

Technical Advisory Bulletin

Risk Control and Claim Advocacy Practice

January 2018

Winter flood risk

Will you be high and dry this winter? Approximately 25% to 30% of flood insurance claims result from properties not situated in Special Flood Hazard Areas as determined by government flood maps. A flood refers to a gradual rise in the water along a stream, river or wash. Floods result from heavy rainfall, river ice jams and snowmelt. They can erode an entire mountainside, roll boulders the size of trucks, tear out trees, destroy buildings, wash out roads and bridges and cause loss of lives. Rain-weakened soils can also result in mudslides capable of closing major highways.

Winter storms can pose an unusual and serious flood threat to your property and to those of your employees. Review your flood insurance policy terms and conditions for retained risk. Take steps toward winter flood emergency response and loss prevention planning, including involving your employees who are at risk of flooding. In addition, winter storms subject northeast and mid-Atlantic employees to heavy snow, ice storms, strong winds and extreme cold.

The most crowded coastal corridor in the U.S. stretches between Washington, D.C., and Boston – and includes the densely urban cities of Baltimore, Philadelphia and New York. As our population on the Atlantic coast grows each year, it's important to understand the dangers of nor'easters, which include intense winds, high tides, beach erosion, flooding, freezing and heavy rain or snow.

In the Northeast and Atlantic regions, where 180 coastal counties support nearly 80% of the area's total population, it is now the active season for a weather phenomenon known as nor'easters which can cause serious coastal flooding. A nor'easter is a cyclonic storm stemming from a low-pressure system that moves along the east coast of North America.

A nor'easter gets its name from its continuously strong northeasterly winds blowing in from the ocean ahead of the storm and over the coastal areas. New research has revealed that nor'easters often involve smaller, intense areas of snow within the larger zone of heavy rain that can extend 10 to 50 miles wide and 150 to 400 miles long. The snow areas can appear nearly stationary, often pivoting around a specific point as the storm gathers strength.

During winter, the polar jet stream transports cold Arctic air southward across the plains of Canada and the U.S., and eastward toward the Atlantic Ocean, as warm air from the Gulf of Mexico and the Atlantic tries to move northward. The warm waters of the Gulf Stream help keep the coastal waters relatively mild during the winter, which in turn helps warm the cold winter air over the water. This difference in temperature between the warm air over the water and cold Arctic air over the land is the area where nor'easters are born. A nor'easter may develop on the Atlantic Coast frequently, and these could be long-duration events for some.

These storms usually develop between Georgia and New Jersey within 100 miles of the coastline and generally move north or northeastward. The low pressure system will then move up the East Coast into New England. Nor'easters typically become most intense near New England and the Canadian Maritime Provinces.

In such places as New York City and Boston, for instance, if the wintertime low-pressure system tracks up to the west of these cities, wintry precipitation will often change to rain. These winter weather events are notorious for producing heavy snow, rain and oversized waves that crash onto Atlantic beaches, often causing beach erosion and structural damage. Wind gusts associated with these storms can exceed hurricane force in intensity.

In the Great Lakes, in addition to lake effect snow, winter storms can bring strong winds that push water levels up at one end of the lake, creating a storm surge. As the water levels return to normal, a pendulum effect takes place causing high water levels on alternating sides of the lake until a balance returns. Long cold spells can cause the surface of rivers to freeze, leading to ice jams. When a rise in the water level or a thaw breaks the ice into large chunks, these chunks can become jammed at man-made and natural obstructions. Water held back by the ice jam or a floating debris dam can cause flooding upstream.



Warm weather can also cause snow on the middle and higher mountains to melt, putting more water into already rain-swollen streams. A mid-winter thaw can produce large amounts of runoff in a short period of time. Because the ground is hard and frozen, water cannot be reabsorbed. The water then runs off the surface and flows into lakes, streams and rivers, causing excess water to spill over their banks. Subsequent flash flooding can occur downstream if the obstruction should suddenly release. During the spring, frozen land prevents melting snow or rainfall from seeping into the ground. Each cubic foot of compacted snow contains gallons of water and, once the snow melts, it can lead to the overflow of streams, rivers and lakes. Add spring storms to that and the result is often serious, spring flooding.

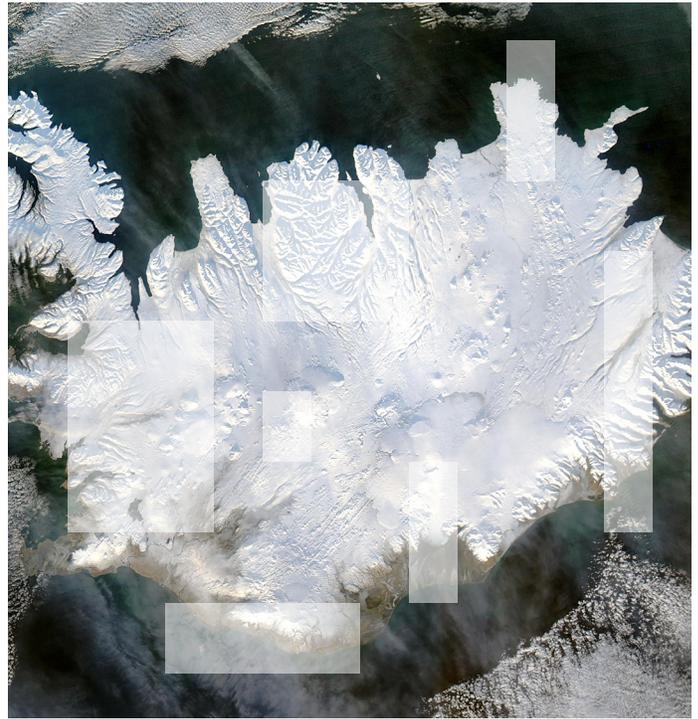
Flooding causes more deaths and property damage in the U.S. than any other severe-weather-related event. The majority of flood-related deaths occur when people become trapped in automobiles while attempting to drive through flooded areas. Flowing water can be deceptively benign, but is strong and can pack a powerful punch. As little as six inches of water is enough to float a small car and carry it away. Winds generated from very strong storms can drive ocean water inland, much like a storm surge, and can cause significant flooding along the immediate coastal areas and estuaries.

Rain can cause flooding due to saturated or snow- and ice-covered land. Basements can be flooded due to vent openings, groundwater over permeable concrete, and loss of power in sump arrangements. Flooding related to snow melting can overburden sewer systems, causing raw sewage to back up into the drains of homes. Backed up sewers can wreak havoc, causing thousands of dollars in damage to floors, walls, furniture and electrical systems. Water damage and freezing account for almost 22% of all homeowners' insurance claims and average \$4,024 per claim, according to the Insurance Information Institute.

Some steps to consider for your organization and for your employees at home:

- Avoid building in a floodplain or area determined to be in or near a Special Flood Hazard Area.
- Monitor National Weather Service communications before, during and after events. Know the difference between a flood watch and a flood warning.
 - A watch means flooding is possible.
 - A warning means flooding is occurring or will occur soon.

- Keep portable communication devices charged.
- Evaluate extent of school closings during a winter storm's approach and arrival. Responsible child care and transportation is a major constraint for employees.
- Request only business-critical employees come into the workplace if this can be done safely.
- Encourage non-critical employees to work from home as long as this can be done safely.
- Monitor river and coastal water levels using state, local and federal resources, such as USGS Water Watch and Lower Mississippi River Forecast Center.
- Be aware of ice jams or debris dams on rivers and streams.
- Report downed power lines, which could remain live beneath flood waters.
- Keep abreast of developments with stressed or breached dams, levees and floodways.
- Remind employees to maintain emergency lights and radios at home and in vehicles.
- Fuel vehicles ahead of time and ask that employees do the same. Provide gas cards if necessary.
- Anchor fuel tanks against their buoyancy.
- Keep furnace vents clear.
- Tell employees to not cook inside when carbon monoxide could result.
- If you must walk in water, wherever possible, walk where the water is not moving. Use a stick to check the firmness of the ground in front of you. Two inches of moving water can knock a man off his feet.
- Do not drive into standing or flowing waters. **TURN AROUND, DON'T DROWN.**
- Steer clear of downed power lines and solar panels.
- Clear all sewer openings of accumulations of snow, ice and debris.
- Consider secondary electric power and battery power for sump pumps.
- Construct barriers to stop flood water from entering your buildings and homes. Seal walls in basements with waterproofing compounds to avoid seepage.
- Pitch ground away from foundations and basements.
- Clear accumulations and pump out retention basins.
- Shovel or plow snow away from buildings, emergency exit discharges, private hydrants, fire lanes and sprinkler control valves



- Remind others to help their fire department keep public fire hydrants clear for access during fires.
- Clear any ice accumulations from drains and foundations.
- Use temporary heaters sparingly and attend at all times.
- Trickle water through plumbing pipes exposed to exterior walls during extreme cold temperatures.
- Move vehicles and portable equipment to higher ground or floor levels.
- Raise or protect main switch electrical equipment and motor control centers.
- Keep storage that cannot be salvaged up off floors.
- Maintain facilities' communications and share community-wide information:
 - Avoid floodwaters; water may be contaminated by oil, gasoline or raw sewage.
 - Be aware of areas where floodwaters have receded. Roads may have weakened and could collapse under the weight of a car.
 - Listen for news reports to learn whether the community's water supply is safe to drink.
- Investigate new flood mitigation technology.

In addition, encourage employees to review FEMA P-1037, *Reducing Flood Risk to Residential Buildings That Cannot Be Elevated* (2015) and FEMA P-312, *Homeowner's Guide to Retrofitting 3rd Edition* (2014), both available at www.fema.gov.

Sources and useful links:

<https://www.weather.gov/safety/winter-noreaster>

<http://www.disaster-survival-resources.com/severe-winter-storms.html>

Claims Journal, News October 10, 2014 (<https://www.claimsjournal.com/>)

https://www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/what_causes_flooding.jsp?cid=Fact_Sheet_FloodRisksWinterFloodingForConsumers_012013_winterrisk

http://www.noaa.gov/features/03_protecting/noreasters.html

<https://www.nationalgeographic.com/environment/natural-disasters/flood-safety-tips/>

Contact

Tod Ossmann

Senior Risk Control Consultant
Risk Control and Claim Advocacy Practice
Willis Towers Watson
tod.ossmann@willistowerswatson.com
+1 631 386 2106

The observations, comments and suggestions we have made in this publication are advisory and are not intended nor should they be taken as legal advice. Please contact your own legal adviser for an analysis of your specific facts and circumstances.

About Willis Towers Watson

Willis Towers Watson (NASDAQ: WLTW) is a leading global advisory, broking and solutions company that helps clients around the world turn risk into a path for growth. With roots dating to 1828, Willis Towers Watson has 40,000 employees serving more than 140 countries. We design and deliver solutions that manage risk, optimize benefits, cultivate talent, and expand the power of capital to protect and strengthen institutions and individuals. Our unique perspective allows us to see the critical intersections between talent, assets and ideas — the dynamic formula that drives business performance. Together, we unlock potential. Learn more at willistowerswatson.com.

   willistowerswatson.com/social-media

Copyright © 2018 Willis Towers Watson. All rights reserved.
WTW-NA-2018-WTW30832

willistowerswatson.com

Willis Towers Watson 