

Port of Edmonds

The Port of Edmonds encompasses just over 62¹ acres and is located a few blocks west of the downtown core of Edmonds. It is an integral spoke in the wheel of various transportation systems bordering it. This includes the UNOCAL site, a portion of which may develop into a multi-modal site for a possible ferry terminal location, and the Burlington Northern tracks, an integral part of the region's proposed commuter rail transportation system and an existing piece of the region's heavy rail system. The Port itself, with its marina capabilities, provides boating traffic transportation links. At present, the boating traffic is personal, pleasure boating with a few commercial charters.²

The Port provides the following facilities and services:

- Twenty-five acres of wet moorage accommodating 670 vessels
- Dry stack storage for 276 boats
- Two hydraulic boat launchers for boats up to 15,000 pounds or 32-foot LOA, 10-foot wide
- Fifty ton travel-lift
- Pressure washing area with wastewater treatment containment
- Environmentally-friendly workyard accessible to the public
- Marine fuel dock, Guest Moorage and Bait Shop
- Public Fishing Pier (500 feet long), managed by the City of Edmonds
- Public parking for shoreline facilities
- Sixty commercial, light-industrial and marine-oriented businesses
- A variety of shops and restaurants
- A yacht sales establishment
- A variety of office facilities
- Private yacht club facilities

The Port of Edmonds' critical structures are identified in *Annex N*.

Hazard Identification

Based on past experience, the Port of Edmonds rates its risk of natural hazards as follows:

| HAZARD | RATING (out of 80 possible) |
|----------------------------------|---------------------------------------|
| DROUGHT | 07 |
| EARTHQUAKE | 40 |
| FLOOD | 20 |
| LANDSLIDE | 18 |
| SEVERE STORM | 30 |
| TSUNAMI & SEICHE | 11 |
| VOLCANO | 05 |
| WILDLAND URBAN INTERFACE FIRE | 05 |

Drought

Rating: 7

Even in the case of a wide-spread and long-term drought, the Port of Edmonds is not considered to be particularly vulnerable to drought. The Port is located on Puget Sound, so while it experiences variations in water depths due to tides, it does not experience the chronic water shortages that those mooring on a river may experience in connection with drought. Drought is an **EXTREMELY-LOW** risk for the Port of Edmonds.

Earthquake

Rating: 40

Earthquake is the greatest hazard that the Port may experience. If a major quake was to occur in the region, it would affect the entire Port area. Property will be damaged or destroyed during a major event. It is probable that people will be injured, and possibly killed, from falling debris or boats and watercraft stored in dry-dock.

The economy will be disrupted if the facilities receive significant damage. This disruption will continue for the duration of rebuilding and beyond as some boat owners who find temporary moorage or storage sites may not return once the facilities are restored. Foot traffic will also be discouraged due to inconveniences caused by traffic revisions and rebuilding activities.

Environmental damage may occur from the waters of Puget Sound being stirred up both during the event as well as during the rebuilding process.

Secondary effects from an earthquake could include the possibility of Hazardous Material spills or fire should fuel lines or tanks be ruptured.

Earthquake is rated as a **MODERATE** risk.

Flood

Rating: 20

100-Year and Urban

The Port is, by definition, located on the water. This limits the impact of flooding as Puget Sound can easily absorb waterflows coming most rainstorms or stormwater overflows. There is some risk of 100-year or urban flooding especially at its Harbor Square Business Complex.

Shoreline

Shoreline flooding is a possibility for the Port of Edmonds. Storm events are often accompanied by significant wave action, and this, combined with heavy rains and run-off from overwhelmed stormwater systems, may cause some flooding in the Port. This will be of short duration and will, with the Port's topography, dissipate as soon as the waves and rainfall abate.

Shoreline flooding represents a **MODERATE** risk.

Landslide and Soil Displacement

Rating: 18

The Port is located at the base of the bluff that contains the former Unocal plant. The upper site is developed with residential condominiums. The slopes are steep enough that it is possible for soil to be displaced during heavy rains or tidal action or during an earthquake. Should this occur, it could destabilize infrastructure such as roadways, parking lots, and ramps.

If the soil surrounding and supporting fuel tanks and lines is displaced, the tank or line could rupture. In such a case, it is possible that the Port of Edmonds would experience a Hazardous Material spill and/or a fire.

Depending on the amount of damage, and how much time, effort, and money it takes to restore the facilities, the Port could experience significant economic damage as a result.

Overall, landslide is a **MODERATELY-LOW** risk.

Severe Storm

Rating: 30

Although severe storm is identified as a **MODERATE** hazard, it is one of the higher risks for the Port of Edmonds. This is due to the frequency of the events, the variety of factors that could affect the event, and the Port's purpose.

Both docks and boats may be damaged when high winds and/or heavy wave actions repeatedly slamming the boats into the docks. Other debris in the water may also become water-borne missiles and cause damage during severe weather.

Photograph 1: Heavy wave action due to winds. Source: Port of Edmonds.



Landslide and soil displacement may occur as a part of the severe storms experienced by the Port. Heavy wave activity may erode and destabilize the waterfront, threatening Port infrastructure. In addition, a section of the Port is located at the base of a steep bluff, and this area may be prone to landslide during periods of saturating rains or freeze-thaw cycles.

Snow and freezing rains may damage or destroy storage structures. This occurred in 1996 when heavy snows collapsed dock roofs. Many of the boats moored under these structures were damaged, and several of them were sunk under the weight of the downed roof.

**Photograph 2: Dock collapse from winter storms, December 1996.
Source: Port of Edmonds**



Tsunami & Seiche

Rating: 11

Tsunami and seiche are **LOW** risks for the Port of Edmonds. Again, this is due to the fact that the facilities are located on Puget Sound, and would be vulnerable should such an event occur.

While not extremely likely to occur, if a tsunami event takes place, it is possible that the entire Port facility could be seriously damaged or destroyed. In such a case, it is very likely that there would be injuries and/or deaths.

As with other natural disasters, there is the potential for environmental damage as the bed of Puget Sound is agitated by the wave action. In addition, beach-front properties have the possibility of being eroded or washed away, and this would change the ecological base for the beach area.

Assuming that there is significant damage to the facilities, the Port would also experience a significant drop-off in the number of people using the moorage facilities as well as a decrease in people using the shopping and business areas. The result would be economic damage that may be very difficult to recover from.

Volcano

Rating: 5

Volcano is considered to be an **EXTREMELY-LOW** risk for the Port of Edmonds. As was discussed in the HIVA (Section II), the primary concern during a volcanic eruption would be ashfall. Due to the limited purpose associated with the Port Authority, this would have limited impact.

Other concerns associated with a volcanic eruption would be the occurrence of an earthquake and/or tsunami as part of the volcanic activity. These hazards are addressed in the previous sections.

Wildland-Urban Interface Fire

Rating: 5

The Port of Edmonds has very little undeveloped land around it. As a result, the threat level from wildland-urban interface fire is **EXTREMELY-LOW**. Furthermore, the Port's infrastructure is located some distance away from potential fuels for wildfire.

Mitigation

Existing and Ongoing Mitigation Activities

The Port of Edmonds is taking the following actions in ongoing efforts to mitigate for natural hazards and to maintain public safety.

All Hazards

- All new structures built to current codes.
- Codes and Plans
 - Port of Edmonds Master Plan
- Placed flexible fuel lines inside new cement docks to allow for water level fluctuation and movement without breakage.
- Purchased (and maintaining) emergency supplies, including items for first aid, water and food.
- Conducted all-hazards facility survey.

Photograph 3: New dock and embedded fuel lines.

Source: Port of Edmonds.



Drought

- Work with the City of Edmonds and the local water utilities to comply with water conservation measures.

Earthquake

- Replaced fuel tanks and lines and brought up to current code. (Note: The new fuel tanks are double-walled to increase integrity.)
- Conducted initial non-structural mitigation activities in office facilities.

**Photograph 4: Double-walled fuel tanks.
Source: Port of Edmonds**



**Photograph 5: New fuel lines installed.
Source: Port of Edmonds**



Landslide and Soil Displacement

- Use bulkheads as appropriate and in accordance with SEPA.

Severe Storm

- Replaced dock roofs with more steeply sloped structures to slough ice and snow and prevent future collapses from accumulated ice or snow.
- Replaced wooden docks with cement dock.

Photograph 6: New docks and covers.

Source: Port of Edmonds



Tsunami and Seiche

- Participated in regional planning meetings with Washington State Department of Natural Resources as they developed a regional model for tsunami and seiche in Puget Sound.

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Mitigation Action Items

The Mitigation Plan identifies short- and long-term action items developed through data collection, research, and the public participation process. Mitigation Plan activities may be considered for funding through federal and state grant programs and when other funds are made available through the budgeting process or the passage of bonds.

Action items address multi-hazard (MH) or hazard-specific issues. Upon implementation, the coordinating organizations may look to partner organizations for resources and technical assistance.

To help ensure activity implementation, each action item includes several pieces of information in the description. These include:

- *Coordinating Organization*
The coordinating organization is that which is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation. The coordinating organizations may be local or regional agencies. Organizations written in *italics* are not participating in this Plan but have an established relationship with this jurisdiction.
- *Timeline*
Action items include both long- and short-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term* action items (ST) are activities that organizations may implement with existing resources and authorities within one to two years. *Long-term* action items (LT) may require new or additional resources or authorities, and may take between two and five years to implement.
- *Ideas for Implementation*
Each action item includes ideas for implementation. This may be individual steps for one project, or it may be several related projects that address the natural hazard.
- *Plan Goals Addressed*
The plan goals are identified to monitor and evaluate how well the Mitigation Plan is achieving its goals once implementation begins.
- *Benefit-to-Cost Review*
Due to limitations in staff time, and because project priorities may shift based on changes in funding options and local events, a generalized benefit-to-cost review is used. The steps associated with prioritizing the mitigation projects are as follows:

1. The jurisdiction rates the project cost as “high,” “medium,” or “low” in relation to budget and previous projects, and each rating is assigned a numerical value.
2. The project outcome is then rated as “low,” “medium,” or “high,” and each of these ratings is assigned a numerical value.
3. The two values are added together, and the total provides the cost-benefit and the priority.

Example:

If a project has a *medium approximate cost*, and is considered to be *highly effective*, the boxes would be marked as shown below.

| Approx Cost + | Effectiveness = | Benefit-to-Cost Review |
|--|--|---------------------------------------|
| <input type="checkbox"/> 1 – High | <input type="checkbox"/> 1 – Low | <input type="checkbox"/> 2 – Lowest |
| <input checked="" type="checkbox"/> 2 – Medium | <input type="checkbox"/> 2 – Medium | <input type="checkbox"/> 3 |
| <input type="checkbox"/> 3 – Low | <input checked="" type="checkbox"/> 3 – High | <input type="checkbox"/> 4 |
| | | <input checked="" type="checkbox"/> 5 |
| | | <input type="checkbox"/> 6 – Highest |

The priority ratings with the highest numbers are considered to be the highest priorities. As always, however, these are subject to financial realities and may not be carried out in the exact order indicated.

MULTI-HAZARD Mitigation Actions (MH)

PE-01-MH-LT: Upgrade safety and security features.

Ideas for implementation:

- Purchase and install new back-up generator.
- Install emergency lighting on docks.
- Install public announcement (sound) system.

Coordinating Organization: Port of Edmonds Administration
Estimated Price: To be determined
Funding Source: General Fund
Timeline: 5 years
Plan Goals Addressed: Protect Life & Property
Benefit-to-Cost Review: 4

| <u>Approx Cost +</u> | <u>Effectiveness =</u> | <u>Benefit-to-Cost Review</u> |
|--|--|---------------------------------------|
| <input type="checkbox"/> 1 – High | <input type="checkbox"/> 1 – Low | <input type="checkbox"/> 2 – Lowest |
| <input checked="" type="checkbox"/> 2 – Medium | <input checked="" type="checkbox"/> 2 – Medium | <input type="checkbox"/> 3 |
| <input type="checkbox"/> 3 – Low | <input type="checkbox"/> 3 – High | <input checked="" type="checkbox"/> 4 |
| | | <input type="checkbox"/> 5 |
| | | <input type="checkbox"/> 6 – Highest |

DROUGHT Mitigation Actions (D)

None identified at this time.

EARTHQUAKE Mitigation Actions (E)

PE-02-E-ST: Conduct non-structural retrofit activities.

Ideas for implementation:

- Strap down and secure computers and other office equipment and machinery.
- Secure shelves, lockers, and furniture to walls.
- Conduct walk-throughs to ensure that heavy items are not stored overhead. Secure in place or move to safer locations
- Mount computer servers on seismic isolation platforms, or use other appropriate technology to secure servers.
- Ensure facility water heaters are strapped securely to wall studs in accordance with current requirements.
- Secure ceiling tiles and light fixtures with wires.
- Secure back-up generator and HVAC equipment.
- Secure ducts and piping.
- Use plastic sleeves on fluorescent lighting tubes.
- Replace untempered glass with tempered glass, or install polyester shatter-resistant film over existing glass.
- Install child-proof latches on drawers and cabinets in appropriate locations.

Coordinating Organization: Port of Edmonds Administration
Estimated Price: \$2,000
Funding Source: General Fund/Grants
Timeline: 5 years, ongoing
Plan Goals Addressed: Protect Life & Property; Provide for
Emergency & Critical Services;
Facilitate Continuity & Recovery
Benefit-to Cost Review: 5

| Approx Cost + | Effectiveness = | Benefit-to-Cost Review |
|---|--|---------------------------------------|
| <input type="checkbox"/> 1 – High | <input type="checkbox"/> 1 – Low | <input type="checkbox"/> 2 – Lowest |
| <input type="checkbox"/> 2 – Medium | <input checked="" type="checkbox"/> 2 – Medium | <input type="checkbox"/> 3 |
| <input checked="" type="checkbox"/> 3 – Low | <input type="checkbox"/> 3 – High | <input type="checkbox"/> 4 |
| | | <input checked="" type="checkbox"/> 5 |
| | | <input type="checkbox"/> 6 – Highest |

FLOOD Mitigation Actions (F)

None identified at this time.

LANDSLIDE Mitigation Actions (L)

None identified at this time.

SEVERE STORM Mitigation Actions (S)

Addressed under Multi-Hazard (MH) Mitigation Projects

TSUNAMI AND SEICHE Mitigation Actions (T)

None identified at this time.

VOLCANO Mitigation Actions (V)

PE-03-V-LT: Develop and implement policy for maintaining stock of filters for key vehicles and pieces of equipment.

Ideas for implementation:

- Identify key vehicles and equipment such as: back-up generators, HVAC and/or other large or unusual equipment requiring filters.
- Establish policy and budget to maintain spare filters.

Coordinating Organization: Port of Edmonds Administration; Port of Edmonds Maintenance Department

Estimated Price: To be determined

Funding Source: General fund

Timeline: 5 years

Plan Goals Addressed: Protect Life & Property; Provide for Emergency Services; Facility Continuity and Recovery

Benefit-to-Cost Review: To be determined

Priority: 3

| Approx Cost + | Effectiveness = | Benefit-to-Cost Review |
|---|---|---------------------------------------|
| <input type="checkbox"/> 1 – High | <input checked="" type="checkbox"/> 1 – Low | <input type="checkbox"/> 2 – Lowest |
| <input type="checkbox"/> 2 – Medium | <input type="checkbox"/> 2 – Medium | <input type="checkbox"/> 3 |
| <input checked="" type="checkbox"/> 3 – Low | <input type="checkbox"/> 3 – High | <input checked="" type="checkbox"/> 4 |
| | | <input type="checkbox"/> 5 |
| | | <input type="checkbox"/> 6 – Highest |

WILDLAND-URBAN INTERFACE FIRE Mitigation Actions (W)
Not applicable.

¹ City of Edmonds Comprehensive Plan (2002).

² David Evans and Associates, Inc., et al. Master Plan for the Port of Edmonds (May 21, 2001).