

SUB-SECTION 4T.19

**PUYALLUP TRIBE ALL HAZARD MITIGATION PLAN
TRANSPORTATION ACCIDENTS HAZARD**

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Identification Description

Definition

Transportation accidents as used in this assessment include accidents involving a method of transportation on the road, rail, air, and maritime systems within the confines of Pierce County.

Types

Because the severity of the accident and the repercussions of it are critical, small accidents between a small number of motor vehicles, small watercraft or an accident involving a small private plane are not included in this definition unless there is some defining characteristic that makes them stand out. Instead, accidents must involve a number of vehicles, and/or include a large number of casualties, or create some other problem that must be resolved by the first responders in the County. Since hazardous materials are covered in the Hazardous Materials chapter, this chapter, while mentioning it as contributing factor, will not emphasize it.

- **Road Transportation:** Pierce County is traversed by 11 state highways, one interstate with a short interstate feeder into downtown Tacoma, and numerous roads and streets.

- **Rail Transportation:** Passenger, freight and tourist rail lines exist in various places in Pierce County. There is also a short light rail section in Tacoma.

- **Air Transportation:** Pierce County is home to 14 working and three closed airports. (See Table 4.19-1 Airports in Pierce County.) Air traffic consists of private fixed wing, sea planes, small commercial jets, helicopters, and a large contingent of military aircraft.

- **Maritime transportation:** The Port of Tacoma is a major terminus for commercial vessels. Ships also traverse the

Table 4.19-1 Airports in Pierce County

Airport	Location	Owner, Use
Gray Field	Joint Base Lewis/McChord	US Army - Military
McChord	Joint Base Lewis/McChord	US Air Force - Military
Thun Field	S. of Puyallup	Pierce County - Flight Training, Lt. Jet Traffic, Helicopter, Commercial, Charter
Tacoma Narrows	Gig Harbor	Pierce County - Flight Training, Charter, Lt. Jet Traffic, Helicopter, Commercial
Spanaway	Spanaway	Privately owned, open to public
American Lake Seaplane Base	Lakewood	Seaplane
Swanson Airport	Eatonville	Publicly-owned
Ranger Creek Airport	Greenwater	WSDOT – Publicly-owned
Kapowsin Field	Kapowsin	Private
Mt. Rainier, Kautz	Kautz Creek	Federal - Helicopter
Fitz Pad 2 Heliport	Graham	Private - Helicopters and single engine planes.
Shady Acres	Spanaway	Private
Cawleys South Prairie	South Prairie	Community
Wilkeson Burnett Landing Airport	Burnett	Private
Moss Field	Graham	Closed
Aspland	Graham/Eatonville	Closed
Clover Park	Lakewood	Closed
Ashford	Ashford	Closed

western portions of the County en route to and from Olympia. Ferry routes cross between Steilacoom and McNeil, Anderson, and Ketron Islands. Vashon Island has a Washington State Ferry route that runs between Point Defiance and Tahlequah on its southern end. A small private ferry runs between the Longbranch Peninsula and Herron Islands. Commercial tour boats spend time in Pierce County waters as do hundreds of private boats of all types and sizes.

Profile

Location and Extent

The various forms of transportation, covering the majority of the County have considerable potential for incidents that could threaten the Planning Area and Pierce County's infrastructure, its citizens and their livelihood.

- **Road Transportation:** Privately owned vehicles and local bus services provide the primary means of transportation for individuals in Pierce County. Freeways, highways, and roads serve the area. Principle roadways include Interstate 5, and State Highways 16, 161, 410, 167, and 512. All major highways carry high volumes of traffic, including large numbers of commercial vehicles carrying goods, and in some cases hazardous materials. Transit and school buses also use these roads. A major road transportation emergency could be caused by an accident involving any one of these carriers. Generally most traffic accidents, even when a death occurs, do not create a major incident. The type of situation where an incident could be considered major might involve a bus of school children; or, a logging truck losing brakes and plowing into the businesses in Wilkeson; or, a propane truck exploding in rush hour traffic. In addition, it may not just affect those on the road, but if carrying hazardous materials, it could require closure of businesses and either sheltering in place or evacuation, as necessary.
- **Rail Transportation:** Amtrak follows the tracks along Puget Sound north of the Nisqually River to Point Defiance, then through Tacoma and Puyallup and up the Auburn Valley. Sounder Commuter Rail Service provides weekday service during peak hours between Tacoma and Seattle. The rail lines run through the County and through or near the edge of DuPont, Steilacoom, Lakewood, University Place, Tacoma, Fife, Puyallup, and Sumner. Passenger transportation exists in Pierce County in the form of Amtrak and the Sounder. Burlington Northern/Santa Fe and the Union Pacific have lines which run north and south through the portions of the County. The railroad owned by the City of Tacoma transports goods and materials around the Port of Tacoma. It also operates the 132 miles of line out to Fredrickson and south out of the County to Morton and Chehalis. The Mt. Rainier Scenic Railway, a small privately owned tourist rail line, runs from Elbe up the Nisqually River valley and then to Mineral Lake in Lewis County.
- **Air Transportation:** The 14 active airports or airstrips in Pierce County range tremendously in size and use. At one end of the scale there are McChord and Gray Fields,

both major US military facilities. At the other end of the scale there are small fields like Spanaway and Ranger Creek or the heliport at Kautz Creek in Mt. Rainier National Park. Aircraft come and go from some of these small runways daily, while others have more casual use. Many of the smaller airports in the County were built in rural areas with low population. Over the years, as the County’s population base expanded, many of these have now become part of the suburban landscape, surrounded by neighborhoods and businesses.

Two small commercial airports exist here in the County, Thun Field and the Tacoma Narrows Airport both owned by Pierce County. Pierce County has the added risk of being directly in the flight path for many planes either landing or taking off from Sea-Tac International Airport in King County.

The attacks on the Pentagon and the World Trade Center have brought home the damage which could happen should a plane fly into any one of a number of facilities in Pierce County. The damage to the IRS building in Austin Texas, from the crash of a single-engine, fixed-wing Piper PA-28-236 on February 18, 2010, shows that even a small plane can cause considerable damage.¹ Potential targets could include buildings, dams, military installations or the Narrows Bridge. For further information see the chapter on Terrorism.

- **Maritime Transportation:** Marine transportation accidents can be classified into two types: those that directly involve large numbers of people in a potential mass casualty accident such as a ferry sinking, or those that threaten the larger community or the environment such as a shipboard fire with hazardous chemicals.

Table 4.19-2 Ferry Service in Pierce County

	# of cars	# of passengers
McNeil Barge and Tug	16	75
McNeil Foot Ferry	0	336
Pt. Defiance Ferry	65	546
Anderson Island Ferry	54	250
Herron Island Ferry	12	49

The possibility of an accident involving one of the ferries could be a major mass casualty incident (MCI) depending on the time of day, weather, and how the accident occurred. If a fully loaded ferry were to capsize, or sink due to some other cause, the death toll could be very high. In addition to passenger

ferries, there are a number of tour boat operators who work the waters around Pierce County. Depending on the boat they may have from ten to a couple of hundred people on board.

Commercial shipping traffic in Pierce County follows well defined shipping lanes. By far the majority of all types of commercial traffic flows through the Port of Tacoma. A major fire, hazardous chemical spill, or explosion, either on board, or at the Port, could affect not only the City of Tacoma, but depending on wind direction and size of the incident, also Browns Point, Federal Way, Fife or even Puyallup. A much smaller volume of material, usually on small ships or barges, passes through the Tacoma Narrows.

Because of the quantity of materials carried by some of these vessels, a spill, explosion, or onboard fire could affect a significant coastal population.

Related to maritime incidents although connected to the land, are marina fires. These can damage or destroy smaller vessels and if uncontrolled, spread to larger ones or shore facilities. There have been a number of these over the years. The latest example is the Harborview Marina Fire in Gig Harbor on August 31st, 2005, damaging 55 boats and sinking 48 of them.² There will be no further coverage of marina fires in this plan.

Occurrences³

- **Road Transportation:** Over the years there have been several major accidents in Pierce County. While many of these have happened along the I-5 corridor others have happened on other major roads, especially on State Route 16 at the Narrows Bridge. The various causes include heavy fog, freezing rain, side winds (especially on the Narrows Bridge), or ice forming on bridges. These types of accidents happen every year. Occasionally tank trucks, chemical trucks, busses or other vehicles, which could lead to a major incident, are involved. Some of these have closed down the highways for portions of a day and some have required evacuation of neighboring buildings. However, none has caused a large long term evacuation or closure of a highway.

Rail Transportation: Of rising concern is the transportation of Bakken Crude Oil which brings 123,000 barrels/day or 5,160,839 gallons/day into Pierce County.⁴ Although there have not been any major derailments of Bakken Crude Oil in Pierce County, there have been a considerable number in Canada and the US. Two major derailments of significance include the Lac-Mégantic, Quebec, Canada 63 car derailment on July 5, 2013 which resulted in the death of 47 people due to fire and other affects of the accident.⁵ The other derailment was on April 30, 2014 in Lynchburg, Virginia where 17 of 105 tank cars fell into the James River, spilling almost 30,000 gallons.

Figure 4.19-1 Train Wreck on Mounts/Old Nisqually Road



- Two major rail accidents in Pierce County were located along the shore of Puget Sound near DuPont. The first, in 1984, was an Amtrak derailment. In this instance people suffered only minor injuries. The second involved the derailment of a train into Puget Sound during the winter storm of February 1996. In this case, the train carrying chemicals partially left the tracks and plunged into the water. Although damaged the tank cars remained intact so there was very little spillage and not a large number of people were injured as a result.

A third accident on May 16th, 2007 involved a train that ran off the tracks.(See Figure TA-1 Train Wreck on Mounts/Old Nisqually Road) Minor amounts of diesel were spilled

and three people were trapped and had to be rescued. This incident closed the Mounts/Old Nisqually Road for five days.⁶

Even the small scenic tourist railroad running from Elbe up the Nisqually River towards Mt. Rainier can pose a threat. It has had occasional problems over the years including losing a wheel from the engine while pulling a load of passengers on December 15, 2001.⁷ While no injuries were sustained, it shows that a mass casualty incident could occur even there.

On February 26, 2011 a 103-car freight train derailed and side-swiped a 14-car train. The smaller train, carrying four cars of sodium hydroxide, had three cars land on the shoreline near the Chambers Bay Golf Course in University Place. In this incident an estimated 50 gallons of sodium hydroxide discharged into the beach.^{8,9}

- **Air Transportation:** Pierce County has been the scene of dozens of airplane crashes over the years. Most of these have been small craft with one or two people in them. However, three major crashes show the potential for a major airplane incident involving in Pierce County. Probably the best known crash is that of a Marine transport plane in which the 32 marines aboard lost their lives when it crashed into the side of Mt. Rainier December 10, 1942. This, however, is not the worse aviation disaster to befall the County. On Thanksgiving night 1952, a C-54 transport crashed in southern Pierce County killing 37 people of the 38 people on board. The lone survivor was a young boy who lost his parents, two brothers and a sister in the crash. The County came close again when a Northwest Orient Airlines flight crashed into Puget Sound on the Pierce/King County border off Dash Point in April of 1956. Of the 37 people on board, all but three survived. On June 4th, 2014, 2 people were killed in a 2 passenger World War II era SNJ-4 model plane between Buckley and Edgewood.¹⁰

Test pilots from Boeing have crashed in the County. Military planes have flown into each other. Pilots have crashed during 4th of July celebrations. Ultralights have crashed and there is even an incident of a plane attempting to take off without its pilot. Mount Rainier, sticking up above the rest of the County, has accounted for a number of accidents.

In addition to these problems, pieces of planes have occasionally fallen off during flights. A jet tire fell on Brown's Point; a jet canopy popped off and hit a home in 1954; a piece of a C-141 Starlifter fell into a yard in 1979; and in 1984, the tail cone of a Boeing 747 fell into a field north of Puyallup.

- **Maritime Transportation:** The last two major vessel fires in the Port of Tacoma were in 1986 and 1989. There have been a number of small craft that have exploded and burned or sank, as well as fires at marinas. In addition, there are the occasional freighters, like the Ocean Steelhead in 1983 or the Ace Accord in 1986, which have listed and come near to sinking in the Port of Tacoma. Barge shipments containing thousands of gallons of petroleum products are regularly transported up Puget Sound from Tacoma.

Historically the ferry systems in Pierce County have been largely accident free. Most problems have occurred with the docking facilities rather than the ferries themselves.

Recurrence Rate

Small transportation incidents happen in Pierce County on a daily basis. Most of these are on the roads and highways. The large scale incidents that threaten the lives and livelihood of a large number of citizens are much rarer. Reviewing the information above would point to a ten year or less recurrence rate for all types combined.

Vulnerability

Planning Area

The Planning Team determined the Planning Area has a medium vulnerability to transportation incidents because it encompasses roadways, railways, air and marine transportation. All of these potential hazards can have a huge impact on their fisheries with containments entering the waterways. The analysis for vulnerability was broken down into transportation accidents in three sections; along the shoreline, railroad and roads. The details are outlined in the Risk Assessment Section in Table 4-4, page 4-18. This allowed for a better understanding of the vulnerability between the potential transportation accidents.

Impacts

The impacts of a major transportation accident, although varying depending on the type of accident and the vehicles involved, will have a number of similar factors. Differences between them are discussed as necessary.

Health and Safety of Persons in the Affected Area at the Time of the Incident

The potential for injury and death, to the persons involved, are the major impacts from all types of transportation accidents. Traumatic injury and possible burns are the primary results. For the survivors of a major incident, with a large number of dead and injured, post-traumatic stress disorder (PTSD) can become a lingering problem. With ferry or other marine transport accidents, the potential for drowning and/or hypothermia are additional threats.

Health and Safety of Personnel Responding to the Incident

The threats to the health and safety of personnel responding to the scene of transportation accidents depend on the environmental factors associated with each incident. Threats include: inhalation or contact with hazardous chemicals, fire, explosion, and in water rescues, drowning and hypothermia.

Continuity of Operations and Delivery of Services

Impact to the continuity of operations and the delivery of services to the public will depend on the type of transportation accident and its location.

- **Road Transportation:** An incident on the highways while damaging, should not impact the delivery of services or the continuity of operations for any jurisdiction for more than a short period of time. Rerouting for all major routes is a standard operating procedure that happens frequently.
- **Rail Transportation:** Continuity of operations should not be compromised by a rail accident in most jurisdictions in the County unless there is something to compound the problem. That would most likely be a chemical spill, especially a toxic cloud that could reach government facilities. Delivery of services on the other hand could be jeopardized by a train accident that damages, or blocks access to critical infrastructure.
- **Air Transportation:** The impact to continuity of operations and the delivery of governmental services from an air transportation incident are directly connected to what is hit by the aircraft. Any object struck by an aircraft of any type will suffer damage. If government buildings are struck the continuity of operations for that jurisdiction could be at risk. If a critical portion of the infrastructure is struck, it could impact the delivery of services that it normally carries out.
- **Maritime Transportation:** A ferry accident, on any one of the Pierce County runs, putting a ferry out of commission, and/or destroying a ferry dock will heavily impact the delivery of services to the areas served. The ability to get a route back in service will depend on the time it takes to replace or repair the ferry or dock.

Two of many possible scenarios for other maritime mishaps in the waterways of Pierce County include:

- A ship sinking in Commencement Bay, especially at the entrance to the Blair Waterway, that could restrict commercial traffic and impact the operations of the Port of Tacoma, or
- A ship hitting one of the supports for the Narrows Bridge would force a rerouting of traffic over the other span until such time as damage is repaired. This could slow, but not halt, traffic on highway 16.

Other types of marine accidents, unless combined with an explosion or hazardous chemical spill, will probably not impact service delivery or the continuity of operations

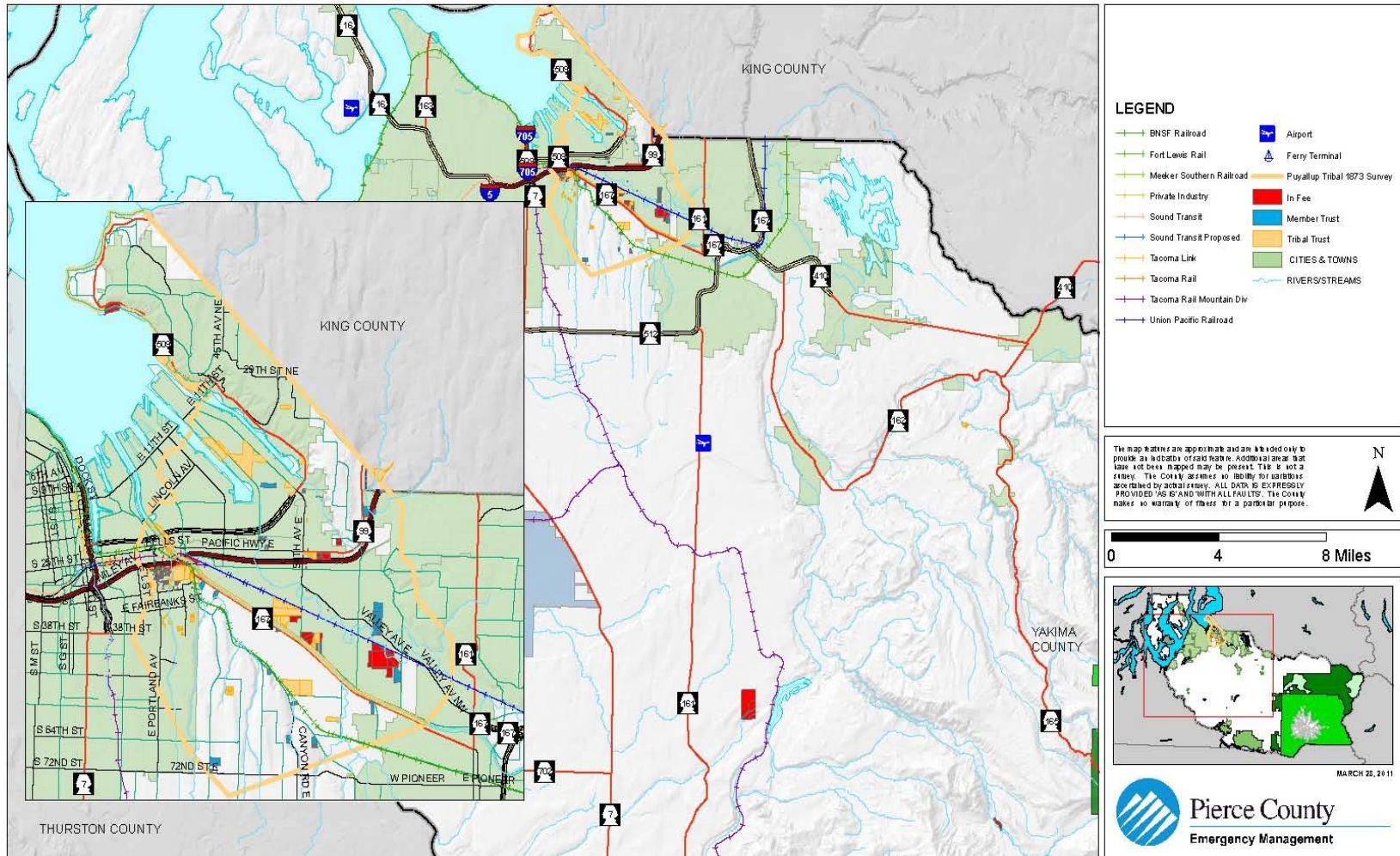
Property, Facilities, and Infrastructure

- **Road Transportation:** Most road or highway transportation incidents will result in very little damage to facilities, infrastructure, or property. This is due to the limited or localized nature of any highway accident.
- **Rail Transportation:** Rail transportation events, localized in nature like road events, can cause considerable more damage to property, facilities and infrastructure due to the size of trains and the quantity of materials carried. Any piece of property or facility in close proximity to the tracks has the potential of being damaged or destroyed. The most likely item

of infrastructure damaged will be the rail tracks themselves. This is compounded by any fire or chemical spill that is created by the accident.

Map 4.19-1 Puyallup Tribe Transportation Hazards

PUYALLUP TRIBE TRANSPORTATION ACCIDENTS HAZARDOUS AREA



- **Air Transportation:** The crash of any aircraft can damage or destroy any property, facility or piece of infrastructure that it hits.
- **Maritime Transportation:** Any property along the Puget Sound shoreline is at risk from a maritime incident. This can come from the actual grounding of a vessel or complications from a fire or the release of hazardous chemicals.

Environment

Generally, given the localized nature of the accident, the environment will not be greatly impacted unless the accident involves some other complicating factor. While the normal spill from accidents on the roads and highways of the County can cause minor environmental damage, it seldom covers more than a few dozen square meters and after some clean up the environmental damage will heal over time. Aircraft may contain a large quantity of fuel and in many accidents this will burn causing local fire damage. Those accidents that might include a large chemical spill and/or fire from a train, aircraft, or a truck accident may take months or years to be resolved.

A perfect worse-case example happened in northern California. It is the Cantara/Dunsmuir chemical spill of July 14, 1991. In this case, the spill of 19,000 gallons of metam sodium, a potent herbicide and pesticide that is usually used to sterilize soil, from a train tank car into the Upper Sacramento River, killed off all aquatic life in the river. In addition it killed the algae, aquatic plants and vegetation growing along the river bank.¹¹ See the chapter on Hazardous Materials for more detail on this spill.

Economic and Financial Condition

The economic impacts from any transportation incident are directly related to its impact on the ability for business and industry to move their goods into, through, or out of the County.

- **Road Transportation:** With few exceptions, damage to roads or bridges from a single incident, while changing the transportation route that cargo travels on the highways, will have little impact on the economic environment. A repeat of the collapse of the Interstate 5 bridge over the Skagit River is the obvious example of a road accident that did impact the local economic environment. However, this is an example of the impact being on the local businesses that had to deal with a change in traffic patterns creating excessive truck and other vehicle traffic clogging up of roadways on the alternate routes.
- **Rail Transportation:** A rail incident involving damage to tracks could force shippers to change the methods of commodity movement. Due to the large quantity of goods carried by a train, if they were destroyed it could impact the financial condition of individual companies. This would be especially true of those companies that operate on a “just-in-time” basis. In the larger economic scheme, while there might be some ripples, it is unlikely to create large changes in the economic climate of the County.
- **Air Transportation:** An individual air incident may have little or no impact or totally destroy a company’s ability to operate depends on where the impact is located, who and what cargo is on board and the impact of any hazardous chemicals such as aviation fuel. A small

plane that crashes in an open field may have little impact, except for the possible loss of the individuals on board. In contrast a large plane flying into one of the major banks in Tacoma, or some other critical financial or industrial site, in addition to the loss of life, could impact the economic climate in the County.

- **Maritime Transportation:** The sheer quantity of goods loaded on ships and barges in Commencement Bay and docked at the Port of Tacoma means that a maritime accident, leading to one being damaged, sunk or destroyed, could impact not only the local economic climate, but the financial wellbeing of companies that may ship material from either overseas or some other part of the United States. If one were to block either the Blair or Sitcum Waterways, it would shut down a large portion of the commercial traffic through the Port with major economic repercussions.

Public Confidence in the Jurisdiction's Governance

Confidence in the jurisdiction will depend directly on two major points. First, was the incident large enough to create problems for citizens, their businesses, and the local jurisdiction? Was it noticed? The second point asks how well did the response go and was the public's perception of that response accurate? Questions that arise will include:

- Could the accident have been prevented?
- Who is at fault?
- Was the response well handled?
- How soon will things be back to normal?
- What measures are going to be taken to prevent a repeat of the incident?
-

Depending on the answers to these questions, the involvement, of one or more jurisdictions, could be applauded or criticized.

Resource Directory

Regional

- **Pierce County Department of Emergency Management**
<http://www.co.pierce.wa.us/PC/Abtus/ourorg/dem/abtusdem.htm>
- **Pierce Transit**
<http://www.piercetransit.org>
- **Sound Transit**
www.soundtransit.org
- **Washington State Department of Transportation**
www.wsdot.wa.gov
- **Washington Utilities and Transportation Commission**
www.wutc.wa.gov

National

- **Federal Aviation Administration**
www.faa.gov
- **National Transportation Safety Board**
www.nts.gov

Endnotes

¹ Man Crashes Plane into Texas I.R.S. Office, The New York Times online, <http://www.nytimes.com/2010/02/19/us/19crash.html>

² Harborview Marina Fire at Gig Harbor, Washington Department of Ecology, report at <http://www.ecy.wa.gov/programs/spills/incidents/harborviewmarina/HarborViewMarinaFirebase.htm>

³ Most information in this section is taken from the September 2002 edition of the Pierce County HIVA.

⁴ Bakken Crude Oil distributed by the NW Area Committee. February 2015. Data for calculation of statistics can be found on page 3.

⁵ Ibid, page 7.

⁶ Information on this accident came from the incident logs, situation reports and other archived ICS documents from the incident.

⁷ Personal report by a DEM staff member who was on the scene that day, followed by a phone call to Mt. Rainier Scenic Railway.

⁸ Department of Ecology. (Dec. 1, 2011). *BNSF Train Derailment*. Retrieved February 23, 2015 from <http://www.ecy.wa.gov/programs/spills/accidents/ChambersBayDerailment/ChambersBayDerailment.html>

⁹ Attachment distributed by the NW Area Committee in an email from Lori Gifford with the Washington Military Department lorri.gifford@mil.wa.gov dated 2/24/2015. Currently (dated Feb. 2015) around 19 trains/week in Washington State transport Bakken Crude Oil, of which 15 enter Pierce County. Bakken Oil is unloaded at (48,000 barrels/day) at U.S. Oil and (75,000 barrels/day) at Targa Sound in Tacoma.

¹⁰ KOMO. (June 4, 2014). 2 dead in World War II-era plane crash near Bonney Lake. Retrieved February 25, 2015 from <http://www.komonews.com/news/local/1-dead-in-small-plane-crash-near-Enumclaw-261899591.html>

¹¹ Final Report on the Recovery of the Upper Sacramento River – Subsequent to the 1991 Cantara Spill, The Cantara Trustee Council, 2007, p. 3