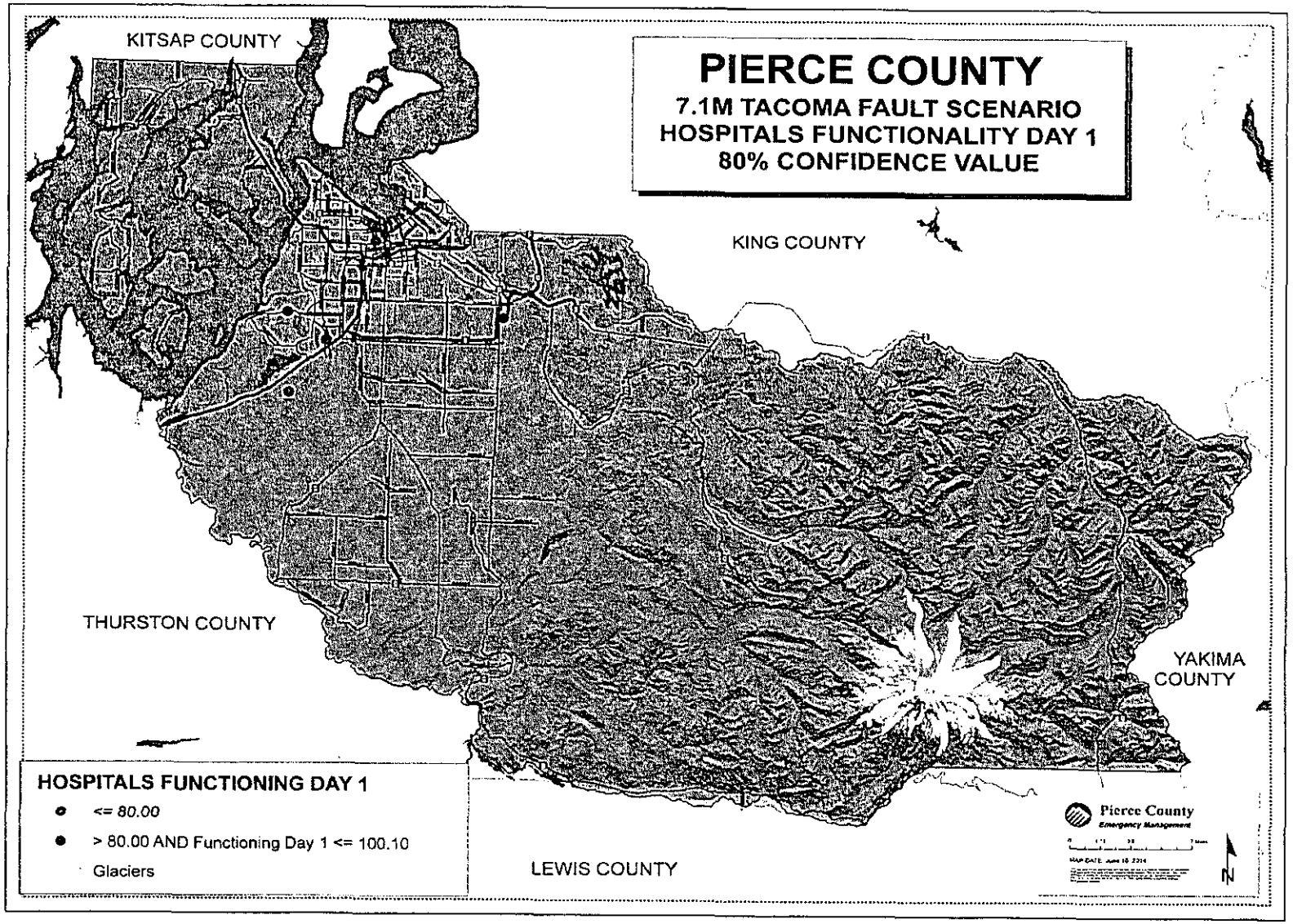
Map D-15 Pierce County Tacoma Fault Scenario Police Department Functionality Day 1 Map



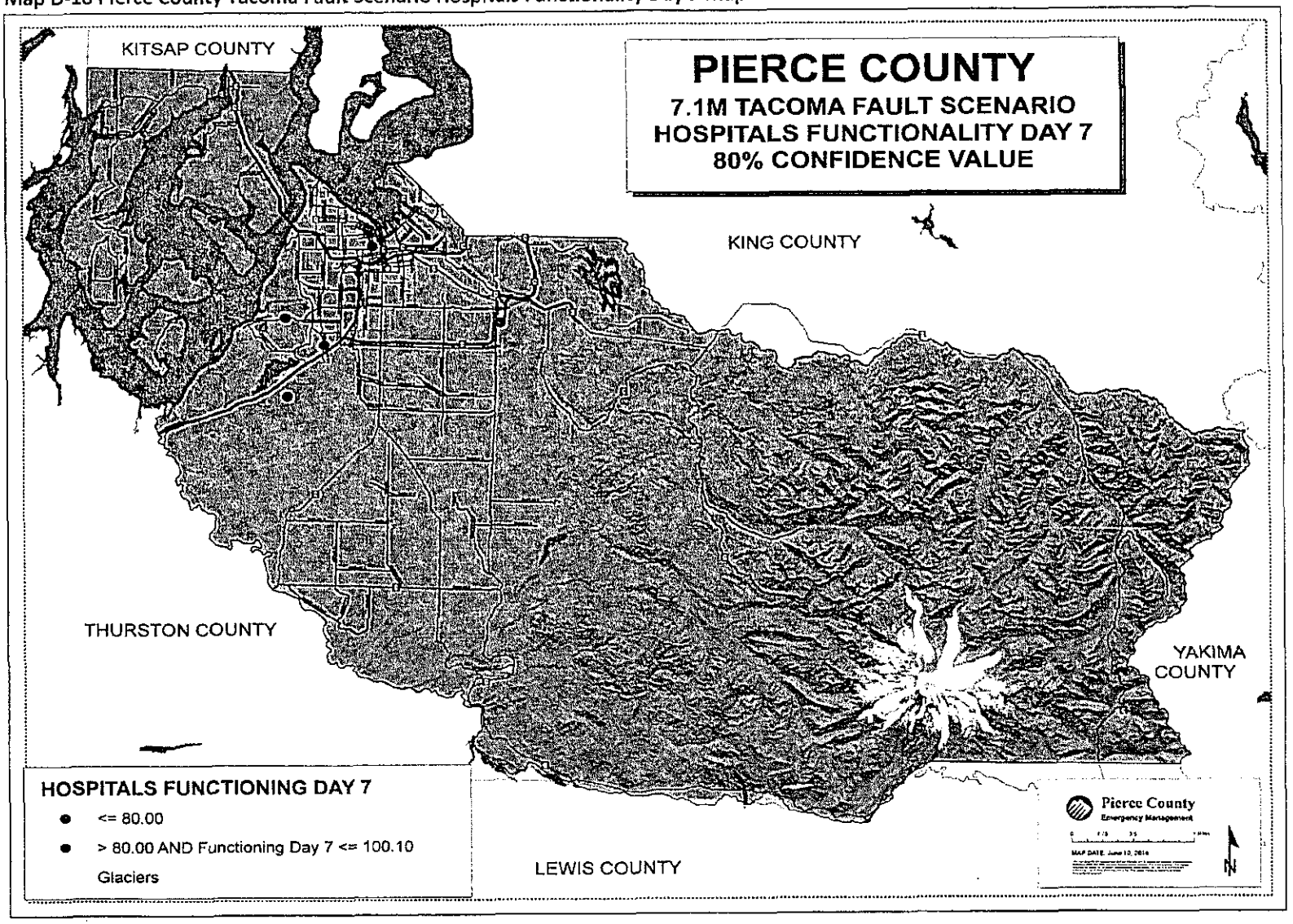
Map D-16 Pierce County Tacoma Fault Scenario Police Department Functionality Day 7 Map



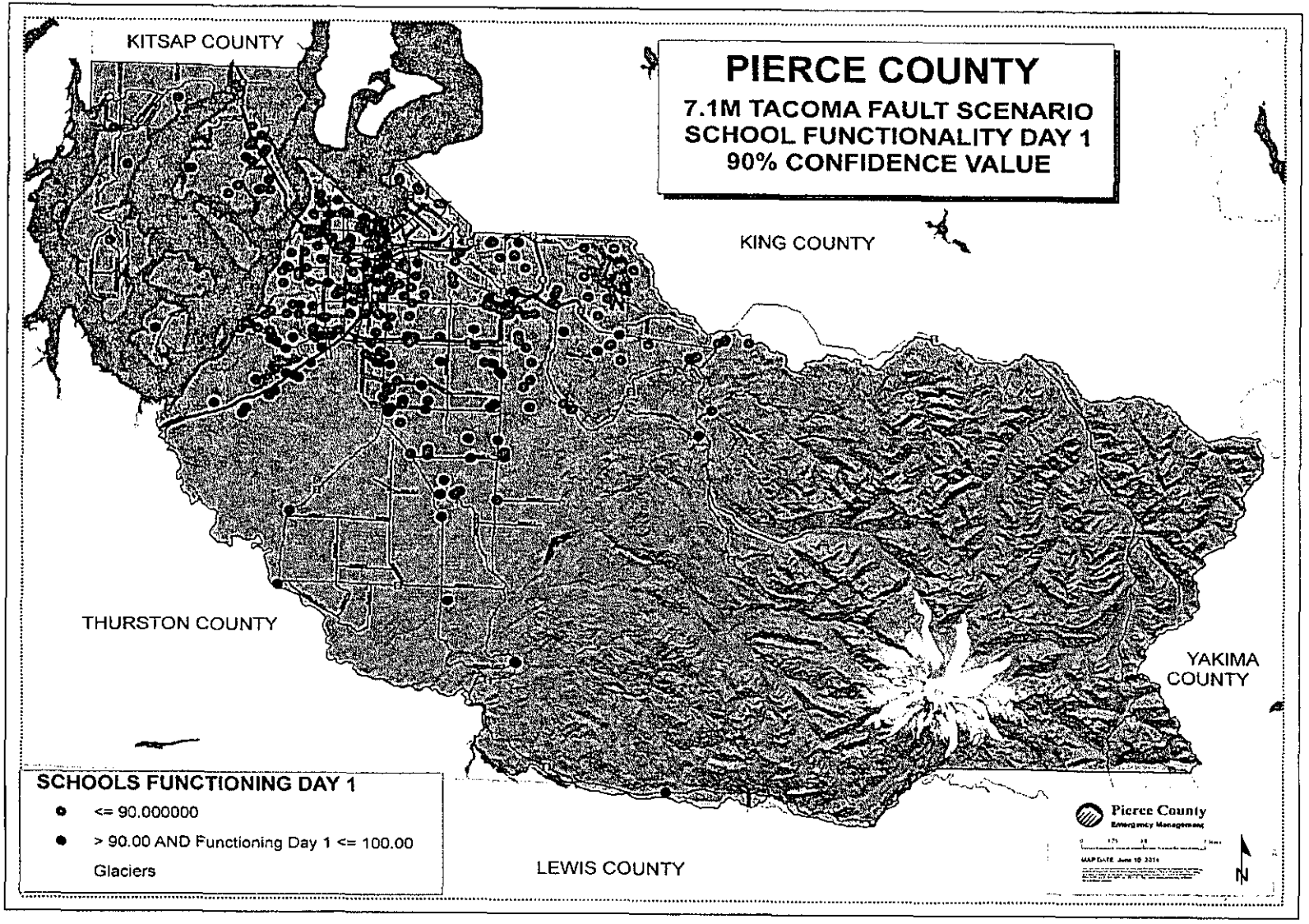
Map D-17 Pierce County Tacoma Fault Scenario Hospitals Functionality Day 1 Map



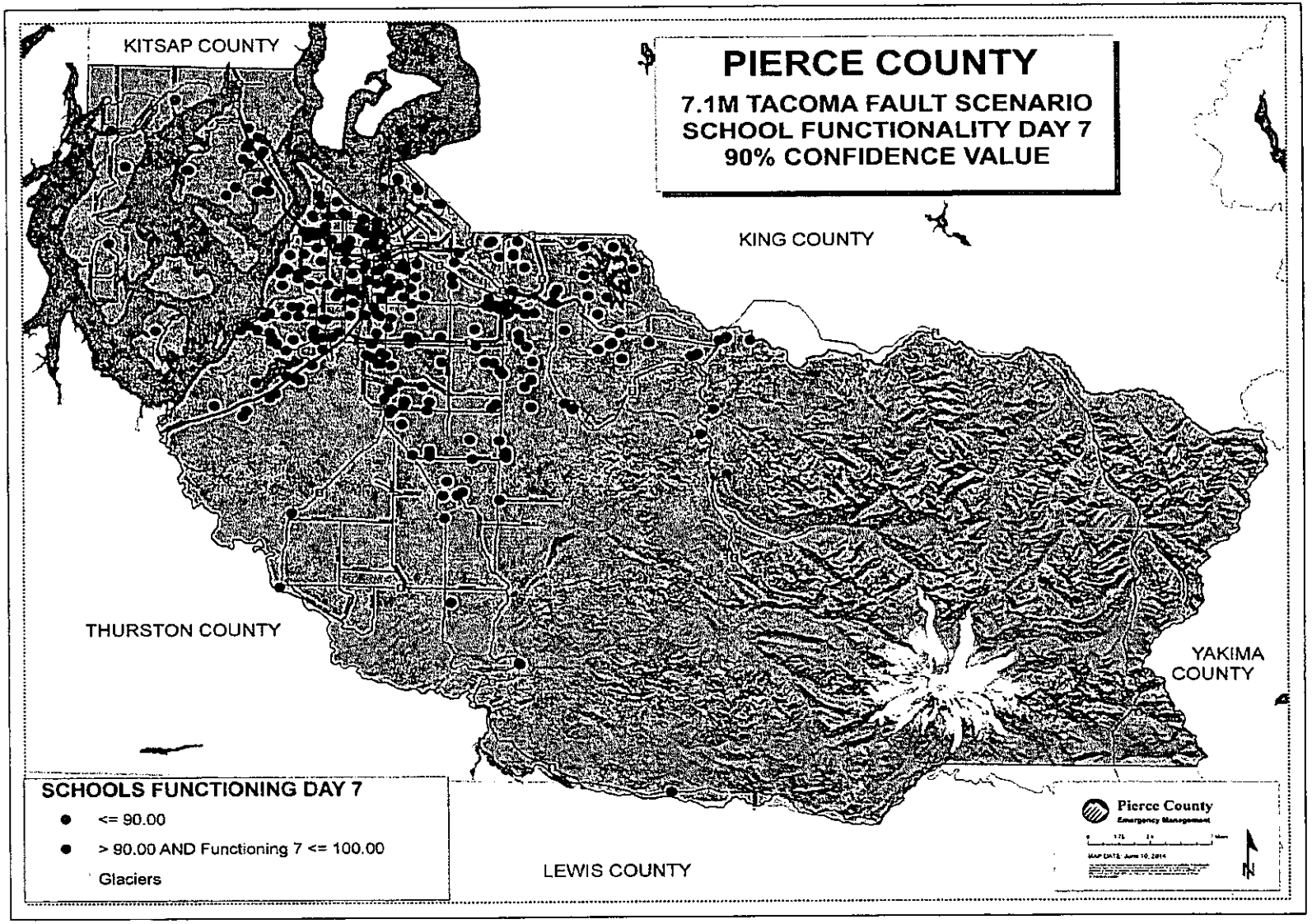
Map D-18 Pierce County Tacoma Fault Scenario Hospitals Functionality Day 7 Map



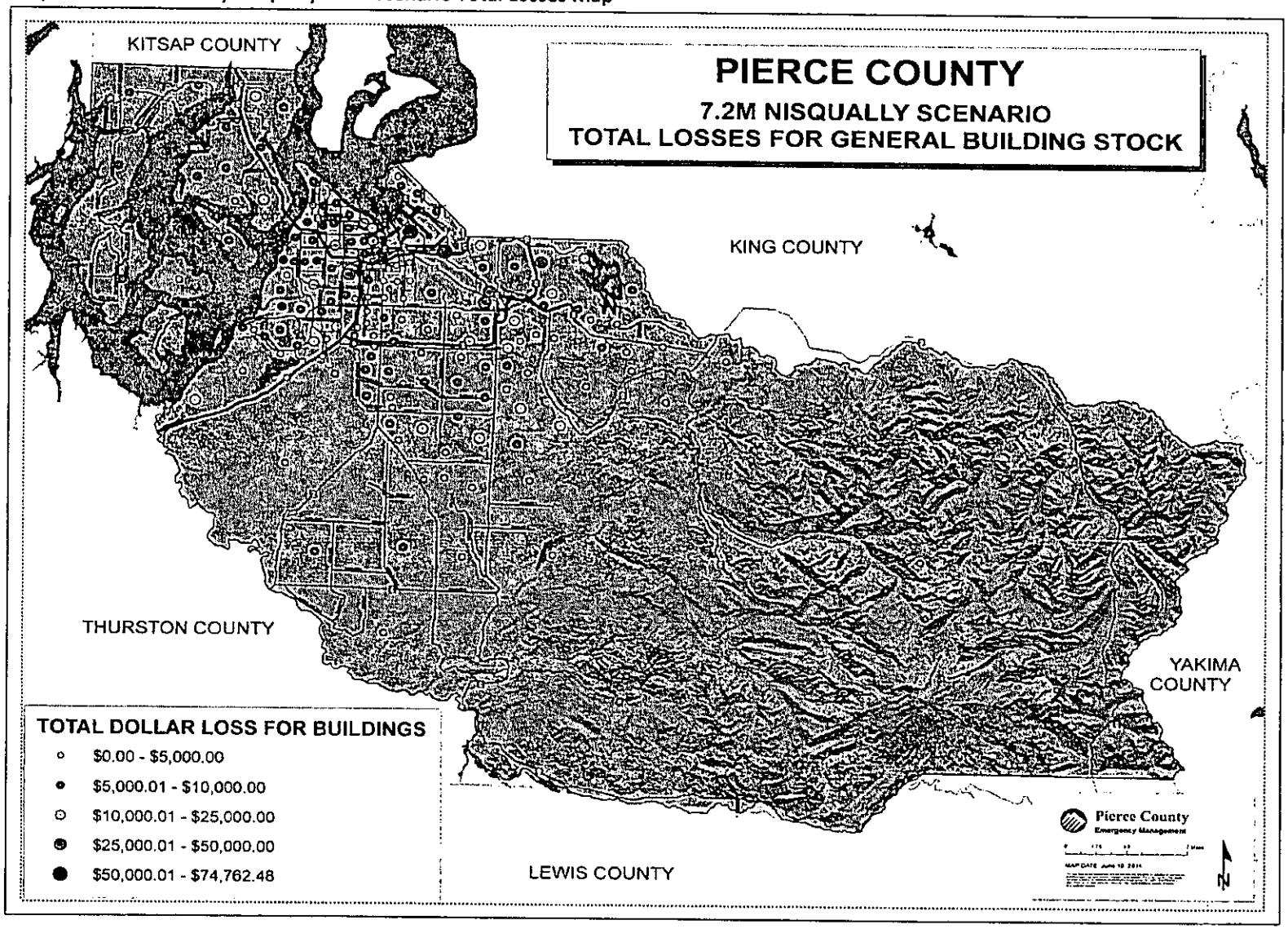
Map D-19 Pierce County Tacoma Fault Scenario School Functionality Day 1 Map



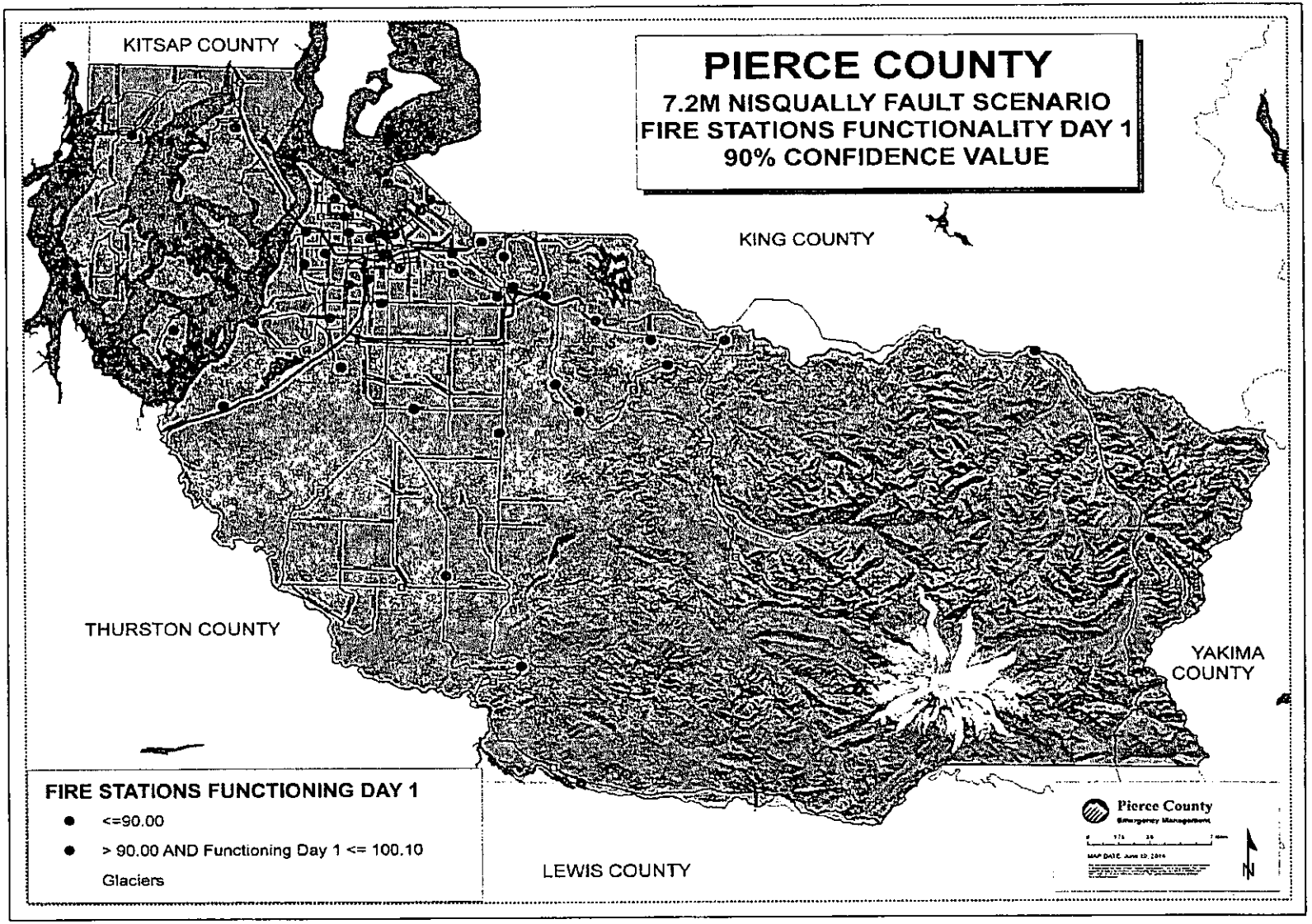
Map D-20 Pierce County Tacoma Fault Scenario School Functionality Day 7 Map



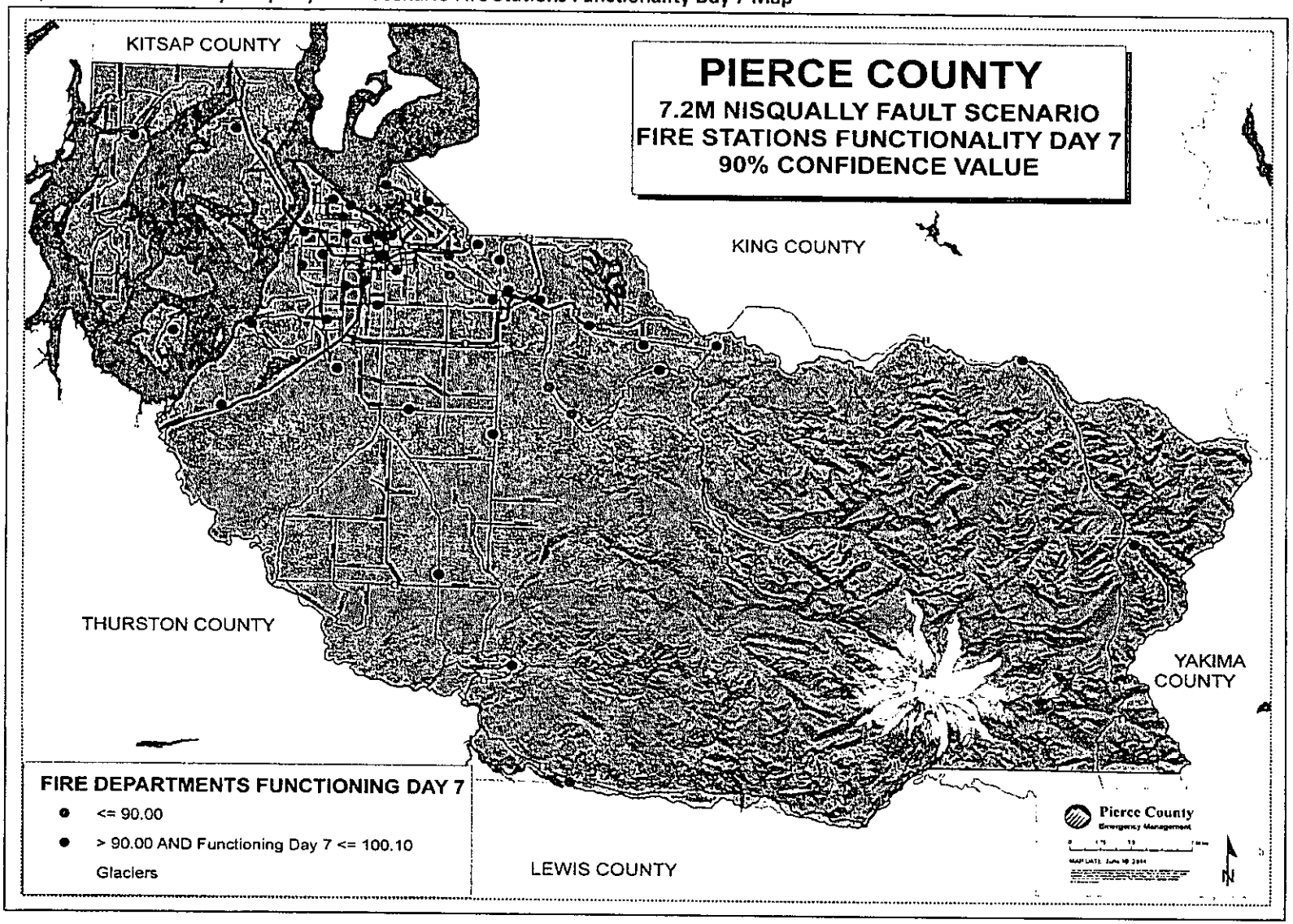
Map D-21 Pierce County Nisqually Fault Scenario Total Losses Map



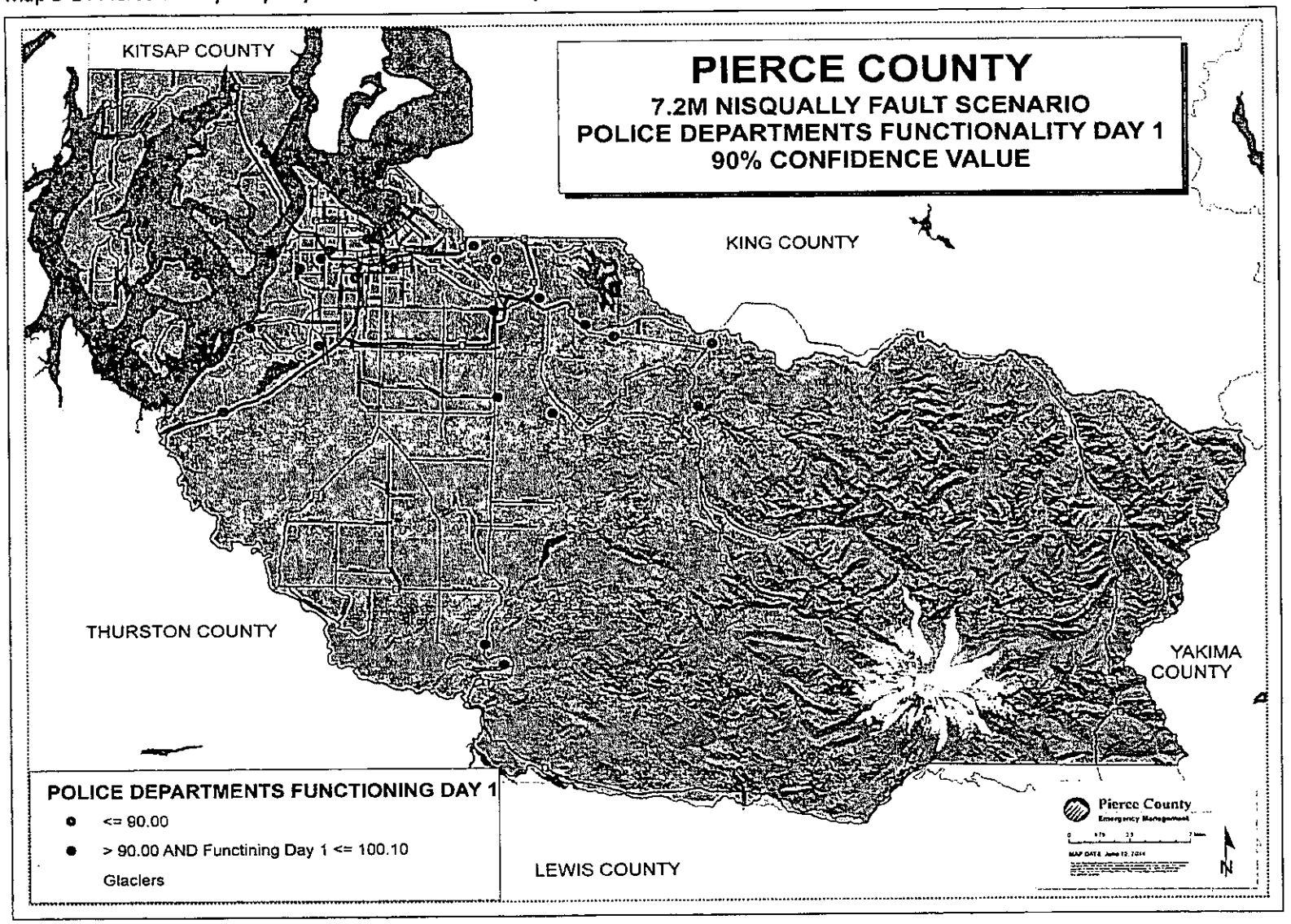
Map D-22 Pierce County Nisqually Fault Scenario Fire Stations Functionality Day 1 Map



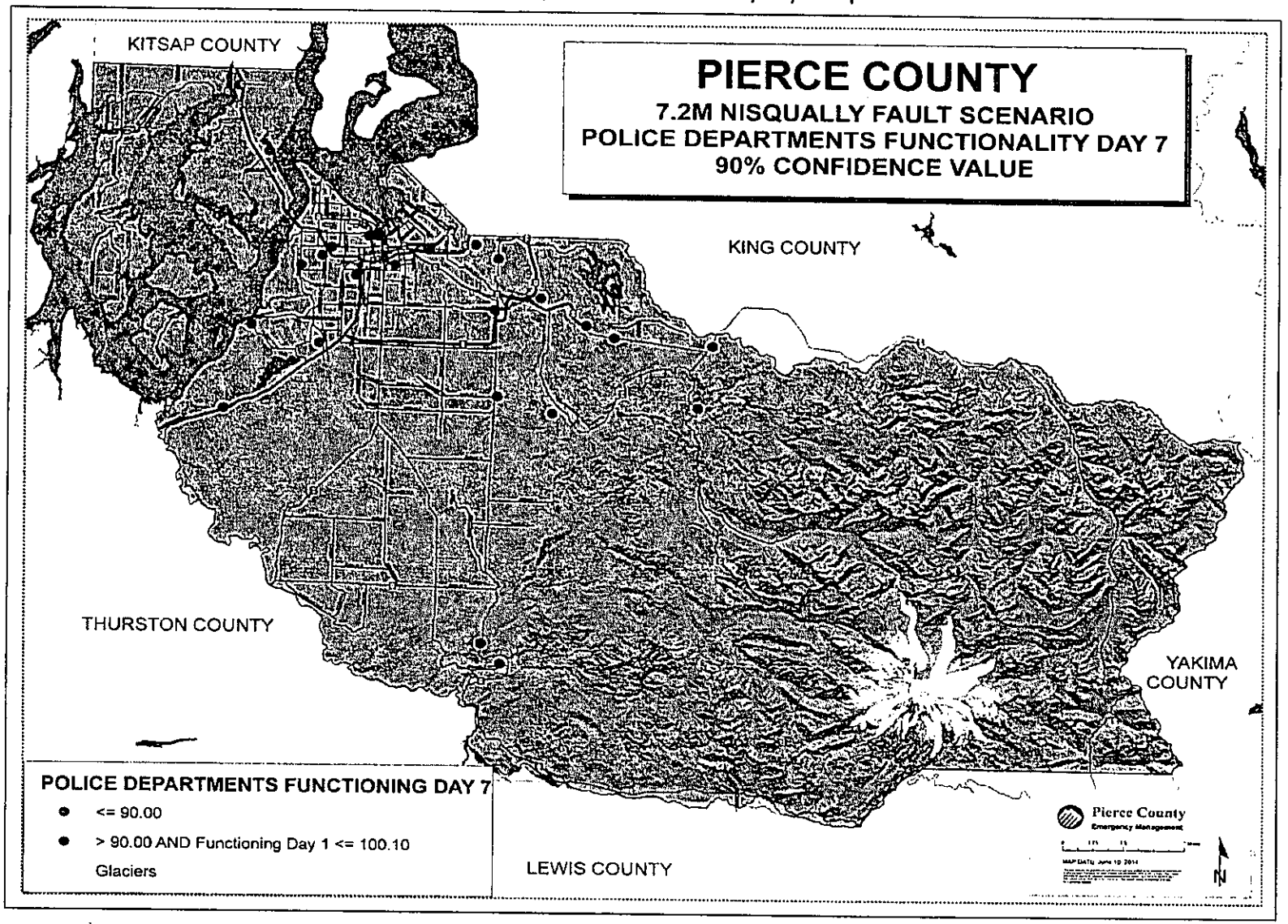
Map D-23 Pierce County Nisqually Fault Scenario Fire Stations Functionality Day 7 Map



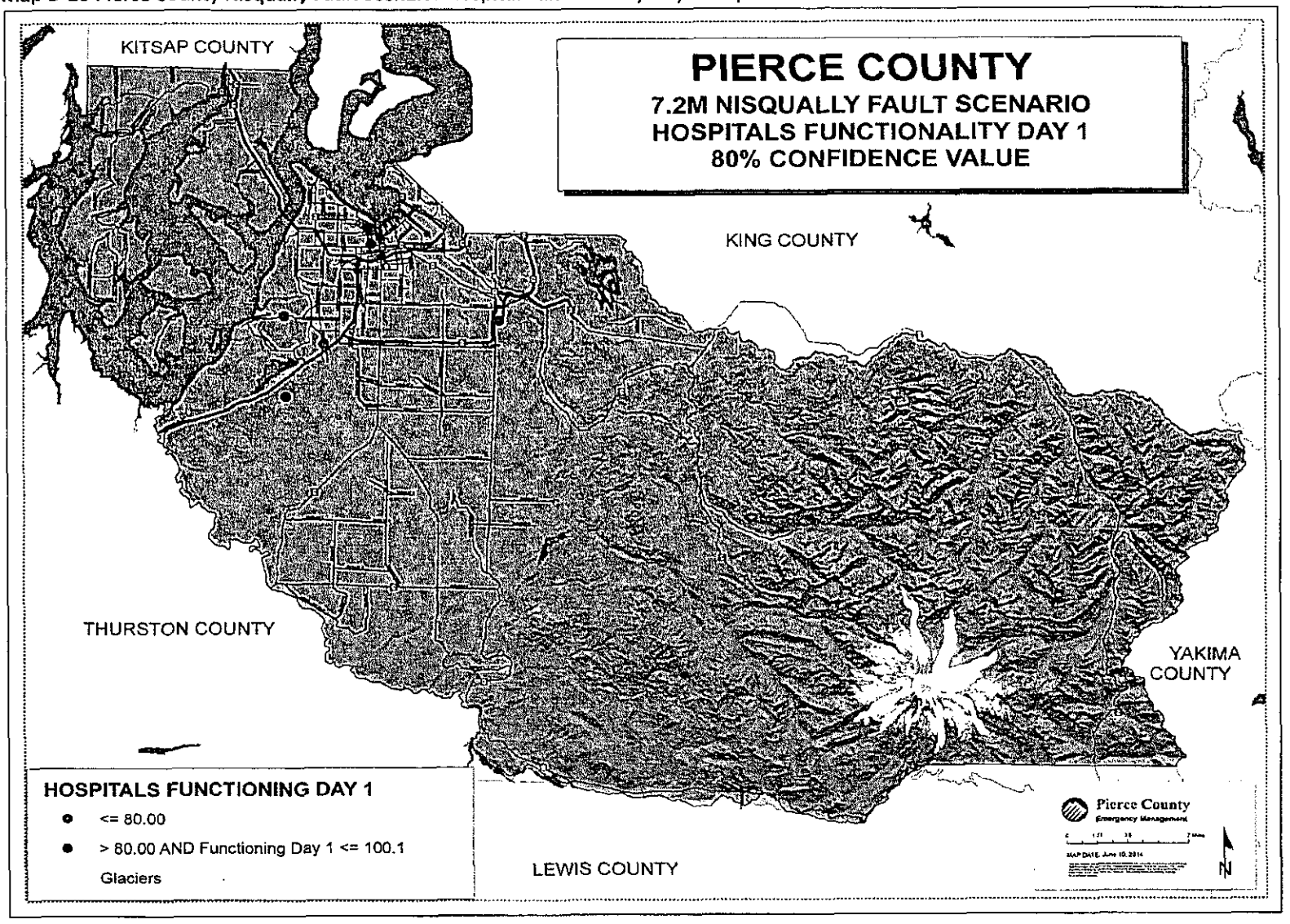
Map D-24 Pierce County Nisqually Fault Scenario Police Departments Functionality Day 1 Map



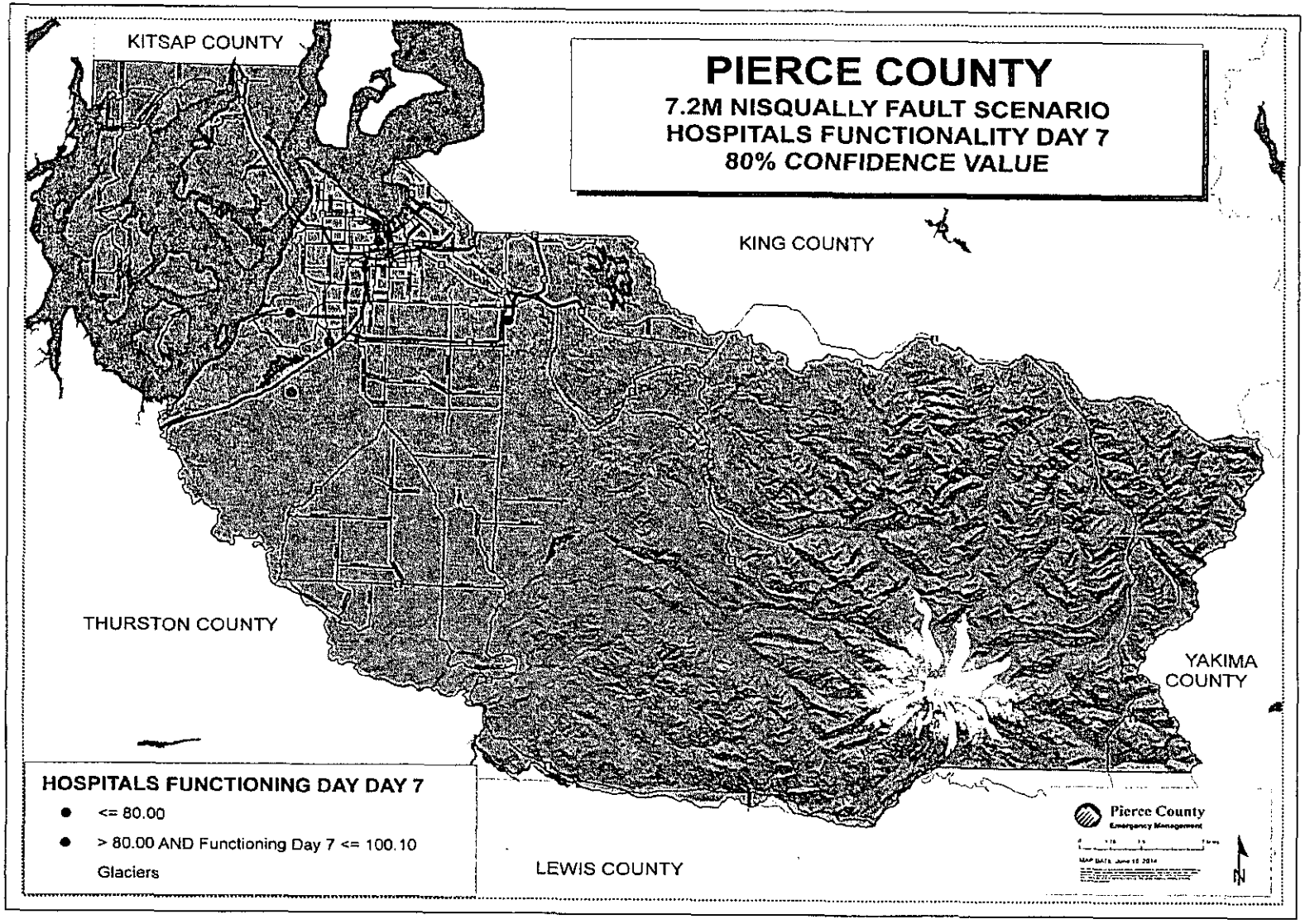
Map D-25 Pierce County Nisqually Fault Scenario Police Departments Functionality Day 7 Map



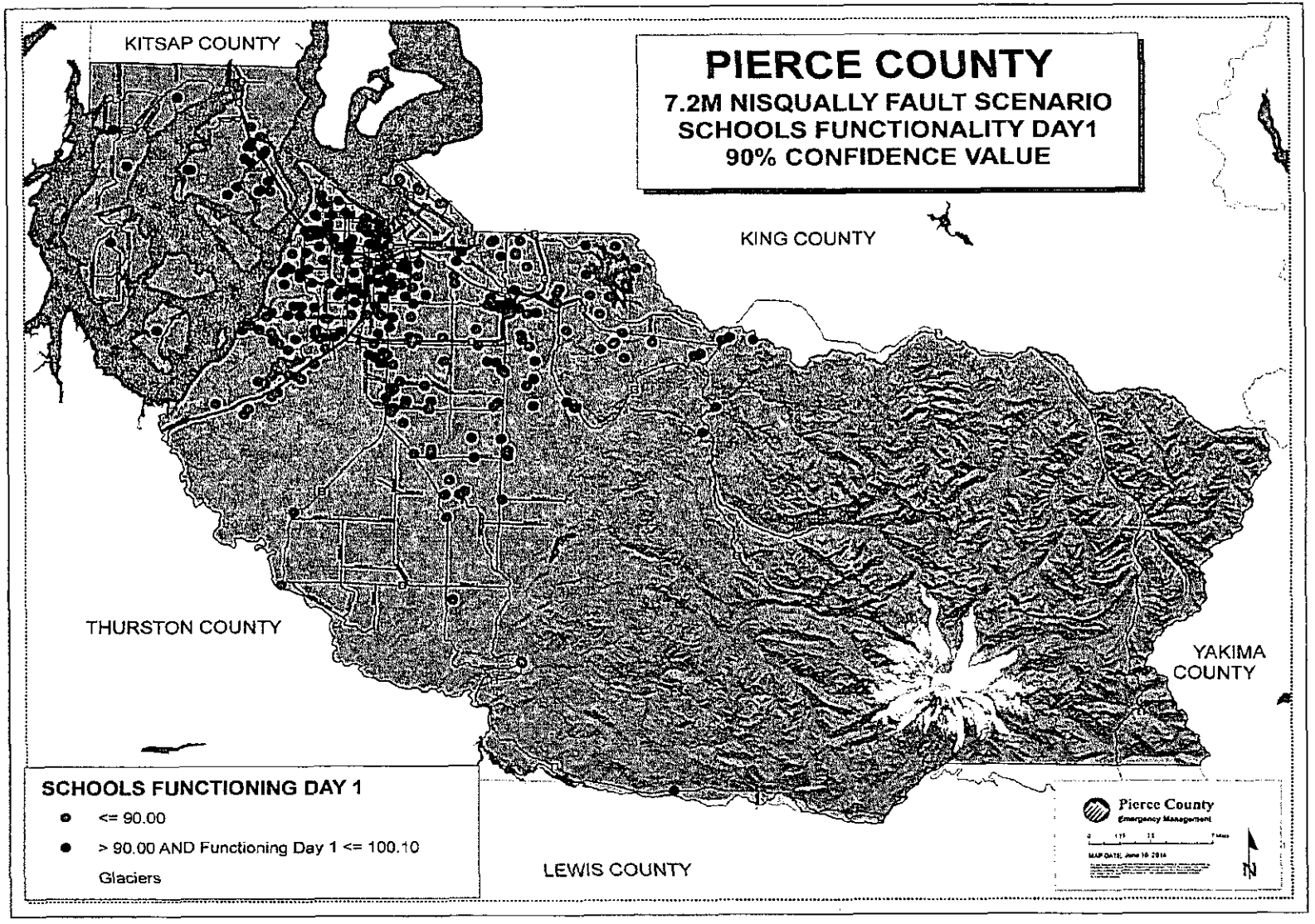
Map D-26 Pierce County Nisqually Fault Scenario Hospital Functionality Day 1 Map



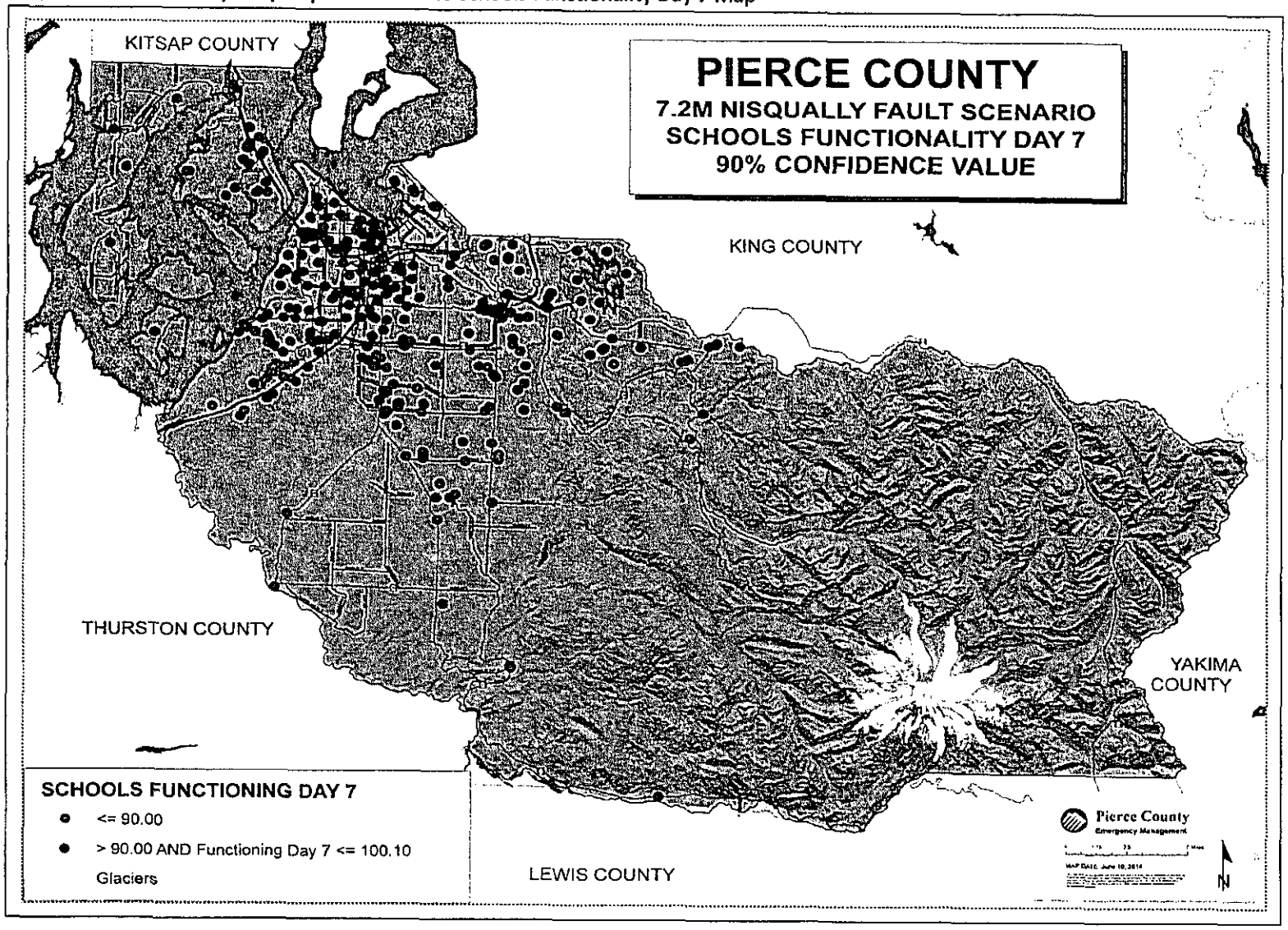
Map D-27 Pierce County Nisqually Fault Scenario Hospital Functionality Day 7 Map



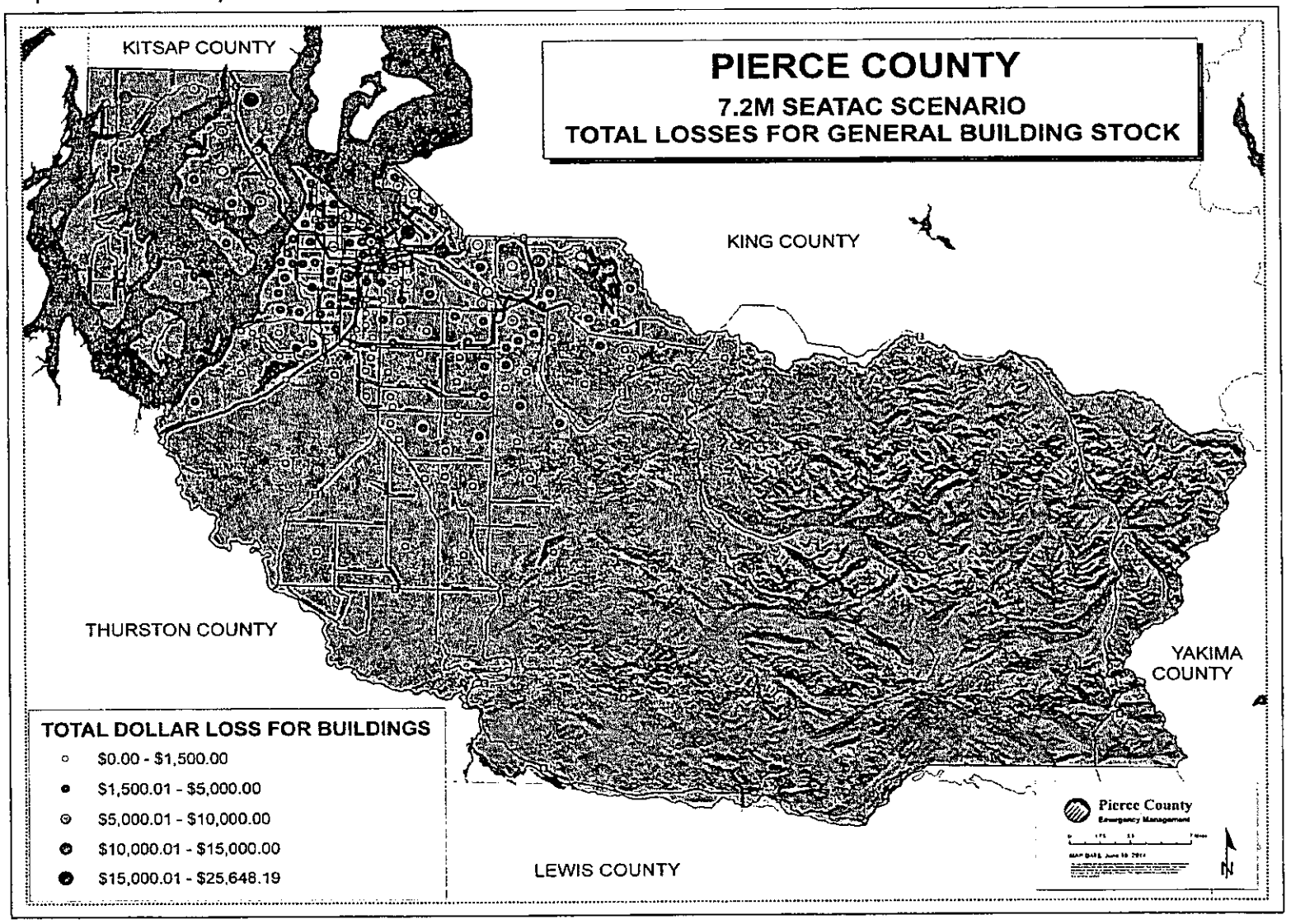
Map D-28 Pierce County Nisqually Fault Scenario Schools Functionality Day 1 Map



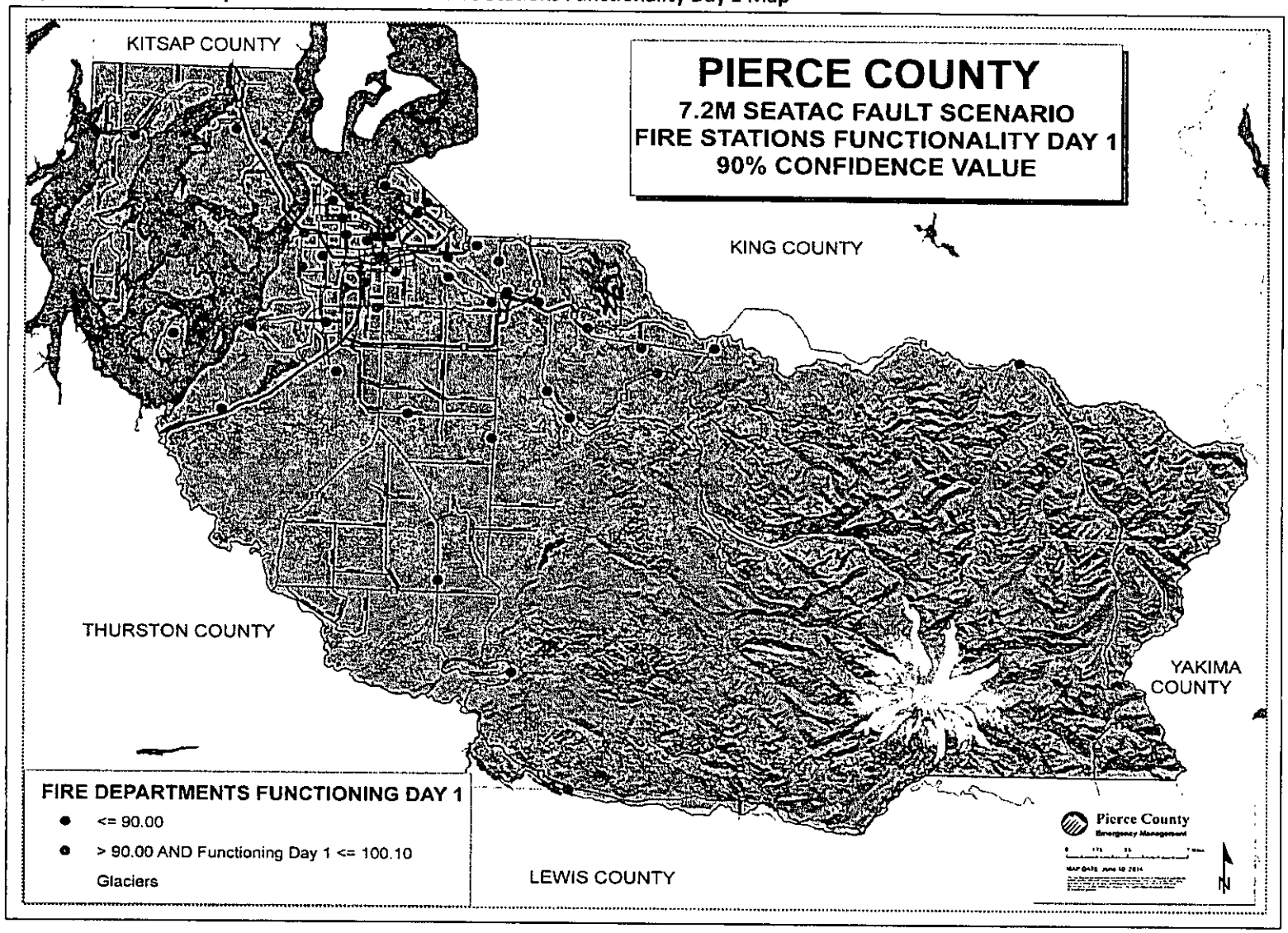
Map D-29 Pierce County Nisqually Fault Scenario Schools Functionality Day 7 Map



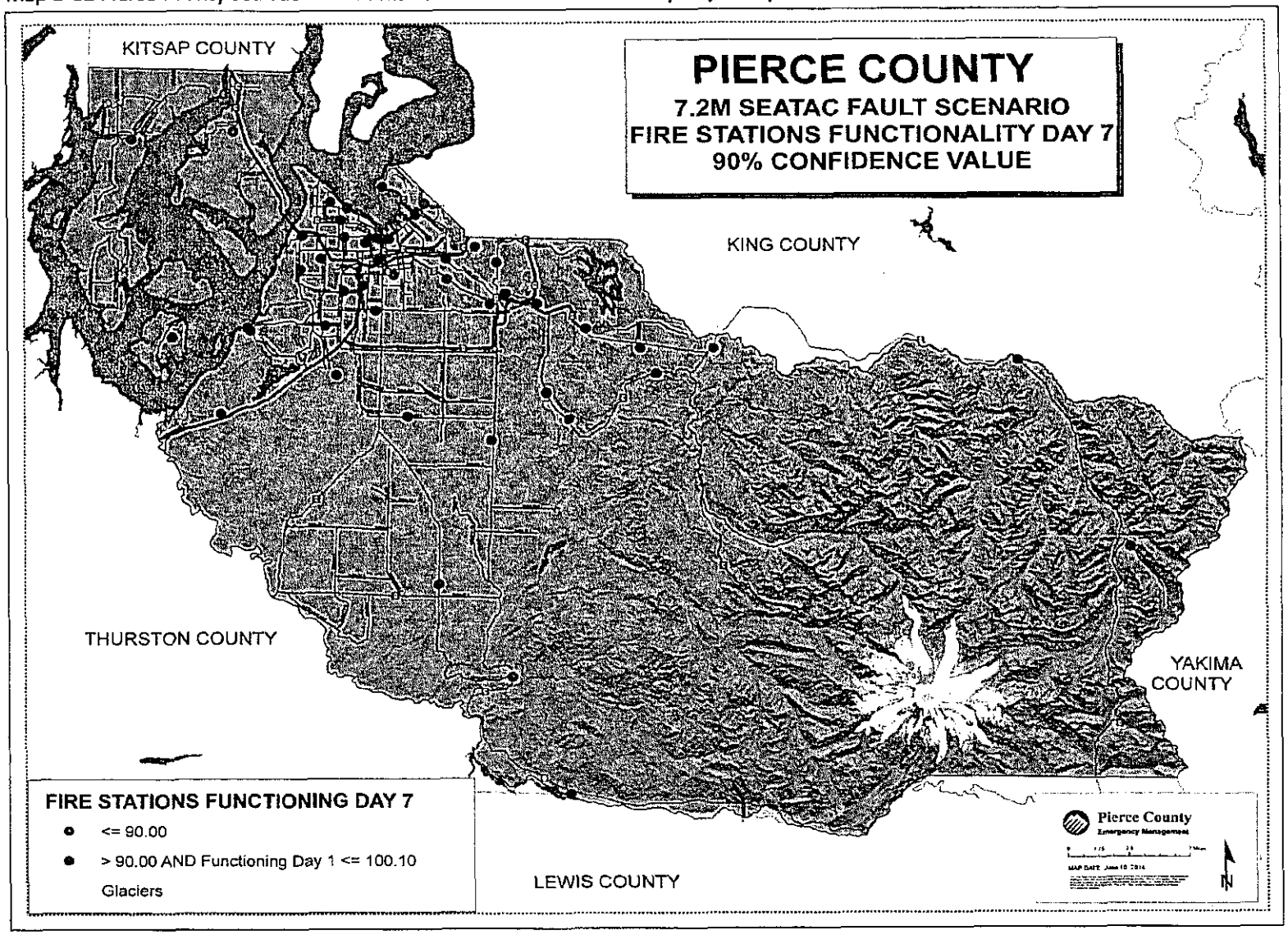
Map D-30 Pierce County Sea Tac Fault Scenario Total Losses Map



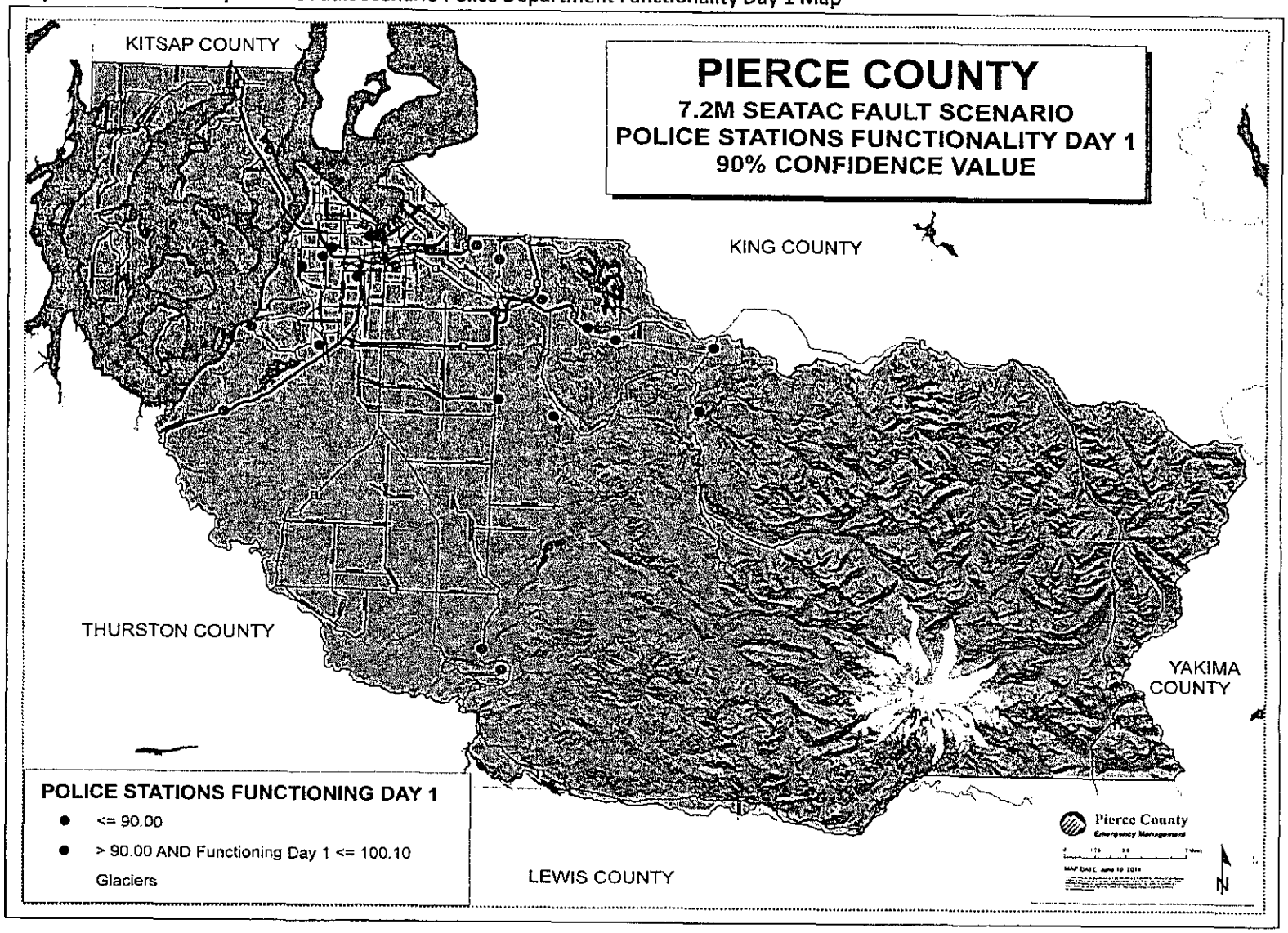
Map D-31 Pierce County Sea Tac Fault Scenario Fire Stations Functionality Day 1 Map



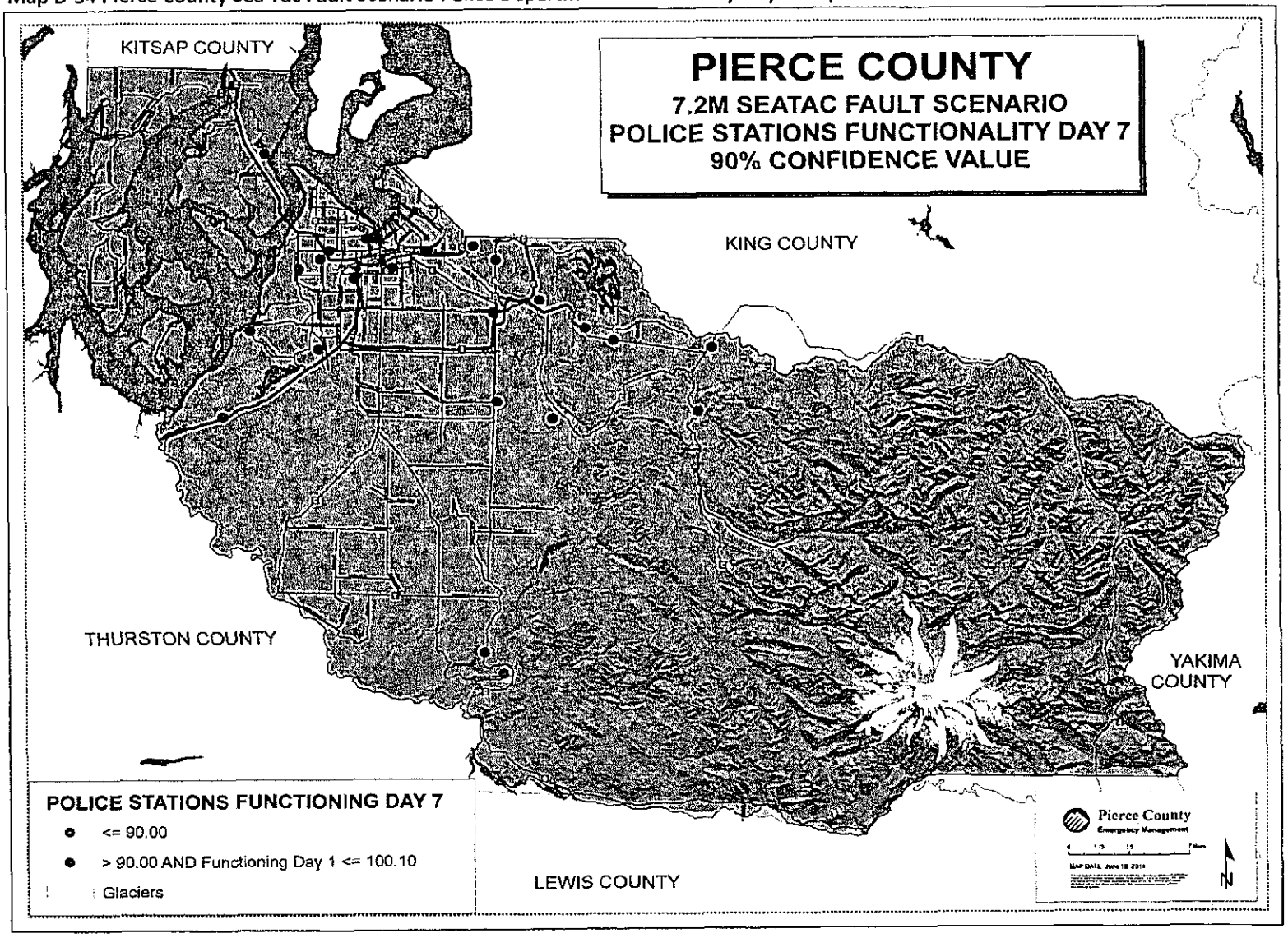
Map D-32 Pierce County Sea Tac Fault Scenario Fire Stations Functionality Day 7 Map



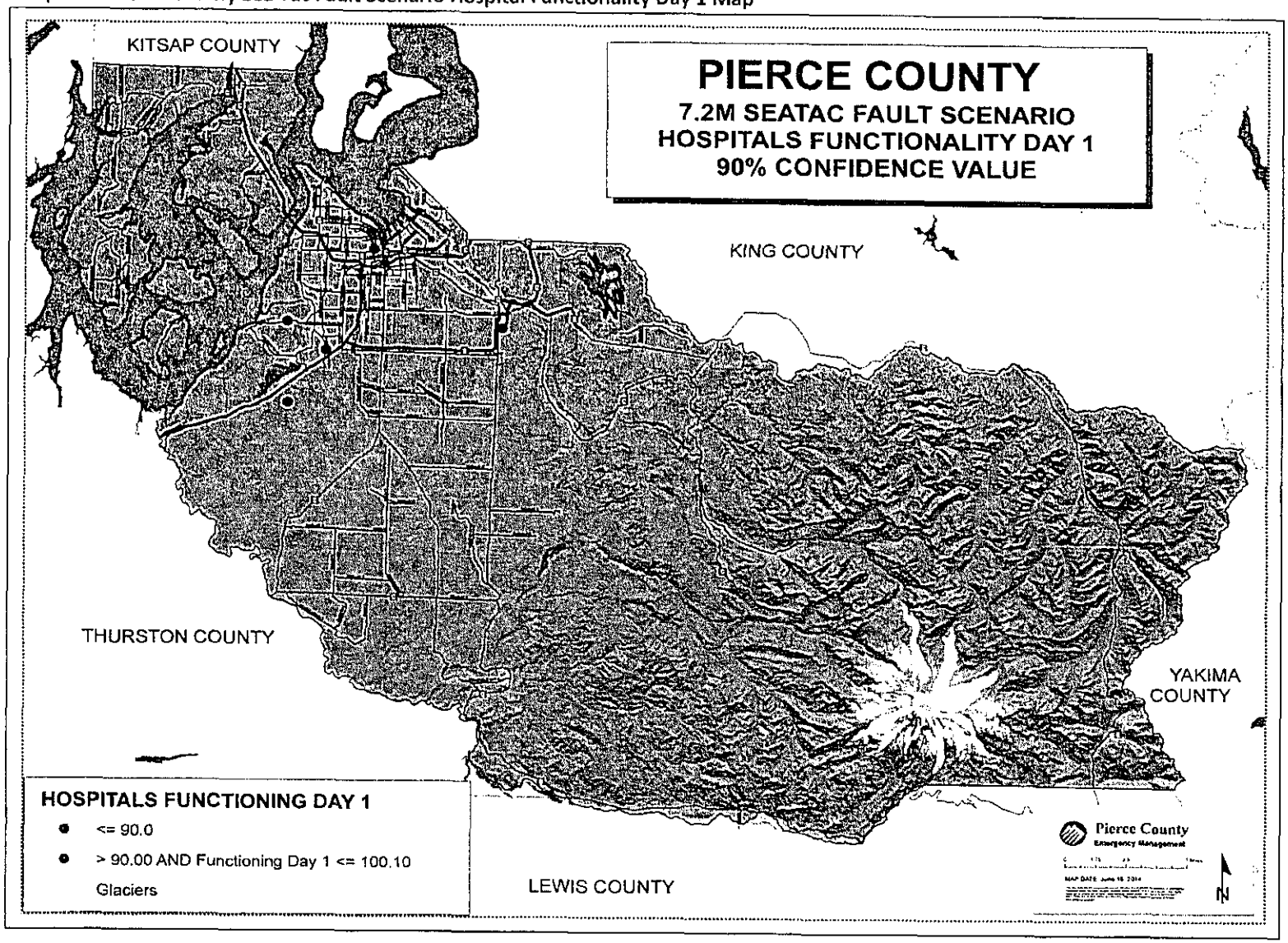
Map D-33 Pierce County Sea Tac Fault Scenario Police Department Functionality Day 1 Map



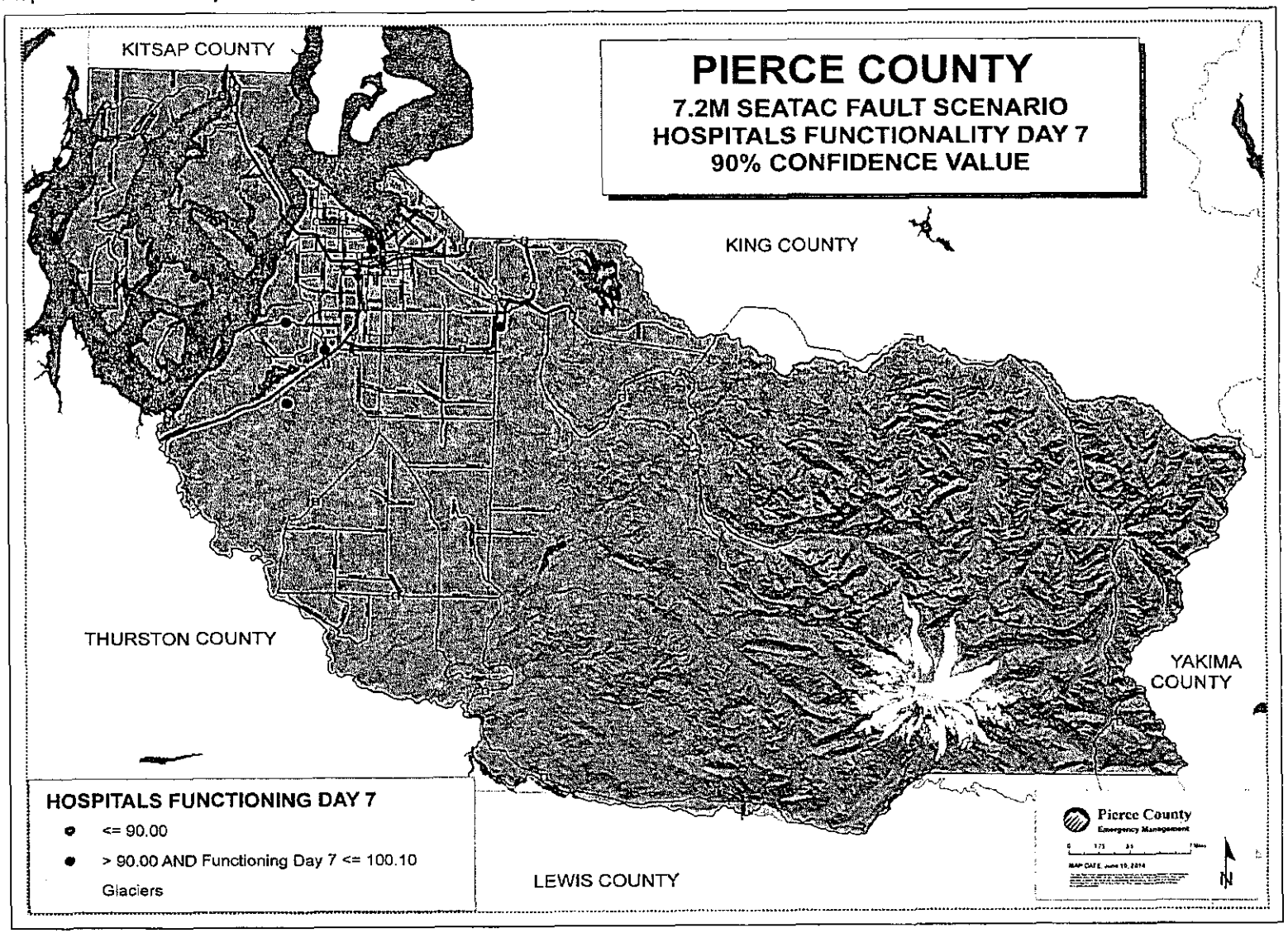
Map D-34 Pierce County Sea Tac Fault Scenario Police Department Functionality Day 7 Map



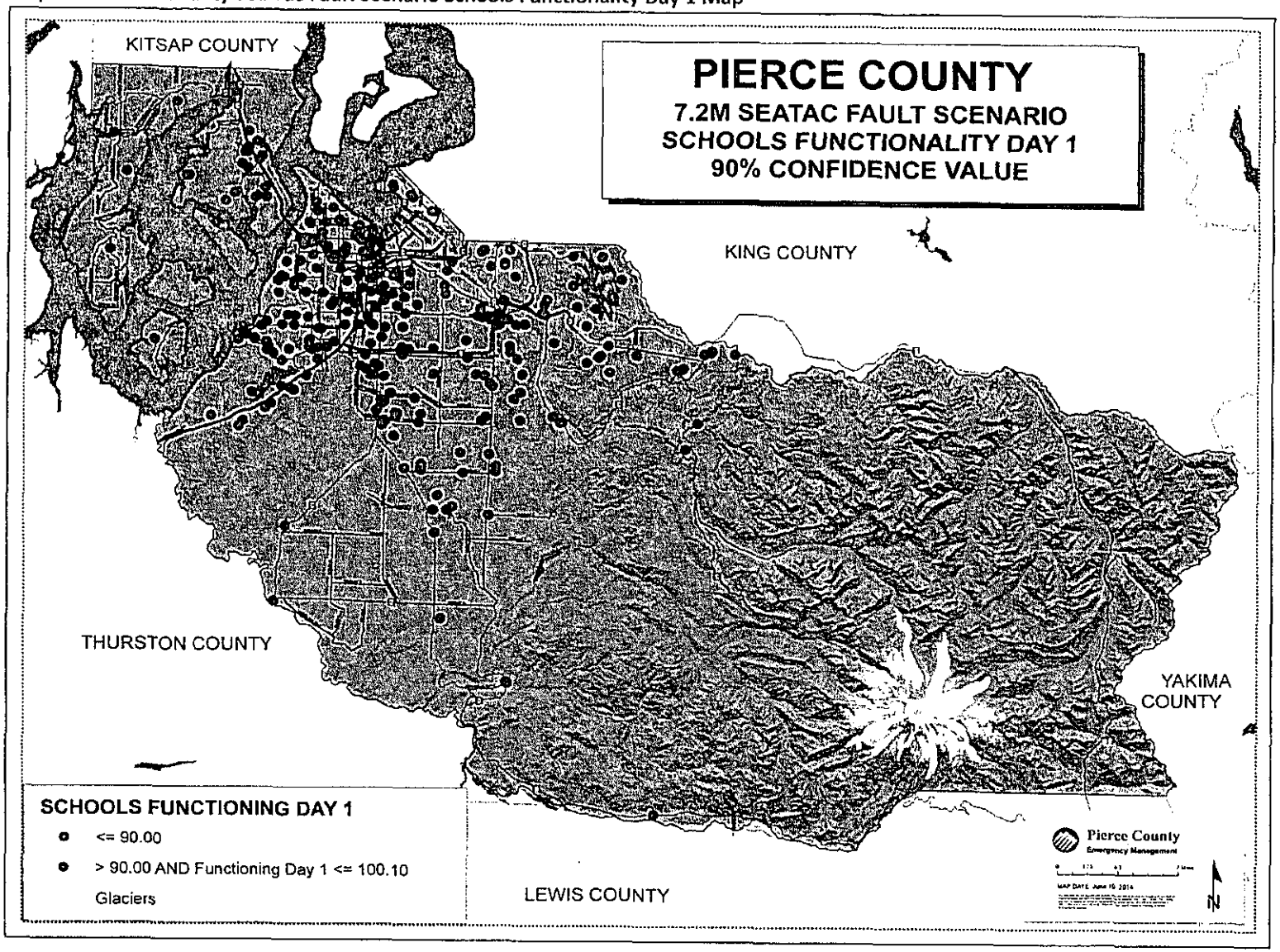
Map D-35 Pierce County Sea Tac Fault Scenario Hospital Functionality Day 1 Map



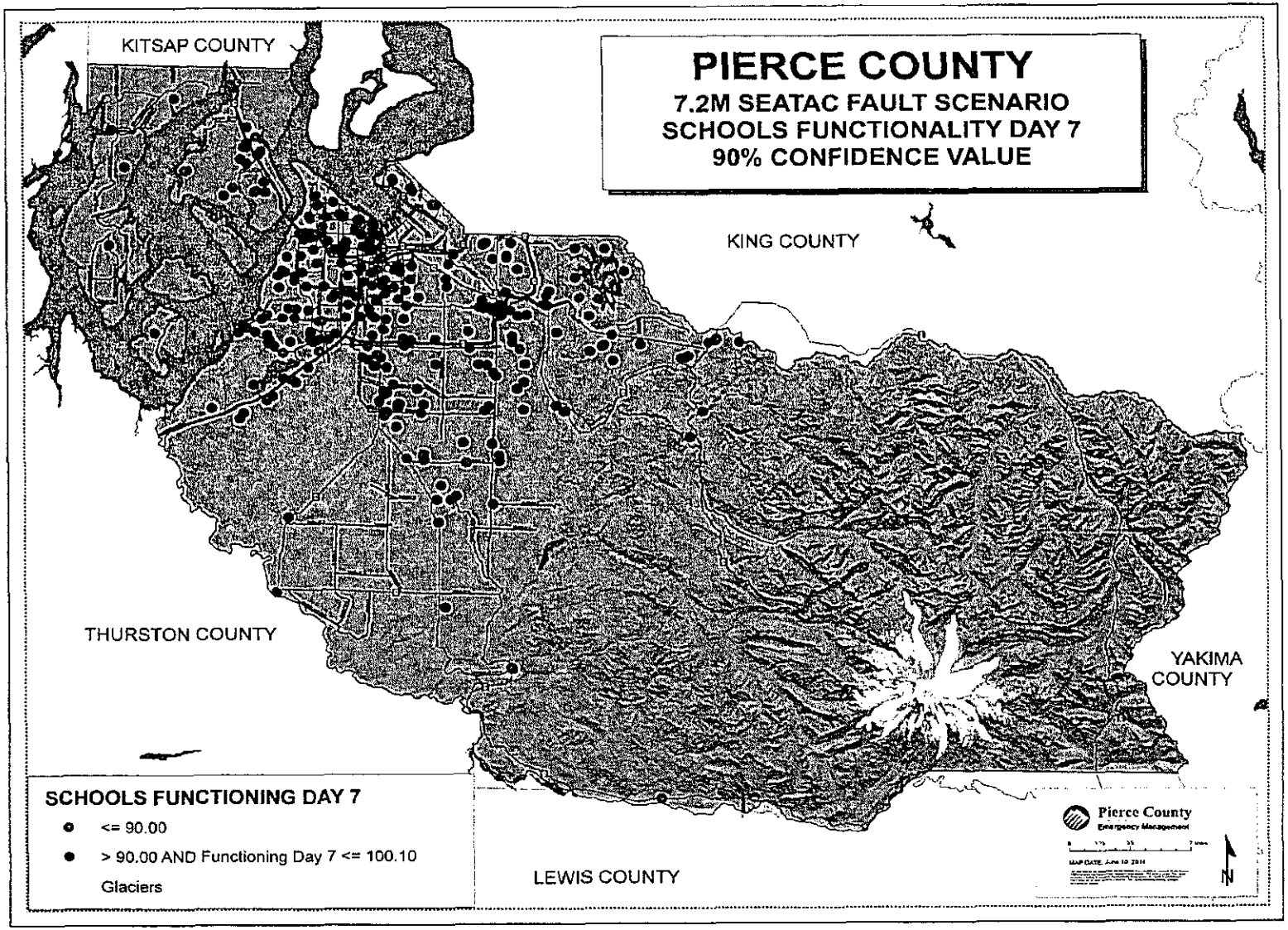
Map D-36 Pierce County Sea Tac Fault Scenario Hospital Functionality Day 7 Map



Map D-37 Pierce County Sea Tac Fault Scenario Schools Functionality Day 1 Map



Map D-38 Pierce County Sea Tac Fault Scenario Schools Functionality Day 7 Map



This page left intentionally blank