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

PIERCE COUNTY REGIONAL HAZARD MITIGATION PLAN 2025-2030 EDITION PORT OF TACOMA PROCESS SECTION

Table of Contents

Changes To Jurisdiction Plan in this Document

This Addendum to the Pierce County Regional Hazard Mitigation Plan includes the following changes that are documented as a result of a complete review and update of the existing plan for the Port of Tacoma Hazard Mitigation 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) this Plan will be an Addendum to the 2025 comprehensive and FEMA approved Pierce County Regional Hazard Mitigation Plan and 3) 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 Port of Tacoma Hazard Mitigation Plan.

Change Matrix

This Matrix of Changes documents the pertinent changes made from the July 2020 Port of Tacoma Plan for the Pierce County Regional All Hazard Mitigation Plan; 2025-2030 Update. Most of the changes are a matter of additional detail, more information provided, and in some cases a response to new requirements. This 2025-2030 version represents a complete view and update by Port of Tacoma and Pierce County Emergency Management using a detailed process for development and following an established format. During this procedure, all web links have been verified and updated.

Table 1-1 Change Matrix – Taylor Bay Pierce County Regional Hazard Mitigation Plan 2025-2030 Update

Section 1 – Plan Development, Process Section	
Section 1 – Plan Development	**New in 2025 Plan**

Section 2 – Profile	
Previous 2020 Plan	**New in 2025 Plan**

Section 3 – Capability Identification	
Previous 2020 Plan	**New in 2025 Plan**

Section 4 – Vulnerability, Risk Analysis	
Previous 2020 Plan	**New in 2025 Plan**

Section 5 – Mitigation Strategy	
Previous 2020 Plan	**New in 2025 Plan**

Section 6 – Infrastructure	
Previous 2020 Plan	**New in 2025 Plan**

Section 7 – Plan Maintenance	
Previous 2020 Plan	**New in 2025 Plan**

Section 8 – Other Changes	
Previous 2020 Plan	**New in 2025 Plan**

Plan Process

The Pierce County Regional Hazard Mitigation Plan Process Section is a discussion of the planning process used to update the Pierce County Regional Hazard Mitigation Plan, 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."[i]

In order to accomplish this goal and to ensure that the updated Pierce County Regional 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 Pierce County Regional Hazard Mitigation Plan 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 Pierce County Regional 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 2024. The individual Pierce County Regional Hazards Mitigation Planning Team members understand 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 1-2 Planning Teams – Discipline Special Purpose District Group

NAME	TITLE	JURISDICTION
Curt Simonson	President HOA	Crystal River Ranch Association
Gary Castell	President HOA	Crystal Village Homeowners Association
Erich Sachs	Asset Mgmt/Sustainability Manager	Metropolitan Park District of Tacoma
Rod Chandler	Emergency Management Coordinator	Pierce Transit
Deidre Wilson	Planning Manager	Port of Tacoma
John Cammon	Maintenance Superintendent	Riviera Community Club
Mitzi McCart	President HOA	Taylor Bay Beach Club

Table 1-3 Planning Teams – North Regional Group

NAME	TITLE	JURISDICTION-DEPARTMENT
Jason Youngman	Police Chief	City of Edgewood
Sandi Phillips	Office Assistant lll	City of Edgewood
Pete Fisher	Police Chief	City of Fife
Doug Newman	Assistant Police Chief	City of Fife
Tyler Bemis	Public Works Director	City of Fircrest
Trisha Summers	City Clerk, / HR Manager	City of Milton
Angelie Stahlnecker	Planning Manager	City of Milton
Tieka Adeogun	EM Program Manager	City of Tacoma
Arianna Topbjerg	Emergency Manager Analyst	City of Tacoma
Jim Wassall	Fire Chief	Pierce County Fire District #13
Kira Thirkield	Battalion Chief	Riverside Fire & Rescue #14
Ben Ramirez	Superintendent	Fife School District
Jeffrey Rogers	Environmental Health & Safety Manager	Tacoma School District
Mike Rupert	Director of Safety & Security	Tacoma School District
Mike Craig	General Manager	Mt. View-Edgewood Water Co
Darryl Scott	General Manager	Summit Water Co.
Jon Cave	Field Supervisor	Summit Water Co.
Jason Anderson	Construction Foreman	Summit Water Co.
Lora Scott	Water Quality Administer	Summit Water Company
Courtney Rose	Emergency Manager	Tacoma Public Utilities
Lisa Millius	Assistant Emergency Manager	Tacoma Public Utilities
Michelle Joseph	Risk Manager	Community Health Care
Eileen Newton	Emergency Management Manager	Franciscan Health System

Troy Ellis	EM Manager/Disaster Preparedness and Business Continuity	Kaiser Permanente
Ben Wilson	Director of Strategic Execution Communicable Disease/Organizational Preparedness	Kaiser Permanente
Debbie Russell	Director of Business Administration & Planning	Metropolitan Park District of Tacoma
Erich Sachs	Asset Management/Sustainability Manager	Metropolitan Park District of Tacoma
Jenna Richardson	Human Resources & /Risk Manager	Metropolitan Park District of Tacoma
Deirdre Wilson, AICP	Senior Planning Manager	Port of Tacoma
Samuel Hudson	Planner	Port of Tacoma

Planning Team Meetings

The Planning Team held XX Planning Team Meetings either in their Discipline Groups or Regional Planning Groups. Meeting in Regional Planning Groups supported a whole community planning approach which either developed new or stronger relationships amongst jurisdictions. This allowed for an integration of mitigation strategies for regions sharing the commonality in hazards. There was a total of XX meetings from September 2024 to September 2025 between all Planning Groups. Additional working group drop-in workshops were provided for jurisdictions to continue to work on and update their plans. Two "drop-in" workshops were provided each month from January through June alternating between morning and afternoons to accommodate work schedules.

The Planning Teams Discipline Groups: City and Town Group, Fire Group, School Group, Special Purpose Group, Utility Group, Medical Group and Unincorporated Pierce County Group. These discipline groups will continue to meet on an annual basis for the relationship building and sharing of mitigation strategies and ideas.

The Planning Team Regional Groups broken down into five geographical areas in Pierce County: West Group (all of Gig Harbor, Key Peninsula, Herron Island, Fox Island and Raft Island), SW Group (Lakewood, Anderson Island, DuPont, Steilacoom), Central Group (Puyallup, Graham, Eatonville), NE Group (Buckley, Carbonado, Bonney Lake, Wilkeson, Orting), North Group (Tacoma, Fife, Edgewood, Milton, Sumner). The Regional Groups were developed based on geographic location and the commonality of hazards shared and continued with this update. This provides for better community planning, relationship building, and collaboration of mitigation strategies ultimately leading to community resiliency. These Regional groups will continue to meet on an annual basis and as sub committees are developed to work on specific projects the frequency of meetings will potentially increase.

Table 1-4 Planning Team Meetings

Planning Team Meeting #1 – Special Purpose Districts: PCEM Carbon Room – September 16, 2024

Planning Team Meeting #3 – Special Purpose Districts: PCEM Carbon Room – November 18, 2024
Planning Team Meeting #5 – Special Purpose Districts: PCEM Carbon Room – January 22, 2025
Planning Team Meeting #7 – Special Purpose Districts: PCEM Carbon Room – March 17, 2025
Planning Team Meeting #9 – Special Purpose Districts: PCEM Carbon Room – May 19, 2025
Planning Team Meeting #11 – Special Purpose Districts: PCEM Carbon Room – July 21, 2025
Planning Team Meeting #13 – Special Purpose Districts: PCEM Carbon Room – September 15, 2025
Planning Team Meeting #15 – Special Purpose Districts: PCEM Carbon Room – November 17, 2025

Table 1-5 Planning Team Meetings – North Regional Group

Planning Team Meeting #2 – North Regional Group: Carbon Room October 14, 2024
Planning Team Meeting #4 – North Regional Group: Carbon Room – December 9, 2024
Planning Team Meeting #6 – North Regional Group: Carbon Room – February 10, 2025
Planning Team Meeting #8 – North Regional Group: Carbon Room – April 14, 2025
Planning Team Meeting #10 – North NE Regional Group: Carbon Room – June 9, 2025
Planning Team Meeting #12 – North Regional Group: Carbon Room – August 11, 2025
Planning Team Meeting #14 – North Regional Group: Carbon Room – October 13, 2025
Planning Team Meeting #16 – North Regional Group: Carbon Room – December 8, 2025

Table 1-6 Mitigation Forum and Seminar Meetings

Annual 2024 Mitigation Forum – October 23, 2024
Equity Considerations Seminar – November 21, 2024

Climate Change Seminar – January 23, 2025

Drop – In Workshop

Table 1-7 Drop-in Workshop Meetings

Date	Location

Public Comment and Outreach

Table 1-8 Public Comment and Outreach Events

Date	Location
December 17, 2024	Fabulich Center, Room 104: 3600 Port of Tacoma Rd., Tacoma, WA
July 1, 2025 - September 15, 2025	Online information page and feedback portal: Hazard Mitigation Plan update | Port of Tacoma

The Port of Tacoma held a Regular Commission Meeting on December 17, 2024. This meeting was open to the general public and can be viewed online following the event See Appendix ## for the meeting minutes.

On July 1, 2025 the Port of Tacoma launched an Online information web page and feedback portal. This page was available to the public including all Pierce County residents, business owners, and workers in the Tideflats. On August 8, 2025 the draft of the Port of Tacoma Addendum was posted to the page, with the opportunity for the public to submit comments through the Online feedback portal. At public events around Pierce County and on social media the Port of Tacoma promoted awareness of the plan update page and encouraged feedback and engagement on the draft plan. This was collected through September 15, 2025. The webpage is also provided in Appendix##.

Elected Officials Meetings

Port of Tacoma Commissioner briefing, December 9, 2024
Port of Tacoma Commissioner's Meeting, December 17, 2024
**See documentation in Appendix folder to complete write up here

Joint Planning Requirement

Plan	Next Update
Port of Tacoma/Northwest Seaport Alliance Plans	
Port of Tacoma Strategic Plan	2026 update nearly complete, 2031 is the Next update
NWSA Strategic Framework	2030
NWSA Resilient Gateway Program	New Plan, ongoing
Partner Agency Plans	
City of Tacoma's Tideflats Subarea Plan	TBD, New Plan, Adoption 2025/2026
City of Tacoma's Container Port Element of the Comprehensive Plan	2035
City of Tacoma Climate Adaptation Strategy	2030

Endnote

[i] 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

PIERCE COUNTY REGIONAL ALL HAZARD MITIGATION PLAN
2025-2030 EDITION
PORT OF TACOMA
PROFILE SECTION

Table of Contents

Overview

The Port of Tacoma is an independent municipal corporation that operates as a public port district under Title 53 of the Revised Code of Washington (RCW). Created in 1918, the Port owns and maintains facilities in the industrial tideflats of Tacoma, most of which support maritime commerce, including facilities for containerized cargo, automobiles, and dry bulks such as grain, breakbulk cargo, heavy lift cargo and project cargoes. The Port of Tacoma also plays a strategic role for the U.S. Department of Defense as part of the National Port Readiness Network. As a military strategic port, it helps ensure rapid, secure, and effective military mobilization to support major force deployments in times of need.

Methods for quantifying the relative size, scope of operations and capabilities for counties, cities and towns (e.g., demographics, population) are, in many instances, not readily applicable to public ports whose size may be generally measured in terms of service capabilities, trade volumes, job creation and service area.

The following provides a general overview of the Port of Tacoma, its mission, core values, operations, and economic impact.

Mission Statement

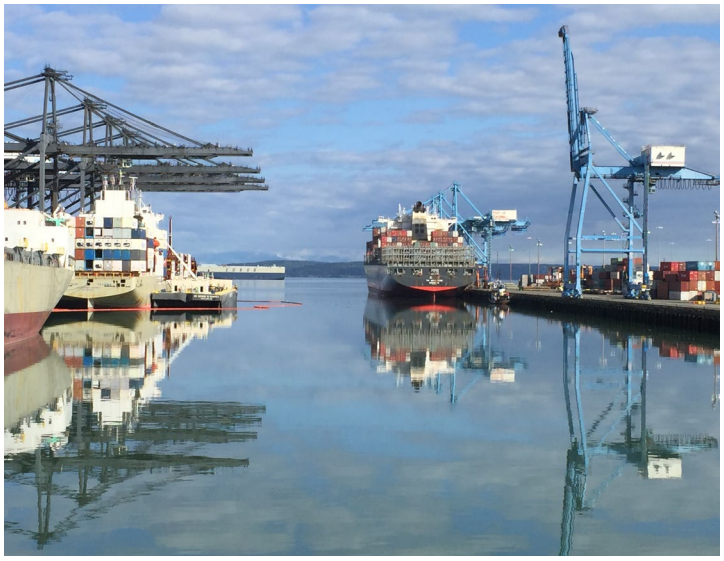
The Port of Tacoma makes strategic investments in our harbor and community to promote prosperity, trade and jobs, while protecting and enhancing our environment.

Core Values

Integrity and Transparency
The Port conducts all business and decision-making with integrity and transparency, inside and outside the organization.

Excellence
The Port strives for excellence throughout our workplace to best serve the needs of our team, our customers and our community.

Adaptability and Innovation
As an enterprise government, the Port is committed to adapting to the challenges of a dynamic workplace and market environment.



Stewardship
The Port is a responsible steward of our natural environment and of the public financial resources that are entrusted to us.
Teamwork and Partnerships
The Port is committed to internal teamwork and external partnerships in pursuit of a shared vision for the future.
Health and Safety
The Port is committed to the health and safety of our employees, labor partners, customers and community.
Workplace Culture
The Port is committed to cultivating a welcoming and supportive workplace that promotes a sense of belonging for all employees.

Operational Summary

In 2015, The Port of Tacoma and the Port of Seattle formed The Northwest Seaport Alliance (NWSA), which represents one of the largest intermodal gateways in North America. The Northwest Seaport Alliance serves as the cargo operating partnership between both ports and

CONTAINER TERMINALS

	Area	Berthing	Berth Depth	Cranes	Truck Lanes	Scales	Reefer Plugs	Rail Service
West Sitcum	137 acres 55 ha	2,200 ft 671 m	51 ft 15.5 m	8 4x18 wide 4x14 wide	7/5 inbound/ outbound	7	875	Near-dock
Husky	118 acres 48 ha	2,960 ft 902 m	51 ft 15.5 m	8 8x24 wide	9/3 inbound/ outbound	7	600	On-dock
East Sitcum	53 acres 21 ha	900 ft 274 m	51 ft 15.5 m	4 3x15 wide 1x14 wide	5/2 inbound/ outbound	2	300	On-dock
PCT	184 acres 74 ha	2,087 ft 636 m	51 ft 15.5 m	7 7x23 wide	10/6 inbound/ outbound	6	654	On-dock
WUT	150 acres 61 ha	2,600 ft 792 m	51 ft 15.5 m	8 4x18 wide 4x24 wide	9/4 inbound/ outbound	7	884	On-dock
TOTE	52 acres 21 ha	2/3 dolphin piers RO/RO ramps	40 ft 12.2 m	N/A	5/4 inbound/ outbound	4	140	Off-dock

NON-CONTAINER TERMINALS

	Area	Berthing	Berth Depth	Wharf Height	Cargo	Rail Service
SOUTH HARBOR • TACOMA						
T-7	22 acres 10 ha	1,800 ft 549 m	51 ft 15.5 m	18 ft 5.5 m	Breakbulk Autos	On-dock
East Blair One	19 acres 8 ha	1,200 ft 366 m	51 ft 15.5 m	21.5 ft 6.5 m	Breakbulk Autos	On-dock
Blair	15 acres 6 ha	600 ft 183 m	51 ft 15.5 m	22 ft 6.7 m	Autos	Near-dock
West Hylebos	24 acres 10 ha	800 ft 244 m	35 ft 11 m	21 ft 6.4 m	Bulk	Off-dock

NWSA, the Port of Tacoma is also referred to as the 'South Harbor'. The NWSA-licensed Port of Tacoma properties and their terminal figures are shown on page 2-5.

The Port of Tacoma owns approximately 2,500 acres of land in the Tacoma Tideflatswhich supports a wide range of industrial and non-industrial tenants and activities. Many of these tenants directly support the marine cargo operations of The Northwest Seaport Alliance. Outside of the NWSA marine cargo operations, the Port of Tacoma also provides bulk cargo operations at the TEMCO Grain Terminal, as well as bulk gypsum operations for the wallboard manufacturing activities of Georgia Pacific Gypsum. The Port of Tacoma also provides critical habitat and open space areas. The Port of Tacoma properties that fall outside of the NWSA operations are shown below.

Economic Summary

The economic reach of the Port of Tacoma is much greater than its budgeted financial revenues and expenses and extends far beyond the Tacoma Tideflats. The port brings in imports for consumers in most states and helps export goods from Washington, Oregon, Idaho, and beyond. There port is a key connection to Alaska. A study released in July 2025 highlighted the economic impact of the NWSA and Port of Tacoma's cargo operations and real estate in 2023, which supported 41,095 jobs in 2023, These $3.4 billion in total compensation, generated

nearly $10.8 billion in revenue, and provided 1.7 million sq. ft of warehousing, offices, industrial, and other buildings.

Geo-Political Summary

Table 2-2 Geo-Political Summary[1]

Jurisdiction	Area (sq mi)	Elevation Range (ft.)	Major Water Features	Regional Partners	
				Shared Borders	Land Use Authorities
Port of Tacoma	~4.5	Sea Level	Puget Sound and Puyallup River	N/A	Pierce County and the City of Tacoma

Population Summary

Demographics

Table 2-3 Population[2]

Jurisdiction	Population	Population Density (people/sq mi)	Population Served
Region 5	795,225	440	795,225

Special Populations

Table 2-4 Special Populations[3]

Jurisdiction	Population	Population 65 Plus	% of Total	Population Under 20	% of Total
Region 5	795,225	89,860	11.3%	193,240	24.3%

Demographic Analysis

The Port of Tacoma is located predominately in the Tacoma Tideflats in a non-residential area zoned Port Maritime Industrial (PMI). While the residential population in the Tacoma Tideflats is low and primarily limited to those at the detention center and re-entry facility, the daytime population estimate is 11,743. This reflects the high number of jobs and activity that take place in the Tideflats. There can be wide swings in the daytime population depending on vessel schedules and the labor and trucks required to move cargo through the port.

Infrastructure Summary

General

Table 2-5 Parcel Summary[4]

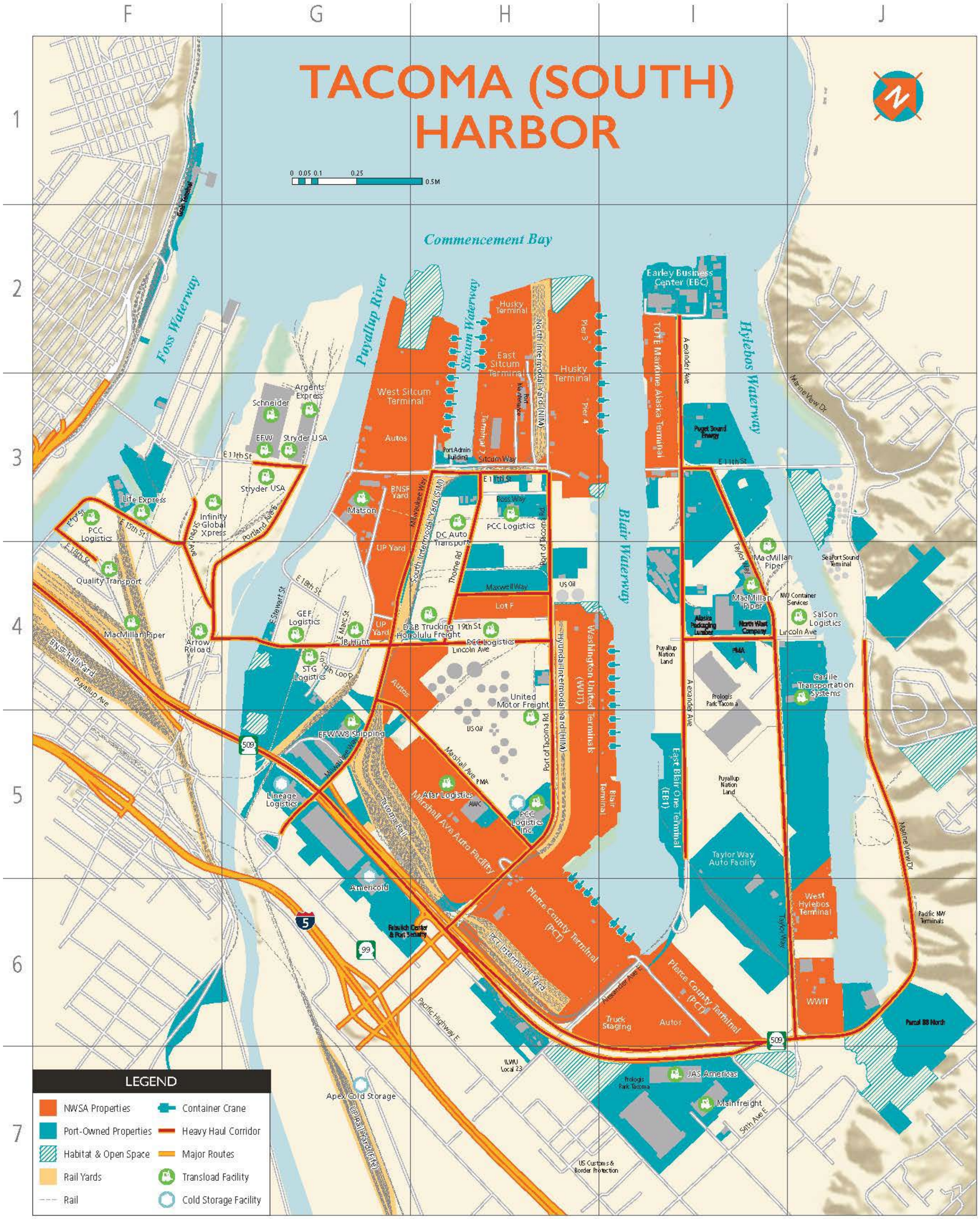
Jurisdiction	# Parcels	Land Value	Average Land Value	Improved Value	Average Improved Value
Region 5	256	$1,092,649,600	$4,268,163	$261,693,000	$1,022,238

Jurisdiction	Total Assessed Value	Average Assessed Value
Region 5	$1,354,342,600	$5,290,401

Table 2-6 Housing Summary[5]

Jurisdiction	# Houses	Housing Density
Region 5	277,060	165

A basemap for the Port of Tacoma, identifying property ownership, is provided on the following page.


TACOMA (SOUTH) HARBOR
Commencement Bay
Foss Waterway
Puyallup River
Sitcum Waterway
Blair Waterway
Hylebos Waterway
West Sitcum Terminal
East Sitcum Terminal
Husky Terminal
Washington United Terminals (WUT)
Pierce County Terminal (PCT)
Marshall Ave Auto Facility
Taylor Way Auto Facility
West Hylebos Terminal
East Blair One Terminal (EB1)
Earley Business Center (EBC)
TOTE Maritime Alaska Terminal
LEGEND
NWSA Properties
Port-Owned Properties
Habitat & Open Space
Rail Yards
Rail
Container Crane
Heavy Haul Corridor
Major Routes
Transload Facility
Cold Storage Facility

Resource Directory

Regional

- **Port of Tacoma**
  http://www.portoftacoma.com/

- **Northwest Seaport Alliance**
  http://www.nwseaportalliance.com

- **City of Tacoma**
  https://cms.cityoftacoma.org/fire/Website%202013/all-hazards%20risk%20assessment%202016.pdf

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

- **Pierce County DEM**
  https://www.co.pierce.wa.us/104/Emergency-Management

- **Pierce County Planning and Public Works (PPW)**
  https://www.co.pierce.wa.us/4999/Planning-Public-Works

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

National

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

Endnotes

[1] Information from Pierce County GIS application, CountyView Pro (2020).
[2] "Population" from Census 2010, Office of Financial Management.
[3] "Special Population" from Census 2010, Office of Financial Management.
[4] Information from Pierce County GIS application, CountyView Pro (2020). Numbers derived from tax parcels whose centers are within selected jurisdictions.
[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.

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

PIERCE COUNTY REGIONAL ALL HAZARD MITIGATION PLAN
2025-2030 EDITION
PORT OF TACOMA
CAPABILITY IDENTIFICATION SECTION

Table of Contents

County Plans and Codes

The Pierce County Regional Hazard Mitigation Forum encourages other local government jurisdictions to adopt their own Hazard Mitigation Plan by using the ***Pierce County Regional Hazard Mitigation Plan*** as a foundation document. This approach minimizes the amount of work a jurisdiction needs to accomplish by focusing only on those issues and needs that the jurisdiction differs from the Region's plan. Once a local jurisdiction satisfies all of the Local Mitigation Plan requirements identified in 44 CFR §201.6, its plan will become part of the Pierce County Regional plan as an addendum.

Existing Planning Mechanisms

Pierce County currently has a broad framework of plans, policies, and development regulations that mitigate or reduce the threat of hazards to life, property, and the economy. Evaluating the completeness of this framework can be a difficult task. Small & rural jurisdictions typically lack the funding and access to the expertise and resources often available to larger, urbanized ones.

Jurisdictions are encouraged to incorporate the Pierce County Regional Plan and their particular addenda into existing plan development.

Building Codes

Pierce County has adopted the following building codes that mitigate hazard threats through construction practices:

• International Building Code (IBC), 2009 Edition, including Appendix J governing grading;
• International Residential Code (IRC), 2009 Edition, including Appendix J governing existing buildings (with the exception of AJFO 1.5).

Comprehensive Plan

The Comprehensive Plan contains long-range goals, objectives, and policies for directing public and private development in Pierce County. It establishes the policy foundations to various county ordinances that regulate development.

The Comprehensive Plan consists of several stand-alone elements pertaining to land use, transportation, critical areas, rural lands, industrial development, and parks and recreation. The plan directs the county to adopt development regulations that preclude land uses or development incompatible with critical areas.

Main documents that make up the plan are Resource Lands and Critical Areas Designation; Agricultural Lands Element; Industrial Lands Element; Parks and Recreation Element. The adoption of the first elements of the plan occurred back in 1968 with amendments and additions since then.

Zoning Code

The Pierce County Zoning Code is the primary regulatory framework for managing new and expanded development in the county. Other development codes, such as the Critical Areas Ordinance, integrate their application through each development district.

Zoning is an important tool in hazard mitigation as it regulates types of development at appropriate densities. Used in conjunction with the Critical Area Ordinance and the Shoreline Master Program, it can limit new development in areas prone to natural hazards. Variances are possible under the zoning code new development if it meets specific hardship criteria.

Critical Areas Ordinance

The purpose of the Pierce County Critical Areas Ordinance is to preserve the natural environment and protect the public's health and safety, including reducing the threat of hazards related to frequently flooded and geologically hazardous areas. The county is required to protect critical areas through the Growth Management Act, Chapter 36.70A RCW. The county uses the critical areas ordinance as an overlay to the development requirements within each district classifications of the zoning code.

Subdivision Ordinance

The Subdivision Ordinance implements Chapter 57.18 of the Revised Code of Washington (RCW). Sections of this code mitigate threats from hazard events by identifying unsuitable lands for subdivision, setting review criteria, and regulating drainage and storm water runoff. The Critical Areas Ordinance has boosted the ability of the Subdivision code at mitigating the impacts of hazards through the application of development standards. However, it does not apply to existing development.

Stormwater Maintenance Manual

The storm water maintenance manual assists private storm water management system owners in performing proper maintenance of these facilities. The storm water management facilities consist of a series of collection and conveyance systems, detention systems and treatment facilities. They are typically a combination of landscape and structural components that slow, filter, detain, or infiltrate storm water runoff on-site after a rainfall event. Properly designed, installed, and maintained storm water management facilities protect water quality and reduce flooding. The intent of this manual provides framework for storm water management facilities to design and help mitigate negative effects of storm water runoff by a combination of reducing or eliminating runoff, treatment of runoff, and/or retention or detention of runoff with a metered release through actins called "Best management Practices".

Capital Improvements Plan

The Capital Improvements Plan lists prioritized structural and critical facility protection projects over a five-year period. The county uses this document to guide its annual budget development process and in applying for grants and loans from state and federal agencies. The county adopts its Capital Improvements Plan by resolution, which it amends on an as needed basis.

Comprehensive Emergency Management Plan (CEMP)

The CEMP establishes a systematic and coordinated countywide response plan for emergencies and disasters to minimize impacts to people, property, environment, and economy. The county reviews and updates the CEMP every five years and formally adopts the plan.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a federal program to identify flood prone areas and make flood insurance available to the owners and leasers of property. This insurance provides an alternative to disaster assistance for meeting escalating costs of repairing damaged buildings and their contents from floods. Participation in the NFIP by Region 5 (Pierce County) is by agreement with the federal government predicated on the adoption and enforcement of a floodplain ordinance that ensures new buildings will be free from flood damage and prevents new developments from increasing flood damages on existing properties.

Pierce County currently meets the minimum requirements of the NFIP.

Community Rating System Program

In addition, Pierce County participates in the Federal Emergency Management Agency (FEMA) Community Rating System (CRS) program. CRS is a voluntary incentive program that recognizes and encourages community flood plain management activities that exceed the minimum National Flood Insurance Program requirements. Pierce County's participation in the CRS program requires an annual recertification of the activities that presently result in a 40% reduction in flood insurance policy premiums for properties in unincorporated Pierce County. Pierce County is one of only four counties in the nation to be a Class 2 or better, which is shared by King and Thurston counties. Pierce County first received a Class 2 back in 2009 after beginning in 1995 with a Class 7 and has continued to maintain the Class 2 ever since reducing flood insurance for residents living in a designated Special Flood Hazard Area (SFHA).

There are a few cities along with Unincorporated Pierce County that also participate in the CRS program which also offers their residents a reduction in flood insurance policy premiums.

Legal and Regulatory

Table 3-1 Legal and Regulatory

Jurisdiction Capabilities	Yes or No
Enabling legislation under Chapter 53 of the Revised Code of Washington (RCW)	Yes http://apps.leg.wa.gov/RCW/default.aspx?cite=53
State Environmental Protection Act (SEPA): Lead Agency Authority	Yes
Interlocal Agreement Authority	Yes
Resolution Authority	Yes

Administrative Capability

Table 3-2 Administrative Capability

Administrative Tools	Yes or No
Commission (five-member, elected at-large) www.portoftacoma.com/commission	Yes
Newsletter	Yes
Port Website www.portoftacoma.com	Yes
Comprehensive Annual Financial Report https://s3.us-west-2.amazonaws.com/portoftacoma.com.if-us-west-2-or/s3fs-public/2025-04/2024%20Annual%20Financial%20Report.pdf	Yes
Capital Improvement Program	Yes
Communications Capabilities	Yes
CPR/First Aid/AED Training	Yes
HAZWOPER Training	Yes
Emergency Response Drills and Exercises	Yes
Threat &Vulnerability Assessment	Yes
Armed, Non-Commissioned Proprietary Security Force	Yes
Regional Capabilities	
Local Fire Service (provided by Tacoma Fire Department)	Yes
City & County Laws Enforcement Agencies (Tacoma Police Department primary)	Yes
Pierce County Department of Emergency Management	Yes
Pierce County Portal	Yes

Technical Capability

Table 3-3 Technical Capability

Technical Tools	Yes or No
Emergency Declaration and Contracting Authority (under existing Master Policy Resolution)	Yes
Emergency Coordination Center (ECC)	Yes
Interoperable Communications	Yes
Disaster Recovery Plan	Yes
Equipment and Facilities Maintenance & Repair	Yes
Emergency Generator Power (except cranes)	Yes
Ability to Telecommute; i.e., Work Remotely (except M&R, terminal operations and security)	Yes
Engineering Project Management, Planning and Environmental Services	Yes
ATC-20 Training and Equipment	Yes
Inclement Weather Plan	Yes
Facility Security Plan (USCG-approved)	Yes

Fiscal Capability

Table 3-4 Fiscal Capability

Fiscal Tools	Yes or No
Eligible for Federal and State Grants	Yes
Taxing Authority	Yes http://app.leg.wa.gov/RCW/default.aspx?cite=39.36.015
General Obligation Bonds	Yes
Revenue Bonds	Yes
All-Risk (including EQ/Flood) Insurance	Yes

The Moody's and Standard & Poor's rated the Port's debt as reported in the 2018 Comprehensive Annual Financial Report:

Description	MOODY'S	STANDARD & POORS
General Obligation (Senior Lien)	Aa2	AA+
Revenue Bonds (Senior Lien)	Aa3	AA+
Revenue Bonds (Subordinate)	A1	AA

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?

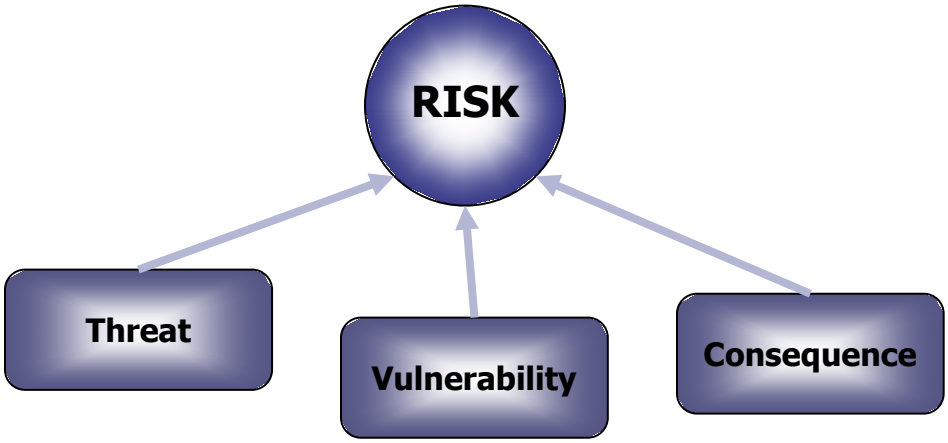
SECTION 4

PIERCE COUNTY REGIONAL ALL HAZARD MITIGATION PLAN
2025-2030 EDITION
PORT OF TACOMA
RISK ASSESSMENT SECTION

Table of Contents

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 Pierce County **Hazard Identification** was used for this plan. Each jurisdiction's Vulnerability and Consequence Analysis is based on the Pierce County Hazard Identification. The Pierce County 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, meteorological, and technological hazards) and then alphabetically within each type. A summary table of the Pierce County Hazard Identification is included in this section as Table 4-1a, Table 4-1b and Table 4-1c.

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 has been assessed for each of the following hazards: dam failure, earthquake, deep and shallow landslides, liquefaction susceptibility, tsunami/seiche, volcano and lahar, drought, flood, severe weather,

wildfire, civil unrest, cyber-incident, , energy emergency, epidemic/pandemic, hazardous materials/pipeline/transportation accident, and terrorism / extremism. The information (impact/recurrence) from these tables is utilized to prioritize mitigation direction and projects.

Specific information and analysis of Port of Tacoma's owned (public) infrastructure is addressed in the Infrastructure Section of this Plan.

Vulnerability and Hazard Impact Analysis

Through the Mitigation, Hazard Identification and Risk Assessment (HIRA) and Comprehensive Emergency Management Plan (CEMP) planning processes, the Port of Tacoma susceptible to fifteen of the eighteen hazards considered in this plan. Some of the more relevant risks are detailed below.

These hazards were chosen based on multiple criteria including high frequency and potential impact. The most common hazards are earthquake, flood, winter/severe storms, hazardous materials spills, and transportation accidents. We have included much less likely hazards and incidents including terrorism as they are high consequence incidents. They have been identified in all plans and the likelihood of (re)occurrence and potential damage to life and property is illustrated.

The geography and climate of the Port area naturally offer rationale for the threats and vulnerabilities. The Port is located on water and generally has mild and steady rainfall annually. The make-up of the land and normal weather patterns make harsh weather an issue that needs to be accounted for and mitigated. Since the climate is typically mild, severe weather tends to hit the area harder and make a greater impact to certain critical services like transportation, communications, and utilities.

Geological:

- Earthquake
- Liquefaction
- Tsunami/seiche
- Volcano and Lahar

Meteorological:

- Dam Failure
- Drought
- Flood
- Severe Weather
- Wildfire

Technological:

- Civil Unrest
- Cyber Incident
- Energy Emergency
- Hazardous Materials/Pipelines/Transportation Accidents

- Terrorism / Extremism

Geological

Earthquake / Liquefaction Susceptibility

The Port averages at least one earthquake every ten years. More recently they have become more frequent and at a higher rate of intensity. Over the last 20 years, the region has experienced earthquakes every two years and in 2001 we had three in one year. The highest likelihood for devastating damage will occur in the Puget Sound area and include a large part of Pierce County and King County. More detailed information on the impacts of earthquakes in the Port of Tacoma area can be found on the Pierce County Department of Emergency Management (PCDEM) website, Washington State Department of Natural Resources and through the US Geological Survey and in the Region 5 All Hazards Mitigation Plan-Base Plan Risk Section.

The Port of Tacoma facilities are composed of a variety of construction types, some of which could be damaged in the event of an earthquake. Because the Port is largely located on fill materials, the facilities could be impacted by liquefaction.

Landslides

Most of the port facilities are not located in deep landslide hazard areas. There are several properties located off Marine View Drive and Schuster Parkway that are located in or near deep landslide hazard areas. Shallow landslide hazard areas could potentially impact Alexander Avenue, and several areas along the shoreline.

Tsunami / seiche

Pierce County has been impacted by three tsunamis generated in the Puget Sound in the past 120 years. The largest of these, the 1894 tsunami, originated in Commencement Bay and destroyed 300 feet of dock and sent a ten-foot wave into Old Town Tacoma. With eight miles of Puget Sound waterfront acting as the western border of the Gig Harbor and Key Peninsula's, there is a risk of either a tsunami or seiche. A seiche is a standing wave in an enclosed or partially enclosed body of water. The phenomenon has been observed on lakes, reservoirs, swimming pools and bays.

An event such as an earthquake could generate a tsunami and devastate the Port of Tacoma. Much of the low-lying lands of the Tideflats are susceptible to tsunami wave inundation.

Current modeling for a Seattle Fault induced tsunami will be worse than the Cascadia Subduction Zone earthquake due to our proximity from the source. Major transportation routes will be directly impacted including Interstate 5, SR 99 (turns into Pacific Hwy E.), and SR 167. The Port could become isolated due to damaged infrastructure. On-terminal utility systems above and below ground could be compromised if exposed to saltwater or damaged by impact Even if they are not damaged, they may need to be cut off for safety reasons. Cargo in inundation areas would likely be damaged from collisions or exposure to saltwater.

Volcano and Lahar

The Port of Tacoma lies in the Mount Rainier lahar zone. The likelihood of a volcano erupting in and around the Port of Tacoma from Mt. Saint Helens and Mt. Rainier is relatively low compared to the other hazards, but the amount of damage and devastation it would cause is high.

In addition to any impacts to the port facilities, sediment buildup in the waterways could affect vessel access and require dredging.

All the Port of Tacoma area is directly and indirectly affected by volcanic hazards.

The Port of Tacoma lies in the Mount Rainier lahar zone. Although the chance of an eruption and lahar are low, such an event would have a devastating impact on the Port. In addition to any impacts to the port facilities, sediment buildup in the waterways could affect vessel access and require dredging.

Mount Rainier is the most dangerous volcano in North America according to the USGS Cascades Volcano Observatory (CVO). It has previously buried sections of the surrounding river valleys in a volcanic mudflow, called a lahar. The Puyallup River Valley is at greatest risk. Tens of thousands of people live in areas that may have as little as 40 minutes to as much as three hours to move to safety once a large lahar is detected. The lahar warning system is robust, and warnings are disseminated promptly and widely every first Monday of the month so people in harm's way are taught how to respond to the warnings and take protective actions.

Pierce County DEM in partnership with USGS CVO maintains a “Volcano Map”.

Pierce County DEM maintains a “Mt. Rainier Volcanic Hazards Response Plan” that details the monitoring, planning, operational response, and historical data surrounding a volcanic event in the region.

Meteorological

Dam Failure

The Port of Tacoma is vulnerable to two dam failures: Lake Tapps and Mud Mountain Dam. The vulnerability analysis tables below you will see that nearly 100% of the Port would be impacted. There is potential for dike failure at Lake Tapps and dam failure from Mud Mountain Dam that could inundate the Port of Tacoma.

Drought

A severe drought could affect the health of the Port of Tacoma’s habitat sites. Hydroelectric power generation has dropped 30% as a result of our dry weather, and the Port is increasingly turning to electricity as an energy solution. Dry conditions can exacerbate the risk of land subsidence, alter sediment deposition in the tideflats, and add to the unpredictability of floods.

Flood

The Port is a water-dependent use and many of its facilities are located at or near sea-level and/or in floodplains. Furthermore, there is potential for dike failure at Lake Tapps and dam failure from Mud Mountain Dam that could inundate the Port of Tacoma.

Since the Port of Tacoma is prone to flooding on an annual basis, a lot of information has been gathered on the potential and real impacts of flooding in the area and multiple mitigation strategies have been designed based on past disaster events and areas that are continually affected. The most common flood zones are rivers and creeks swelling due to heavy rainfall in urban areas and ice melting from Mount Rainier and the surrounding Cascade Mountain Range. Pierce County has had 25 federally declared disasters since 1960 and eleven of them were flooding incidents. The largest flood on record is the Puyallup River in 1996-1997. As population grows and urbanization expands, this increases the damages as a consequence of repetitive flooding. Also, it is important to note that changes in the temperature and climate have added to the frequency and magnitude of flooding incidents particularly over the last 20 years.

Severe Weather

Severe weather events in the past have caused extended power outages that can affect port operations. There can also be compounding effects from severe weather such as access issues to port terminals in events such as snowstorms. Severe weather events in the past have caused extended power outages that can affect port operations. Winds are increasing in intensity and are the primary source of power outages. Extreme heat created dangerous conditions for many working outside an in equipment or facilities that do not have cooling capabilities, and may reduce the productivity of operations.

The Base Plan contains the Hazard Identification Vulnerability Assessment (HIRA) records and disaster declarations of severe storms affecting the Port of Tacoma and the surrounding region such as windstorms, snowstorms, ice storms and tornadoes. Harsh weather, creating severe storms, affects the Port area at least once every year and the damages/costs to our business are high.

Technological

Civil Unrest

A civil disturbance could affect port operations.

Civil disturbances are the result of groups or individuals feeling their needs or rights are being infringed upon, either by society at large, a segment thereof, or the current overriding political system. When this results in community disruption where intervention is required to maintain public safety it has become a civil disturbance. Civil disturbance spans a wide variety of actions and includes, but is not limited to; labor unrest, strikes, civil disobedience, demonstrations, riots, or rebellion. Triggers could include; racial tension, development projects, immigration status, religious conflict, unemployment, a decrease in normally accepted goods or services such as water, food, or gas shortages, or unpopular political actions. There are frequent reoccurrences of civil disturbances within the districts' borders. Civil disturbances can affect the region's

economic vitality should businesses be forced to close, or highways and other infrastructure severely impacted.

Tacoma experiences peaceful protests frequently and sometimes students participate in a walkout. Beginning on May 27, 2020, several locations within Pierce County experienced riots and destruction of property flowing the death of George Floyd in Minneapolis, MN. Some organizations that utilize port facilities have attracted protestors and potentially actors looking to disrupt operations.

Cyber Incident

- During times of disaster there is a significant increase in scams, phishing attacks, and Advance Persistent Threat attacks to gain access to financial and cyber systems.
- In COVID-19 there was a significant increase in attacks against medical centers and collaboration platforms.
- The cyber incidents we are seeing at this time against the area are typically in the form of phishing attacks attempting to steal personal information or attempting to change personal financial information to outside attackers rather than employees and vendors. The greatest impact to our system this far has been the relentless phishing emails asking for financial information or gift cards while spoofed from administrators email addresses.
- The Port is a critical node in the supply chain which attracts A wide variety of threat actors from around the world, including many advanced persistent threats. The Port faces an asymmetrical cyber threat environment.
- Some projects with the NWSA were impacted by the Cyberattack, detected August 2024, and response efforts at the Port of Seattle.

Energy Emergency

An energy emergency could impact port operations either through operations interruptions or increased costs for handling cargo.

A utility emergency may involve one or more of the following; natural gas, heating oil, gasoline, coal, electricity, or water. These types of emergencies can create a great risk to first responders. The United States power grid is made up of three interconnecting networks. Power for the infrastructure is linked to the Western Interconnection, a network of public and private power generators and distributors that serve over 80 million people in the Western U.S., from Mexico to Canada.

The majority of power outages on the peninsula are due to failure of overhead lines during weather events or accidents. Replacement of overhead lines with protected wire and placing sections of the system underground continue to make progress to limit outages.

Power is supplied through the Cushman Transmission lines, which are operated by Tacoma Power. While failures of the transmission lines are rare, a failure of the transmission lines will create an area wide outage.

The largest impacts of an extended power outage would be economic because most businesses in the affected area would likely shut down. Utilities face financial difficulty that impedes investment in mitigation measures due to rate regulations. Restoration and recovery will require substantial expenditures from utilities at a time when their revenue stream from the sale of power is curtailed.
The region's power depends on the health of third-party generating facilities that lay far outside the district boundaries, on snow and rain that are the "fuel" for hydroelectric power and finally on the health of the transmission and distribution lines that move the power.

FEMA Region X Power Grid Risk Profile: A Risk Analysis Profile from the Region X Threat and Hazard Analysis Report March 2019 key findings:

- Transmission grid is less extensively interconnected in comparison to power grids elsewhere in the US. This provides fewer redundancies in case of failure of part of the system.
- Difficult to replace equipment. Restoration timeline months-years. If a number of high-voltage transformers are damaged in an incident triggering an outage, restoration and recovery will be difficult because these transformers are not typically manufactured domestically, and their size and weight make transportation difficult.
- Utilities face financial difficulty that impedes investment in mitigation measures due to rate regulations. Restoration and recovery will require substantial expenditures from utilities at a time when their revenue stream from the sale of power is curtailed.
- Rural populations may be proportionately more impacted due to the unique geographic features of Pierce County making access difficult. The use of drones and helicopters help significantly but often surface transportation is needed for restoration. These populations already deal with more outages than their urban counterparts and may be better prepared and more resilient.
- Those dependent on powered medical devices or services such as dialysis face immediate threat to life. Community preparedness should identify these populations and plan for their survival.
- Most widespread impacts to an energy emergency are usually the result of severe weather or industrial accidents that have cascading impacts.
- Outages are often smaller in scale when power lines feeding the substation are impacted. Often communications service providers infrastructure such as comcast will be impacted concurrently. If a communications provider fiber line is damaged, then a community could be without internet, unable to use landlines and cell phones. Utility restoration may be delayed due to transportation impacts. Some cell phones may still work depending on your provider, but often rural communities will be isolated until both transportation and utilities are functioning.
- An earthquake in Pierce County or a catastrophic impact to a fuel producer can result in a shortage. Critical equipment such as generators, vehicles, and other operating machines could be impacted for a long time.

Epidemic / Pandemic

An epidemic in the area might have impacts on the Port of Tacoma and its operations.

- Throughout history, disease outbreaks have changed and shaped society. The impact of these diseases varies based on the severity of the disease, duration of the illness and spread within the community.

- The most threatening emergency management situation is the outbreak of a new disease with high rates of illness and death. New disease outbreaks can quickly overwhelm local hospitals, healthcare providers and decrease society's ability to maintain critical services.

- An outbreak can be characterized by the extent of spread of the disease. An outbreak is considered pandemic if the disease spreads throughout the world. The outbreak is considered epidemic if it's above normal disease levels within a geographical area. More common diseases are classified as endemic, as they are at or below normal levels within a community. Brand new diseases can quickly become an epidemic/pandemic if there is little or no immunity in the population.

- For Pierce County, the Tacoma-Pierce County Health Department investigates and coordinates the Public Health surveillance of disease outbreaks

Hazardous Materials / Pipelines / Transportation Accidents

Given the industrial nature of the Tacoma Tideflats, there are hazardous materials both on and around Port of Tacoma facilities, including three pipelines. One recent addition on port property is the liquefied natural gas (LNG) facility for Puget Sound Energy. Special precautions have been taken to ensure the safety of this facility.

The US Department of Transportation (DOT) collects data on hazardous materials incidents occurring in the US during transportation.

Fixed locations are the most frequent for accidents, but the transportation accidents are often riskier because they happen in uncontained spaces. They can be in close proximity to people and responders who usually have less information about the materials involved.

Areas up to one-half mile downwind from an accident site are considered vulnerable, according to US DOT. An incident could affect thousands of people in nearby areas.

Other hazards, such as earthquakes and landslides could produce hazardous material incidents.

Pipelines

There are three pipelines that run through and near Port of Tacoma facilities.

Transportation Accidents

There are high truck and rail volumes that converge in the area due to its industrial nature. Accidents involving either mode of transport can have significant impacts on the transportation network, especially if hazardous materials are involved. Furthermore, there are limited access routes into and out of the Port, so incidents on nearby roads such as I-5 can have major impacts on the ability to get into or out of the Tideflats.

Terrorism and Active Threat / Attack Tactics

Attacks can be perpetrated by many different actors with different motivations, such as terrorists, violent extremists, the mentally ill, and targeted violent offenders. All use violent attack tactics to harm people and/or property. Attack tactics can include active shooter, bombings, arson, murder, kidnapping, and vehicle ramming.

Ports can be targets for terrorist attacks because of their high levels of activity, economic significance, and the usual presence of hazardous materials in the port vicinity. Incidents of terrorism and active threats have increased in the United States. Our Port Police and Security department trains regularly for this type of incident.

Changes in Development

Since the Port of Tacoma All Hazard Mitigation Plan was last updated in 2016, there have been changes in and around the Tideflats that affect the Port and its vulnerabilities and resiliency to various types of hazards. Notable changes include:

Port Facilities

- The Port of Tacoma and its terminal operator added shore power capability to both berths at Husky Terminal. This project is a significant step in the achieving NWSA's Northwest Clean Ports Clean Air Strategy goals since ships will be able to plug in and operate on electricity and turn off their engines while at berth.

- Puget Sound Energy Commissioned an LNG facility at the Port of Tacoma in 2022. It can liquefy up to 250,000 gallons of LNG a day and includes a fueling Dock and an 8-million-gallon storage tank.

- Four ship-to-shore cranes were elevated at Pierce County Terminal & two Additional ship-to-shore cranes have been added at Washington United Terminals.

- The Port of Tacoma completed a project to replace a failing culvert with a new bridge that provides access to one of the terminal truck queuing lots. Replacing the culvert with a bridge will increase the culvert's capacity and reduce flood risk in the area.

- The Earley Business Center's aging facilities are being replaced. Hazardous structures are being replaced with new buildings.

Transportation Facilities

- WSDOT continues to make progress building the Puget Sound Gateway SR 167 project. This project will provide a new and improved connection between the port and warehousing in the area. Because it will be built to modern design standards it will be better able to withstand a natural hazard event such as an earthquake. The Port has contributed funding to this project.

- Port staff, WSDOT, and the City of Tacoma began operations of a formal working group known as the Tacoma Area Joint Operations Group or 'TAJOG' to improve their

collective ability to get traffic moving after an emergency or incident. This effort is initially focused on establishing protocols to improve future cooperation among staff from different agencies during incidents.

General Development

- Port Maritime center: A new office building for the Port of Tacoma and Maritime skills center for Tacoma Public Schools will be located on the East side of the Foss waterway, both buildings are currently under construction.
- The WestRock Company's Tacoma Paper Mill Closed in Fall 2023
- The Port continues to clean up historically contaminated sites and implement habitat restoration projects.
- The Port has been involved with the City of Tacoma's Tideflats Subarea Plan. This will implement a variety of new policies including transition zones meant to serve as both a buffer zone between incompatible uses, while providing space for light industry and a subset of non-industrial uses to coexist.

Table 4-1a Pierce County Regional Hazard Identification Summary – Geological

	THREAT	DECLARATION # DATE/PLACE	PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Geological	**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	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-1671-WA--2006 DR-1361-WA--2001 DR-1159-WA--12/96-2/1997 DR-852-WA--1/1990 DR-545-WA--12/1977 State proclamations: 20-02 – 01/20/2020 17-08 –05/18/2017 SR 410	Slides with minor impact (damage to five or less developed properties or $1,000,000 or less damage) 10 years or less. Slides with significant impact (damage to six or more developed properties or $1,000,000 or greater damage) 100 years or less.	Northeast Tacoma Landslide January 2007 Pierce County Landslide Deposits, Scarps and Flanks, and Susceptibility Landslide Facts for Pierce County – Shallow Landslide Susceptibility Pierce County Deep Landslide Hazard Area Pierce County Shallow Landslide Hazard Area Pierce County Slope Stability Areas Pierce County Comparison of Landslide Susceptible 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--A.D. 900 Seattle Fault EQ Sourced Tsunami N/A--1894 Puyallup River Delta N/A--1949 Tacoma Narrows	Due to the limited historic record, until further research can provide a better estimate a recurrence rate of plus or minus 100-200 years will be used.	Hawaii 1957 – Residents Explore Ocean Floor Before Tsunami Hawaii 1949 – Wave Overtakes a Seawall Tsunamis in Washington State Tsunami Inundation and Current Based on Earthquake Scenario Notable Tsunamis in Pierce County Salmon Beach, Pierce County 1949 – Tsunamigenic Subaerial Landslide Salmon Beach, Pierce County 1949 – Tsunamigenic Subaerial Landslide 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 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 Pierce County Eruptive Events and Lahars

Table 4-1b Pierce County Regional Hazard Identification Summary – Meteorological

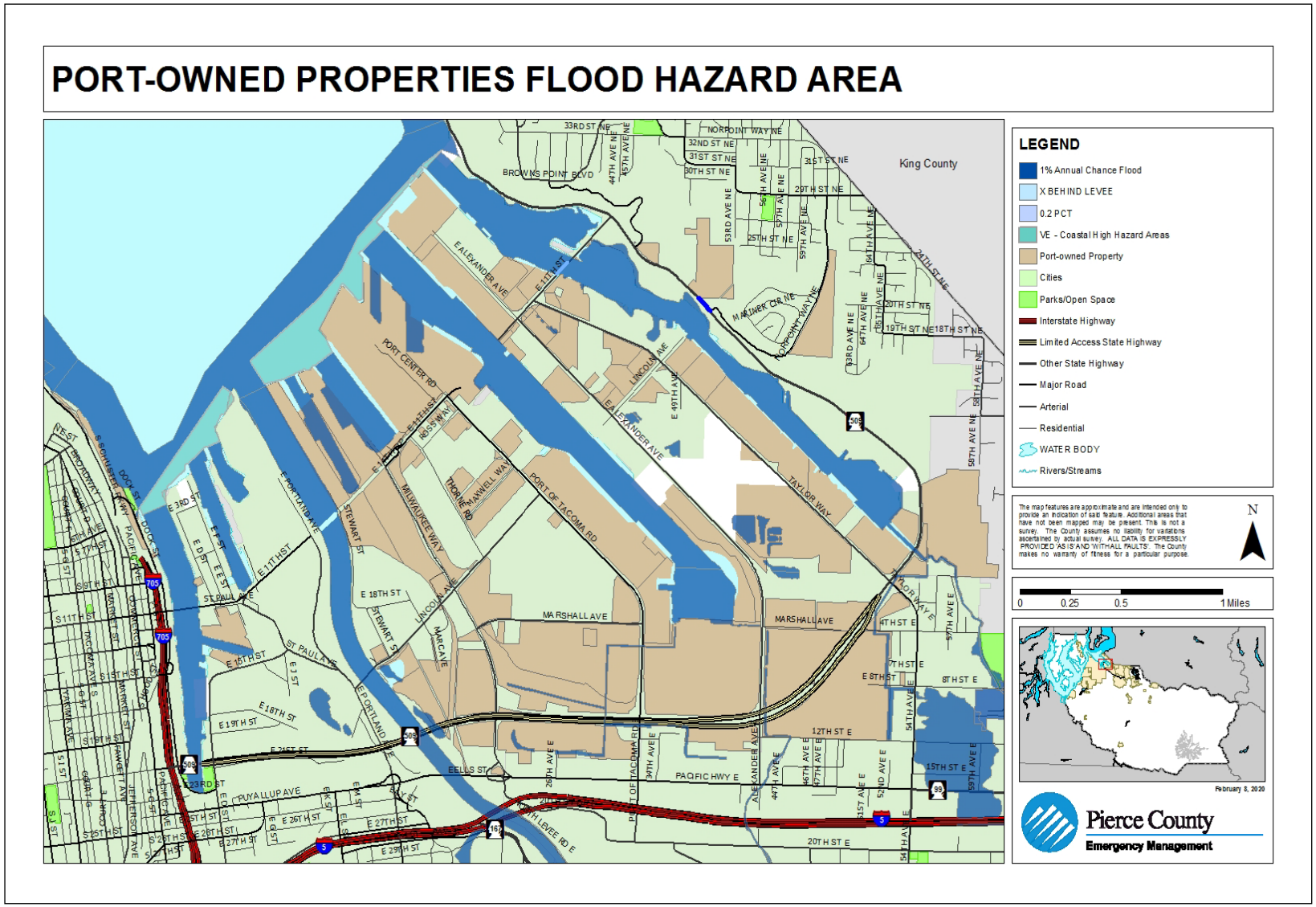
	HAZARD	DECLARATION # DATE/PLACE	PROBABILITY/ RECURRENCE	MAPS, FIGURES AND TABLES
Meteorological	**DROUGHT**	Many dry seasons but no declarations State proclamations: 18-05--7/31/2018	50 years or less occurrence	Sequence of Drought Impacts Palmer Drought Severity Index Pierce County Watersheds %Area of Basin in Drought Conditions Since 1895 %Time in Severe to Extreme Drought: 1895-2004 %Time in Severe to Extreme Drought: 1985-1995 Notable Droughts Affecting Pierce County Columbia River Basin USDA Climate Zones – Washington State
	FLOOD	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 DR-WA 1817--01/2009 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.	Lower Puyallup River Historical Flooding in Lower Puyallup River Levees and Revetments in the Lower Puyallup River Summary of Damages to Lower Puyallup River Facilities Middle Puyallup River Historical Flooding in Middle Puyallup River Levees and Revetments in the Middle Puyallup River Summary of Damages to Lower Middle River Facilities Upper Puyallup River Historical Flooding in Upper Puyallup River Levees and Revetments in the Upper Puyallup River Summary of Damages to Upper Puyallup River Facilities Lower White River Historical Flooding in Lower White River Levees and Revetments in the Lower White River Summary of Damages to Lower White River Facilities Upper White River Historical Flooding in Upper White River Levees and Revetments in the Upper White River Summary of Damages to Upper White River Facilities Greenwater River Historical Flooding in Greenwater River Carbon River Historical Flooding in Carbon River South Prairie Creek Historical Flooding in South Prairie Creek Middle Nisqually River Historical Flooding in Middle Nisqually River Upper Nisqually River Historical Flooding in Upper Nisqually River Levees and Revetments in the Upper Nisqually River Summary of Damages to Upper Nisqually River Facilities Mashel River Historical Flooding in Mashel River Nov 2006 Flooding River Park Estates – Along Puyallup River
Mete	**SEVERE WEATHER**	DR-981-WA--1/1993 DR-137-WA--10/1962 DR-4056-WA – 01/2012 DR-1825- WA – 12/2008 – 01/2009	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 – Enumclaw East Wind Event

		DR-1682-WA--12/2006 DR-1159-WA--12/96-2/1997 DR-1152-WA--11/19/1996 DR-981-WA--1/1993 Inauguration Day Storm DR-137-WA--10/1962 Columbus Day Storm State proclamations: 19-06--02/15/2019 (Dec. 2018 Winter Storm) 19-05--02/14/2019 Winter Storm Maya 17-08--5/18/2017 Severe rain 17-03--3/14/2017 17-02--1/19/2017 Winter Storm 15-18--12/24/2015 Windstorms and Flooding		Notable Severe Weather in Pierce County Snowstorm January 2004 Downtown Tacoma Satellite Image – Hanukkah Eve Windstorm Before/After Tornado Damage Greensburg KS May 2007 County Road December 2006 Windstorm Tacoma Narrows Bridge – November 1940 Windstorm
	WILDFIRE	EM-3372-WA Aug-Sept. 2015 State proclamations: 17-12--9/2/2017 Norse Peak Fire 15-11--6/26/2015	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

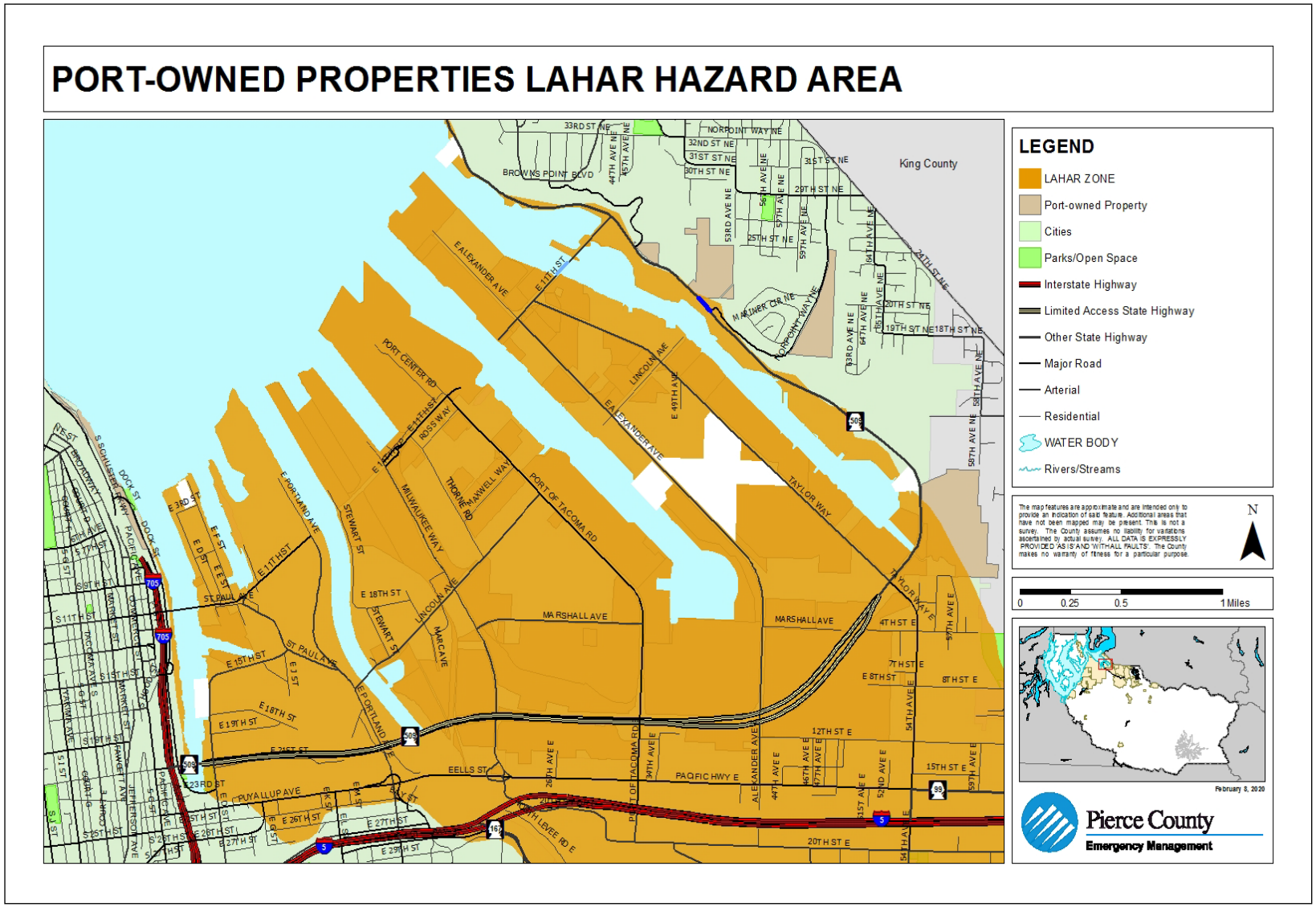
Table 4-1c Pierce County Regional Hazard Identification Summary – Technological

	HAZARD	FEMA DECLARATION # DATE/PLACE	PROBABILITY/RECURRENCE	MAPS, FIGURES AND TABLES
Technological	**CIVIL DISTURBANCE**	Not Applicable	In the past 150 + years there have been eleven major incidents giving a recurrence rate of every seven years.	Pierce County Civil Disturbance High Probability Locations Map Pierce County Civil Disturbance High Probability Locations Zoomed in Map
	DAM FAILURE	Not Applicable	No occurrences in Pierce County 50+ years recurrence for WA State	Reasons for Dam Failures Nationally PC Dams that Pose a High or Significant Risk to the Public Pierce County High and Significant Risk Dams Dam Failures in WA State Mud Mt. Dam Intake
	ENERGY EMERGENCY	Not Applicable	Power outages are the most frequent energy incident, via natural hazards (storms, ice) Recurrence rate – every five years (storms) Recurrence rate – 50+ years (major)	Tacoma Power Outage 1929, USS Lexington provides power
	EPIDEMIC / PANDEMIC	EM-3507-WA 03/12/2020	Epidemic: • 1976-2014 Ebola outbreaks • Flu occurs annually Pandemics: • 2009-2010 "Swine Flu" recurrence rate – 20 years	Individuals hoping to avoid contacting disease
	HAZARDOUS MATERIALS	Not Applicable	• Dalco Passage oil spill of October 13, 2004 • Chlorine Spill Port of Tacoma February 12, 2007 Large incidents five-year recurrence Small incidents one-week recurrence	List of constituents or ingredients found in Bakken crude oil Environmental Protection Agency's Identified Top Five Facilities Exxon Valdez Oil Spill, 1989 Pierce County Spill data from May 2018 to May 2019 Dalco Passage oil spill (October 13, 2004)
	PIPELINE FAILURE	Not Applicable	• Northwest Pipeline Corporation natural gas incident May 1st, 2003, in Sumner 10 years recurrence	Cities and Towns with interstate pipelines within, or within 1 mile of city limits Olympic Pipeline Rupture 06/10/99 Pierce County Pipelines Whatcom Falls Park, 2003
	TERRORISM CYBER ATTACK	Not Applicable	Minor incident –recurrence 1-year Major Incident – recurrence 10 years	250 Active Shooter Incidents in the U.S. from 2000-2017: Incidents per year 250 Active Shooter Incidents in the U.S. from 2000-2017: Casualty Breakdown per year 250 Active Shooter Incidents in the U.S. from 2000-2017: Location Categories Occurrences in the Puget Sound
	TRANSPORTATION ACCIDENT	Not Applicable State proclamations: 17-13--12/18/2017Amtrak derailment 15-05--4/16/2015 SR 410 Bridge 15-04--3/11/15 Damage to I-5 Overpass	Minor incidents – recurrence daily Major incidents - recurrence 10 years	Airports in Pierce County Ferry Services in Pierce County Transportation Accidents/Catastrophic Failures in Pierce County

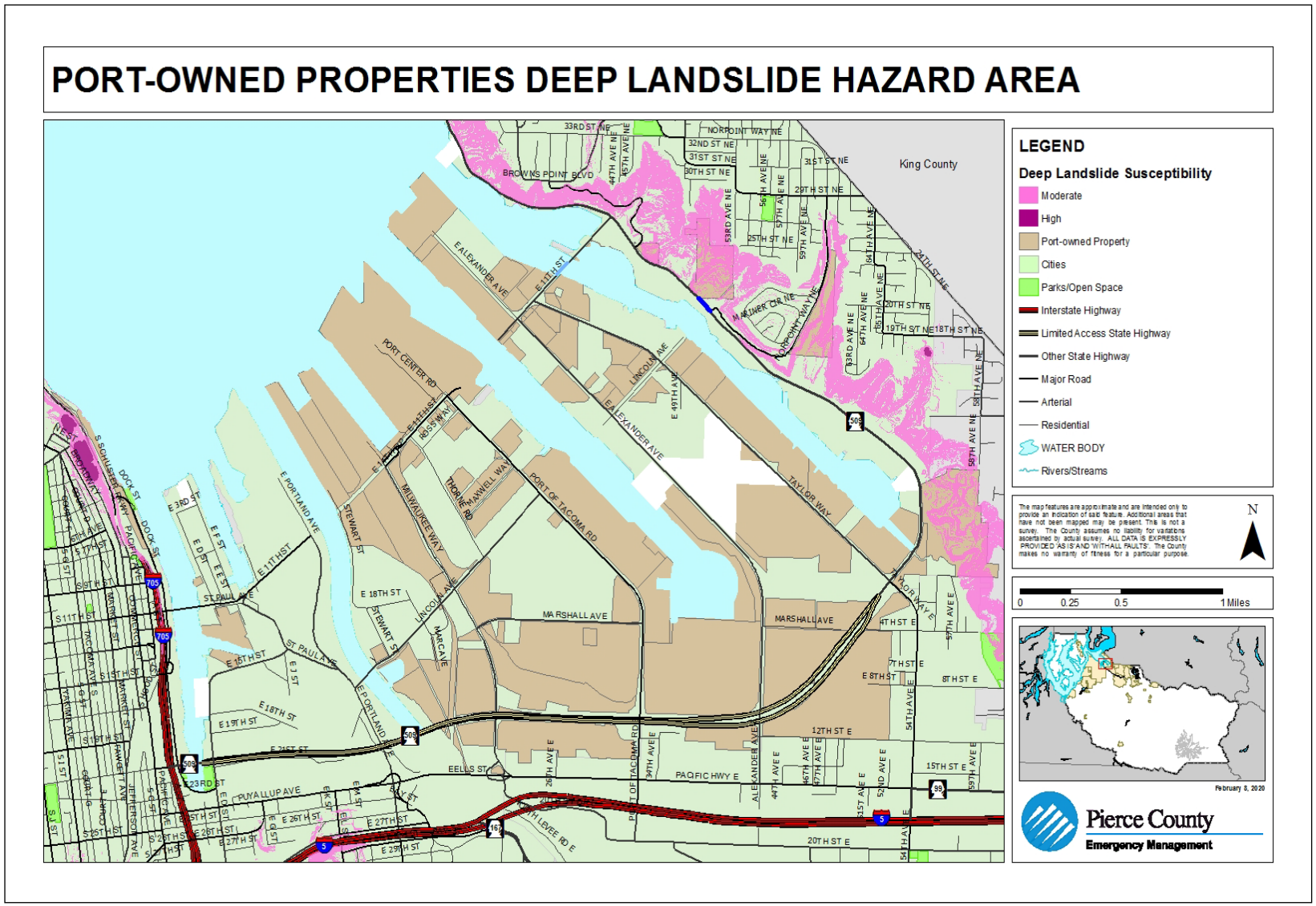
Map 4-1 Port of Tacoma Flood Hazard Map



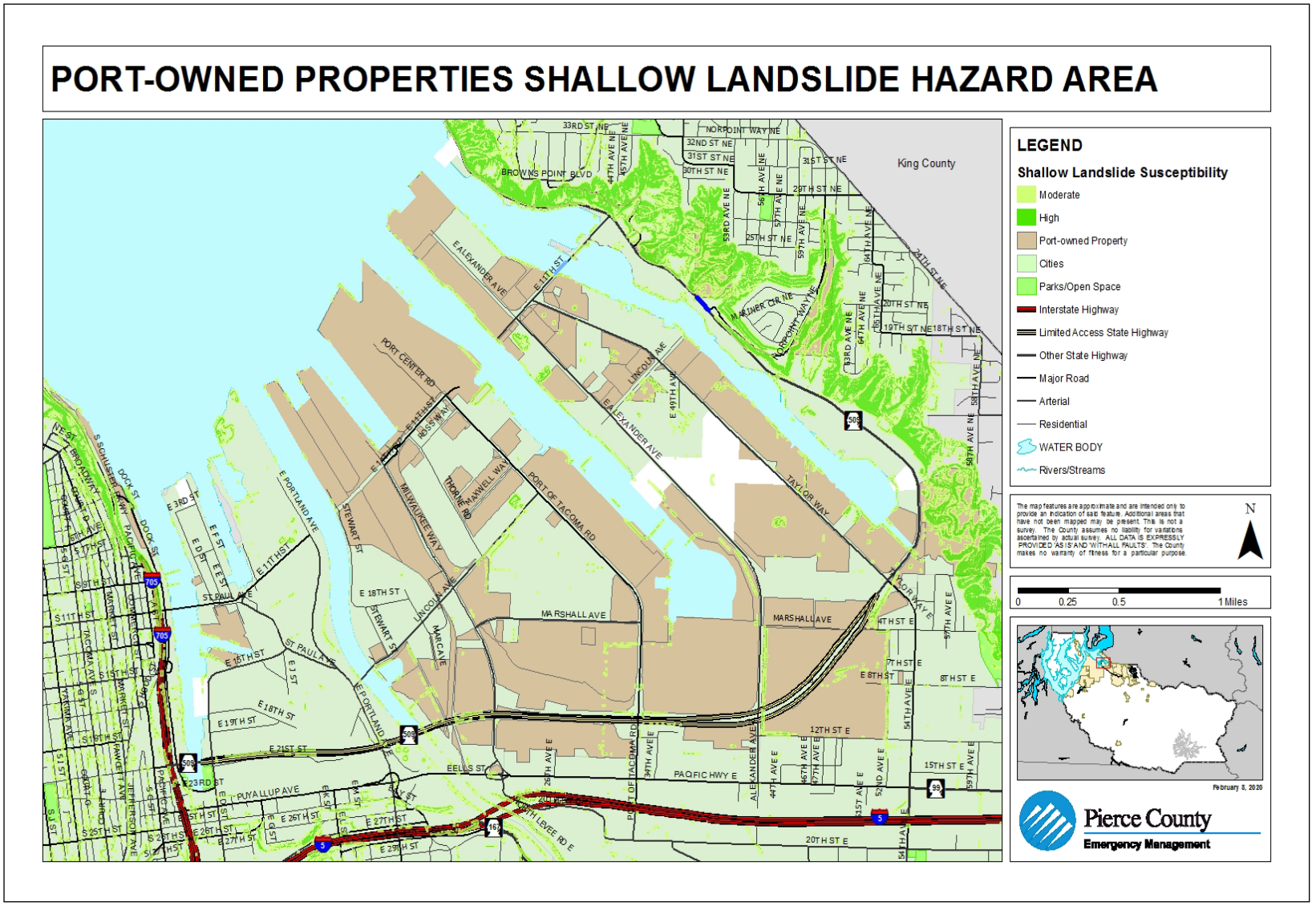
Map 4-2 Port of Tacoma Lahar Hazard Map



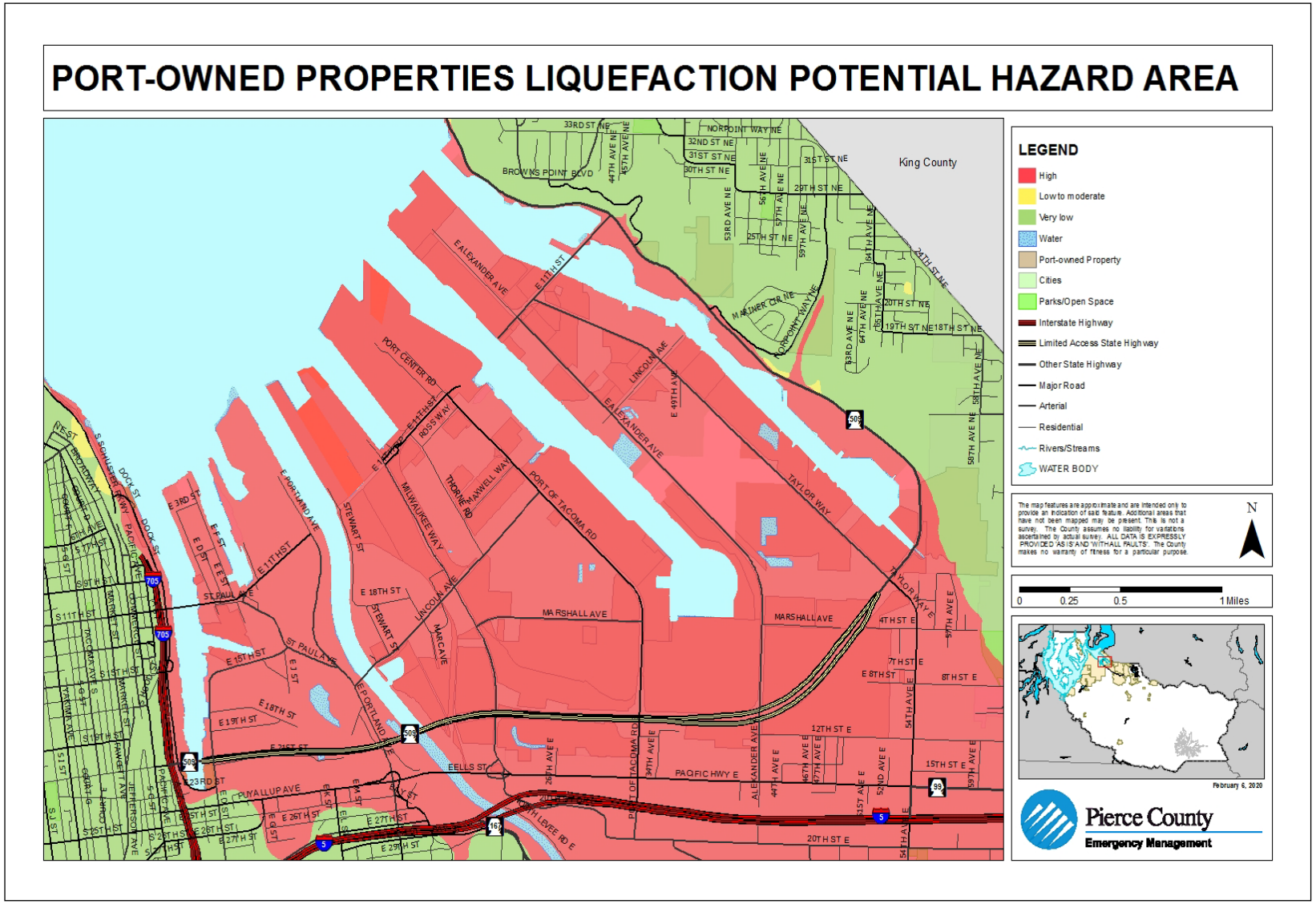
Map 4-3 Port of Tacoma Deep Landslide Hazard Map



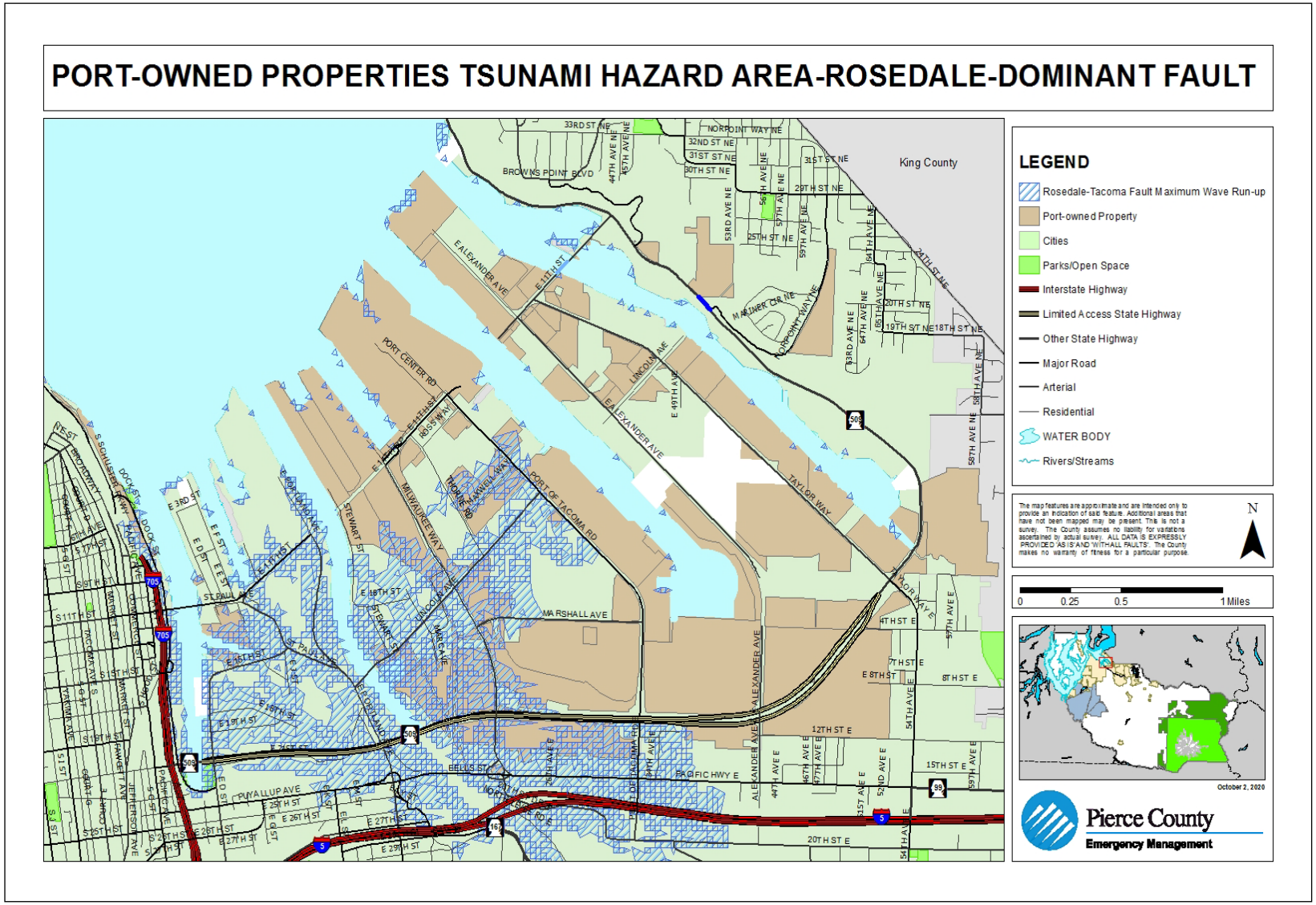
Map 4-4 Port of Tacoma Shallow Landslide Hazard Map



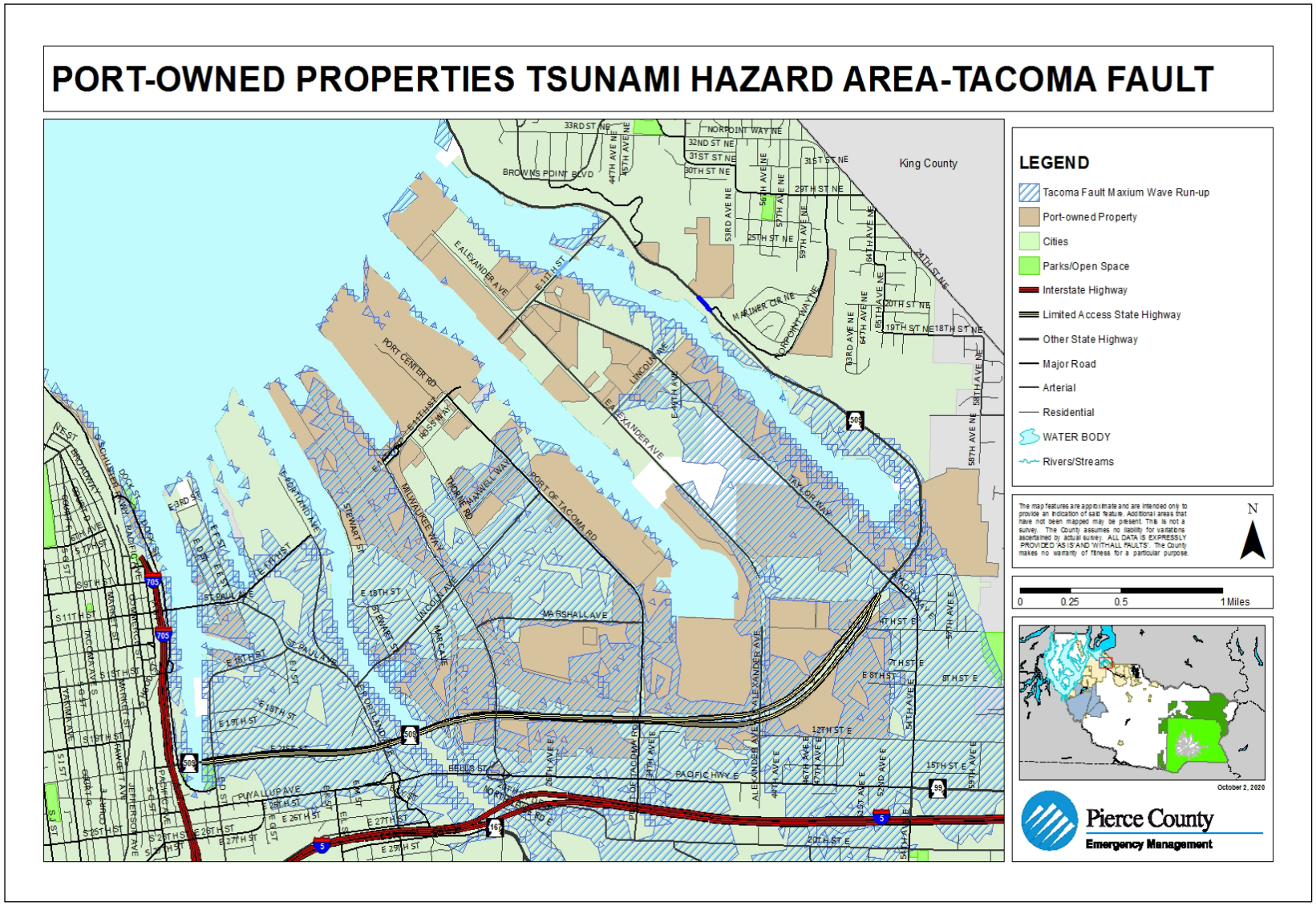
Map 4-5 Port of Tacoma Liquefaction Susceptibility Hazard Map



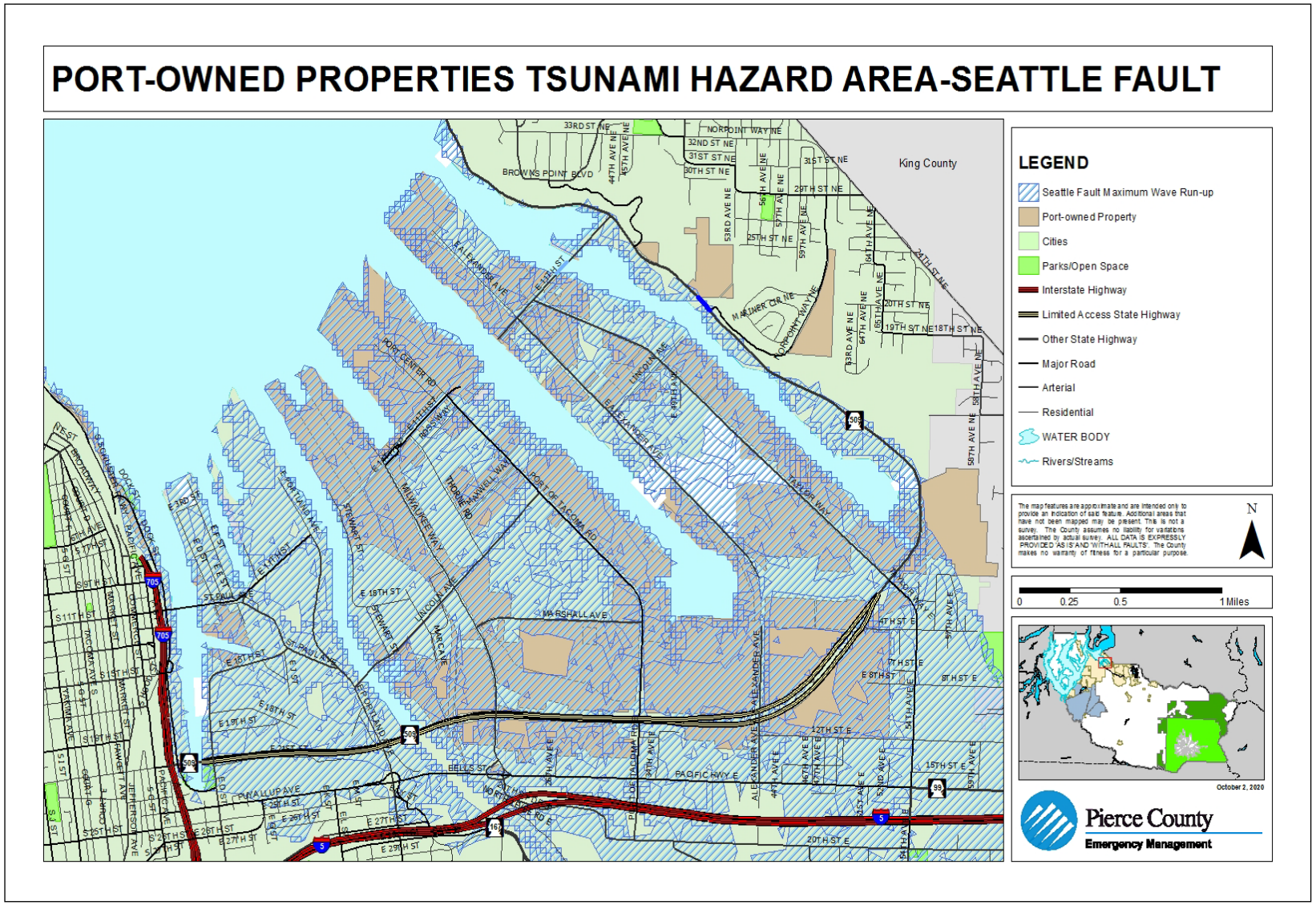
Map 4-6 Port of Tacoma –Tsunami Hazard –Rosedale Tacoma Fault Area Map



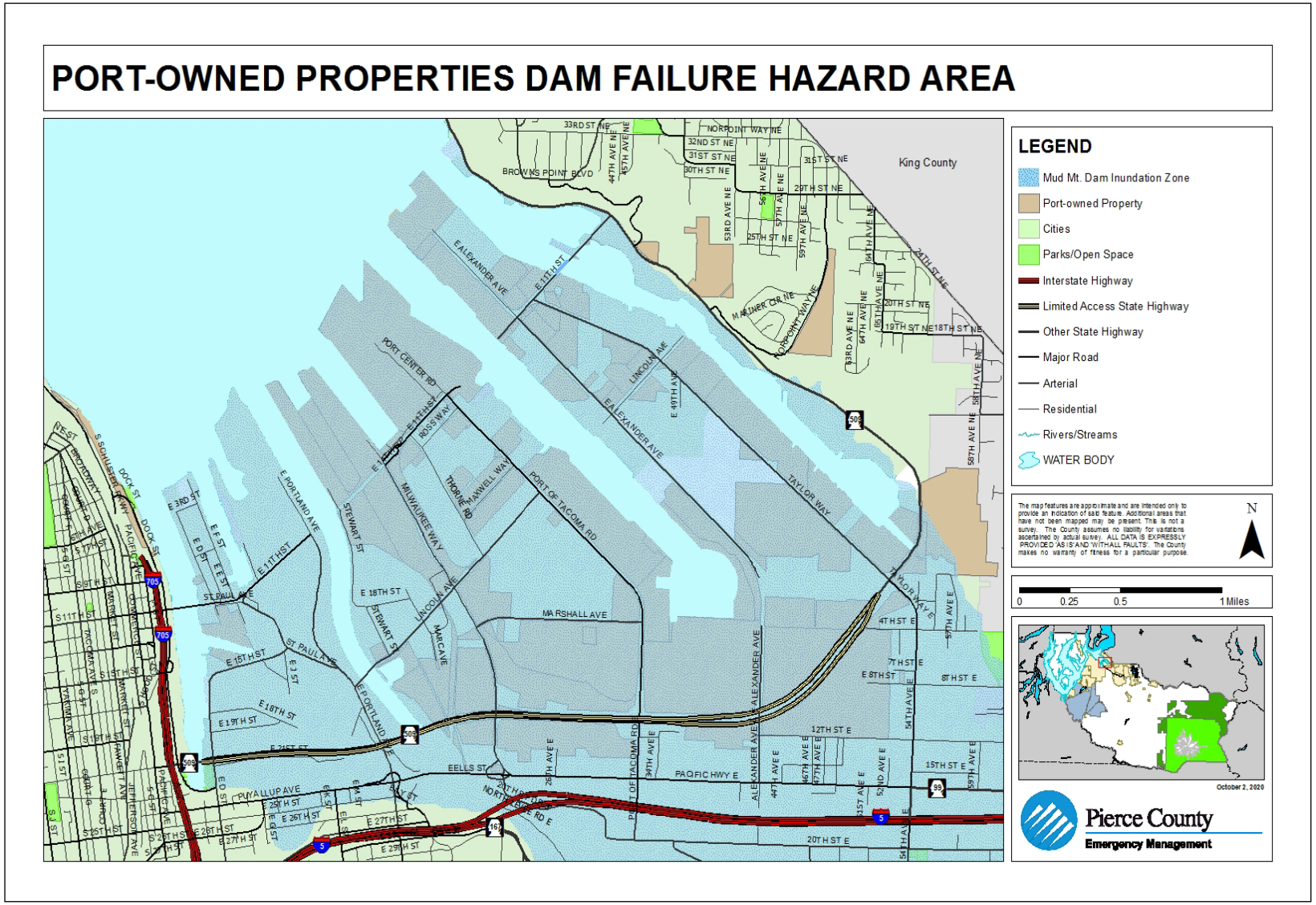
Map 4-7 Port of Tacoma –Tsunami Hazard –Tacoma Fault Area Map



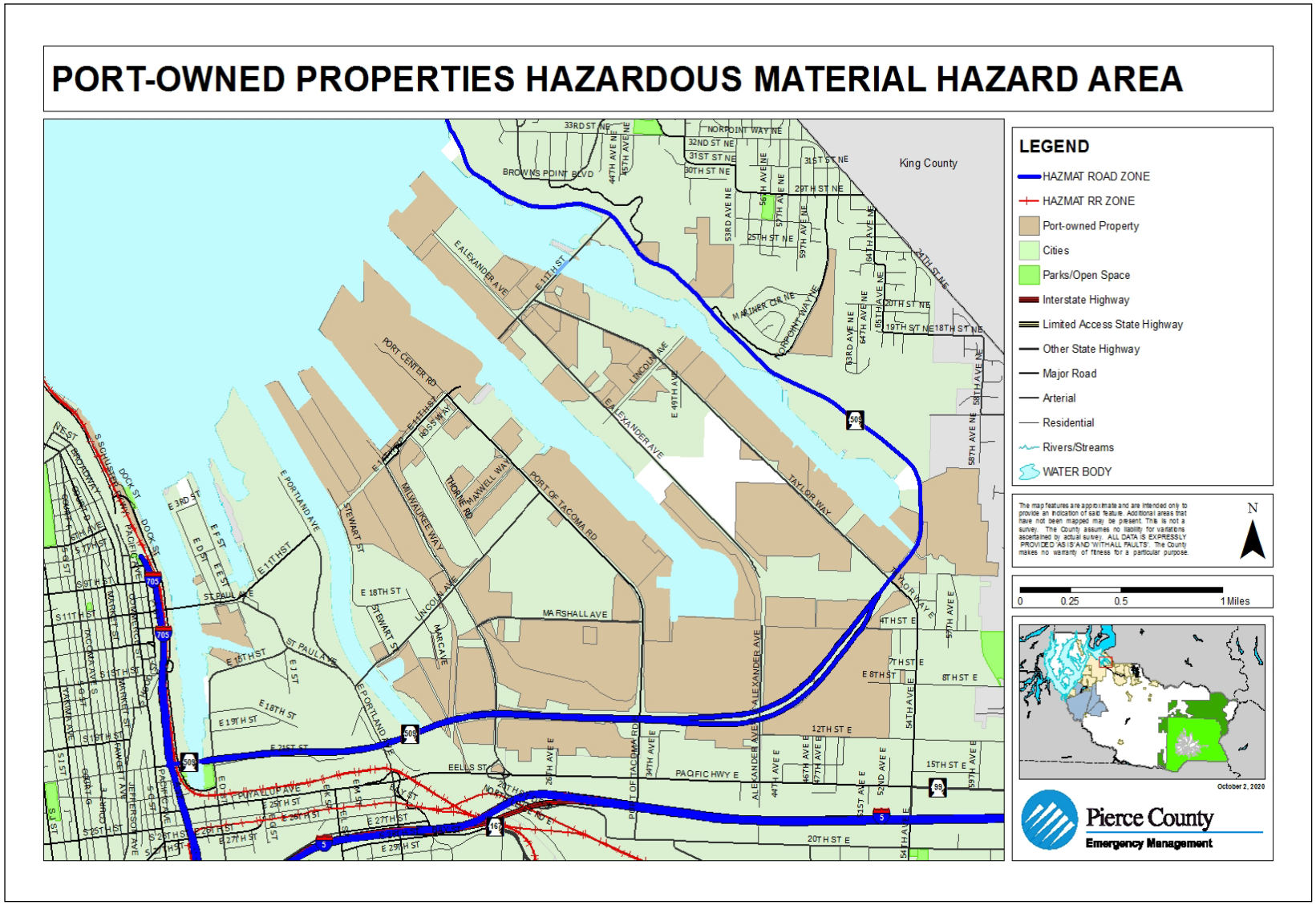
Map 4-8 Port of Tacoma –Tsunami Hazard –Seattle Fault Area Map



Map 4-9 Port of Tacoma –Dam Failure Hazard Area Map



Map 4-10 Port of Tacoma – Hazardous Material Hazard Area Map



Map 4-12 Port of Tacoma –Pipeline Hazard Area Map

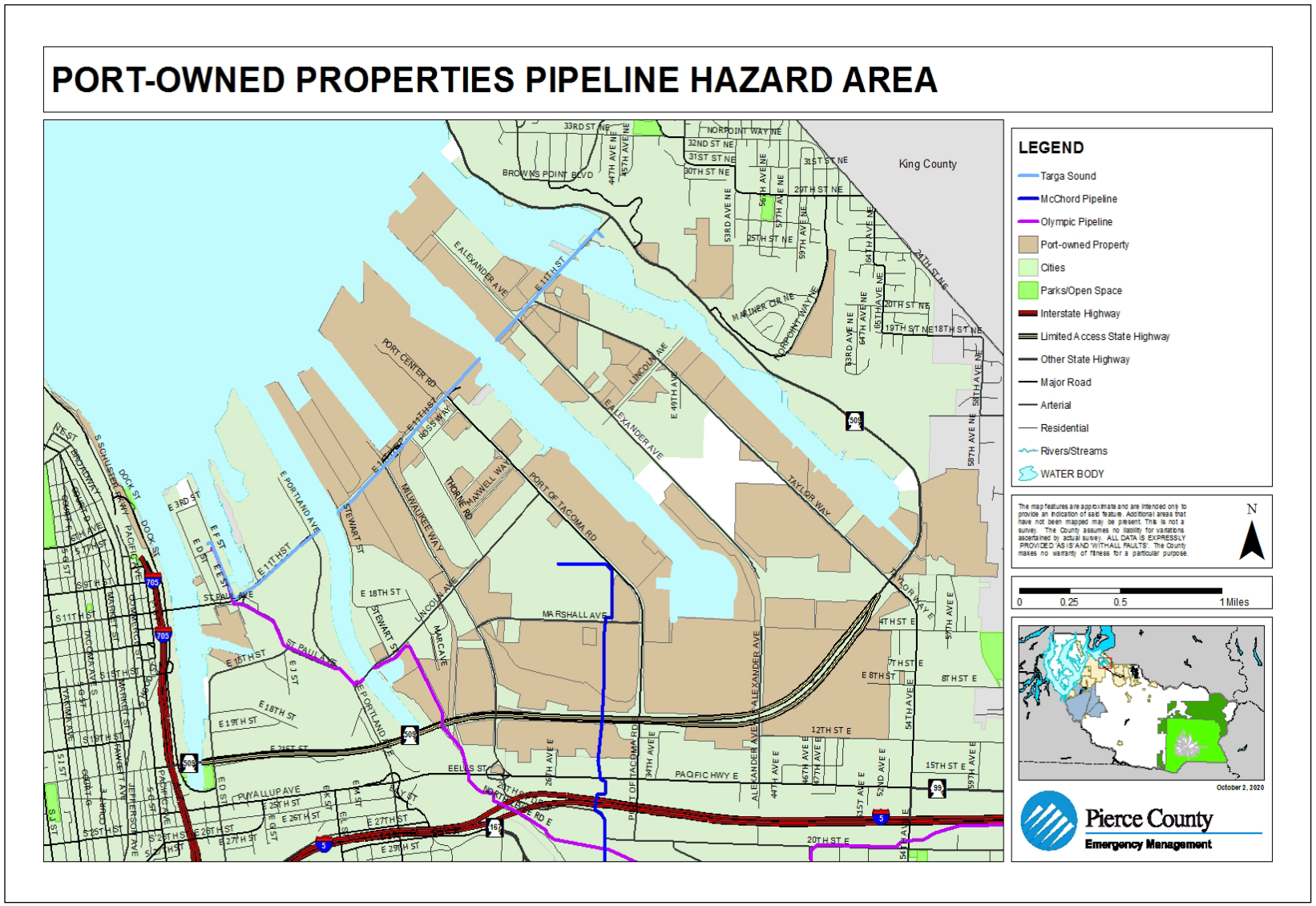


Table 4-2 Vulnerability Analysis: General Exposure[1]

THREAT[2]		AREA (SQ MI)		PARCELS	
		Total	% Base	Total	% Base
BASE		**4.50**	**100%**	**256**	**100%**
Geological	**Landslide - Deep**	85.43	3.1%	14	5.47%
	Landslide - Shallow	3.63	84.6%	147	57.42%
	Liquefaction[3]	4.50	100%	262	100%
	Tsunami	3.43	80.1%	213	83.20%
	Volcanic[4]	3.53	82.4%	217	84.77%
Meteorological	**Drought[5]**	4.50	100%	262	100%
	Flood	2.87	67.1%	100	39.06%
	Severe Weather	4.50	100%	262	100%
	Wildfire[6]	Insufficient GIS data to draw numbers from at this time or map susceptible areas.			
Technological	**Civil Disturbance[7]**	4.50	100%	262	100%
	Cyber Incident	4.50	100%	262	100%
	Dam Failure[8]	3.50	81.7%	214	83.59%
	Energy Emergency[9]	4.50	100%	262	100%
	Epidemic / Pandemic[10]	4.50	100%	262	100%
	Hazardous Material / Transportation Accidents [11]	4.50	100%	262	100%
	Pipeline Hazard[12]	1.37	32.1%	62	24.22%
	Terrorism / Extremism[13]	4.50	100%	262	100%

Table 4-3 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		$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
Geological	Landslide - Deep	$29,384,900	2.69%	$6,937,400	$6,937,400	2.65%	$231,247	$36,322,300	2.68%	$1,210,743
	Landslide - Shallow	$872,944,400	79.89%	$5,938,397	$233,716,700	89.31%	$1,589,910	$1,106,661,100	81.71%	$7,528,307
	Liquefaction	$1,011,784,100	92.60%	$4,537,148	$212,749,700	81.30%	$954,035	$1,224,533,800	90.42%	$5,491,183
	Tsunami / Seiche	$1,007,123,800	92.2%	$4,348,834	$221,098,200	84.49%	$1,018,886	$1,164,795,100	86%	$5,367,719
	Volcano and Lahar	$943,696,900	86.37%	$3,285,102	$158,072,300	74.07%	$745,624	$854,514,000	84.18%	$4,030,726
Meteorological	Dam Failure	$99,546,200	90.66%	$4,628,721	$205,812,300	78.65%	$961,740	$1,196,358,500	88.33%	$5,590,460
	Drought	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
	Flood	$686,700,200	62.85%	$6,867,002	$185,160,900	70.76%	$1,851,609	$871,861,100	64.38%	$8,718,611
	Severe Weather	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
	Wildfire	Insufficient GIS data to draw numbers from at this time or map susceptible areas.								
Technological	Civil Unrest	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
	Cyber Incident	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
	Energy Emergency	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
	Epidemic / Pandemic	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401

	Hazardous Material / Transportation Accidents	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401
	Pipeline Hazard	$330,688,000	30.26%	$5,333,677	$55,121,500	21.06%	$889,056	$385,809,500	28.49%	$6,222,734
	Terrorism / Extremism	$1,092,649,600	100%	$4,268,163	$261,693,000	100%	$1,022,238	$1,354,342,600	100%	$5,290,401

Table 4-4a Consequence Analysis Chart – Geological[14,15]

THREAT		CONSEQUENCE	YES OR NO
Geological	**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	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
	Tsunami / Seiche	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
	Volcano / Lahar[16]	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

Table 4-4b Consequence Analysis Chart – Meteorological

THREAT		CONSEQUENCE	YES OR NO
Meteorological	**Dam Failure**	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
	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	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
	Severe Weather	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
	Wildfire	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 4-4c Consequence Analysis Chart – Technological[17]

THREAT		CONSEQUENCE	YES OR NO
Technological	**Civil Unrest**	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
	Energy Emergency	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

	Epidemic / Pandemic	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
	Hazardous Materials / Transportation Accident	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
	Pipeline Hazards	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
	Terrorism / Extremism	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

Endnotes

[1] Info obtained from Pierce County GIS application, CountyView Pro (2025).

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

[4] 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.

[5] 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.

[6] According to the most recent information from the Department of Natural Resources, the Port of Tacoma 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.

[7] The definition of Civil Disturbance comes from the 2025 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.

[8] The definition of Dam Failure comes from the 2025 Pierce County HIRA: A dam is any "barrier built across a watercourse for impounding water.[8]" 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 dam's emergency plans inundation maps.

[9] The definition of an Energy Emergency comes from the 2025 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.

[10] 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).

[11] The definition of Hazardous Materials comes from the 2025 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.

[12] The definition of Pipeline Emergency comes from the 2025 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

[13] The definition of Terrorism comes from the 2025 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.

[14] 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.

[15] 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 that consequence will have a major impact, not that there will be no impact at all.

[16] 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 consider the possibility of tephra deposition in addition to a lahar.

[17] 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

PIERCE COUNTY REGIONAL HAZARD MITIGATION PLAN 2025-2030 EDITION PORT OF TACOMA MITIGATION STRATEGY SECTION

Table of Contents

Mitigation Measure Overview

The measures having been identified, defined, and evaluated; the rest of the process involved prioritization. The process relied upon the identified risks and vulnerabilities, the planning team's local expertise, public participation, each organization's needs and capabilities, a cost/benefit review, and input from the chief elected officials. In order to promote implementation of the measures, they were grouped based on the level at which they would be implemented, as described in the Plan Maintenance Section. These levels were:

- **Startup Mitigation Measures:** Those mitigation measures already in existence within the organization and including the maintenance of the Mitigation Plan.
- **Hazard Mitigation Forum (HMF):** Multi-organizational implementation mechanism.
- **Organization-Wide Mitigation Measures:** Mechanism depends on organization.
- **Public Education Mitigation Measures:** Localized level based on targeted communities and their needs and vulnerabilities.

The measures are prioritized within each implementation category. In order to provide consistency, the evaluation process including the eight categories, was used as the basis for the prioritization of measures. This allows for emphasis on the extent to which each measure is cost-effective.

The planning team members from each organization prioritized their organization's potential mitigation measures based on goals addressed with special attention paid to the measure's benefit-cost review, its ability to be implemented, and the extent to which it would mitigate one or multiple relevant hazards.

Prioritization of Measures

The list was prioritized based on the ongoing work and projects within the port. Mitigation measures are supported and implemented by multiple departments within the port and their implementation is largely based on funding opportunities and constraints, opportunities that arise with the development of new facilities or repairs to existing ones, and operational and organizational adjustments based on leadership priorities and recent events.

Draft Note: Prioritization order is a carry over from the previous 5 years, new measures need to be included in the updated table.

Table 5-1 Port of Tacoma Mitigation Strategy Matrix

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations	Partnerships	Natural Resources	Preparedness	Sustainable Economy
Startup	1. Existing Mitigation Actions *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
	2. Plan Maintenance *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
HMF	1. Pierce County Hazard Mitigation Forum *(E,L,T,V,D,F,SW,WUI,MM)*	PC DEM; Port of Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
Port Management	1. Capability Identification and Evaluation *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	N/A					
	2. Engineer Future Infrastructure with Auxiliary Power Capability *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	3. Install Seismic Shutoff Valves to Gas Utility Lines Serving Port Facilities *(E,T,SW,MM)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	4. Install Automatic Fire Sprinklers in New Port Buildings *(E,T,V,F,SW,MM)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	5. Using Modular Buildings to Ease Replacement and Lower Construction Costs *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	6. Strengthen and Create Redundancy in Utilities Serving the Port of Tacoma *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	7. Support Rail Grade Separation Projects *(E,T,V,F,SW,MM)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	8. Collaborate with Regional Partners on Mitigation Strategies for the Lower Puyallup River *(E,T,V,F,SW,MM)*	Port of Tacoma with Regional Partners	Ongoing	✓	✓	✓			✓
	9. Develop and Maintain a Port Business Continuity Plan *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Partially Complete	✓	✓	✓		✓	✓
	10. Create and Maintain Emergency "Go Kits" *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓		✓	✓
	11. Enroll Senior Management in the Government Emergency Telecommunication Service and Enroll all Staff Phones in a Wireless Broadband Capabilities Program *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓		✓	✓
	12. Develop Emergency Notification and Evacuation Procedures *(E,L,T,V,F,SW,WUI,MM)*	Port of Tacoma with Regional Partners	Ongoing	✓	✓	✓		✓	✓

Implementation Mechanism	Mitigation Measure *(Hazard(s))*[1]	Lead Jurisdiction(s) / Department(s)	Timeline (years)	Plan Goals					
				Life and Property	Operations	Partnerships	Natural Resources	Preparedness	Sustainable Economy
	13. Cybersecurity Assessment and Mitigation *(E,L,T,V,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
	14. Enhanced Use of Geographic Information System (GIS) *(E,L,T,V,F,SW,WUI,MM)*	Port of Tacoma with Regional Partners	Ongoing			✓		✓	✓
	15. Develop Coverage Areas for Reverse 911 System *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma and PCDEM	Ongoing	✓	✓	✓	✓	✓	✓
	16. Update Terminal Snow Removal Plans *(F,SW)*	Port of Tacoma	Ongoing	✓	✓	✓			✓
	17. Equip Port Vehicles with Radios (E,L,T,V,F,SW,WUI,MM)	Port of Tacoma	Ongoing	✓	✓	✓			✓
	18. Create Remote Access Capability for Security Cameras *(E,L,T,V,F,SW,WUI,MM)*	Port of Tacoma	Partially Complete	✓	✓	✓			✓
	19. Continued Support of Emergency Warning System *(All)*	Port of Tacoma	Ongoing	✓	✓	✓		✓	✓
	20. Stone Column Installation in New Pier Construction *(E)*	Port of Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
	21. Planning for Potential Sea-Level Rise *(T, F, SW)*	Port of Tacoma	Ongoing	✓	✓	✓	✓	✓	✓
Public Education	1. Continue Hazard Related Training for Port Officials and Employees *(E,L,T,V,F,SW,WUI,MM)*	Port of Tacoma	Ongoing	✓	✓	✓		✓	✓
	2. Train Port Engineers in Post-Earthquake Building Assessment (ATC-20) Class *(E,SW,MM)*	Port of Tacoma with Regional Partners	Ongoing	✓	✓	✓		✓	✓
	3. Hazard Related Education and Training for Port Terminal Businesses *(E,L,T,V,D,F,SW,WUI,MM)*	Port of Tacoma with Regional Partners	Ongoing	✓	✓	✓		✓	✓

Startup Mitigation Measures

Existing Mitigation Actions

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

Port of Tacoma will integrate the hazard mitigation plan into existing plans, ordinances, and programs to dictate land uses within the jurisdiction. Further, Port of Tacoma will continue to implement existing programs, policies, and regulations as identified in the Capability Identification Section of this Plan. This includes continuing those programs that are identified as technical and fiscal 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) =** Port of Tacoma
5. **Timeline =** Ongoing
6. **Benefit** = Port-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
✓	

Plan Maintenance

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

Port of Tacoma 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) =** Port of Tacoma
5. **Timeline =** Ongoing
6. **Benefit** = Port-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
✓	

Hazard Mitigation Forum

Pierce County Hazard Mitigation Forum

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

Port of Tacoma 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. 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; Port of Tacoma
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.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
✓	

Port Management Measures

Capability Identification and Evaluation

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

Port of Tacoma will develop a consistent and replicable system for evaluating the Port'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 Port'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) =** Port of Tacoma
5. **Timeline =** Short-term
6. **Benefit** = Port-Wide
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
✓	

Engineer Future Infrastructure with Auxiliary Power Capability

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

The measure will involve engineering future infrastructure with auxiliary power capability allowing for temporary power to easily connect. The Port of Tacoma will be continue to find infrastructure solutions to ensure that the port can maintain operations, even in times of power interruption. This work will be further assessed in an upcoming planning effort, the Port of Tacoma Electrification Roadmap. This assessment involved evaluating the

priority facilities, and evaluating battery backups, generators, or other auxiliary power options effectiveness for each situation.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, consultant time, design, materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma, Regional Partners (Terminal Operators)
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Not suitable for gantry crane operations			

Origin

Previous Plan	Current Plan
✓	

Install Automatic Fire Sprinklers in New Port Buildings

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

The measure will involve adding automatic fire sprinklers, , to new Port Buildings as they are constructed.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = Staff time, design, materials,
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners (Terminal Operators)
7. **Life of Measure** = 50 years
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred

	✓		
Comments			
Not included in mobile structures.			

Origin

Previous Plan	Current Plan
✓	

Using Modular Buildings to Ease Replacement and Lower Construction Costs

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

The measure will involve maximizing infrastructure life expectancy and terminal space through the use of modular buildings. Using modular buildings eases replacement and lowers construction costs.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; 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) =** Port of Tacoma
5. **Timeline =** Ongoing
6. **Benefit** = Port of Tacoma and Regional partners (Terminal operators)
7. **Life of Measure** = Varies (5-10 years)
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Implemented where functionally suitable.			

Origin

Previous Plan	Current Plan
✓	

Strengthen and Create Redundancy in Utilities Serving the Port of Tacoma

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

The measure will involve identifying the regional partners that provide utilities to Port, identifying the specific utility infrastructure that the Port relies upon, identifying the hazard vulnerability in that infrastructure, and developing strategies to strengthen and create redundancies in these infrastructures. This will involve working with regional partners (City of Tacoma, City of Fife, etc.).

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget and grants.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional partners (Terminal Operators)
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Full implementation will require extensive time and capital expense. Based on the long term goals of the Port plans to become increasingly dependent on electricity. A variety of strategies are being planned to maintain resiliency, including building redundant power distribution systems, adding electrical infrastructure underground. New sewer connections are always looped.			

Origin

Previous Plan	Current Plan
✓	

Support Rail Grade Separation Projects

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

The measure will involve supporting rail grade separation projects. These rail projects improve efficiency at points where freight is transferred between transportation modes such as ports and rail yards. Eliminating at grade roadways crossing rail lines with a grade separation mitigates rail and road congestion benefiting routine as well as emergency traffic and reduces the chances of collisions between rail and other modal users.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy.
2. **Cost of Measure** = TBD, depends on individual grade separation project

3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Port of Tacoma with Regional Partners
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners (Terminal operators)
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Lincoln Avenue Grade Separation completed. Additional projects may be identified in the NWSA Gatetway Infrastructure Plan and Tideflats Subarea Plan.			

Origin

Previous Plan	Current Plan
✓	

Collaborate with Regional Partners on Mitigation Strategies for the Lower Puyallup River

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

The measure will involve working with Regional Partners (Cities, County, Tribe, Local District, Army Corps, etc.) on mitigation strategies for the Lower Puyallup River. In 2005, County-wide flood hazard maps were updated and reproduced. Studies have shown the lower Puyallup River Levee System is in need of replacement or rehabilitation in order to provide flood protection from a 100-year flood. Strategies could include: raising levees, creating setback levees, acquisition of property, public education, and response procedures.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; 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) =** Port of Tacoma with Regional Partners
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional partners (Terminal Operators)
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal would be somewhat controversial.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
✓	

Update the Existing Port Business Continuity Plan (BCP)

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

The measure will involve updating the 2014 Business Continuity Plan (BCP) for the Port. This plan will provide guidance for the rapid recovery of critical operations, IT services and continuity of government in the event of a disaster. The BCP update will be carried out in partnership with the Port of Tacoma Safety Committee.

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** = Staff time, consultant support (year 1 is about $80,000), services/subscriptions, and materials
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants
4. **Lead Jurisdiction(s) =** Port of Tacoma – Port Security
5. **Timeline = Ongoing**
6. **Benefit** = Direct Port of Tacoma and Regional Partners Terminals, shipping providers, labor, business community
7. **Life of Measure** = Perpetual
8. **Community Reaction** = Likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
			✓
Comments			
A Business Continuity uplift is on schedule to complete BCP Update by end of CY 2025			

Origin

Previous Plan	Current Plan
✓	

Create and Maintain Emergency "Go Kits"

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

The measure will involve ensuring that Go Kits are created and maintained. Two types of Go Kits will be provided including one for all staff that includes emergency supplies for three days and special Go Kits for essential Port personnel for times of emergency or disaster. The second type of Go Kit provides the basis for Port personnel to continue operations. Items that may be included for supporting essential services include but are not limited to: laptops, radios, emergency manual, SOPs, vital records and forms. This measure once completed will become a component of the Port Business Continuity Plan.

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** = Varies for Essential Port Personnel Go Kits; $33 for each Staff Go Kit
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
✓	✓		
Comments			
All port staff have received their individual Go Kits; Essential Port Personnel Go Kits will be updated as part of the BCP Update.			

Origin

Previous Plan	Current Plan
✓	

Sample "Go Kit" for Essential Port Personnel

Enroll Senior Management and staff in Everbridge for emergency telecommunication services.

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

The measure will involve using the federal government's telecommunication service that provides emergency access to local and long-distance telephone networks increasing the probability of completing emergency calls when normal calling methods fail. This measure once completed will become a component of the Port Business Continuity Plan. Furthermore, expand emergency communications to port staff through involvement with a wireless broadband capabilities program.

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** = Varies
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal would be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Senior Management are enrolled in GETS. All Port of Tacoma phones have been enrolled in the FirstNet wireless broadband service as of 2019.			

Origin Cybersecurity

Previous Plan	Current Plan
✓	

Update Emergency Evacuation Plans

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

The measure will involve developing emergency notification and evacuation procedures. The objective is an integrated Port-wide system to provide notice of an emergency and information on evacuation via a variety of means such as radio, phone, sirens and email.

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** = ~$215,000 – evacuation planning for tideflats (grant funded
3. **Funding Source and Situation** = Funding could be obtained through local budgets or grants.
4. **Lead Jurisdiction(s) =** Port of Tacoma and Regional Partners including WSDOT and Cities of Tacoma and Fife
5. **Timeline =** Short-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Perpetual
8. **Community Reaction** = the proposal is likely to be endorsed by entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
		✓	
Comments			
The Port of Tacoma will be updating its All Hazards Emergency Response Procedures including evacuation planning.			

Origin

Previous Plan	Current Plan
✓	

Cybersecurity Assessment and Mitigation

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

Implement a host of strategies to secure and protect the Port's networks.
Implement policies and procedures to maintain comprehensive knowledgebase of port assets, along with maintaining a regular cycle of identification and mitigation of vulnerabilities.
These strategies include, but are not limited to, the implementation of enterprise class firewall and intrusion detection devices and best practices, co-located the data center to a secure commercial data center that is sited off the Tacoma Tideflats, installation of redundant connectivity, and contract for provide host-based detection services.
The types of systems supporting this measure include: an enterprise class firewall, intrusion detection devices, intrusion detection best practices, co-located data center outside of the Tacoma Tideflats, redundant connectivity, and host-based intrusion detection services. The security posture is evaluated regularly including an annual NIST audit and two vulnerability assessments, often in the form of penetration tests. The findings from these assessments generate projects that remediate the findings.

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 budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal would be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
	✓

Enhanced Use of Geographic Information System (GIS)

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

This prospective Mitigation Action consists of two components.

1) Work towards integrating existing Statement of Values with existing GIS data to provide improved correlation of values at-risk by hazard type.
2) Explore implementation of HAZUS to provide detailed event-based scenario modeling so as to help direct future mitigation efforts.

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 budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal would be endorsed by the entire community.

The following section confirms the status of the Mitigation Action (above) and identifies whether it was listed in the original Plan document approved in November 2008 (i.e., Previous Plan) or is a more recent addition (i.e., Current Plan).

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Hazards will be shared in GIS format on the Port of Tacoma/NWSA GeoHub to raise natural hazard awareness to all staff. GIS is applied beyond the two components listed, one example is how GIS is used in vulnerability assessments and to process drone imagery.			

Origin

Previous Plan	Current Plan
	✓

Develop Coverage Areas for Reverse 911 System

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

The measure will involve developing geographic information system coverage areas in the County's Reverse 911 System for the Port. The impacted jurisdiction defines a geographic area and system then calls all land phones in that area alerting them to the given hazard. This system can be used without pre-drawn coverage areas, but by pre-identifying the service areas within the Port the message can be send out more efficiently. The system has proved invaluable in recent floods and windstorms, both declared Federal Disasters, in the County.

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 budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma with PCDEM
5. **Timeline =** Ongoing
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal would be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
		✓	
Comments			

Origin

Previous Plan	Current Plan
✓	

Update Terminal Snow Removal Plans

Hazards: F, SW[1]

The measure will involve updating the Port's terminal snow removal plans to minimize the interruption of inclement weather.

1. **Goal(s) Addressed** = Protect life and property; Ensure continuity of operations, Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma with Terminal Operators
5. **Timeline =** Long-Term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Response plans updated each Fall. The Snow Removal Plans will be included as part of the Port Business Continuity Plan.			

Origin

Previous Plan	Current Plan
✓	

Equip Port Vehicles with Radios

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

The measure will involve equipping new Port Vehicles with radios. This measure will enhance the Port's capabilities to communicate during times of emergency or disaster.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-Term
6. **Benefit** = Port of Tacoma with Regional partners (terminal operators)
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Operations, Facilities and Equipment Maintenance vehicles only.			

Origin

Previous Plan	Current Plan
✓	

Create Remote Access Capability for Security Cameras

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

The measure will involve creating the ability to direct and view Port security cameras from locations other than the Security Center such as Port vehicles and alternate work locations.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote a Sustainable Economy.
2. **Cost of Measure** = TBD
3. **Funding Source and Situation** = Funding could be obtained through local budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional partners (terminal operators)
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2025 – 2030 Edition

Complete	Ongoing	Partially Complete	Deferred
			✓
Comments			
Cybersecurity concerns have held up implementation			

Origin

Previous Plan	Current Plan
✓	

Continued Support of Emergency Warning Systems

Hazards: All

The measure will involve ongoing deployment of the Port Emergency Warning System (PEWS). The PEWS sirens are located in various locations across the Port of Tacoma, providing emergency notification to most of the Tacoma Tideflats. They are activated for but not limited to the following situations: hazardous materials emergencies, general emergencies, flooding, lahars, and tsunamis. The Port shall continue to support the County's Lahar Warning System. The lahar warning system notifies the Region when there is impending lahar emanating from the flanks of Mt. Rainier. The system is vital to the welfare of all citizens living and working in the valley and Tideflats area.

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 budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma, Pierce County Emergency Management Division
5. **Timeline =** Ongoing
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction =** the proposal is likely to be endorsed by the entire community.

The following section confirms the status of the Mitigation Action (above) and identifies whether it was listed in the original Plan document approved in November 2008 (i.e., Previous Plan) or is a more recent addition (i.e., Current Plan).

Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Tideflats installation of PEWS (Port Emergency Warning System). The Port continues to test the PEWS System and include it as part of its ongoing education efforts.			

Origin

Previous Plan	Current Plan
✓	

Stone Column Installation in New Pier Construction

Hazards: E

The measure involves installation of 'Stone Columns' along new bulkheads (where applicable) to provide for improved soil densification. 'Stone Columns' help prevent soil liquefaction during an earthquake and lessens the amount of ground movement were the pier meets the land helping to avoid slope failure. As an example, the Port installed~1350 columns (~69,000 LF) at its Pier 4 reconstruction project (completed in 2018). These

columns are 3.5’ in diameter and extend to a depth of elevation -50 feet (*see sample drawing and photos below*)

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; Promote A Sustainable Economy.
2. **Cost of Measure** = Current instace of replacing failing wooden piles budgeted for $450,000
3. **Funding Source and Situation** = Funding could be obtained through local budget or grants.
4. **Lead Jurisdiction(s) =** Port of Tacoma with Regional Partners
5. **Timeline =** Ongoing
6. **Benefit** = Port of Tacoma and Regional Partners (Terminal operators)
7. **Life of Measure** = Varies, in ideal conditions 75 years or more
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

The following section confirms the status of the Mitigation Action (above) and identifies whether it was listed in the original Plan document approved in November 2008 (i.e., Previous Plan) or is a more recent addition (i.e., Current Plan).

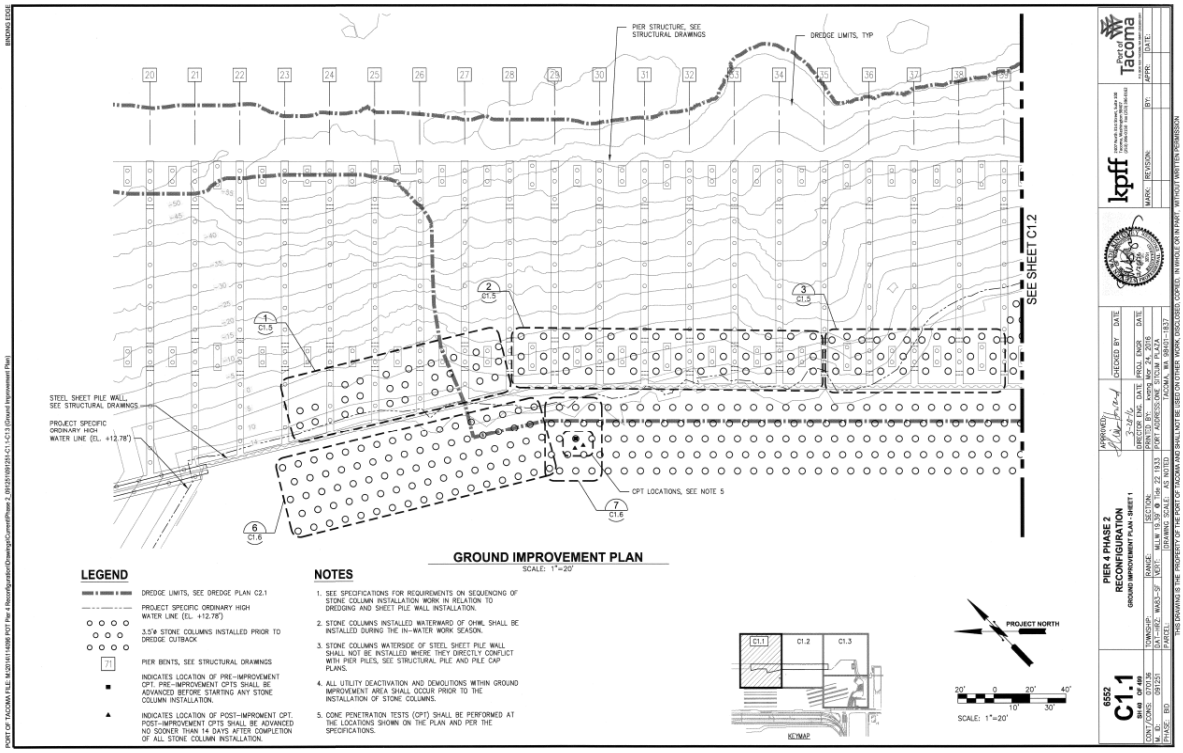
Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Installed at East Blair One (EB-1) and used in Pier 4 reconfiguration project. To be installed as a replacement for failing pile under West Sitcum Terminal Gangway.			

Origin

Previous Plan	Current Plan
	✓

Sample Ground Improvement Plan



Pier 4 Reconstruction including 'Stone Column' installation

Example of 'Stone Column" installation

Planning for Potential Sea-Level Rise

Hazards: T, F, SW

Evaluate, and if necessary, modify design of future pier structures and related infrastructure (including, but not limited to, rail, rail yards and storm water conveyance systems) in consideration of climate change and the potential for future sea-level rise. The ongoing NWSA Resilient Gateway Program. will look at hazards, including sea-level rise, and help establish guidelines for new facility development with respects to sea-level rise. This program included a study evaluating the vulnerability of NWSA assets, and is meant to develop a phased adaptation strategy.

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** = Staff time, consultant expertise, monitoring, and implementation
3. **Funding Source and Situation** = Funding could be obtained through grants and local budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Ongoing
6. **Benefit** = Port of Tacoma; Tideflats and supply chain partners
7. **Life of Measure** = Planning will for projected conditions in 2100
8. **Community Reaction** = the proposal would be endorsed by the entire community.

Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
One example of this planning took place when evaluating the suitability of the future maritime center site, and it was determined that the site needed to be raised 2 feet so that the development would not be vulnerable to flooding.			

Origin

Previous Plan	Current Plan
	✓

Backup Generator for Primary Maintenance Facility

Hazards: A, E, F, SW, L, MM

A Generator will be *installed or replaced* at the Ports Maintenance building North of 11th Street.

1. **Goal(s) Addressed** = Protect life and property; Ensure continuity of operations.
2. **Cost of Measure** = ~950k
3. **Funding Source and Situation** =. **Funding will be obtained through local budgets**
4. **Lead Jurisdiction(s) =** Port of Tacoma Maintenance
5. **Timeline =** Short-Term
6. **Benefit** = Direct – Port of Tacoma; Indirect Terminal Operators, regional business
7. **Life of Measure** = 20+ years
8. **Community Reaction** = the proposal would benefit those affected, with no adverse reaction from others

Origin

Previous Plan	Current Plan
	✓

Shoreline Monitoring and Stabilization

Hazards: L, F, SW, MM

Inspections and Surveys are regularly done monitoring the integrity of the shoreline and adjacent areas. Shorelines are armored or stabilized with riprap, native plantings or a variety of methods depending on the landward use.

9. **Goal(s) Addressed** = Protect life and property; Preserve or Restore Natural Resources, Increase Public Preparedness for Disasters

10. **Cost of Measure** = Staff and consultant time, materials, construction, design, planning
11. **Funding Source and Situation** =. **Funding will be obtained through local budgets**
12. **Lead Jurisdiction(s) =** Port of Tacoma Engineering
13. **Timeline = Ongoing**
14. **Benefit** = Direct – Port of Tacoma; Indirect Terminal Operators, regional business
15. **Life of Measure** = Varies
16. **Community Reaction** = the proposal would be somewhat controversial

Origin

Previous Plan	Current Plan
	✓.

Heat and Smoke Adaptations

Hazards: Severe Weather, Wildfire, Volcano, Hazardous Material spill or accident

The measure will involve monitoring for unhealthy conditions for workers, communicating the need for extra precautions, and providing applicable time, space, PPE to protect staff from extreme heat and air quality issues during wildfires or other events causing unhealthy air quality. The Washington State Department of Ecology's Air Quality Map will be used to assess air quality.

1. **Goal(s) Addressed** = Protect life and property; Ensure continuity of operations.
2. **Objective =** One of the objectives it to meet and exceed the General Occupational Health Standards, Ch 296-62 WAC
3. **Cost of Measure** = Materials and staff time
4. **Funding Source and Situation** =**Funding could be obtained through local budgets or grants.**
5. **Lead Jurisdiction(s) =** Port of Tacoma Operations
6. **Timeline =** Ongoing
7. **Benefit** = Direct – Port of Tacoma Staff; Indirect Terminal Operators, regional business
8. **Life of Measure** = Perpetual
9. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Origin

Previous Plan	Current Plan
	✓

Potential addition: Electrical Substation Upgrades

Public Education

Continue Hazard Related Training for Port Officials & Employees

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

The measure will involve continuing the Hazard Related Disaster Preparedness Training for Port officials and employees. This will build on such classes that involve: Preparedness at Work, Home and on the Road, NIMS Training and Hazard Awareness Training. Preparation will help ensure Port operations and provide a faster response and recovery when hazards do threaten the Port.

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 budget or grants.
4. **Lead Jurisdiction(s) =**Port of Tacoma
5. **Timeline =** Short-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
New employees are briefed on hazards during their new employee orientation. There is ongoing hazard education for port employees through classes such as NIMS (taught in Fall 2019) and public education opportunities such as WA Shakeout or the Tsunami Roadshow.			

Origin

Previous Plan	Current Plan
✓	

Train Port Engineers in Post-Earthquake Building Assessment (ATC-20) Class

Hazards: E, SW[1], MM[2]

The measure will involve the Port engineers taking the ATC-20 Class. This class will provide them with the skills and knowledge to assess damage to buildings after an earthquake. By ensuring this capability at the Port, response and recovery in the aftermath of a seismic event will be faster and more efficient.

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 budget.
4. **Lead Jurisdiction(s) =** Port of Tacoma
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma and Regional Partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal would be endorsed by the entire community.

Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			

Origin

Previous Plan	Current Plan
✓	

Hazard Related Education and Training for Port Terminal Businesses

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

The measure will involve conducting hazard related education and training for Port Terminal Businesses. The Port businesses play a vital role in the future of the Port. By partnering with other regional governmental partners (Fire District, Cities, County, etc.) the businesses will be provided an awareness level introduction to the hazards in the area building a level of sustainability into Port along with provide a mechanism for leveraging resources before and after an emergency or disaster.

The Port will consider future opportunities to increase hazard awareness and improve safety in the Tideflats by engaging in partnership programs such as the National Weather Service TsunamiReady and StormReady community programs.

1. **Goal(s) Addressed** = Protect Life and Property; Ensure Continuity of Operations; Establish and Strengthen Partnerships for Implementation; 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) =** Port of Tacoma and Regional Partners
5. **Timeline =** Long-term
6. **Benefit** = Port of Tacoma businesses and Regional partners
7. **Life of Measure** = Varies
8. **Community Reaction** = the proposal is likely to be endorsed by the entire community.

Status Update: 2020 – 2025 Edition

Complete	Ongoing	Partially Complete	Deferred
	✓		
Comments			
Evaluating opportunities for tenant participation in hazard exercises and educational events Hazard communications may be shared with special groups including labor, employers, and facility security officers.			

Origin

Previous Plan	Current Plan
✓	

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 the original Plan was strictly a *Natural* hazard mitigation plan, where a measure stemmed from a facility recommendation (Infrastructure Section) that dealt specifically with potential acts of terrorism, the mitigation strategy has, and will continue to, utilize the associated analysis. The current plan is now *All* Hazards. It is not the intent of this notation to imply that all measures were analyzed with regards to human-made hazards. Rather, the notation merely illustrates the potential on this template for the inclusion of human-made hazard analysis.

SECTION 6

PIERCE COUNTY REGIONAL ALL HAZARD MITIGATION PLAN 2025-2030 UPDATE PORT OF TACOMA INFRASTRUCTURE SECTION

The Infrastructure Section is exempt from public disclosure pursuant to RCW 42.56.420.