

4.4.9 Transportation Accident

Including Vehicular, Railway, and Aircraft Accidents

4.4.9.1 Characteristics

A transportation accident, for the purposes of this plan, is any large-scale vehicular, railroad, or aircraft accident involving mass casualties. Mass casualties can be defined as an incident resulting in a large number of deaths and/or injuries that reaches a magnitude that overtaxes the ability of local resources to adequately respond. In most disasters, death and injury represent one of the effects of the hazard while in transportation accidents, the mass casualties often become the hazard.

Transportation incidents in North Dakota are the same as most states. Passenger and cargo trains, bus and other highway vehicles, and passenger and cargo airplanes pose the highest risk. Since North Dakota has vast areas containing sparse population, even an incident involving a small number of deaths and/or injuries could overwhelm local resources. A large event such as a commercial passenger plane crash could possibly overwhelm state resources.

Federal and state highways, county and city roadways, active railways, airports, and air traffic routes pass through North Dakota. Map 4.3.2N in the Critical Facilities and Infrastructure section shows the major road, rail, and airport networks in the state. Two interstates pass through North Dakota, Interstate 94 and Interstate 29. In all, the state has over 105,000 miles of road and 5,026 bridges, including 18 international highway ports of entry along the Canadian border. (North Dakota Department of Transportation, 2007a)

Railroads in North Dakota include Amtrak for passenger service and nearly 4,000 miles of railway operated by BNSF Railway, Canadian Pacific Railway, Dakota, Missouri Valley and Western Railroad (DMVW), Dakota Northern Railroad, Northern Plains Railroad, and Red River Valley and Western Railroad for the transportation of goods.

North Dakota has 90 public airports, including eight that provide scheduled commercial passenger service located in Bismarck, Devils Lake, Dickinson, Fargo, Grand Forks, Jamestown, Minot, and Williston. Aviation accidents can occur for a multitude of reasons from mechanical failure to poor weather conditions to intentional causes. The size of accidents also varies widely from single engine incidents to large commercial crashes. The location of the accident, such as a remote area versus a populated location, also plays an important role in the amount of destruction.

Probably the most significant and common hazard associated with transportation accidents is the release of hazardous materials. Many hazardous material releases occur as an element of a transportation accident. Any transportation accident involving the release of hazardous materials significantly increases the complexity and potential damages from such an accident. Transportation accidents can also occur independently due to poor operator judgment or equipment problems.

Many times, weather hazards lead to transportation accidents. Examples include winter weather when snow and ice make roadways slick. Blizzards, smoke, and dust storms can lead to reduced visibilities and increase the probability of an accident. Floods may damage the infrastructure of transportation networks.

Summer storms can cause confusion, reduce visibilities, damage infrastructure, and knock down trees and poles, blocking roadways. Terrorists have used transportation, particularly mass transportation, as a method of delivering their attacks throughout the world. Should above-ground electric or telephone infrastructure be damaged in a transportation accident, it could lead to a long-term utility or communication outage. Almost any hazard can cause or aggravate a mass casualty transportation incident.

4.4.9.2 History

Whereas most other hazards have a track record in the state, transportation accidents involving mass casualties have had no significant record of occurrence in North Dakota. Listed below are some of the transportation events of greater significance that have occurred in the state.

1906 – Charles Service of Park River became North Dakota’s first automobile fatality.

1945 – A train wreck on the outskirts of Michigan, North Dakota killed 34 people.

1968 – Eight teenagers were killed in a traffic accident near Jamestown.

1974 – The first attempted airplane hijack in the state occurred at the Grand Forks Airport. (State Historical Society of North Dakota, 2007)

The history of transportation accidents in North Dakota consists primarily of small magnitude incidents, some with fatalities, but most with very little effect on the entire community. Traffic accidents along the roadways occur regularly, usually inconveniencing travelers, requiring local emergency resources, and occasionally causing delays. Table 4.4.9.2A shows the traffic fatalities and crash data in North Dakota over the past ten years. Table 4.4.9.2B shows railroad accident statistics and Table 4.4.9.2C shows the aircraft incident statistics.

Table 4.4.9.2A North Dakota Traffic Accident Data

Year	Total Number of Crashes	Fatalities	Injuries
1996	15,962	85	5,970
1997	16,662	105	5,900
1998	14,423	92	4,917
1999	14,431	119	4,962
2000	14,527	86	4,619
2001	14,759	105	4,608
2002	16,114	97	4,886
2003	16,552	105	4,817
2004	16,922	100	4,611
2005	15,788	123	4,360

Source: North Dakota Department of Transportation, 2007c.

Table 4.4.9.2B North Dakota Railroad Accident Data

Year	Accidents/ Incidents	Fatalities	Injuries
1997	124	2	81
1998	114	8	68
1999	110	3	72
2000	122	9	82
2001	113	4	76
2002	118	3	1,523*
2003	94	6	62
2004	93	2	71
2005	92	8	55
2006	80	2	50

* includes injuries from the Minot hazardous material release
Source: Federal Railroad Administration, 2007.

Table 4.4.9.2C North Dakota Aircraft Incident Data

Year	Accidents/ Incidents	Fatalities
1997	16	1
1998	22	5
1999	11	3
2000	12	1
2001	13	2
2002	7	2
2003	10	0
2004	8	2
2005	12	1
2006	14	2

Source: National Transportation Safety Board, 2007.

Table 4.4.9.2D North Dakota Transportation Accident Declared Disasters and Emergencies

Declaration	Location	Date	Magnitude	Casualties	Damages
None					

4.4.9.3 Probability and Magnitude

Without detailed history of mass casualty transportation accidents, the probability of such an accident can only be expressed qualitatively. The probability is increased during winter storms, periods of poor visibility from snow, smoke, or dust, during holiday festivities with more instances of drinking and driving, and during times of increased traffic volume. Vehicle accidents with minor damage and injuries occur regularly. On average over the past ten years, North Dakota has about 15,614 accidents annually. Serious, fatal

accidents are less frequent but still occur. On average, North Dakota has 102 traffic fatalities and 4,965 injuries annually.

Railroad accidents in North Dakota have historically had very little impact on the communities. The only exception is the January 2002 railroad accident near Minot where those impacted were affected by the hazardous material release rather than the accident itself. Based on records from the past ten years, approximately 106 railroad incidents occur annually resulting in about 5 fatalities.

Aircraft accidents are documented carefully. Since 1997, 125 aircraft incidents have occurred averaging 12-13 incidents per year and resulting in about 2 fatalities annually in North Dakota. Although an incident involving a commercial passenger flight and mass casualties cannot be ruled out, the probability is considered lower.

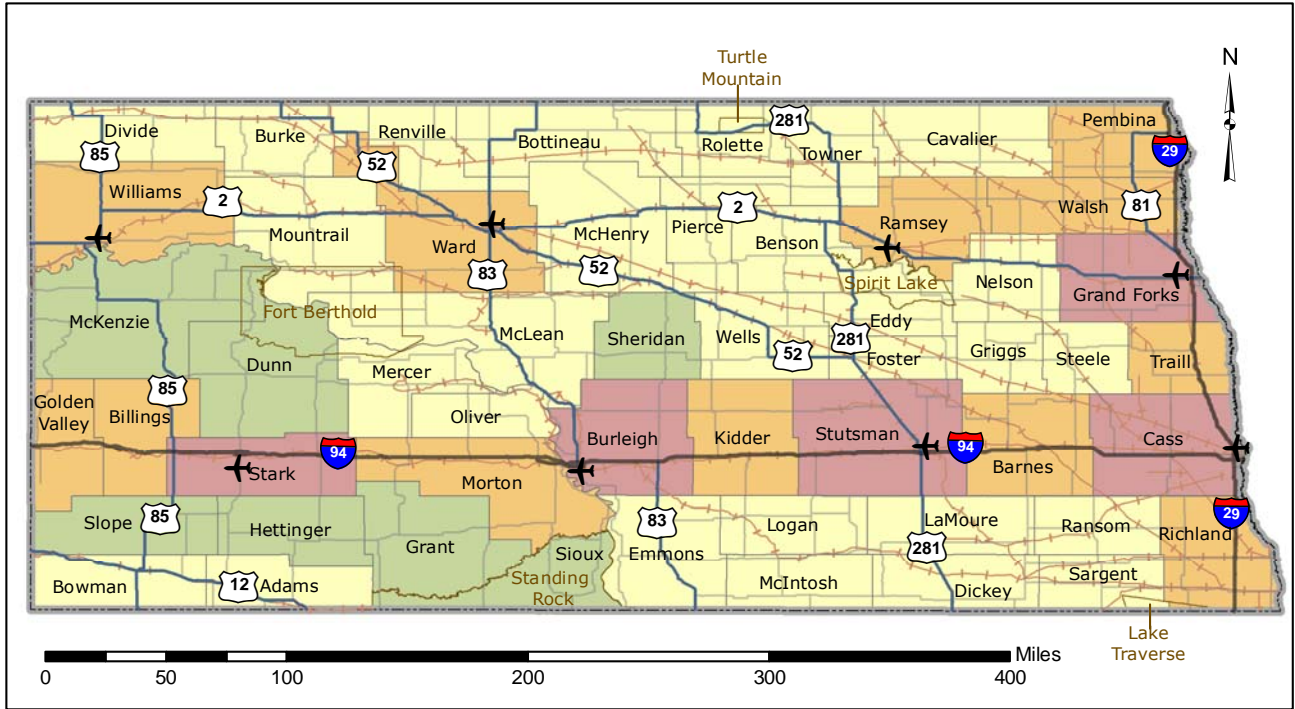
Mass casualty incidents that overwhelm the emergency response resources, such as a bus, large multi-vehicle, passenger rail, or plane crash, represent high magnitude events.

4.4.9.4 Mapping

Map 4.4.9.4A shows the major road, rail, and airport networks in the state. Theoretically, the more highly used transportation infrastructure that exists in a given area, the more likely a significant transportation accident will occur. Map 4.4.9.4A also shows the level of transportation infrastructure by county as defined in Section 4.3.2.

Map 4.4.9.4A

Transportation Accident Hazard Area State of North Dakota



Data Source: North Dakota State Water Commission
 Data Date: October 2002
 Map Coordinates: NAD 1983

Map Created By:
 Pam Shrauger, October 2007

Transportation Hazard	
 Low	Interstates
 Moderate	US Highways
 High	State Highways
 Very High	Railroads
	Major Airports



4.4.9.5 Vulnerabilities of State-Owned Buildings and Property

Except in the very rare case of an aircraft, train, or vehicle crashing into a structure, state-owned buildings and property should be unaffected by a transportation accident. Should structures be affected, damages could vary in the tens or hundreds of thousands of dollars depending on the structure or structures impacted. A large commercial jet crash could potentially destroy an entire segment of a populated area for a greater loss to buildings and property.

4.4.9.6 Vulnerabilities of Critical Facilities and Infrastructure

Like state-owned buildings and property, except in the very rare case of an aircraft, train, or vehicle crashing into a critical facility, the facilities should remain unaffected by a transportation accident. An accident involving a first response agency or blocking a primary transportation route could delay emergency services.

In most cases, infrastructure also remains unaffected during transportation accidents. The most likely impact would be the closure of a major roadway due to a vehicular accident, thus resulting in travel inconveniences and long detours. Theoretically, an aircraft or vehicle can take out power lines, telephone lines, or other important pieces of infrastructure resulting in service disruptions.

4.4.9.7 Vulnerabilities to Jurisdictions

Of all the resources and values, transportation accidents pose the most common risk to the population. Accidents involving aircraft, trains, vans, or busses could have mass casualties. The magnitudes of such population impacts vary from the size of the aircraft or vehicle to the number of vehicles involved. Anywhere from 2-200 people or more could be involved.

Road or railway closures due to a transportation accident could have a temporary effect on the local economy. The local agricultural economy has a strong dependence on the transportation infrastructure. Alternate means of transportation would be needed within a relatively short time frame.

Unless a building or site was damaged, historical values would remain intact. Slight ecological values could also be lost should vehicle fluids or hazardous materials seep into a water body or wildlife habitat. Social values may only be temporarily lost due to road closures and inconvenient detours; however, an accident involving a large number of residents and/or children may have lasting emotional effects.

Table 4.4.9.7A Transportation Accident Risk to Jurisdictions

County	Transportation Accident Hazard	Hazard Rating in Local/Tribal Plan*	Additional Information from Local/Tribal Plan
Adams	Moderate	C	
Barnes	High	C	\$5M in potential mass casualty losses
Benson	Moderate	NP	
Billings	High	C	
Bottineau	Moderate	D	
Bowman	Moderate	C	
Burke	Moderate	B	
Burleigh	Very High	B	
Cass	Very High	D	
Cavalier	Moderate	C	
Dickey	Moderate	D	
Divide	Moderate	NP	
Dunn	Low	D	
Eddy	Moderate	C	
Emmons	Moderate	D	
<i>Fort Berthold^</i>	<i>Moderate</i>	<i>NP</i>	
Foster	Moderate	D	
Golden Valley	High	D	
Grand Forks	Very High	D	
Grant	Low	D	
Griggs	Moderate	D	
Hettinger	Low	D	
Kidder	High	C	
<i>Lake Traverse^</i>	<i>Low</i>	<i>NP</i>	
LaMoure	Moderate	D	
Logan	Moderate	C	
McHenry	Moderate	C	
McIntosh	Moderate	C	
McKenzie	Low	NP	
McLean	Moderate	B	
Mercer	Moderate	C	
Morton	High	D	
Mountrail	Moderate	D	
Nelson	Moderate	D	
Oliver	Moderate	C	
Pembina	High	D	
Pierce	Moderate	D	
Ramsey	High	D	
Ransom	Moderate	C	

Table 4.4.9.7A Transportation Accident Risk to Jurisdictions (continued)

County	Transportation Accident Hazard	Hazard Rating in Local/Tribal Plan*	Additional Information from Local/Tribal Plan
Renville	Moderate	D	
Richland	High	C	
Rolette	Moderate	NP	
Sargent	Moderate	NP	
Sheridan	Low	NP	
Sioux	Low	NP	
Slope	Low	NP	
<i>Spirit Lake</i>	<i>Low</i>	<i>NP</i>	
<i>Standing Rock</i> [^]	<i>Low</i>	<i>NP</i>	
Stark	Very High	NP	
Steele	Moderate	NP	
Stutsman	Very High	C	
Towner	Moderate	D	
Traill	High	C	
<i>Turtle Mountain</i> [^]	<i>Low</i>	<i>NP</i>	
Walsh	High	C	
Ward	High	NP	
Wells	Moderate	C	
Williams	High	C	

NP = no local plan

* Many of the local plans have a mass casualty hazard listed rather than a transportation accident hazard. For analysis purposes, mass casualty is listed under the transportation accident category here.

[^] includes only North Dakota parts of the reservation

4.4.9.8 Vulnerabilities to Future Development

Future development, particularly the associated increase in traffic, may increase the probability of a major transportation accident. Otherwise, the specific locations of where and how development occurs, except for possibly in the immediate vicinity of the airports or the railroad, should not significantly affect the vulnerabilities from this hazard. Population increases are being seen or are expected in Barnes, Benson, Burleigh, Cass, Grand Forks, Morton, Mountrail, Ransom, Rolette, Sargent, Sioux, and Stark Counties.

4.4.9.9 Data Limitations and Other Key Documents

Transportation accidents have had relatively minor impacts on the state in the past, but the level at which such accidents become overwhelming or disastrous is not clear. Therefore, understanding the potential damages and impacts that may occur are difficult to quantify. The National Transportation Safety Board keeps very detailed records of damaging aircraft incidents. These records allow for in-depth analysis of individual accidents. The randomness of aircraft accidents, however, limits the usefulness of such information in determining the potential for future losses and areas of greatest hazard. Data outlining the normal flight patterns would help to quantify the potential for a major aircraft accident.

A publicly available database of vehicle accidents could help pinpoint the most dangerous traffic locations, however, even detailed data would not rule out a major accident at any given location.

The Federal Railroad Administration records are sufficient for calculating railroad problems over the past 30 years. Where the data is not useful is in determining the probability of a large-scale accident involving hazardous materials. An analysis of the current railroad weaknesses, numbers, and types of materials transported would enhance this profile. Such information would not necessary be placed in a public plan for security reasons.

Other key documents related to the Transportation Accident hazard include:

- North Dakota Emergency Operations Plan, Transportation Annex
- TransAction II, North Dakota's Statewide Strategic Transportation Plan
- North Dakota Highway Safety Plan