

GOVERNMENT LIABILITY FOR FLOOD HAZARDS



By
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Association of State Wetland Managers

September 2016

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Prepared by

**Association of State Wetland Managers and the
Association of State Floodplain Managers**



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COVER PHOTO

During the week of August 25, 2011 more than 10½ inches of rain from the remnants of Hurricane Irene fell on the Fox Creek watershed in Berne, NY. Fox Creek became a torrent or high velocity water, up to twenty feet deep and more than 300 feet wide in some places. A small feeder creek, ordinarily three feet wide and a few inches deep also jumped its banks and flowed a dozen feet deep and about 100 feet wide. Photo credit Berne Fire District, Berne, NY.

DISCLAIMER

The following book is **not a legal opinion and does not provide legal advice for a specific jurisdiction**. Public liability for increasing natural hazards and regulating hazard areas is a complicated area of law with variations from state to state. For legal advice including the status of statutory and case law in your jurisdiction consult your lawyer. The book describes the general status of law throughout the nation and not that of a particular jurisdiction. It reflects Jon Kusler's opinions concerning the content of cases and trends in the law. It should be used with care.

We hope you will find the materials helpful. Researching and writing the book has been both interesting and challenging.

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PREFACE

Goal Audience: This book is the culmination of my flood/liability related research and that of colleagues over the last three decades. My goal has been and continues to be to help government units reduce liability for flood related natural hazards while simultaneously protecting floodplain, riparian, and wetland functions and values. How can governments stay out of flood trouble? How can they reduce liability if they must conduct activities in the floodplain? How can they reduce impacts to natural systems?

This book has been written for the staff of local governments, states, and federal agencies and private sector organizations concerned about potential government liability for flooding private property or for adopting floodplain regulations which “take” private property without payment of just compensation. Such staff include lawyers, floodplain and wetland regulators, planners, legislators, emergency managers, and watershed managers at all levels of government. The book is designed to help these individuals answer the following questions:

- Is my governmental unit or agency potentially liable for increasing flooding and flood damages on upstream, adjacent, and downstream lands by activities in the floodplain or for the issuance of permits which increase flood hazards? If so, under what circumstances? How serious is the threat? What are possible defenses?
- Is my governmental unit or agency constitutionally liable to landowners for uncompensated “taking” of private property for tightly regulating private development in flood and erosion hazard areas? If so, in what circumstances? How serious is this threat? What defenses does the government unit have?

How might governments reduce potential Constitutional “takings” or “tort”¹ liability in either of these contexts?

This book has been written because no single book, report, or article provides an overview of government liability for increasing flood hazards or for adopting and administering floodplain regulations. This is also an active area of case law with a number of recent Supreme Court cases addressing the taking issue and many lower court cases addressing tort liability and increased flood hazards on private lands.

This is a large and complicated subject and to keep it to manageable size I have needed to confine the manuscript to flood and erosion issues with an emphasis upon state and municipal liability. I refer the reader to a broader and excellent literature pertaining to related wetland, riparian, coastal zone, endangered species, and biodiversity issues in Appendix G.

It is also an expanding and changing subject. For example climate change raises a number of significant issues beyond the scope of this book. See, for example [Legal Issues in Upgrading Flood Maps to Reflect Climate Change, Other Changed Conditions](http://www.aswm.org/pdf/lib/legal%20issues%20in%20upgrading%20flood%20maps%20kusler%200416.pdf) ([http://www.aswm.org/pdf lib/legal issues in upgrading flood maps kusler 0416.pdf](http://www.aswm.org/pdf/lib/legal%20issues%20in%20upgrading%20flood%20maps%20kusler%200416.pdf))

I wish to thank the many legal colleagues who have helped me conduct background studies upon which this book is based.

¹A “tort” is a civil wrong or wrongful act which causes someone to suffer loss or harm resulting in legal liability.

FOREWARD

Governments in the U.S. face a dilemma with regard to flood and erosion hazards.

On the one hand, they face huge and increasing flood losses from hurricanes, winter storms, and the runoff from rivers and streams. Governments may be sued for increasing these flood and erosion losses. Flooding affects the entire nation to a lesser or greater degree even arid or semi-arid cities like Phoenix, Tucson, Albuquerque, and Las Vegas. Single flood events like the Great Flood of 1993 on the Mississippi, Hurricane Katrina and Super Storm Sandy in the Northeast can result in tens of billions of dollars in flood damages.

Increased flooding and erosion losses are due to a combination of naturally occurring flooding and flooding caused or exacerbated by the activities of humans. Virtually all measures taken to reduce flood losses such as dikes, dams, levees, sea walls and groins may, in fact, worsen damages and losses when severe flood events occur which exceed project designs. Flood hazards and damages may also be increased by a broad range of hydrologic modifications such as road and bridge building, construction of stormwater systems, drainage, channelization, and residential, commercial, and industrial development. See below.

On the other hand, governments may also be sued for “taking” private property without payment of compensation if they tightly regulate floodplain development with the goal of reducing flood losses. Damned if they do; damaged if they don’t.

This book will help you evaluate the risk of both types of suits based upon increases in flooding or tightly regulating floodplain activities. It will help you and your attorney design your land and water use programs to reduce the potential for successful liability suits. It will help you and your attorney defend your government unit if you are sued.

This is not a legal cook book. Rather, it provides annotated cases and textual discussion which you and your attorney will find useful in avoiding or addressing legal problems.

The author has attempted to steer a middle course between a legal treatise for lawyers and a book understandable and useable by nonlawyers. This book endeavors to explain, in a relatively simple manner, a complicated legal subject. It also contains many case citations and annotations for lawyers.

ABOUT THE AUTHOR

Dr. Jon A. Kusler, Esq. is a lawyer, writer educator and administrator with over 40 years of experience working with legal/science/policy issues in water resources management and the management of water related lands. Dr. Kusler has published many articles, books and reports specializing in mitigation of natural hazards, wetland management, and water resources planning and he has worked extensively as consultant to nonprofit organizations, and to state and federal agencies. Some of his seminal works include: *Our National Wetland Heritage: A Protection Guide*; *Regulating Sensitive Lands*; and *Wetland Creation and Restoration: The Status of the Science, Volumes I & II* (co-editor with Mary Kentula). Dr. Kusler also authored some key publications for the U.S. Water Resources Council, including *Regulation of Flood Hazard Areas to Reduce Flood Losses*; (<http://catalog.hathitrust.org/Record/010086770>) that not only laid the foundation nationwide for the management of flood plains, but also was the basis for laws later adopted by some states and model ordinances for communities.

In 1983, Jon helped found the [Association of State Wetland Managers](http://www.aswm.org/) (ASWM; <http://www.aswm.org/>) and served as its Executive Director from 1983 to 2001. During his tenure as Executive Director at ASWM, he organized more than sixty successful workshops, training sessions, and symposia dealing with the protection and restoration of wetlands, floodplains, streams and related ecosystems. For many decades, Jon has also worked very closely with the [Association of State Floodplain Managers](http://www.floods.org/) (ASFPM; <http://www.floods.org/>) and helped shape the concepts of “[No Adverse Impact Floodplain Management](http://www.floods.org/index.asp?menuID=349&firstlevelmenuID=187&siteID=1)” (<http://www.floods.org/index.asp?menuID=349&firstlevelmenuID=187&siteID=1>), ASFPM’s national initiative to help communities understand the legal implications of allowing development that adversely impacts other properties and communities. This initiative has been used by numerous communities and states to reduce flood losses and suffering. Those principles have also led to the protection and preservation of natural ecosystems. Jon has actively pursued strategies that focus on overall watershed health, including the natural and beneficial functions of floodplains and wetlands. Dr. Kusler was recipient of the Gilbert White award in floodplain management in 1979, the Environmental Law Institute’s National Wetland Lifetime Achievement Award in 1990 and the Society of Wetland Scientist’s Lifetime Achievement Award in 2009.

ACKNOWLEDGEMENTS

This book draws upon materials from a number of legal and policy studies concerning natural hazards carried out by the author and colleagues over the last two and one half decades. See description below. These studies were funded by the National Science Foundation, Association of State Floodplain Managers, Association of State Floodplain Managers Foundation, Federal Emergency Management Agency, U.S. Environmental Protection Agency, and the U.S. Water Resources Council. This funding support for previous studies and reports is gratefully acknowledged.

I wish to thank, particularly, the National Science Foundation (NSF) for funding the original research upon which the book is based and Bill Anderson at NSF for his support.

I also wish to thank the Association of State Floodplain Managers Foundation and the Association of State Floodplain Managers for funding a series of papers in the last several years which helped me synthesize and update materials from earlier studies. These papers are available on the Association of State Floodplain Managers website. See <http://www.floods.org/>. For other papers prepared by the author for the Association of State Floodplain Managers see Jon Kusler, Esq., [Professional Liability for Construction in Flood Hazard Areas](http://www.floods.org/PDF/ASFPM_Professional_Liability_Construction.pdf) (2007, [http://www.floods.org/PDF/ASFPM Professional Liability Construction.pdf](http://www.floods.org/PDF/ASFPM_Professional_Liability_Construction.pdf)). Jon Kusler, Esq. and Ed Thomas, Esq., [No Adverse Impact and the Courts: Protecting the Property Rights of All](http://www.floods.org/PDF/ASFPM_NAI_Legal_Paper_1107.pdf) Updated (2007, [http://www.floods.org/PDF/ASFPM NAI Legal Paper 1107.pdf](http://www.floods.org/PDF/ASFPM_NAI_Legal_Paper_1107.pdf)); Jon Kusler, Esq., [A Comparative Look at Public Liability for Flood Hazard Mitigation](http://www.floods.org/PDF/Mitigation/ASFPM_Comparative_look_at_pub_liability_for_flood_haz_mitigation_09.pdf) (2009, [http://www.floods.org/PDF/Mitigation/ASFPM Comparative look at pub liability for flood haz mitigation 09.pdf](http://www.floods.org/PDF/Mitigation/ASFPM_Comparative_look_at_pub_liability_for_flood_haz_mitigation_09.pdf)); Jon Kusler., Esq. and Sam Riley Medlock, Esq. [Flood Risk in the Courts: Reducing Government Liability While Encouraging Government Responsibility](http://www.floods.org/ace-files/documentlibrary/Legal_Papers/Flood_Risk_in_the_Courts_102411.pdf) (2011, [http://www.floods.org/ace-files/documentlibrary/Legal Papers/Flood Risk in the Courts 102411.pdf](http://www.floods.org/ace-files/documentlibrary/Legal_Papers/Flood_Risk_in_the_Courts_102411.pdf)).

Particular thanks is due to Ed Thomas, Esq. who co-authored a number of the background papers and has been a never-ending source of enthusiasm and helpful ideas. For other related papers also located or referenced on the ASFPM website see Ed Thomas, Esq. & Sam Riley Medlock, JD, CFM, [Mitigating Misery: Land Use and Protection of Property Rights Before the Next Big Flood](http://www.floods.org/PDF/Mitigation/ASFPM_Thomas&Medlock_FINAL.pdf), ([http://www.floods.org/PDF/Mitigation/ASFPM Thomas&Medlock FINAL.pdf](http://www.floods.org/PDF/Mitigation/ASFPM_Thomas&Medlock_FINAL.pdf)) (9 Vt. J. Env'tl. L. 155 (2008); Ed Thomas, [Protecting the Property Rights of All: No Adverse Impact Floodplain and Stormwater Management](http://www.floods.org/PDF/NAI%20No%20Adverse%20Impact%20Floodplain%20and%20Stormwater%20Management.pdf) (2008, [http://www.floods.org/PDF/NAI%20 No%20Adverse%20Impact%20Floodplain%20and%20Stormwater%20Management.pdf](http://www.floods.org/PDF/NAI%20No%20Adverse%20Impact%20Floodplain%20and%20Stormwater%20Management.pdf)). See also web sites, above, for a broader list of publications.

This book would not have been possible without the help of law students at the University of Wisconsin and Albany Law School who patiently researched hundreds of flood-related liability issues. This research is reflected in the materials which follow. I am grateful for your help.

Editorial assistance by Sharon Weaver and Marla Stelk of the Association of wetland managers is also much appreciated. So is overall project guidance by my friend and colleague Jeanne Christie.

Additional, earlier studies include: Jon Kusler, Esq., *Regulating Sensitive Lands*, Ballinger Publishing Company (1986) prepared, in part, with funding support from the University of Wisconsin Sea Grant Program; Jon Kusler, Esq. (ed.), [Post Disaster Response and Mitigation of Future Losses](https://www.gpo.gov/fdsys/pkg/CZIC-hc62-i52-1985/html/CZIC-hc62-i52-1985.htm), (<https://www.gpo.gov/fdsys/pkg/CZIC-hc62-i52-1985/html/CZIC-hc62-i52-1985.htm>). Proceedings of an International Symposium Concerning Housing and Urban Development After Natural Disasters conducted by the American Bar Association, Special Committee on Housing and Urban Development with funding support from the National Science Foundation (1987); Jon Kusler, Esq. and Rutherford Platt, Esq., *The Law of Floodplains and Wetlands: Cases and Materials*, prepared for the American Bar Association, Special Committee on Housing and Urban Development, Washington, D.C. (1984) with funding from the Federal Emergency Management Agency. Jon Kusler, Esq., Vols. 1, 2, 3 [Regulation of Flood Hazard Areas to Reduce Flood Losses](http://catalog.hathitrust.org/Record/010086770), (<http://catalog.hathitrust.org/Record/010086770>) prepared for and funded by the U.S. Water Resources Council, and published by the U.S. Government Printing Office (1971, 1972, and 1974).

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CHAPTER 1. INTRODUCTION

Chapter 1 provides an overview of the legal theories or legal “causes of action” upon which governments may be sued for either increasing flood hazards² or tightly regulating development in floodplain areas.

1.1 Increasing Flood Losses

Despite government efforts to protect lives and reduce property losses, flood³ hazards continue to take a heavy toll in the U.S. and abroad. Hurricane Katrina in 2005 killed more than 900 and caused damages estimated to approach \$50 billion dollars. The “Great Flood” along the Mississippi and its tributaries in 1993 caused damages in excess of \$12.5 billion. Hurricane Sandy in the fall of 2012 caused an estimated \$120 billion in damages to more than 100,000 structures.

Successful liability suits based upon government-caused increases in flooding have become increasingly expensive to governments. For example, in 2003 the California Court of Appeals upheld a damage award against the State of California for flood damages. See *Paterno vs. State of California*, 113 Cal. App.4th 998 (Calif., 2003). The negotiated settlement in this suit totals \$464 million dollars. In this suit, approximately 3,000 plaintiffs sued the state of California when heavy rains in 1986 caused a levee to collapse on the Yuba River. The levee had been constructed with uncompacted mining debris. The state had not constructed the levee but had assumed responsibility for the levee in 1953. The court held that “when a public entity operates a flood control system built by someone else, it accepts liability as if it had planned and built the system itself.” *Id.* at 1003.

Much larger amounts of money are at stake in the law suits filed by private landowners and local governments in Louisiana and the neighboring states of Florida, Alabama, and Mississippi after Hurricane Katrina struck the Gulf on August 29, 2005. See *In re Katrina Canal Breaches Litigation*, No. 05-11191. May 1 2015. Suits have been filed on behalf of approximately 250,000 people seeking over \$278 billion in damages from the federal government alone. Landowners and governmental entities damaged by Hurricane Katrina have sued insurance companies, businesses, local parishes, levee districts, the state of Louisiana, and the Federal government based upon a broad range of legal theories—insurance contract, negligence, pollution control, wetland destruction, and taking without payment of just compensation. See O. Houck, “The Three Katrinas: Hard Cases Make New Law, National Wetland Newsletter, July-August, 2010. Brougher, C & K. Alexander, CRS Report to Congress, Federal Liability for Hurricane Katrina-Related Flood Damage, Congressional Research Service, Washington, D.C. (2008). See Thomas, E., Recovery Following Hurricane Katrina: Will Litigation and Uncertainty Today Make for an Improved Tomorrow? Vol 29, No. 5, National Wetlands Newsletter, Environmental Law Institute, Washington, D.C.

² It is to be noted that virtually all successful suits have been for increasing flood hazards.

³“Flood” is a temporary condition of partial or complete inundation of normally dry land from the overflow of inland or tidal waters or from high ground water levels.

In this case, the Federal Court of Claims held⁴ the United States liable for flood damages from Hurricane Katrina caused by the “gross negligence” of the Army Corps of Engineers in failing to adequately operate and maintain the Mississippi River Gulf Outlet—a canal built to permit swift boat passage between the Port of New Orleans and the Gulf of Mexico. The Court of Claims awarded the plaintiffs \$720,000 in damages with a likely much larger ultimate payout to other plaintiffs. This suit may also open the door to many other suits claiming that governments “take” private property by failing to adequately maintain flood control works such as dams, dikes and levees or to protect wetlands which reduce flood losses.

1.2 Flooding

Flooding affects extensive areas of the U.S. Approximately 7%⁵ of the U.S. lies within the 100-year floodplain but a much larger percent is subject to some threat of flooding.⁶ Flooding is due to tides, storm surges, pressure differentials (seiches), long term fluctuations in precipitation leading to high groundwater levels or high lake levels, riverine flash flooding, storm surge (hurricanes), and stormwater flooding. High water levels and high water velocities kill people, livestock, and wildlife and destroy or damage structures, crops, roads and other infrastructure.

As indicated above, flooding affects not only humid and temperate areas but arid and semi-arid states such as Nevada, Utah, Arizona, New Mexico and Texas. In arid and semi-arid states as little as one inch of rain will fill out of their banks streams and arroyos, causing flash flooding and, in some instances, loss of life and significant property damage.⁷ Flooding and the impacts of flooding are of course, varied. A brief summary includes:

Coastal and estuarine flooding; tsunamis. Coastal and estuarine flooding are due to a combination of tides, storm surges, and waves. Flooding may also be due, in part, to river and stream runoff. Tsunamis are caused by earthquakes and may cause massive coastal and estuarine flooding. Coastal flooding causes loss of life and immense damage to structures and infrastructure like the catastrophic damages from hurricanes Andrew, Katrina, and Sandy⁸ and the devastation caused by the December 26, 2004 Asian and March 11, 2011 Japanese tsunamis. The later tsunamis are estimated to have killed more than 230,000. Coastal flooding is usually of short term duration (hours and days).

Deep inundation and erosive waves are common with coastal and estuarine flooding. Climate change is a contributing factor to sea level rise and long term flooding.

⁴See *In Re Katrina Canal Breaches Litigation*, 696 F.3d 436 (5th Cir. 2012). See also Brougher, C., *Flood Damage Related to Army Corps of Engineers Projects: Selected Legal Issues*, Congressional Research Service (June 7, 2011).

⁵The U.S. Water Resources Council in 1977 estimated that 100 year floodplains comprise about 7% of the continental U.S. and its territories. See Federal Interagency Floodplain Management Task Force, Volume 2: Full Report. *Floodplain Management In the United States* (1992). See also a 1991 study by the Federal Emergency Management Agency (FEMA) of mapped floodplains which FEMA estimated to be about 93.8 million acres.

⁶For example, in early February 2013 the Federal Emergency Management Agency released revised floodplain maps prepared by the agency after Hurricane Sandy. These maps double the number of structures included in mapped flood hazard areas (35,000 to 70,000).

⁷See, for example, the Johnstown Flood of 1889 which killed more than 2,200. More recently, in 1976, the Big Thompson Flood in Colorado killed 143 and the Black Hills Flood in 1972 killed 238.

⁸Losses from Sandy are still being totaled but have been estimated to exceed 100 billion dollars.

Flooding along the Great Lakes and other major lakes. Flooding along the Great Lakes, Great Salt Lake, and many other closed or partially closed basin lakes is due to a combination of direct precipitation and runoff from rivers and streams including melting snows. Such flooding is often long duration (months and years). Structures typically become unusable and deteriorate if surrounded by water for long periods despite elevation or flood proofing.

Flooding along main stem inland rivers. Flooding along main stem rivers like the Mississippi (e.g., the Great Flood of 1993) is principally due to runoff from precipitation and melting snows. It is often of fairly long duration (weeks and months) and flood waters are often deep. Erosion may be substantial in high gradient areas.

Flooding along secondary rivers and streams. Flooding along secondary rivers and streams is also due primarily to runoff from precipitation and melting snows. Flooding is often of relatively short duration but may be deep and high velocity. High velocity flash flooding is common for rivers and streams in mountainous areas.

Flooding due to sheet flow and flooding along smaller water bodies such as ditches and storm water channels. Much of the flooding that occurs in the U.S. is from water overflowing creeks, ditches, and other smaller water bodies. Flooding is often short duration (hours, days) but may be deep and high velocity with localized serious erosion hazards. Flash flooding is common for areas with steep slopes. Areas outside of identified floodplains are commonly inundated. For example, basement flooding is common outside of mapped floodplains.

Special issue flooding. Flooding also occurs in a variety of special contexts such as mudslides, alluvial fans, ice jam flooding, and the overtopping or failure of dams, dikes and levees. Most of this flooding is of short duration but may be highly destructive. Flood and geologic hazards combine to form mudflows, landslides, and liquefaction areas.

1.3 Hydrologic Modifications

Governments often modify natural hydrologic regimes when they construct roads, bridges, dikes, levees, stormwater systems or otherwise fill or grade floodplain areas. Modifications may increase the quantity, depth, duration, and velocity of flood waters on adjacent, upstream, and downstream lands. Landowners damaged by such increases may then sue governments for this increased flooding. Common government activities altering flows and resulting in law suits include:

- Construction, and maintenance of roads,
- installation and maintenance of culverts and bridges,
- construction and maintenance of buildings,
- construction and operation of dikes, levees, sea walls, other flood and erosion control measures,
- channelization, ditching,
- rip-rapping of rivers and streams,
- construction and operation of stormwater management systems, and
- filling or grading of land which alters natural hydrology.

Such activities may:

- Block flood flows,
- increase flood runoff,
- move the point of flood discharge,
- increase erosion,
- cause subsidence,
- decrease lateral support and/or,
- otherwise increase natural hazards and damages on adjacent, downstream or upstream lands.

As will be discussed shortly, governments may be sued for increasing flooding and flood damages principally based upon common law tort theories but may also be sued based upon Constitutional claims of “taking without payment of just compensation”. In many instances government actions which result in liability are intended to reduce flood hazards (e.g., construction of dams, dikes, levees, groins, sea walls, stormwater management systems) and may partially do so, particularly for smaller, high frequency floods. But, flood control measures may increase flood losses for larger, less frequent flood events when dams break, levees are overtopped, or structural design frequencies are exceeded.

1.4 Liability of Various Levels of Government

The federal government, states, and local governments all undertake activities which result in flood damages and flood-related law suits. These activities include construction, operation, and maintenance of structural measures (dikes, dams, levees, sea walls) and the establishment and implementation of nonstructural measures (flood warning systems, flood maps, flood insurance, floodplain regulations, and public land management). All three levels of government may be sued for adopting flood loss reduction measures which increase flooding in certain circumstances. Governments may also be sued, in some instances for tightly regulating private floodplain property. Challenges to regulations as a “taking” occur primarily at state and local levels of government because floodplains are not directly regulated by the federal government.

The **Federal government** (U.S. Army Corps of Engineers, Bureau of Reclamation, USDA Natural Resources Conservation Service) has constructed major dams and levees throughout the Nation such as the dams and levees along the Mississippi and Missouri rivers. Federal agencies may be sued for uncompensated taking of private property if they flood, saturate (e.g., high ground water levels) or erode private land. Federal agencies may also be sued under the Federal Tort Claims act of 1946, for some types of negligence resulting in the flooding of private lands. Under this statute, the Federal government may be held liable for flood-related nondiscretionary" negligence. However, Congress has specifically exempted federal agencies for liability for negligence with regard to construction of flood control measures by 702c of the Flood Control Act of 1936 although the scope of this immunity is not complete.

The Bureau of Land Management, the Forest Service, the National Wildlife Service and the National Park Service and other federal agencies manage almost one third of the Nation's lands. This includes many flood hazard areas including flood prone portions of forests, national parks and camp grounds.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program. It establishes national policy for floodplain regulations, researches floodplain construction practices and administers the flood hazard mapping program. FEMA has mapped more than 100 million acres of flood hazard areas nationwide and designated some six million acres of floodways along 40,000 stream and river miles. (See Unit 2: the National Flood Insurance Program, https://www.fema.gov/pdf/floodplain/nfip_sg_unit_2.pdf.)

States also manage many state parks, wildlife areas, roads and other public lands which contain flood hazard areas. State activities on these lands such as road or bridge building may result in flooding of adjacent lands and law suits based upon tort or inverse condemnation grounds. See, e.g., *Dickgieser v. State*, 105 P.3d 26 (Wash., 2005) (Inverse condemnation can occur where damage to private property results from improper maintenance of property already devoted to the public use. Some states such as Connecticut and New Jersey have also adopted floodplain regulations which may be subject to taking suits. Many states work with local governments to establish floodplain regulations.

According to a study by the Association of State Floodplain Managers carried out in 1995 and updated in 2010, many states have adopted regulations or cooperative state/local regulations exceeding FEMA minimum standards. (See Floodplain Management 2010 State and Local Programs, http://www.floods.org/ace-files/Projects/FPM2010/FPM2010_Final_Report_Web.pdf.) Additional Regulatory Measures include (See Unit 6: Additional Regulatory Measures, http://www.fema.gov/pdf/floodplain/nfip_sg_unit_6.pdf):

- 25 states either directly regulate the handling and storage of stormwater in their jurisdictions or establish standards that communities must meet.
- 30 states have regulations or standards for the control of erosion and sediment.
- 23 states have either direct regulations or state standards to restrict or prohibit some or all development within a certain distance from bodies of water.
- 16 of those states have setbacks for coastal and/or lakeshore areas.
- 14 states have special rules for areas that lie below dams or are protected by levees.
- 30 states have adopted measures to regulate hazardous materials in flood-plains.
- 29 states have special public health standards that apply to floodplains.

Local governments are most vulnerable to flood-related suits because they are, in many contexts, the units of government most likely to undertake activities which result in increased natural hazard losses or "takings of private property" and they are the least protected by defenses such as sovereign immunity and statutory immunity provisions contained in state tort claim acts. It is at the local level that much of the active management of both public and private hazardous lands occurs (e.g., road building and maintenance; culverts, levees, and construction and operation of public buildings such as schools, libraries, town halls, sewer and water plants; parks).