The National Flood Insurance Program at Fifty: How the Fifth Amendment Takings Doctrine Skews Federal Flood Policy

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ABSTRACT

The National Flood Insurance Program ("NFIP") of 1968 marked its fiftieth anniversary in 2018. Despite the program's long history, few appreciate that the NFIP was never intended as a permanent federal subsidy for flood-prone properties along rivers and coastlines abandoned as commercially unviable by the private insurance industry. Instead, Congress provided flood insurance at below-cost rates as only an interim solution until state and local governments enacted permanent self-help land-use regulations that would restrict development in risky areas. By encouraging local governments to enact floodplain regulations, Congress intended to shift the costs of development in known flood areas back to those who chose to occupy them, thereby sending a strong signal of danger. But despite its lofty goals, the NFIP has failed miserably: It was more than twenty billion dollars in debt to the U.S. treasury as it turned fifty. At the same time, the nation continues to build in floodplains and to suffer death and devastating property loss from recurrent floods.

What can account for the NFIP's failings? Although there is extensive literature on the design flaws endemic to the NFIP itself, scant attention has been directed to a pair of external contributors to the program's ineffectiveness: the regulatory and physical takings doctrines. This Article unpacks the role played by those doctrines in undermining federal flood policy. The modern takings movement was gaining momentum at roughly the same time as the NFIP's passage, and several of the movement's often-cited foundational cases took aim at coastal and floodplain development regulations. The conventional justification for the takings doctrine is that it prevents the public from foisting the cost of regulation and government action onto individual property owners. But in the case of coastal and floodplain development, the opposite is often true: The actual or threatened filing of a takings lawsuit can have a costly and chilling

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impact on regulations, including those encouraged by the NFIP to promote floodplain and coastal safety. As a result, the doctrine has helped to shift the financial costs of risky development to the general public and to make floodplain occupants less safe.

Congress has been well aware of the NFIP's failings for years and has struggled to come up with a solution that is both politically feasible and financially sustainable. But surprisingly, the national dialogue has ignored the other half of the puzzle—the judicially-created takings doctrine. This Article argues that any durable solution must look at the entire problem and harness the power of both Congress and the courts to send the signal that floodplains are not safe and to create robust incentives for people to stay out of harm's way.

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INTRODUCTION

The National Flood Insurance Program ("NFIP") of 1968 marked its fiftieth anniversary in 2018.[1] Despite the program's long history, few appreciate that the NFIP was never intended as a permanent federal subsidy for flood-prone properties along rivers and coastlines abandoned as commercially unviable by the private insurance industry. Instead, Congress provided below-cost flood insurance as only an interim solution until state and local governments enacted self-help land-use regulations that would restrict development in risky areas.[2] Congress intended to shift the costs of development in known flood areas back to those who chose to occupy them, thereby sending a strong signal of danger and discouraging people from settling in hazard-prone areas. Further, Congress intended to relieve the federal government of costly expenditures on flood prevention structures, such as levees, dams, and reservoirs, and to reduce federal disaster relief payments when flooding inevitably occurred.[3] Overall, Congress designed the NFIP to make people safer and to reduce the federal government's financial liabilities for flood damage and flood control.

Despite its lofty goals, the NFIP has failed miserably: It was more than twenty billion dollars in debt to the federal treasury as it turned fifty.[4] At the same time, the nation continues to build in floodplains and to suffer death and devastating property loss from recurrent floods.[5] What can account for the NFIP's failings? Although there is extensive literature on the design flaws endemic to the NFIP

1. National Flood Insurance Act of 1968, Pub. L. No. 90–448, 82 Stat. 572, 572 (1968) (codified as amended at 42 U.S.C. § 4001 et seq.).
2. *See infra* Part I.A.
3. *See infra* text accompanying note 49.
4. *See National Flood Insurance Program*, U.S. GOV. ACCOUNTABILITY OFFICE, https://www.gao.gov/key_issues/disaster_assistance/national-flood-insurance-program (last visited July 27, 2018) (placing FEMA's debt at $20.5 billion as of February 2018). This figure represents the debt in February 2018, after the Treasury Department forgave an additional sixteen billion dollars incurred after Hurricanes Harvey, Irma, and Maria. *Id.*
5. *See infra* text accompanying notes 111–14.

itself, scant attention has been directed to a pair of external contributors to the program's ineffectiveness: the regulatory and physical takings doctrines.

The modern takings movement was gaining momentum at roughly the same time as the NFIP's passage, and several of the movement's often-cited foundational cases took aim at regulations directed at coastal and floodplain areas.[6] The conventional justification for the takings doctrine is that it prevents the public from foisting the cost of regulation and government action onto individual property owners. As the U.S. Supreme Court articulated in 1960 in *Armstrong v. United States*, "[t]he Fifth Amendment's guarantee that private property shall not be taken for a public use without just compensation was designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole."[7] In the case of coastal and floodplain development, however, the opposite is often true: Takings litigation can have a costly impact on land-use regulators, including those encouraged by the NFIP to promote floodplain and coastal safety. Even if unsuccessful, the prosecution of a lawsuit can impose substantial litigation costs, often beyond the reach of many small communities. Furthermore, the mere threat of a takings lawsuit can have a deterrent effect on would-be regulators. As a result, the doctrine has helped to shift the financial costs of risky development—costs that arguably should be borne by the developers and property owners who undertake such risks—to the general public. To be sure, there are many reasons why communities allow development in risky, flood-prone areas: to maintain a strong tax base, to support the local economy, or a laissez-faire opposition to government regulation. Nevertheless, the takings doctrine provides an important and under-explored rationale for the ineffectiveness of the floodplain regulation upon which the NFIP relies.

Part I examines the evolution of the NFIP, an early example of what has come to be known as "cooperative federalism." This Part explains that the NFIP represents the federal government's third attempt to manage floods and flood damage, after federally-engineered flood control structures and federal disaster relief alone proved expensive and inadequate. Through the NFIP, the federal government offered to provide temporary, below-cost flood insurance, but only if its state and local partners adopted permanent land-use regulations designed to constrict development away from known flood zones and to guide it to safer ground.

Part II considers the political economy of coastal and floodplain development, suggesting who stands to benefit from such development. Using the example of the devastating floods in Houston and surrounding Harris County when Hurricane Harvey struck in 2017, the discussion examines how floodplain development can produce both "winners" and "losers." This Part concludes that flood policy can be distorted by well-organized groups pursuing their own self-interest

6. *See infra* Part III.A.
7. Armstrong v. United States, 364 U.S. 40, 49 (1960).

through litigation and the political process. Such efforts can displace congressional incentives and logical, hydrology-based planning.

Part III explores the regulatory and physical takings doctrines. This Part takes a granular look at the threat of takings liability to government regulators and actors, suggesting that it has been both over- and under-estimated. Under the regulatory takings doctrine, the success rate of property owners has been remarkably low. This suggests local regulators' fear of takings liability may be overblown, needlessly deterring them from enacting otherwise desirable land-use regulation. Conversely, property owners have enjoyed a reasonably high rate of success under the physical takings doctrine, claiming government flood-control structures released floodwaters onto their property that resulted in temporary or permanent flooding. This higher rate of success may result, in part, from current doctrinal confusion as to whether the appropriate action by flooded landowners against government actors sound in tort or in takings.

Based on these observations, Part IV suggests a way forward. It recommends encouraging property owners and developers to internalize the costs of risky land-use decisions and to stay out of harm's way, rather than externalizing the costs onto federal taxpayers. This Part considers reforms to both the NFIP and the takings doctrine that can simultaneously protect human life and property, as well as the taxpayer's purse.

I. THE NATIONAL FLOOD INSURANCE PROGRAM: FLOOD FEDERALISM

> The Congress finds that . . . flood disasters have . . . placed an increasing burden on the Nation's resources . . . . It is therefore the purpose of this title to authorize a flood insurance program . . . [based on workable methods of] distributing burdens equitably among those who will be protected by flood insurance and the general public.[8]

More than fifty years ago, Congress established the National Flood Insurance Program ("NFIP") when it passed the National Flood Insurance Act of 1968.[9] Given the federal government's half-century-long practice of subsidizing many flood insurance policies at below-cost rates, it would be easy to assume Congress designed the NFIP as a permanent subsidy. Nothing could be further from the truth. As this Part reveals, that assumption turns the original legislative design on its head.

Congress was motivated by an urgent desire to blunt the deadly and costly impact of floods by moving development out of the path of floodwaters.[10] Although a program of insurance alone could speed up recovery after disaster strikes, it would do little to reduce flooding's high cost in suffering and dollars.

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8. National Flood Insurance Act of 1968 § 1302.
9. *Id.*
10. *See infra* Part I.B.

Recognizing this, Congress had broader and more durable goals in mind. Through the NFIP, Congress intended to fundamentally shift the costs of flood damage to those who chose to settle in areas of predictable flooding.[11] This downshifting would weaken the incentive to occupy risky areas. Further, the NFIP contained inducements for state and local governments to enact land-use regulations restricting new floodplain development. Over time, Congress intended that these measures would reduce exposure to flooding and relieve the federal government of much of the financial responsibility it had undertaken to keep the nation safe from floods and to compensate flood victims with disaster relief.[12] The program has now been in effect for more than fifty years. But, as this Part discusses, it has fallen woefully short of achieving the goals originally articulated by Congress in 1968.

A. THE DESIGN: DOWNSHIFTING COSTS TO RISK TAKERS

Throughout the twentieth century, Congress experimented with a variety of mechanisms to respond to the threat of flooding. Together, these efforts can be described as a century of trial-and-error. This section discusses the three primary flood responses undertaken by the federal government: engineered flood control structures, disaster relief, and flood insurance. After assuming significant expense for the cost of flood protection through the first two methods, the federal government eventually developed a system of federal flood insurance designed to shift a significant portion of the cost and risk back down to floodplain occupants and state and local governments.[13]

1. Phase One: Federal Levees and Other Structures

Originally, the nation perceived flood control as a matter of local concern only.[14] By the early nineteenth century, the federal government began to control, divert, and dam rivers in the name of promoting navigation,[15] but it was reluctant to insert itself into the flood control business. Flood-related deaths and property damage gradually increased interest in federal measures. After a 1913 flood in the Ohio River Valley killed 415 people and caused approximately $200 million in property damage, the call for federal intervention increased.[16] The federal government cautiously entered the flood control arena, relying solely on the

11. *Id.*
12. *Id.*
13. *See infra* note 54 and accompanying text.
14. *See generally* Christine A. Klein & Sandra B. Zellmer, *Mississippi River Stories: Lessons from a Century of Unnatural Disasters*, 60 SMU L. REV. 1471, 1478 (2007).
15. *Id.*; *see* Gibbons v. Ogden, 22 U.S. 1, 2 (1824) (interpreting the commerce clause of the U.S. Constitution as allowing the federal government to regulate navigation).
16. AM. INSTS. FOR RES., A CHRONOLOGY OF MAJOR EVENTS AFFECTING THE NATIONAL FLOOD INSURANCE PROGRAM 2 (2005), *available from* https://www.fema.gov/media-library/assets/documents/9612.

construction of levees to prevent rivers from overflowing, and eschewing other engineering measures such as reservoirs, which hold excess waters during times of flood.[17] It grounded its caution in the then-prevailing "levees only" engineering philosophy; it posited that levees would constrict the flow of rivers during periods of heavy precipitation and runoff, which would concentrate the rivers' force enough to scour and deepen their riverbeds, enabling rivers to accommodate excess floodwaters.[18]

In time, the "levees only" theory proved to be a catastrophic failure.[19] In particular, the Mississippi River Flood of 1927 demonstrated the theory's gross inadequacy. Although the federal government through the U.S. Army Corps of Engineers had lined the lower Mississippi River with more than 1,600 miles of levees up to eighteen feet wide,[20] the 1927 flood caused up to 500 deaths, left 700,000 people homeless, destroyed property worth more than $236 million, and inundated some thirteen million acres of land.[21] Soon thereafter, through the Flood Control Act of 1928, Congress rejected the "levees only" approach.[22] Instead, Congress called for the construction of an expanded array of flood control works in the Mississippi River Basin, including outlets, floodways, spillways, and diversion channels.[23] Eight years later, through the Flood Control Act of 1936,[24] Congress recognized floods as a "menace to national welfare" that cause "loss of life and property" and explicitly assumed responsibility for flood control nationwide.[25]

Although the 1928 and 1936 acts expanded the federal government's flood control responsibilities, they provided broad immunity for such endeavors,

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17. *Id.* (discussing the 1861 report of Humphreys and Abbott); *see also* ANDREW A. HUMPHREYS & HENRY L. ABBOTT, REPORT UPON THE PHYSICS AND HYDRAULICS OF THE MISSISSIPPI RIVER 30, 417–18 (1861), *available from* https://quod.lib.umich.edu/m/moa/AHE3908.0013.001?view=toc. Humphreys and Abbott concluded that through their study "the great problem of protection against inundation was solved" for the lower Mississippi River, and,

> It has been *demonstrated* that no advantage can be derived either from diverting tributaries or constructing reservoirs, and that the plans of cut-offs, and of new or enlarged outlets to the gulf, are too costly and too dangerous to be attempted. The plan of levees, on the contrary, which has always recommended itself by its simplicity and its direct repayment of investments, may be relied upon for protecting all of the alluvial bottom lands liable to inundation below Cape Girardeau.

HUMPHREYS & ABBOTT, *supra* note 17, at 30, 417–18 (emphasis in original).

18. *See* Klein & Zellmer, *supra* note 14, at 1479.

19. *Id.* at 1483 (quoting Congressman Robert Crosser's description of the levees only policy as a "monumental blunder").

20. CHRISTINE A. KLEIN & SANDRA B. ZELLMER, MISSISSIPPI RIVER TRAGEDIES: A CENTURY OF UNNATURAL DISASTER 61 (2014).

21. AM. INSTS. FOR RES., *supra* note 16, at 3.

22. Flood Control Act of 1928, Pub. L. No. 70-391, 45 Stat. 534, 535–36 (codified as amended at 33 U.S.C.A. §§ 701–09).

23. *Id.* at 535.

24. Flood Control Act of 1936, Pub. L. No. 74-738, 49 Stat. 1570, 1570 (codified as amended at 33 U.S.C.A. § 701a).

25. *See* Klein & Zellmer, *supra* note 14, at 1485 (citing 33 U.S.C.A. § 701a).

asserting that "[n]o liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place."[26] As the Eighth Circuit explained, Congress recognized the high cost of federal flood control works and "plainly manifested its will that those costs should not have the flood damages that will *inevitably recur* added to them."[27] Further, the court explained, in some cases, reliance on flood control works could "vastly increas[e]" flood damages.[28] The court concluded that flood damage immunity undoubtedly "has been a factor of the greatest importance in the extent to which Congress has been and is willing to make appropriations for flood control and to engage in costly undertakings to reduce flood damages."[29]

But even the authorization of a nationwide network of federal flood control structures fell short of insulating the country from the impact of devastating floods. As the Association of State Floodplain Managers later explained, "the mission-oriented flood control laws of the early 20th century were due, in part, to the prevailing view that we could build our way out of almost any problem, with engineers revered in American society then as only rock stars and sports heroes are today."[30] For about the first three decades after the passage of the Flood Control Act of 1936, the federal government spent more than twelve billion dollars on engineered flood control structures.[31] Despite that expenditure, annual flood losses continued to rise into the billions of dollars.[32]

Today, the nation's rivers and coasts are covered with about 40,000 to 50,000 miles of levees and more than 78,000 dams.[33] These flood control structures were not designed to protect against all flooding (which would likely be impossible), but only up to a specific level of flooding.[34] Although these structures provide a strong measure of protection, catastrophic damages continue to occur. As the Association of State Floodplain Managers explains:

> When structures fail or are overtopped with larger [precipitation] events, we experience catastrophic flood damages for two reasons: one, more development occurs behind the levee because people and communities incorrectly believe there is no longer a flood risk there; and two, new development has not been elevated or otherwise protected, so levee failure may result in very deep

26. Flood Control Act of 1928, 45 Stat. at 536.
27. Nat'l Mfg. Co. v. United States, 210 F.2d 263, 270 (8th Cir. 1954) (emphasis added).
28. *Id.*
29. *Id.* at 271.
30. JAMES M. WRIGHT, THE NATION'S RESPONSES TO FLOOD DISASTERS: A HISTORICAL ACCOUNT 12 (2000), *available at* https://www.floods.org/PDF/hist_fpm.pdf.
31. *Id.* at 31.
32. *Id.* (citing an estimated one billion dollars in annual flood losses in 1958 and two billion dollars in 1972, and explaining that, generally, "engineering had substantially reduced flood losses where they were built, but people continued to move into unprotected areas").
33. *National Flood Programs & Policies in Review*, ASSOC. OF STATE FLOODPLAIN MANAGERS (2015), *available at* http://www.floods.org/index.asp?menuid=%20828.
34. *Id.*

> flooding, causing total damage to the building and infrastructure instead of just minor flooding.[35]

As the Association concludes, a portion of the flood damages that continue to occur are compensated for by taxpayer-funded disaster relief, as explained in the next section.

2. Phase Two: Federal Disaster Relief

Through passage of the Disaster Relief Act of 1950,[36] Congress added a new weapon to the federal government's arsenal against flood damage: disaster relief to alleviate the suffering that "inevitably"[37] recurred despite the federal government's best efforts to engineer its way out of flood damage. This law created for the first time a permanent disaster relief system.[38] The congressionally declared intent to assist state and local governments in flood relief was restricted to a limited range of purposes: "to alleviate suffering and damage resulting from major disasters, to repair essential public facilities in major disasters, and to foster the development of such State and local organizations and plans to cope with major disasters as may be necessary."[39] Notably, the legislation did not claim to help people rebuild their property to full pre-disaster standards.

Congress intentionally limited disaster relief to protect the federal budget. Like the immunity provisions of the Flood Control Acts of 1928 and 1936, disaster relief legislation preserved the principle of federal non-liability. Congress firmly declined to assume federal responsibility to indemnify flood victims for property damage, but provided relief only for such Federal Emergency Management Agency ("FEMA") needs as shelter, clothing, and medical supplies.[40] Legislators vehemently rejected proposals during the 1950s to assume federal responsibility for property loss indemnification because doing so could result in an "almost unlimited number of claims from victims of every 'Act of God' disaster

35. *Id.*

36. An Act to Authorize Federal Assistance to States and Local Governments in Major Disasters, and for Other Purposes, Pub. L. No. 81-875, 64 Stat. 1109, 1109 (codified as amended at 42 U.S.C.A. §§ 5121–23).

37. *See supra* note 27 and accompanying text.

38. AM. INSTS. FOR RES., *supra* note 16, at 4.

39. An Act to Authorize Federal Assistance to States and Local Governments in Major Disasters, and for Other Purposes § 1. In the wake of a presidentially-declared "major disaster" including floods, droughts, fires, hurricanes, earthquakes, storms, or other catastrophes, Congress authorized the provision of federal assistance "to supplement the efforts and available resources of state and local governments in alleviating the disaster." *Id.* § 2(a).

40. Nat'l Mfg. Co. v. United States, 210 F.2d 263, 272–73 n.3 (1954) (explaining that the 1950 Act "authorizes federal agencies to provide food, clothing, temporary shelter, and other critical needs to victims of flood, hurricane, drought, earthquake, or other major disaster," but "excludes federal assumption of any responsibility of 'payment for damages' resulting from the disaster" and is obviously "'first-aid' in nature" (citing 96 Cong. Rec. 11896–98, 11905)); *see also id.* at 272 n.3 (citing 96 Cong. Rec. 11898, 11905; 97 Cong. Rec. 8177–78).

throughout the country;" would have "enormous" financial implications; could involve future sums of money that are "so staggering that the mortal mind cannot comprehend it;" and could pose an existential threat to the federal government's very ability to "last."[41] Today, FEMA warns that disaster relief is meant to help "with critical expenses that cannot be covered in other ways," but is "not intended to restore . . . damaged property to its condition before the disaster."[42]

Federal disaster relief introduced the idea of hazard mitigation as a method of reducing future flood losses and minimizing federal disaster payments—an idea that would assume prominence later in the NFIP.[43] The Disaster Relief Act, as amended in 1974, required states and local communities receiving disaster assistance to engage in self-help hazard mitigation as a precondition for receiving federal assistance.[44] Likewise, 1988 amendments known as the Stafford Act continued to focus on hazard mitigation[45] and authorized federal acquisition or "buyouts" of properties damaged or destroyed by floods as an alternative to rebuilding in flood-prone areas.[46]

Like federal flood control structures, federal disaster assistance proved to be an imperfect response to floods and flood damage. This lesson was reinforced in 1965 after Hurricane Betsy, a Category Three hurricane, made landfall in Florida and Louisiana, killing seventy-five people and submerging tens of thousands of homes, some up to their rooftops.[47] Hurricane Betsy was the nation's first "billion-dollar hurricane" in terms of flood damage (about $7.9 billion today, adjusted for inflation)[48] and the relief costs it imposed on the federal government

41. *Id.* (citing 82 Cong., 1st Sess., on Rehabilitation of Flood Stricken Areas, p. 87; H. Rept. 1092 on H.J. Res. 341, 82nd Cong., 1st Sess., p. 5; 97 Cong. Rec. 12637).

42. *What is Disaster Assistance?*, FED. EMERGENCY MGMT. AGENCY, https://www.fema.gov/what-disaster-assistance (last visited June 17, 2018).

43. *See infra* text accompanying note 51.

44. The Disaster Relief Act Amendments of 1974, Pub. L. No. 93-288, 88 Stat. 143, 143 (codified as amended at 42 U.S.C. § 5122). Among its purposes, the Act stated the congressional intent of "encouraging hazard mitigation measures to reduce losses from disasters, including development of land use and construction regulations." *Id.* Section 406 required states and communities receiving federal disaster assistance to "agree that the natural hazards in the area in which the proceeds of the grants or loans are to be used shall be evaluated and appropriate action shall be taken to mitigate such hazards, including safe land-use and construction practices." *Id.* § 406; *see also* AM. INSTS. FOR RES., *supra* note 16, at 20 (describing the 1974 amendments as "the first congressional mandate for hazard mitigation as a precondition for federal disaster assistance").

45. The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, Pub. L. No. 100-707, § 404, 102 Stat. 4689 (codified as amended at 42 U.S.C. ch. 68, § 5121 et seq.) (authorizing the President to contribute up to 50% of hazard mitigation costs determined to be "cost–effective and which substantially reduce the risk of future damage, hardship, loss, or suffering").

46. *Id.* § 5154a (1994) (failure to obtain and maintain flood insurance may preclude disaster assistance).

47. KLEIN & ZELLMER, *supra* note 20, at 109.

48. *See 1965: Hurricane Betsy Smashes Ashore Near New Orleans*, THE TIMES-PICAYUNE (Dec. 8, 2011, 11:59 PM), https://www.nola.com/175years/index.ssf/2011/12/1965_hurricane_betsy_smashes_a.html. According to one "inflation calculator," one billion dollars in 1965 has equivalent purchasing

were a major impetus for Congress to try yet a third approach to minimize flood loss: federal insurance.[49]

3. Phase Three: The National Flood Insurance Program

Just three years after Hurricane Betsy struck, Congress passed the National Flood Insurance Act of 1968.[50] Through this legislation, Congress intended to defray the expense of after-the-fact disaster relief by encouraging floodplain occupants to pay insurance premiums into an insurance pool before disaster struck. The House of Representatives' report on the pending legislation explained that disaster relief from the federal government and voluntary relief agencies had proved inadequate, thereby "underlin[ing] the need for a program which will make insurance against flood damage available, encourage persons to become aware of the risk of occupying the flood plains, and reduce the mounting Federal expenditures for disaster relief assistance."[51]

The NFIP can be viewed as an early example of what has been called "cooperative federalism." According to one definition, cooperative federalism "typically appears as congressional or administrative efforts to induce (but not coerce or commandeer) states to participate in a coordinated federal program."[52] Originating with the New Deal, cooperative federalism became what one commentator calls "an enduring, organizing concept in environmental law" during the "explosion of [environmental] legislation in the 1970s. . ."[53]

Consistent with the cooperative federalism design, Congress carved out roles for both federal and state/local governments with the goal of shifting the cost of floodplain occupancy away from federal taxpayers and down to those who choose to settle in flood-prone areas.[54] For its part, the federal government would make flood insurance available to the public—and, in many cases, at below-cost

power to $7.99 billion in 2018. *Inflation Calculator*, OFFICIAL DATA, https://www.officialdata.org/1965-dollars-in-2018?amount=1 (last visited June 18, 2018).

49. *50th Anniversary of the National Flood Insurance Program*, FEMA (Aug. 9, 2018, 11:37), https://www.fema.gov/nfip50 (asserting that the National Flood Insurance Act of 1968 "was motivated by the devastating loss of life and property by Hurricane Betsy in 1965 and created the National Flood Insurance Program"). Subsequently, a 1973 report by the Nixon Administration found that as a result of the availability of federal disaster assistance, "individuals, businesses, and communities had little incentives to take initiatives to reduce personal and local hazards." AM. INSTS. FOR RES., *supra* note 16, at 19 (quoting House Document 93–100, 93rd Congress, First Session).

50. National Flood Insurance Act of 1968, 82 Stat. at 572.

51. H.R. Rep. No. 90-1585, at 2966–67 (1968).

52. Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L. J. 179, 184 (2005).

53. *Id.* at 187.

54. National Flood Insurance Act of 1968 § 1302(d)(2) (expressing legislative purpose of "distributing [flood insurance] burdens equitably among those who will be protected by flood insurance and the general public"); *see also* Wright, *supra* note 30, at 34 ("The act was to return the cost for location decisions back to the landowner and to account for the total cost in any decision regarding occupancy or use of flood hazard areas, thereby shifting the burden from the taxpayer.").

subsidized rates.[55] However, Congress required a quid pro quo from states and local governments: Federal insurance would be available only to those communities that agreed to enact permanent zoning or land-use regulations to limit development in areas the federal government mapped as "special flood hazard areas" at the level of the 1%-chance flood.[56] These measures would encourage floodplain occupants to internalize the costs of risky development rather than to externalize them onto the federal government and taxpayers, "reducing the moral hazard associated with full government support."[57]

As a critical policy choice, the NFIP focuses on "special flood hazard areas," which are defined as places that have a one percent chance each year of flooding ("1%-chance floodplains"). Although colloquially referred to as the "hundred-year floodplain," these areas have a one percent chance of flooding *each* year, making it possible to have "hundred year" floods in successive years.[58]

B. THE MECHANISM: ENCOURAGING REGULATION OF RISKY LAND-USES

The National Flood Insurance Act occupied Title XIII of the sprawling Housing and Urban Development Act of 1968.[59] The latter addressed such diverse topics as lower income housing, community development financing, urban renewal, comprehensive urban planning, urban mass transportation, and federal urban riot insurance.[60] From among all the provisions of that act, only the NFIP grew into a significant national program.[61] One former NFIP official characterized the program as "an accident that occurred from political tradeoffs and that survives by every flood disaster."[62]

The idea of a national flood insurance program began to surface long before the 1968 legislation. After the Mississippi River Flood of 1927, private insurers started to pull out of the flood insurance market, concluding that it was not

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55. *See infra* Part I.B.1; *see also* NAT'L RES. COUNCIL, AFFORDABILITY OF NATIONAL FLOOD INSURANCE PROGRAM PREMIUMS: REPORT 1, 26–28 (2015), *available at* https://www.nap.edu/read/21709/chapter/4 (discussing subsidized rates for existing structures and actuarial risk-based rates for new structures).

56. *See infra* Part I.B.2; *see also* National Flood Insurance Act of 1968 § 1305(c)(2) (stating flood insurance shall be available only in those areas that have "given satisfactory assurance that . . . permanent land use and control measures will have been adopted . . . which are consistent with the comprehensive criteria for land management and use developed under section 1361 . . . ."), 1307, 1308; NAT'L RES. COUNCIL, *supra* note 55, at 26–29.

57. INTERAGENCY FLOODPLAIN MGMT. REVIEW COMM., SHARING THE CHALLENGE: FLOODPLAIN MANAGEMENT INTO THE 21ST CENTURY v (1994) (discussing measures that internalize risks, including land use planning, elevating structures, and relocating buildings out of the floodplain).

58. Robert Holmes & Karen Dinicola, *100-Year Flood—It's All About Chance*, U.S. GEOLOGICAL SURVEY (Apr. 2010), https://pubs.usgs.gov/gip/106/pdf/100-year-flood-handout-042610.pdf. During the life of a typical thirty-year mortgage for a property in a 1%-chance floodplain, a home would have a 26% chance of flooding at least once during the life of the mortgage. *Id.*

59. Housing and Urban Development Act of 1968, Pub. L. No. 90–448, 82 Stat. 476, 572 (1968).

60. *Id.* at 526–27.

61. *See* Wright, *supra* note 30, at 33.

62. *Id.* (citing personal interview with Frank Thomas on October 13, 1999).

commercially viable.[63] By mid-century, some academics and others began to consider federal flood insurance to fill the void.[64] In 1942, Gilbert F. White, who later became known as the "father of flood plain management,"[65] summed up then current federal policy in *Human Adjustment to Floods*, his doctoral dissertation for the University of Chicago. He complained that federal flood policy at the time was "in essence . . . one of protecting the occupants of flood plains against floods, of aiding them when they suffer flood losses, and of encouraging more intensive use of flood plains."[66] He acknowledged that the federal government had reduced flood hazard for present floodplain occupants by "providing plans and all or at least half of the cost of protective works," yet, he worried such efforts would "[stimulate] new occupants to venture into some flood plains that otherwise might have remained unsettled or sparsely settled."[67] White estimated that floodplain occupancy cost the federal government about ninety-five million dollars annually at that time.[68]

In his dissertation, White recommended a system of federal flood insurance.[69] Two decades later, he would chair a federal task force commissioned to examine more closely the nation's flood control policies.[70] The task force's 1966 report encouraged the development of a unified federal program and provided a clear caution, recognizing flood insurance as "a tool that should be used expertly or not at all" because "[i]ncorrectly applied, it could exacerbate the whole problem of

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63. NAT'L RES. COUNCIL, *supra* note 55, at 23 (asserting "[f]lood insurance was offered by private insurers between 1895 and 1927, but losses incurred from the 1927 Mississippi River floods and additional flood losses in 1928 led insurers to stop offering flood policies"); AM. INSTS. FOR RES., *supra* note 16, at 3 (asserting that by 1929 the "private insurance industry abandons the coverage of flood losses"), 6 (asserting that a 1956 American Insurance Association study "strengthen[ed] insurers' conviction that flood insurance is not commercially [viable]"); *see* National Flood Insurance Act of 1968 § 1302(b) (finding that "(1) many factors have made it uneconomic for the private insurance industry alone to make flood insurance available to those in need of such protection on reasonable terms and conditions; but (2) a program of flood insurance with large–scale participation of the Federal Government and carried out to the maximum extent practicable by the private insurance industry is feasible and can be initiated").

64. NAT'L RES. COUNCIL, *supra* note 55, at 3.

65. Patricia Sullivan, *Gilbert F. White; Altered Flood-Plain Management*, WASH. POST (Oct. 9, 2006), http://www.washingtonpost.com/wp-dyn/content/article/2006/10/08/AR2006100801035.html.

66. GILBERT F. WHITE, HUMAN ADJUSTMENT TO FLOODS 32–33 (1945), *available at* https://biotech.law.lsu.edu/climate/docs/Human_Adj_Floods_White.pdf; *see also* Wright, *supra* note 30, at 16 (asserting it is "widely accepted that Gilbert F. White's seminal study stimulated the interest and set the course for the emergence and evolution, in ensuing decades, of broader approaches to flood problems").

67. GILBERT F. WHITE, *Dissertation on Human Adjustment to Floods* (1945), reprinted in GEOGRAPHY, RESOURCES, AND ENVIRONMENT: SELECTED WRITINGS OF GILBERT F. WHITE 15 (Ian Burton & Robert W. Kates eds., 1986).

68. *Id.*

69. *Id.*

70. In the interim, Congress passed the Federal Flood Insurance Act of 1956. However, the program was never funded nor implemented, in part due to congressional fears that federal intervention would in fact lure more people into the floodplain, resulting in increased damage from floods. *Id.* at 29; KLEIN & ZELLMER, *supra* note 20, at 122–23.

flood losses."[71] The report concluded that it would be proper for the federal government to subsidize flood insurance for *existing* floodplain property, "provided owners of submarginal development were precluded from rebuilding destroyed or obsolete structures on the flood plain." The report warned that federal subsidies for *new* floodplain investments would "aggravate flood damages and constitute gross public irresponsibility."[72]

Those warnings reflect an awareness of what the insurance refers to as "moral hazard," which one economist defined as "any situation in which one person makes the decision about how much risk to take, while someone else bears the cost if things go badly."[73] When Congress passed the National Flood Insurance Act of 1968, it heeded the task force's warning. In particular, to avoid moral hazard, Congress incorporated three critical components into the NFIP: (1) temporary federal subsidies, (2) encouragement of state and local land-use regulation, and (3) partial floodplain retreat over time.

1. Temporary Federal Subsidies

Through the National Flood Insurance Act of 1968, Congress recognized that it was "uneconomic" for private industry to provide flood insurance on reasonable terms and conditions.[74] It therefore authorized a public-private hybrid with "large-scale participation" by the federal government in a flood insurance program that would be carried out "to the maximum extent practicable" by the private insurance industry.[75] As originally designed, the NFIP would afford private insurers the option to participate on a risk-sharing basis or simply as fiscal agents who bore no financial risk.[76]

The legislation authorized the Secretary of the U.S. Department of Housing and Urban Development ("HUD")[77] to investigate how risk premium rates should be set.[78] In some cases, premiums would be based on the actual risk involved,

71. TASK FORCE ON FEDERAL FLOOD CONTROL POLICY, A UNIFIED NATIONAL PROGRAM FOR MANAGING FLOOD LOSSES 17 (1966), *available at* https://www.loc.gov/law/find/hearings/floods/floods89-465.pdf. Congress was well aware that any insurance program—especially one with federal subsidies—could "aggravate rather than ameliorate" flood danger by giving floodplain occupants a false sense of security. *Id.* at 38.

72. *Id.* at 18.

73. PAUL KRUGMAN, THE RETURN OF DEPRESSION ECONOMICS AND THE CRISIS OF 2008 63 (2009).

74. National Flood Insurance Act of 1968 § 1302(b).

75. *Id.* § 1302(b)(1) (referring to rates "based on a consideration of the respective risks involved, including differences in risks due to land use measures, flood-proofing, flood forecasting, and similar measures").

76. *Id.* §§ 1331–32.

77. *Id.* § 1304 (authorizing the Secretary of HUD to "establish and carry out a national flood insurance program"). Today, the program is administered by the Secretary of FEMA. NAT'L RES. COUNCIL, *supra* note 55, at 29.

78. National Flood Insurance Act of 1968 § 1307.

including coverage of the program's operating and administrative expenses.[79] These full-cost premiums would serve the goal of providing the insurance pool with sufficient reserves to cover anticipated losses and discouraging risky floodplain development.[80] In other cases, the act authorized subsidized premiums set at less than full cost to establish "reasonable" rates that encourage people to purchase flood insurance.[81] The NFIP's tension between charging premiums that are both "risk-based" and subsidized at "reasonable" rates continues to this day.[82]

The subsidies authorized by the founding legislation have taken two primary forms. First, the program recognizes the so-called "pre-FIRM subsidy." Under this subsidy, the program can charge less than full-cost actuarial rates for properties that were built before the areas in which they are located were identified as special flood hazard areas on "Flood Insurance Rate Maps" ("FIRMs") prepared and periodically revised by the federal government.[83] These subsidies are borne by federal taxpayers.[84] Second, under the practice known as "grandfathering,"[85] landowners are allowed to continue paying their current flood insurance rates even if their property is subsequently mapped into a new (and presumably higher) flood rate class, provided the property had complied with the building code and standards in place at the time of construction.[86] These grandfathered properties constitute a cross-subsidy that is paid by other policyholders in the same rate class, rather than by federal taxpayers.[87]

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79. *Id.* § 1307(a)(1); *see generally* THOMAS L. HAYES & DAN R. SPAFFORD, ACTUARIAL RATE REVIEW: IN SUPPORT OF THE MAY 1, 2008, RATE AND RULE CHANGES, https://www.fema.gov/media-library-data/20130726-1640-20490-7962/rate_rev2008.pdf (providing overview of how the NFIP develops flood insurance rates).

80. National Flood Insurance Act of 1968 § 1308(b); NAT'L RES. COUNCIL, *supra* note 55, at 25 (quoting a 1966 report by HUD).

81. National Flood Insurance Act of 1968 §1302(b)(2).

82. NAT'L RES. COUNCIL, *supra* note 55, at 32.

83. National Flood Insurance Act of 1968 § 4015(c). The special flood hazard areas, sometimes described as the "100-year floodplain," refer to areas that have a 1% or greater chance of flooding each year. *See supra* text accompanying notes 56–58. Pre-FIRM subsidies also apply to properties constructed or substantially improved before December 31, 1974, if later than the first FIRM for the area. DIANE P. HORN & JARED T. BROWN, CONG. RESEARCH SERV., R44593, INTRODUCTION TO THE NATIONAL FLOOD INSURANCE PROGRAM 15–16 (2018). As Horn and Brown explain,

> The availability of this pre-FIRM subsidy was intended to allow preexisting floodplain properties to contribute in some measure to prefunding their recovery from a flood disaster instead of relying solely on federal disaster assistance. In essence, the flood insurance could distribute some of the financial burden among those protected by flood insurance and the public.

Id.

84. *Id.*

85. *See NFIP Grandfathering Rules for Agents*, FED. EMERGENCY MGMT. AGENCY (Mar. 2016), https://www.fema.gov/media-library-data/1488482596393-dcc52e6c120c9327dcd75f1c08e802e4/GrandfatheringForAgents_03_2016.pdf.

86. HORN & BROWN, *supra* note 83, at 17–18.

87. *Id.* at 18.

Realizing that subsidized insurance premiums could have negative impacts, the 1968 House Report on the pending legislation asserted, "Any Federal 'subsidy' which will accrue under the insurance program to the benefit of property owners now occupying the flood plain is defensible only as part of an *interim solution* to long-range readjustments in land use . . . ."[88] In contrast to subsidies for existing floodplain structures, the House Report explained that subsidies for new properties were "not at all valid."[89] A 1967 report of the Senate Committee on Banking and Currency projected that federal subsidies would gradually disappear as the private insurance industry assumed an ever-increasing role in the program. The Committee predicted that existing properties insured at subsidized rates would gradually be replaced by new or improved properties subject to full-cost premiums. Eventually, the Committee concluded, the federal government would have no liability, expenses, or losses.[90]

The 1966 task force report that gave rise to the NFIP originally estimated that federal subsidization of the cost of flood premiums for existing high-risk properties would be required for a limited period of time only—approximately twenty-five years.[91] In hindsight, that prediction would prove to be wildly optimistic.[92] By about 1978, it became apparent that private insurers would not become risk-sharing participants and the federal government assumed the full risk of the program (although private insurers continued to assist in administration and policy writing).[93] As risk-sharing private partners failed to materialize, so too did the hope for the elimination of subsidies. Today, many flood insurance policyholders continue to enjoy subsidized, below-cost rates.[94]

2. Land-Use Regulation

How did Congress expect private insurers would be able to provide economical insurance at some future date? The key lies in the state and local land-use regulations that Congress envisioned as the centerpiece of the national flood insurance program. In the statute's statement of purpose, Congress found that "a program of flood insurance can promote the public interest by providing appropriate protection against the perils of flood losses and encouraging sound land-use by minimizing exposure of property to flood losses . . . ."[95] In fact, federal insurance

88. H.R. Rep. No. 90–1585, at 2969 (1968) (emphasis added).
89. *Id.*
90. NAT'L RES. COUNCIL, *supra* note 55, at 28–29 (quoting a 1967 report of the Senate Committee on Banking and Currency); *see also* H.R. Rep. No. 90-1585, at 2973. (predicting private insurers would take over the bulk of the program, charging full, risk-based actuarial premiums, and "the government will have no liability for expenses or losses, except with respect to reinsurance against catastrophic losses").
91. AM. INSTS. FOR RES., *supra* note 16, at 9.
92. *See infra* Part I.C.
93. NAT'L RES. COUNCIL, *supra* note 55, at 29.
94. *See infra* Part I.C.
95. National Flood Insurance Act of 1968, 82 Stat. at 573.

would be available only to participating communities that provided satisfactory assurances that they were adopting permanent land-use and control measures,[96] with effective enforcement mechanisms, in conformity with federal criteria to be developed by the Secretary of HUD.[97] Further, the law made federal disaster assistance unavailable for losses covered by the flood insurance program, or that could have been so covered by landowners in participating communities, with exceptions for low-income individuals.[98]

3. Partial Floodplain Retreat

Thus, state and local land-use regulation was an essential cornerstone of the NFIP. Such regulation would perform at least two critical functions, as stated in the declaration of purpose contained in Section 1302(e) of the National Flood Insurance Act. First, it would "constrict the development of land which is exposed to flood damage and minimize damage caused by flood losses."[99] Second, regulation would "guide the development of proposed future construction, where practicable, away from locations which are threatened by flood hazards."[100] If fully implemented, these "constrict" and "guide away" principles could have done much to protect lives and property from floodwaters, as well as to insulate the federal treasury from unsustainable costs. Instead, regulatory efforts were thwarted by many factors, including a growing antipathy toward regulation and the rise of the regulatory and physical takings doctrines.[101]

C. LOOKING BACK: THE FIRST FIFTY YEARS

As the NFIP marked its fiftieth anniversary in 2018, it had over five million policies in effect, which provide about $1.28 trillion in coverage.[102] Overall, about 22,315 communities, representing fifty-six states and jurisdictions, participate in the program.[103] FEMA estimates that the floodplain and building regulations enacted by participating communities have avoided almost two billion dollars in flood losses annually.[104] Nevertheless, the program has failed to live up to its promise. In particular, it has deviated from three of its fundamental premises: (1) the charging of subsidized premiums on a temporary basis only; (2) the implementation of permanent, local land-use regulations to minimize exposure of

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96. *Id.* at 574.
97. *Id.*
98. *Id.* at 579.
99. *Id.* at 573.
100. *Id.*
101. *See infra* Part III.
102. HORN & BROWN, *supra* note 83, at 1 (citing data as of February 2018).
103. *Id.*
104. *Id.* (citing data as of March 2018, and estimating annual avoided flood losses to be $1.87 billion).

property to flood losses; and (3) the constriction of floodplain development and the guiding of future construction away from flood hazard areas.[105]

First, the 1968 House Report for the new flood insurance legislation defended federal premium subsidies as only "interim solutions to long-range adjustments in land-use."[106] Fifty years later, about 30% to 40% of all policyholders continued to receive some type of subsidy.[107] The Congressional Budget Office estimates that these discounts reduce premiums paid to the federal government by about seventy million dollars.[108] As a result of continuing subsidies and of rates too low to cover catastrophic storms and hurricanes, the program was more than twenty billion dollars in debt to the federal treasury as of early 2018.[109] This is true even after the Treasury Department forgave an additional sixteen billion dollars of debt incurred after Hurricanes Harvey, Irma, and Maria in 2017.[110]

Second, even though communities must enact a baseline level of floodplain regulations to qualify for federal flood insurance, the nation's overall exposure of property to flood loss continues to increase. From 1960 to 2008, the number of housing units along the coast increased 225%.[111] Due to the combined impacts of more coastal development and sea level rise, FEMA predicts that the coastal areas at high risk of floods will increase 55% by 2100.[112] At the same time, FEMA predicts that the population in such high risk coastal areas will increase 140% by 2100.[113] As a result, the nation continues to face more—rather than less—exposure to flooding over time.[114]

Finally, local regulations have not been sufficient to guide future construction away from flood hazard areas.[115] Current mapping is not adequate to accurately identify flood hazard areas, hampering attempts to guide future construction

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105. *See supra* Part I.B.

106. *See supra* text accompanying note 88.

107. HORN & BROWN, *supra* note 83, at 15–18. As of September 2016, about 16.1% of all policyholders received what are known as "pre-FIRM subsidies." Amendments to the NFIP call for the gradual phasing out of these subsidies to actuarially sound rates. An additional 3.9% of policyholders receive a "newly mapped subsidy" introduced by 2015 amendments to the NFIP. This subsidy will also be phased out over time until full-risk rates are achieved. An additional 10-20% of policyholders are "grandfathered" in at below-cost rates, but these are considered to be "cross subsidies" because they are paid for by other policyholders, rather than by federal taxpayers. *Id.*

108. CONGRESSIONAL BUDGET OFFICE, THE NATIONAL FLOOD INSURANCE PROGRAM: FINANCIAL SOUNDNESS AND AFFORDABILITY 35, Appendix B (2017), *available at* https://www.cbo.gov/publication/53028.

109. *See supra* text accompanying note 4.

110. *National Flood Insurance Program*, *supra* note 4 (placing FEMA's debt at $20.5 billion as of February 2018).

111. UNION OF CONCERNED SCIENTISTS, OVERWHELMING RISK: RETHINKING FLOOD INSURANCE IN A WORLD OF RISING SEAS 1, 4 (2013), *available at* https://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/Overwhelming-Risk-Full-Report.pdf.

112. *Id.* at 3 (citing an increase from 16.1 million units in 1960 to 36.3 million units in 2008).

113. *Id.*

114. FEMA predicts that population growth will cause 30% of this increased risk, whereas sea level rise will cause 70% of the increase. *Id.*

115. *See infra* Parts I.B.2–.3.

away from it. For example, current maps identify flood hazard areas using present conditions only.[116] But, as more development is added to the floodplain, permeable surfaces are paved over, expanding the geographic area subject to flood hazard.[117] Moreover, as asserted by the Association of State Floodplain Managers, the minimum NFIP standards are insufficient to keep up with mounting flood losses for a variety of reasons, including:[118] (1) the NFIP regulates only the 1%-chance floodplain rather than the more conservative 0.2%-chance floodplain (sometimes called the "five hundred year floodplain"); (2) the NFIP generally allows *new* construction in the 1%-chance floodplain as long as structures are elevated one foot above the predicted base flood level[119]—creating what one could call a "vertical retreat" from the floodplain; (3) flood hazard maps generally do not include "residual risk" areas that are geographically within a floodplain but are protected by a levee—creating a type of "levee loophole." If the levee fails, or if flooding occurs at levels beyond that which the levee was designed to protect against, then damage can be catastrophic.[120] As a result of these deficiencies, flood losses increasingly occur outside the boundaries of mapped flood hazard areas, catching many property owners by surprise and uninsured, as happened in the Houston area during Hurricane Harvey in Fall 2017.

II. THE POLITICAL ECONOMY OF FLOODPLAIN AND COASTAL DEVELOPMENT

This Article considers two perverse incentives for floodplain development that skew otherwise rational, risk-avoiding behavior: the National Flood Insurance Program as currently implemented and the Fifth Amendment takings doctrine. Considerations of political economy help to explain why the NFIP and the takings doctrine have evolved into potent forces that lure people into harm's way, despite otherwise laudable goals.[121] As used in this Article, "political economy" refers to the influence of political forces on the development of economic policy.[122] Political considerations are often at the heart of economic decisionmaking. They

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116. ASSOC. OF STATE FLOODPLAIN MANAGERS, FLOOD MAP MODERNIZATION 19 (2008), *available at* https://www.floods.org/ace-files/Projects/Bldg_State_Capacity.pdf. FEMA has only recently begun to map "future conditions," but for informational purposes only at the request of participating communities. FED. EMERGENCY MGMT. AGENCY, FUTURE-CONDITIONS HYDROLOGY FINAL RULE (2001), *available at* https://www.fema.gov/media-library/assets/documents/7287.

117. ASSOC. OF STATE FLOODPLAIN MANAGERS, *supra* note 116.

118. *See supra* text accompanying notes 56–58, 95–98.

119. ASSOC. OF STATE FLOODPLAIN MANAGERS, *supra* note 116, at 16.

120. *See* 100 RESILIENT CITIES, STRENGTHENING THE NATIONAL FLOOD INSURANCE PROGRAM 11 (2017), *available at* http://www.100resilientcities.org/wp-content/uploads/2017/11/Resilient-Cities-standalone-ch3_revised_11.7.17.pdf (explaining that "[i]ncreased impervious coverage and development in floodplains, changing rainfall patterns with more frequent heavy rains in some areas, and sea-level rise are factors contributing to [an] increase in flooding [in places outside of mapped flood hazard areas]").

121. *See supra* Part I.C.

122. *See generally* Alberto F. Alesina, *Political Economy*, 2007 NAT'L BUREAU OF ECON. RES. REPORTER 3, *available at* http://www.nber.org/reporter/2007number3/ (explaining that "[o]ne of the central themes in political economics has been and continues to be the effect of different political

frequently result in policies that provide concentrated benefits to politically powerful, highly-organized groups. At the same time, the costs are often widely dispersed among those who wield less political influence or who are less tightly organized.[123]

A. IN HARM'S WAY

The nation's floodplains and coastal zones (together, "floodplains") are risky—even deadly—places in which to live and conduct business. Over the past century, flood damage has risen dramatically to about eight billion dollars each year.[124] Floods are also among the nation's deadliest natural disasters, causing an average of eighty-five U.S. deaths annually over the past thirty years.[125] Despite the known risks, we continue to live and build in flood-prone areas. Experts predict continued increases in flood damage, as sea levels rise, storms intensify, and development continues in known high-risk flood areas.[126] One sobering analysis projects that by 2100, the U.S. assets exposed to flood damage will be of a value equivalent to today's entire gross domestic product.[127]

What percentage of the population lives in a floodplain? Estimates vary widely, but about 10% to 13% of the U.S. population lives in high-risk flood areas known as the 1%-chance floodplain.[128] An even higher percentage of the

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institutions on economic outcomes" and identifying "strategic manipulation of policies (especially fiscal policy)" as a traditional topic of political economics).

123. *Id.* at 2 (explaining that political economics departs from a "traditional model of economic policy in which benevolent social planners maximize the utility of a representative individual" and instead focuses on "how political forces affected the choice of policies, paying special attention to distributive conflicts and political institutions").

124. ASSOC. OF STATE FLOODPLAIN MANAGERS, *supra* note 33. This damage estimate does not include the severe storms of 2017, including Hurricanes Harvey, Irma, and Maria. *Hydrologic Information Center—Flood Loss Data*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. http://www.nws.noaa.gov/hic/ (last visited July 22, 2018) (adjusted to 2014 inflation). Up to $2.9 trillion worth of assets in the United States are exposed to flood risk (equivalent to about 15.3% of the United States' total gross domestic product). Oliver E.J. Wing et al., *Estimates of Present and Future Flood Risk in the Conterminous United States*, 2018 ENVTL. RES. LETTERS 13 2–3 (2018), *available at* http://iopscience.iop.org/article/10.1088/1748-9326/aaac65/pdf. As with other flood data, estimates vary widely. *Id.* (presenting range of estimates from other sources).

125. From 1988 through 2017, floods caused an average of eighty-five deaths each year in the United States, second only to heat-related fatalities in terms of weather fatalities (thirty-year average of 134 deaths annually). *See Weather Fatalities 2017*, NAT'L WEATHER SERV., http://www.nws.noaa.gov/om/hazstats.shtml (last visited July 22, 2018). For that period, floods and hurricanes together caused an average of 132 deaths annually. *See 78-Year List of Severe Weather Fatalities*, NAT'L WEATHER SERV., http://www.nws.noaa.gov/om/hazstats/resources/weather_fatalities.pdf (last visited July 22, 2018).

126. Beyond structural damage, flood costs include such things as job loss, particularly for small businesses, which have a 40% failure rate after major floods. ASSOC. OF STATE FLOODPLAIN MANAGERS, *supra* note 33. Fortunately, flood deaths have declined due to factors such as better weather forecasting, improved warning systems, and increased awareness of flood danger. *Id.* at 4.

127. Wing et al., *supra* note 124, at 5.

128. FEMA estimates that thirteen million Americans live within the 1%-chance floodplain, whereas a 2018 study conducted by the University of Bristol, the Nature Conservancy, and the U.S. Environmental Protection Agency places the estimate at forty-one million Americans. Michael Isaac Stein, *New Report*

population is at risk if one adds in the population of the 0.2%-chance floodplain, which has a one in five hundred chance of flooding each year (sometimes called the "five hundred year floodplain.")[129] State-level data show considerable variation. One study focused on what it termed the "combined floodplain," which encompassed both the 1%-chance and 0.2%-chance floodplains.[130] That study showed that anywhere from 1% to 64% of each state's population lives in vulnerable areas.[131] Contrary to what the study described as the "popular perception that floodplains are mostly a problem for coastal areas," it found that inland states were among those with the highest percentage of their population in the combined floodplain, including Arizona (64%) and North Dakota (20%).[132] Further, the study found that two-thirds of the country's combined floodplain population lived in just five states: California, Florida, Arizona, Texas, and New York.[133] Thus, if a handful of high-floodplain-population states can organize their political power effectively, they stand to gain most from floodplain subsidies provided by the diffuse group of federal taxpayers throughout the country. On the other hand, when disaster strikes, they have more lives and property at risk than lower-floodplain-population states.

Who lives in a floodplain? Floodplain populations sorted by race/ethnicity and poverty levels show some deviations from those groups' percentage representation in the United States population as a whole.[134] A 2018 study released by FEMA found that households within the highest flood-prone areas had a somewhat lower annual median income ($50,000) than households outside those flood-prone areas ($57,000).[135] Analysis based on census tract data also revealed some differences. As one study explained, "in some cases, waterfront areas may be desirable and expensive, and attract higher-income residents; whereas other floodplain areas may be less desirable, and thus more affordable for households with lower incomes."[136] In addition to looking at those who occupy the

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Says FEMA Badly Underestimates Flood Risk, CITYLAB (Mar. 2, 2018), https://www.citylab.com/environment/2018/03/new-report-says-fema-badly-underestimates-flood-risk/554627/ (explaining that FEMA's flood maps, which "dictate flood risk management" in the United States, have been "widely criticized for being outdated and underestimating the country's flood risk"); *see also* Wing et al., *supra* note 124, at 13 (estimating that 13.3% of the U.S. population is exposed to a 100-year flood).

129. FED. EMERGENCY MGMT. AGENCY, DEFINITIONS OF FEMA FLOOD ZONE DESIGNATIONS, *available at* https://efotg.sc.egov.usda.gov/references/public/NM/FEMA_FLD_HAZ_guide.pdf, (last visited Jan. 22, 2019).

130. NYU FURMAN CTR., POPULATION IN THE U.S. FLOODPLAINS (2017), *available at* http://furmancenter.org/research/publication/population-in-the-us-floodplains.

131. *Id*. at 6–7.

132. *Id*. at 2. In order of highest state percentage in the combined floodplain, the top four states were Arizona (64%), Florida (26%), North Dakota (20%), and Louisiana (17%).

133. *Id*.

134. *Id*. at 2–5.

135. *See* FED. EMERGENCY MGMT. AGENCY, AN AFFORDABILITY FRAMEWORK FOR THE NATIONAL FLOOD INSURANCE PROGRAM 11 (2017), *available at* https://www.eenews.net/assets/2018/04/17/document_gw_06.pdf.

136. NYU FURMAN CTR., *supra* note 130, at 4.

floodplain, it is useful to consider those who purchase federal flood insurance. Overall, policyholders tend to be higher income people.[137] Further, subsidies for below-cost premiums under the NFIP disproportionately benefit people of higher income.[138]

Why do people choose to locate in flood-prone areas? The answers are many and varied. Some river and coastal areas provide access to ports and harbors as well as scenic, recreational, and tourist amenities. Other low-lying areas offer affordable real estate that attracts development and settlement. Still other floodplain occupants can withstand occasional flooding, such as farmers who construct permanent buildings on higher ground and till the fertile river valleys. In other cases, people are simply unaware of the flood risk, underestimate the danger it poses to them, or dismiss past floods as never-to-be-repeated anomalies. When local governments issue building permits for construction in the floodplain, such approval perpetuates residents' belief that it is safe to occupy them. And in yet other cases, the availability of federal flood insurance and federal disaster relief, as well as the presence of federal levees, reservoirs, and other flood control structures, may give people a false sense of security that lures them into potential danger.[139]

B. THE PUZZLE OF HOUSTON

The example of devastating flooding in the Houston area in 2017 illuminates competing currents that shape the nation's approach to floods and sheds light on who stands to win and lose from floodplain development. It also shows how various forces can discourage enactment of floodplain regulations critical to the success of the NFIP. In particular, the Houston puzzle shows how a desire to preserve the local tax base and economy can combine with a fear of Fifth Amendment takings liability to create a potent deterrent to the adoption of life- and property-saving floodplain regulations. The policies that emerge are perhaps better understood as products of the political economy rather than of logical planning by wise and benevolent officials.

In August to September of 2017, Hurricane Harvey deluged southeastern Texas with more than sixty inches of rain.[140] Harris County, which includes

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137. CONGRESSIONAL BUDGET OFF., *supra* note 108, at 20–21 ("CBO's analysis suggests that, on average, NFIP policy–holders tend to live in places where people have higher income.").

138. Ike Brannon & Ari Blask, *The Government's Hidden Housing Subsidy for the Rich*, POLITICO (Aug. 8, 2017, 5:38 AM), https://www.politico.com/agenda/story/2017/08/08/hidden-subsidy-rich-flood-insurance-000495; *see* Christopher Flavelle, *Latest Climate Threat for Coastal Cities: More Rich People*, BLOOMBERG (last updated Apr. 23, 2018, 10:47 AM), https://www.bloomberg.com/news/articles/2018-04-23/the-latest-climate-threat-for-coastal-cities-more-rich-people; Omri Ben-Shahar & Kyle D. Logue, *The Perverse Effects of Subsidized Weather Insurance*, 68 STAN. L. REV. 571, 596 (2016).

139. *See supra* Part I.A.1.

140. ERIC S. BLAKE & DAVID A. ZELINSKY, NATIONAL HURRICANE CENTER TROPICAL CYCLONE REPORT: HURRICANE HARVEY 1 (2018), *available at* https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf.

Houston, was particularly hard-hit. Hurricane Harvey was directly responsible for at least sixty-eight deaths, which was the highest death toll directly related to a tropical cyclone in Texas since 1919.[141] Hurricane Harvey also broke flood damage records: As of 2017, it ranked as the second-costliest hurricane to strike the United States, falling behind only Hurricane Katrina of 2005.[142]

The Houston area has a long history of flooding and suffers from one of the highest rates of flood deaths and property damage in the country.[143] After devastating floods in 1929 and 1935, the federal government agreed to build and to pay for flood control structures to protect the city and its surroundings. By the 1940s, the U.S. Army Corps of Engineers ("Corps") had built two reservoirs—Addicks and Barker—about twenty miles northwest and upstream of Houston, which were designed to catch and store floodwaters during heavy storms and then safely release them downstream in a gradual and controlled flow.[144] The reservoirs employed a unique design: Gently sloping levees of compacted soil serve as dams to hold back floodwaters, rather than the more traditional, taller concrete dams.[145] As a result, land *within* the reservoirs and their "flood pools" can be used during dry periods for recreation, sports fields, and the like.[146] When it built the reservoirs, the Corps purchased only about 24,500 acres of surrounding land, falling about 8,000 acres short of the total area that could be inundated if the reservoirs reached maximum capacity during extreme storms—a decision that would have devastating repercussions more than seventy years later when Hurricane Harvey struck.[147] At the time though, the 8,000 acre shortfall seemed harmless enough; the additional privately-owned lands were prairie used for cattle grazing and crops that could likely tolerate occasional flooding.[148] But since that time,

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141. *Id.*

142. *Id.* (comparing costs as adjusted for inflation).

143. *See* Al Shaw et al., *Why Houston Isn't Ready for Harvey*, PROPUBLICA (Aug. 25, 2017), https://projects.propublica.org/graphics/harvey. According to Sam Brody, a natural hazards mitigation researcher at Texas A&M University at Galveston, "More people die here than anywhere else from floods. . . . More property per capita is lost here. And the problem is getting worse." Suggested causes include local population growth, relaxed building regulations, paving of rainwater-absorbing prairie, increased storm intensity, and climate change. *Id.*

144. Michael F. Bloom, *The History of Addicks and Barker Reservoirs*, RIPARIANHOUSTON (Sept. 3, 2017), https://riparianhouston.com/2017/09/03/the-history-of-addicks/. The full cost of the reservoirs would have been borne by the federal government. *See* JOSEPH L. ARNOLD, THE EVOLUTION OF THE 1936 FLOOD CONTROL ACT Foreword (1988), *available at* https://www.publications.usace.army.mil/Portals/76/Publications/EngineerPamphlets/EP_870-1-29.pdf (explaining that through the 1936 legislation Congress established a local government cost-sharing requirement for *channel and levee* flood control measures, but the federal government assumed all costs of *reservoir* flood storage projects).

145. Bloom, *supra* note 144.

146. *See* Neena Satija et al., *Everyone Knew Houston's Reservoirs Would Flood—Except for the People Who Bought Homes Inside Them*, PROPUBLICA (Oct. 12, 2017), https://projects.propublica.org/graphics/harvey-reservoirs.

147. *See id.*

148. *Id.*

Houston and Harris County officials issued building permits for the construction of thousands of new homes *within* the reservoirs and their flood pools.[149]

Development continued throughout the greater Houston area. Adjacent to the Addicks Reservoir watershed, homes in the upper White Oak watershed flooded in 1998, 2000, and 2002.[150] Some blamed the flooding on the area's explosive growth. About four hundred homeowners sued Harris County for its approval of unmitigated growth.[151] In particular, they alleged that the County's permitting of upstream development without a flood control plan or other mitigation measures had "taken" their property without just compensation.[152] The Texas Supreme Court rejected those claims, holding that plaintiffs had failed to prove more than "mere negligent conduct" by demonstrating the County's actions were "substantially certain" to cause flooding to the specific properties owned by the plaintiffs.[153]

Unchastised, Houston and Harris County continued to grow, and the area continued to flood. Tropical Storm Allison of 2001 was particularly devastating, killing twenty-two people and causing over five billion dollars of property damage.[154] This time, regulators chose to act. In 2006, Houston amended its ordinances to regulate development within floodways.[155] But the city's resolve was short-lived. Nearby landowners sued the city, claiming that the ordinance worked a regulatory taking under the Fifth Amendment.[156] Fearful of potential liability, the city withdrew its ordinance and later promulgated a less protective version.[157] Thus, the takings doctrine deterred stringent regulation by Houston. At the same time, the doctrine had failed to provide an impetus for Harris County regulators to protect the White Oak watershed.

By 2017, Houston and Harris County had sanctioned extensive development in many vulnerable areas. When Hurricane Harvey struck, about 14,000 homes—

149. *Id.*

150. *See* Harris Cty. Flood Control Dist. v. Kerr, 499 S.W.3d 793 (Tex. 2016).

151. *Id.*

152. *Id.*

153. *Id.*

154. *Harris County's Flooding History*, HARRIS CTY. FLOOD CONTROL DIST., https://www.hcfcd.org/flooding-floodplains/harris-countys-flooding-history/ (last visited July 25, 2018). In its aftermath, a 2003 report by the Harris County Flood Control District acknowledged that up to 2000 homes within Addicks and Barker Reservoirs would have flooded if the rain had fallen in a different location within the county. *Id.* (quoting report's statement, "If the intense rainfall . . . had occurred over Barker and Addicks Reservoirs, record flood heights exceeding previous records by five to eight feet would have occurred") (internal citation omitted).

155. *See* Mark Collette & Matt Dempsey, *What's in Houston's Worst Flood Zones? Development Worth $13.5 Billion*, HOUS. CHRON. (Dec. 14, 2017), https://www.houstonchronicle.com/news/houston-texas/houston/article/What-s-in-a-floodway-In-Houston-20-000-12409821.php. The Association of Floodplain Managers defines a floodway as "the channel of a river or stream, plus the adjacent land needed to carry away floodwaters. It has some of the fastest-moving water during a flood." *Id.*

156. *See, e.g.*, City of Houston v. Noonan, No. 01–08–01030–CV, 2009 Tex. App. LEXIS 3547, at *6 (Tex. App. May 21, 2009) (holding plaintiff's claim ripe for review).

157. Collette & Dempsey, *supra* note 155.

many of them upscale—were sitting within the Addicks and Barker Reservoirs. These properties were in areas that had been *designed* to flood during high rains and that had been marked on plat maps as areas of possible "controlled inundation."[158] During Harvey, over 5,000 of these homes flooded.[159] But because these areas had never flooded significantly before Hurricane Harvey, many homeowners (and the real estate agents who had sold them the properties) professed ignorance of the flood risk they faced.[160]

After Hurricane Harvey, Houston enacted a more stringent ordinance to regulate floodplain development.[161] This ordinance does not prohibit new floodplain development, but requires that it be elevated at least two feet above projected flood levels in the 0.2%-chance floodplain.[162] As with the ill-fated 2006 regulation, some opposed the stricter 2018 ordinance, claiming that it hurts business interests by increasing construction costs and that it might negatively impact the tax base.[163] But this time, rather than withdrawing the ordinance, some council members pushed back, stating, "[w]e're not going to put profit over the lives of people,"[164] and passed the regulation with a nine to seven vote.[165] They cited to a study indicating that the new ordinance would have protected 84% of the thousands of homes flooded during Hurricane Harvey.[166]

But no sooner had the ink dried on the new floodplain regulation, than the Houston city council paved the way for construction of yet another 800 new homes in the 1%-chance floodplain by approving a new municipal utility district

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158. *See* Satija et al., *supra* note 146. A plat map "shows how a tract of land is divided into lots. It is drawn to scale and shows the land's size, boundary locations, nearby streets, flood zones, and any easements or rights of way. . . . It is . . . typically included in the paperwork you get when you buy a home." Lisa Gordon, *What is a Plat Map? It Tells You a Lot About Your Property*, REALTOR.COM (Apr. 12, 2017), https://www.realtor.com/advice/buy/what–is–a–plat–map/.

159. *See* Satija et al., *supra* note 146. Other sources estimated the number of flooded homes within the reservoir at over 9,000. *See, e.g.*, Mihir Zaveri, *Army Corps Predicted Addicks and Barker Flood Pool Lawsuits, Decided Not to Act*, HOUS. CHRON. (Feb. 27, 2018), https://www.houstonchronicle.com/news/politics/houston/article/Army-Corps-predicted-Addicks-and-Barker-flood-12714844.php.

160. *See The Difference Between Upstream and Downstream Flooding Related to the Addicks & Barker Reservoirs*, ZEHL & ASSOCS., https://www.zehllaw.com/the-difference-between-upstream-and-downstream-flooding-related-addicks-barker-reservoirs/ (last visited Dec. 19, 2018).

161. *Forward–Thinking Building Rules Protect Houston From Disaster*, FED. EMERGENCY MGMT. AGENCY (Apr. 13, 2018), https://www.fema.gov/news-release/2018/04/13/forward-thinking-building-rules-protect-houston-disaster. Harris County had previously amended its floodplain regulations. Edward Klump & Mike Lee, *Houston Sees "Defining Moment" With New Regulations*, E&E NEWS (Apr. 5, 2018), https://www.eenews.net/energywire/2018/04/05/stories/1060078211.

162. *Id.* The previous ordinance required that new construction in the 1%-chance floodplain be elevated one foot but placed no such requirements on construction in the 0.2%-chance floodplain. *Id.*

163. *See id.*

164. *Id.*

165. Klump & Lee, *supra* note 161.

166. *Id.*

to service it.[167] Although the plan complied with the city's new regulation, the new utility district would facilitate development in the same watershed where 2,300 homes had flooded during Hurricane Harvey. This was also where the city had spent $10.7 million to buy out floodplain homes damaged during Hurricane Harvey.[168] The Houston Chronicle published a scathing editorial while the proposal was still pending, opining that "[e]ven with the new post-Harvey land-use rules, construction in the floodplain will still risk exacerbating downstream flooding" and noting that "[a]t a time when Houston is lobbying the federal government for billions of dollars in disaster recovery funds, allowing this proposal to sail through City Council would be a startling act of bad faith."[169]

Meanwhile, more than 1,500 flooded landowners above and below the Addicks and Barker reservoirs brought a class action against the Corps, seeking potentially billions of dollars for flood damages resulting in the wake of Hurricane Harvey. The upstream landowners claim the federal government "stored" stormwater on their property when rainwater filled the reservoirs and seek compensation for the permanent, physical taking of their property as well as the taking of drainage easements.[170] The downstream owners claim the Corps took private property without compensation when it made controlled releases from the Addicks and Barker Reservoirs, despite the fact that unprecedented stormwater inflows threatened to surge around the dams.[171]

The Houston example poses a difficult puzzle as to which groups, if any, should be held accountable when flood damage occurs: homeowners and business owners who locate in floodplains, developers who build in floodplains, local governments that approve building permits within floodplains or fail to enact sufficiently stringent floodplain regulations, or the federal government as operator of flood control infrastructure that causes (or fails to prevent) flooding. But such questions of after-the-fact blame tend to deflect the more fundamental issue of how local, state, and federal officials can work together prophylactically to keep

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167. *See* Dan Singer, *City Council Approves MUD for 800 New Homes on Pine Crest Golf Course*, SWAMPLOT (Apr. 25, 2018, 12:00 PM), http://swamplot.com/city-council-approves-mud-for-800-new-homes-on-pine-crest-golf-course/2018-04-25/.

168. Mark Collette & Matt Dempsey, *What's in Houston's Worst Flood Zones, Development Worth $13.5 Billion*, HOUS. CHRON. (Dec. 13, 2017), https://www.houstonchronicle.com/news/houston-texas/houston/article/What-s-in-a-floodway-In-Houston-20-000-12409821.php.

169. *Has City Hall Learned Nothing From Harvey?*, HOUS. CHRON. (last updated Apr. 24, 2018, 9:45 AM), https://www.houstonchronicle.com/opinion/editorials/article/Has-City-Hall-learned-nothing-from-Harvey-12858201.php.

170. *See* ZEHL & ASSOCS., *supra* note 160. Physical takings are discussed *infra* Part III.B.2.

171. ZEHL & ASSOCS., *supra* note 160; *see also In re Upstream Addicks & Barker (Tex.) Flood–Control Reservoirs*, Case No. 1:17–cv–09001–CFL, United States' Motion to Dismiss for Lack of Jurisdiction and for Failure to State a Claim Upon Which Relief Can Be Granted, at 3–4 (Feb. 16, 2018) (arguing that plaintiffs "implicitly maintain that the Corps should have directed floodwaters elsewhere—elsewhere being on to some other person's private property—in order to protect Plaintiffs' own property" and asserting that "the Fifth Amendment is not a constitutional flood insurance policy").

people safe and out of harm's way and to minimize storm damage when the rains and hurricanes inevitably come.

C. WINNERS AND LOSERS

To make sense of the Houston story and to extract broader lessons from it, this section considers briefly what various stakeholders stand to gain or lose from floodplain development. In some cases, the same group may be exposed to both potential gains and potential losses. This section also shows how the takings doctrine—both regulatory and physical—has been used as a blunt instrument that distorts flood policy. This analysis can help inform how best to move forward in removing perverse incentives to making safe and rationale use of the nation's floodplains.[172]

1. Homeowners

As suggested by the Houston story, floodplain homeowners have the most at stake from floodplain development. Although they may enjoy the benefits of their neighborhoods during dry times, their lives and property are endangered when the area floods. Further, although flood victims may receive federal disaster relief and flood insurance payouts, it is difficult for money alone to make up for the loss of one's home or the disruption of one's life.

Many do not even know they live within a floodplain and therefore do not make an informed choice to accept the attendant risks. FEMA rules allow areas to be excluded from special flood hazard area designation on flood maps if the areas are elevated above a certain 1%-chance flood level.[173] As a consequence, flood risk notification requirements and flood insurance purchase requirements may not apply.[174] In Houston, for example, many developers took advantage of this provision to fill properties with soil to elevate them slightly above the natural floodplain.[175] According to one analysis, Hurricane Harvey damaged at least 6,000 such properties that were technically removed (vertically) from the flood zone through filling, but which flooded nevertheless.[176]

2. Developers and Real Estate Agents

Stakeholders such as developers and real estate agents may benefit from the construction or sale of floodplain property, but do not own it long-term. As a

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172. *See infra* Part IV.

173. *See supra* text accompanying note 119.

174. *See* John Schwartz, James Glanz, & Andrew W. Lehren, *Builders Said Their Homes Were Out of a Flood Zone. Then Harvey Came*, N.Y. TIMES (Dec. 2, 2017), https://www.nytimes.com/2017/12/02/us/houston-flood-zone-hurricane-harvey.html.

175. *See id.*

176. *Id.* (quoting statement of a former director of the Association of State Floodplain Managers in Wisconsin, "Once a flood plain, always a flood plain. [The area has] still got risk.").

result, they may realize a significant economic benefit from floodplain development, but they suffer only short-term exposure to the flood risk. They form concentrated and powerful lobbying groups and are able to strongly oppose stringent floodplain regulations.

3. Local Governments

The National Flood Insurance Act of 1968 relied primarily on local government officials to constrict floodplain development and guide it to safer ground through local land-use ordinances.[177] Although many local communities have enacted regulations stringent enough to qualify for flood insurance offered and subsidized by the federal government, few have gone beyond the bare minimum. Because many of FEMA's floodplain maps are outdated or inaccurate, minimum regulation is often insufficient to provide an adequate margin of safety for local residents.[178] In Houston, areas outside the officially designated flood zones routinely flood. An area known as "Memorial City," for example, experienced serious flooding three times in less than a decade, even though it is not within a flood zone designated on FEMA maps.[179] Local governments can be reluctant to regulate floodplain development. Many are concerned about maintaining a healthy tax base.[180] Further, actual or threatened takings litigation by regulated landowners can deter risk-adverse local governments from enacting strict regulations. In Houston, for example, when landowners filed lawsuits claiming that 2006 floodplain regulations constituted a regulatory taking requiring compensation, the city withdrew its ordinance and subsequently reissued a weaker version.[181]

4. The Federal Government

As a result of the above-described forces, the federal government and federal taxpayers bear the burden of floodplain development, whereas others enjoy its benefits. Before floods occur, the federal government provides flood control structures (such as the Addicks and Barker Reservoirs above Houston) and federally-subsidized flood insurance.[182] After flooding, the federal government provides disaster relief.[183] If things go wrong with its flood control structures, the federal government may be subject to lawsuits by landowners alleging that

177. *See supra* Part I.B.
178. *See supra* text accompanying notes 115–20.
179. *See* Neena Satija et al., *Boomtown, Flood Town*, PROPUBLICA (Dec. 7, 2016), *available at* https://projects.propublica.org/houston-cypress/. This so-called "urban flooding" outside designated 1%-chance or 0.2%-chance floodplains may result from outdated flood maps, climate change, or continued development that paves over prairies and other natural areas that formerly absorbed and slowed storm water runoff. *Id.*
180. *See id.*
181. *See supra* text accompanying notes 155–57.
182. *See supra* Part I.A.
183. *See supra* Part I.A.2.

the flooding of their property constituted a "physical taking" that requires potentially multi-millions of dollars in compensation[184]—a legal theory related to the "regulatory takings" lawsuits that have challenged many state and local regulations, such as floodplain building requirements.

Overall, this creates a de facto system of floodplain management that departs significantly from the vision of the 1968 Congress that enacted the National Flood Insurance Act.[185] The benefits of floodplain development have been privatized, and the costs have been socialized and spread among federal taxpayers.[186] The existing system creates "moral hazard,"[187] whereby people take more risks than they otherwise would if they had to bear the full costs of their actions. Under this skewed system, many floodplain occupants have been lured into the path of dangerous floodwaters.

III. THE TAKINGS DOCTRINE: A SHADOW INSURANCE POLICY?

> The Fifth Amendment's guarantee that private property shall not be taken for a public use without just compensation was designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole.[188]

The NFIP was authorized in 1968. Within about a decade, the United States Supreme Court would begin to decide a number of cases that ushered in the modern era of takings jurisprudence.[189] Among those decisions, two stand out as challenges to precisely the type of floodplain and coastal regulation essential to the success of the NFIP. *First English Evangelical Lutheran Church v. Los Angeles County*[190] involved the regulation of development within a river's floodplain. The second case, *Lucas v. South Carolina Coastal Council*,[191] involved development restrictions along coastal areas prone to hurricanes and storm surge. Many other

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184. *See infra* Part III.B.2.

185. *See supra* Part I.A.3.

186. ASS'N OF STATE FLOODPLAIN MANAGERS, INC., BUILDING PUBLIC SUPPORT FOR FLOODPLAIN MANAGEMENT: GUIDEBOOK 10 (2010), *available at* http://www.floods.org/ace–files/documentlibrary/Publications/BPS_Guidebook_2_1_10.pdf (describing incentives for developers and property owners to try to "move [the financial costs that come with developments that don't follow the rules or that have an adverse impact on others] from themselves and into the public realm" and explaining, "[t]his is called 'externalizing' the costs of development, and when these costs are pushed over to government, sometimes called 'socializing' the costs").

187. *See supra* text accompanying notes 57, 73.

188. Armstrong v. United States, 364 U.S. 40, 49 (1960).

189. James E. Krier & Stewart E. Sterk, *An Empirical Study of Implicit Takings*, 58 WM. & MARY L. REV. 35, 52 (identifying Penn Central Transportation Co. v. City of New York, 438 U.S. 104 (1978) as "the first of the *modern* takings cases, and the first to make clear that regulatory measures could result in implicit takings" as opposed to explicit takings of property through eminent domain) (emphasis in original).

190. 482 U.S. 304 (1987).

191. 505 U.S. 1003 (1992).

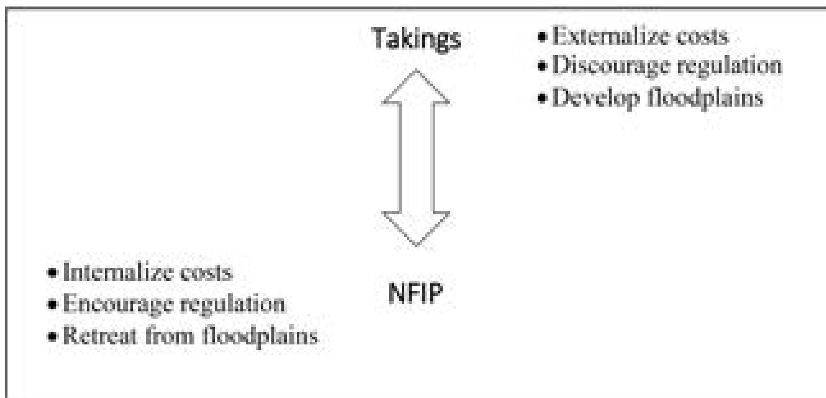

FIGURE 1: A comparison of the goals of the takings doctrine and the NFIP.

takings challenges would follow in the Supreme Court as well as in the lower federal and state courts.

As shown in Figure 1, the goals of the takings doctrine and the NFIP are fundamentally at odds: Whereas the NFIP was designed to internalize the costs of risky development by placing them on those who enjoy its benefits,[192] the takings doctrine seeks to externalize the costs of unwise development by placing them on government regulators and actors.[193] Similarly, whereas the NFIP encourages state and local land-use regulation as an integral part of its cooperative federalism scheme, the takings doctrine provides a basis to challenge that regulation (and other governmental actions) as unconstitutional, unless compensation is provided. Finally, whereas the NFIP attempts to constrict flood-prone development and guide it away from areas of known risk, the takings doctrine scrutinizes uncompensated development restrictions and seeks to declare them unconstitutional.

As this Part will argue, the modern takings doctrine articulated by the Supreme Court was almost perfectly tailored to cripple the fledgling flood insurance program. Importantly, this Article does *not* argue that local governments never overreach when enacting land-use regulations, nor does it argue that the federal government flawlessly designs and operates levees, reservoirs, and other flood control structures. Rather, this Article suggests that the takings doctrine often acts at cross-purposes with the NFIP by allowing landowners to enjoy the *benefits* of floodplain development, while shifting the *costs* of flood risk onto government actors and taxpayers—a scheme that some have described as "socializing" flood

192. *See supra* Parts I.A.3, I.B.

193. Even where a particular development or type of development is acknowledged as contrary to the public interest, the takings doctrine would recognize a compensation requirement in cases where the impact on the landowner was too severe. *See infra* Parts III.A.2, III.B.1.

risk.[194] As a result, floodplain users may take more risks than they otherwise would if they bore the full costs of their actions, serving as a perverse incentive to lure more people into harm's way.

A. THE DESIGN: UPSHIFTING COSTS TO TAXPAYERS

First English and *Lucas* illustrate how the takings doctrine can weaken the NFIP. In each case, the Court applied three analytical techniques that send a strong signal to state and local governments that floodplain and coastal regulations can be costly to them. First, a majority of the Court was eager to reach a legal issue despite vigorous dissents suggesting the issue was premature and not squarely before the Court.[195] Second, the Court weakened the traditional presumption in favor of the constitutionality of legislative enactments, in part by casting doubt on the good faith of government regulators.[196] Finally, the Court signaled its willingness to discourage regulation that severely restricted land-use, even if there was no dispute that such regulation would protect the public against loss of life and property during future floods.[197] Together, these three techniques (and others) could serve to discourage communities from enacting the land-use regulations required as a prerequisite to participating in the NFIP, or more likely, to deter them from enacting standards safer than the bare floor set by that program.[198] As a result, the takings doctrine thwarts the NFIP's purposes of distributing burdens equitably between those in flood-prone areas and the general public, and of relieving the federal government of a portion of the expense of flood control and disaster relief.[199]

1. *First English*—Challenging Floodplain Regulations

First English involved a church campground known as "Lutherglen" that served as a retreat and recreational site for children with handicaps.[200] Located along the banks of a creek that flowed through a canyon, Lutherglen and the surrounding area undisputedly became a potential flood hazard after a forest fire burned thousands of upstream acres.[201] After a heavy rainstorm, the river flooded, drowning ten people and causing millions of dollars in damage throughout the canyon.[202] The buildings on Lutherglen were destroyed.[203] In response, Los

194. *See supra* text accompanying note 186.
195. *See infra* text accompanying notes 209–16, 242–46.
196. *See infra* text accompanying notes 209–16.
197. *See infra* note 248.
198. *See supra* Part I.B.
199. *See supra* Part I.A.3.
200. First English Evangelical Lutheran Church v. Cty. of L.A., 482 U.S. 304, 307 (1987).
201. First English Evangelical Lutheran Church v. Cty. of L.A., 210 Cal. App. 3d 1353, 1356–57 (1989).
202. *Id.* at 1357 (calling the flood "a disaster waiting to happen").
203. *Id.*

Angeles County adopted an interim ordinance prohibiting the construction or reconstruction of structures in portions of the canyon deemed "interim flood protection area[s]," including most of Lutherglen.[204] The Church, as owner of Lutherglen, sued the County, alleging that the interim ordinance caused a temporary regulatory taking of its property for which compensation was required.[205] The lower court struck the takings allegation and the California Court of Appeal affirmed.[206] Although the allegations in the complaint could be described as "cryptic,"[207] the Supreme Court framed the issue as one of remedy: Whether the Fifth Amendment "require[s] compensation as a remedy for 'temporary' regulatory takings—those regulatory takings which are ultimately invalidated by the courts."[208]

Justice Rehnquist, writing for the majority, was eager to reach the remedial question, even though the California courts had not determined whether a taking had occurred under the facts of that case.[209] The court was troubled by the California Court of Appeal's analysis, which it interpreted as restricting all takings claims to the remedy of nonmonetary relief.[210] Confining its consideration to the question of "whether the Just Compensation Clause requires the government to pay for 'temporary' regulatory takings,"[211] the court held in the affirmative, holding that "invalidation of the ordinance without payment of fair value for the use of the property during [the] period of time [the ordinance was in effect] would be a constitutionally insufficient remedy."[212] The court assumed as true for the purposes of its decision that the ordinance in fact denied the Church all use of its property,[213] but itself declined to address the underlying takings issue.[214] In dissent, Justice Stevens chastised the majority for "unnecessarily and imprudently assuming" the ordinance worked an unconstitutional taking, and therefore unnecessarily reaching a novel constitutional issue.[215] On remand, the California

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204. *First English*, 482 U.S. at 307.

205. *Id.* at 308.

206. *Id.* at 311 (interpreting Agins v. Tiburon, 598 P.2d 25 (Cal. 1979), *aff'd on other grounds*, 447 U.S. 255 (1980)).

207. *Id.* at 312–13 (rejecting appellee's suggestion the allegations were "cryptic" and the complaint inadequate).

208. *Id.* at 310.

209. *Id.* at 312–13 (noting earlier cases in which finality concerns rendered the Court's consideration of the remedial question premature).

210. *Id.* at 310 (discussing the California Court of Appeal's reliance on Agins v. Tiburon, 598 P.2d 25 (Cal. 1979), *aff'd on other grounds*, 447 U.S. 255 (1980)). In dissent, Justice Stevens challenged as incorrect the majority's assumption that the California Supreme Court had in fact decided that state courts could never grant monetary relief for temporary regulatory takings. *Id.* at 322–23.

211. *Id.*

212. *Id.*

213. *Id.*

214. *Id.* ("We accordingly have no occasion to decide whether the ordinance at issue actually denied appellant all use of its property.").

215. *Id.* at 322–24 (complaining that the majority's "lack of self-restraint is imprudent") (Stevens, J., dissenting).

Court of Appeal held that the ordinance was not a regulatory taking after all because it did not deny the Church "all use" of its property.[216]

Because the court assumed, rather than decided, that the ordinance denied the Church all use of its property,[217] its opinion was in tension with the traditional presumption in favor of the validity of legislative enactments. Deeming the validity of the County's interim ordinance "irrelevant," the court emphasized the unique posture of the case under which the constitutional question of remedy had been isolated for the court's consideration.[218] In dissent, Justice Stevens challenged the majority's failure to require the Church to allege that the County had an improper purpose or insufficient justification for the interim ordinance, arguing that the presumption of validity is "particularly appropriate" in this case because the Church did make any arguments in favor of the ordinance's invalidity or interference with any future uses of Lutherglen by the Church.[219] Highlighting the facts of the case, Justice Stevens concluded, "In light of the tragic flood and the loss of life that precipitated the safety regulations here, it is hard to understand how appellant ever expected to rebuild on Lutherglen."[220] On remand, the California Court of Appeal echoed such concerns, asserting that "it would be extraordinary to construe the Constitution to require a government to compensate private landowners because it denied them 'the right' to use property which cannot be used without risking injury and death."[221] The Court of Appeal emphasized that the County's challenged zoning regulation involved the "highest of public interests—the prevention of death and injury."[222] The court explained, "[the ordinance's] enactment was prompted by the loss of life in an earlier flood. And its avowed purpose is to prevent the loss of lives in future floods."[223] In contrast, the Supreme Court's majority opinion did not even mention that the flood precipitating the County's interim ordinance had been deadly and costly.

Overall, *First English* has the potential to deter local governments from enacting the type of floodplain regulations contemplated by the National Flood

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216. First English Evangelical Lutheran Church v. Cty. of L.A., 210 Cal. App. 3d 1353, 1367–68 (1989). The California Court of Appeal derived the deprivation of the "all use" test from Justice Rehnquist's majority opinion in *First English*, which in turn relied in part on Agins v. Tiburon, 447 U.S. 255 (1980) ("The application of a general zoning law to a particular property effects a taking if the ordinance does not substantially advance legitimate state interests [citation omitted] or denies an owner economically viable use of his land [citation omitted]."). *First English*, 210 Cal. App. 3d at 1364. The *Agins*' "all use" test was a precursor of the modern Court's opinion in Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1027 (1992) (holding "regulation that deprives land of all economically beneficial use" requires compensation unless "the logically antecedent inquiry into the nature of the owner's estate shows that the proscribed use interests were not part of his title to begin with").

217. *See supra* text accompanying notes 213–14.

218. *First English*, 482 U.S. at 311–12.

219. *Id.* at 326–28 (Stevens, J., dissenting).

220. *Id.*

221. *First English*, 210 Cal. App. 3d at 1366.

222. *Id.* at 1370.

223. *Id.*

Insurance Act. Dissenting Justice Stevens warned that the Court's decision would have far-reaching implications: "Cautious local officials and land-use planners may avoid taking any action that might later be challenged and thus give rise to a damages action. Much important regulation will never be enacted, even perhaps in the health and safety area." [224] He criticized the majority opinion as a "loose cannon . . . unattached to the Constitution" that would undoubtedly spark a "litigation explosion."[225]

Justice Rehnquist, for the majority, did not disagree. Quoting *Armstrong v. United States*,[226] he stated that it is "axiomatic" that the takings clause is "designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole."[227] He acknowledged that the Court's opinion "will undoubtedly lessen to some extent the freedom and flexibility of land-use planners and governing bodies of municipal corporations when enacting land-use regulations."[228] However, he suggested that this was a fair result because the just compensation clause of the Fifth Amendment was designed to limit such flexibility and freedom in some cases; he quoted Justice Holmes' statement that "a strong public desire to improve the public condition is not enough to warrant achieving the desire by a shorter cut than the constitutional way of paying for the change."[229] Thus, the intended effect of *First English* was to shift the cost of flood safety from those who occupy risky areas to government regulators who restrict such risk-taking. *First English*'s chilling message lives on, despite the fact that no taking had actually occurred, as found by the lower court on remand.[230]

2. *Lucas*—Challenging Coastal Regulations

Whereas *First English* addressed county land-use regulations designed to prevent harm from river flooding, *Lucas* involved a challenge to a state's regulations designed to protect life and property from coastal storms and hurricanes.[231] South Carolina had designed its challenged regulations to comply with the Coastal Zone Management Act of 1972 ("CZMA").[232] Passed just four years after the National Flood Insurance Act, the CZMA employs a scheme of cooperative federalism with the goal of "protecting natural resources, managing development in high hazard areas, giving development priority to coastal-dependent uses, and

224. *First English*, 482 U.S. at 340–41 (Stevens, J., dissenting).
225. *Id.*
226. Armstrong v. United States, 364 U.S. 40, 49 (1960).
227. *First English*, 428 U.S. at 318–19.
228. *Id.* at 321.
229. *Id.* (quoting Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 416 (1922)).
230. *See supra* text accompanying note 216.
231. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1021 n.10 (1992).
232. Coastal Zone Management Act of 1972, 16 U.S.C. § 1451 (2012).

providing public access for recreation."[233] In 1986, the plaintiff/petitioner David Lucas purchased two residential lots on the Isle of Palms, a barrier island near Charleston, South Carolina. Lucas himself had also developed an extensive residential area on the island.[234] In 1988, in compliance with the CZMA, South Carolina passed a state Coastal Management Act that, among other things, prohibited the construction of habitable structures seaward of a setback line established by defendant/respondent South Carolina Coastal Council.[235] The coastal zone restriction prevented Lucas from building residences on either of his two remaining lots (but he had been permitted to develop numerous other homes in the development previously).[236]

Lucas sued, alleging that the state restriction worked a taking of his property without just compensation.[237] The Supreme Court applied the categorical rule that compensation is required whenever regulation "denies all economically beneficial or productive use of land,"[238]—which has come to be known as the "wipe-out" or "total takings" rule.[239] Relying on the South Carolina trial court's finding that the construction ban rendered Lucas' lots "valueless,"[240] the Court held that compensation was required unless, on remand, the state Coastal Council could demonstrate that well-established principles of common law would have precluded Lucas' contemplated development.[241]

As in *First English*, three aspects of the Court's analysis could discourage states and local governments from enacting flood protection regulations. First, Justice Scalia's majority opinion arguably addressed an issue that was not squarely before the Court. He accepted as true the state trial court's finding that the development restriction rendered the two Lucas lots "valueless" and declined

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233. In the words of Justice Blackmun, in dissent, "the Act was designed to provide States with money and incentives to carry out Congress' goal of protecting the public from shoreline erosion and coastal hazards. In the 1980 amendments to the Act, Congress directed States to enhance their coastal programs by "[p]reventing or significantly reducing threats to life and the destruction of property by eliminating development and redevelopment in high-hazard areas." *Lucas*, 505 U.S. at 1036 (citing 16 U.S.C. § 1456b(a)(2)).

234. *Id*. at 1008.

235. *Id*.

236. *Id*.

237. *Id*. at 1009.

238. *Id*. at 1015. Justice Scalia suggested that the rule he announced in *Lucas* was not new, but traced back to a variety of sources including Agins v. Tiburon, 447 U.S. 255, 260 (1980). Dissenting Justice Blackmun disagreed, repeatedly citing to the Court's "new" rule. *See, e.g.*, *Lucas*, 505 U.S. at 1054. Some commentators also seem to share Justice Blackmun's skepticism. *See, e.g.*, Krier & Sterk, *supra* note 189, at 59 (suggesting that *Lucas* articulated a new categorical rule "unless one takes seriously Justice Scalia's assertion that the rule had been in place at least since a sentence of dictum in *Agins v. City of Tiburon*").

239. *See* Krier & Sterk, *supra* note 189, at 42–43 (referring to the *Lucas* categorical rule as the "wipeout" rule).

240. *Id*.

241. *Lucas*, 505 U.S. at 1027 (explaining that application of its categorical rule could be avoided if a "logically antecedent inquiry into the nature of the owner's estate shows that the proscribed use interests were not part of his title to begin with").

to consider the respondent's argument that such finding was erroneous.[242] The concurring and dissenting justices questioned this approach, calling it "curious,"[243] "implausible,"[244] "premature,"[245] and "improvident[]".[246]

As a second analytical technique disfavoring government regulators, *Lucas* cast doubt on the good faith of the South Carolina Coastal Council.[247] Lucas conceded that the challenged regulation was "necessary to prevent a great public harm."[248] However, Justice Scalia's majority opinion suggested that South Carolina had been disingenuous in asserting such a harm-prevention rationale because regulations "requiring land to be left substantially in its natural state" and without economically beneficial use carry "a heightened risk that private property is being pressed into some form of public service under the guise of mitigating serious public harm."[249] Brushing off dissenting Justice Blackmun's catalog of the known flood hazards of the area,[250] Justice Scalia asserted, "[i]n Justice

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242. *Id.* at 1029 n.9 ("This finding was the premise of the petition for certiorari, and since it was not challenged in the brief in opposition we decline to entertain the argument in respondent's brief on the merits [citation omitted] that the finding was erroneous.").

243. *Id.* at 1034 (Kennedy, J., concurring) ("I share the reservations of some of my colleagues about a finding that a beach–front lot loses all value because of a development restriction. . . . Where a taking is alleged from regulations which deprive the property of all value, the test must be whether the deprivation is contrary to reasonable, investment–backed expectations.").

244. *Id.* at 1045 (Blackmun, J., dissenting) (noting the majority imagines that regulation will rarely prohibit all economic use of real estate and that it "[a]lmost certainly did not happen in this case" and complaining of the Court's altering the "long-settled rules of review" in its "haste to reach a result").

245. *Id.* at 1061 (Stevens, J., dissenting) ("Proper application of the doctrine of judicial restraint would avoid the premature adjudication of an important constitutional question.").

246. *Id.* at 1076 (Souter, J., dissenting) ("I would dismiss the writ of certiorari in this case as having been granted improvidently. After briefing and argument it is abundantly clear that an unreviewable assumption in which this case comes to us is both questionable as a conclusion of Fifth Amendment law and sufficient to frustrate the Court's ability to render certain the legal premises on which its holding rests.").

247. *See generally* Christine A. Klein, *The New Nuisance: An Antidote to Wetland Loss, Sprawl, and Global Warming*, 48 B.C. L. REV. 1155, 1168–71 (2007).

248. *Lucas*, 505 U.S. at 1021 ("By neglecting to dispute the findings enumerated in the Act or otherwise to challenge the legislature's purposes, petitioner 'concede[d] that the beach/dune area of South Carolina's shores is an extremely valuable public resource; that the erection of new construction, *inter alia*, contributes to the erosion and destruction of this public resource; and that discouraging new construction in close proximity to the beach/dune area is necessary to prevent a great public harm.'").

249. *Id.* at 1016.

250. Justice Blackmun complained,

> The country has come to recognize that uncontrolled beachfront development can cause serious damage to life and property. . . . Hurricane Hugo's September 1989 attack upon South Carolina's coastline, for example, caused 29 deaths and approximately $6 billion in property damage, much of it the result of uncontrolled beachfront development. . . . The beachfront buildings are not only themselves destroyed in such a storm, "but they are often driven, like battering rams, into adjacent inland homes" [citation omitted]. Moreover, the development often destroys the natural sand dune barriers that provide storm breaks.

Id. at 1036 n.1 (Blackmun, J., dissenting).

Blackmun's view, even with respect to regulations that deprive an owner of all developmental or economically beneficial land-uses, the test for required compensation is whether the legislature has recited a harm-preventing justification for its action."[251] He concluded, "[s]ince such a justification can be formulated in practically every case, this amounts to a test of whether the legislature has a stupid staff. We think the Takings Clause requires courts to do more than insist upon artful harm-preventing characterizations."[252] In retrospect, the regulation's harm-preventing characterization proved to be firmly rooted in reality, rather than the artistry suggested by Justice Scalia. The same 2017 hurricane season that ravaged Houston posed grave threats to the Isle of Palms, home to David Lucas' development.[253] Even before, the area has long struggled with persistent storm tides that threatened the island's homes and amenities.[254]

In sum, *Lucas* has almost certainly chilled flood protections of the type that are critical to the success of the NFIP. As Justice Stevens argued in dissent, the majority's new categorical rule would impose substantial costs on state and local governments and was therefore "likely to impede the development of sound land-use policy."[255] With millions of dollars at stake, land-use officials would face both "substantial uncertainty because of the ad hoc nature of takings law and unacceptable penalties if they guess incorrectly about that law."[256] In effect, Justice Stevens continued, *Lucas* establishes "a form of insurance" against the modification of land-use regulations.[257] Similar to other forms of insurance, he concluded, "the Court's rule creates a 'moral hazard' and inefficiencies: In the face of uncertainty about changes in the law, developers will overinvest, safe in

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Justice Blackmun also observed,

> The area is notoriously unstable. In roughly half of the last 40 years, all or part of petitioner's property was part of the beach or flooded twice daily by the ebb and flow of the tide. . . . Tr. 84. Between 1957 and 1963, petitioner's property was under water. . . . Between 1963 and 1973 the shoreline was 100 to 150 feet onto petitioner's property. . . . In 1973 the first line of stable vegetation was about halfway through the property. . . . Between 1981 and 1983, the Isle of Palms issued 12 emergency orders for sandbagging to protect property in the Wild Dune development. . . . Determining that local habitable structures were in imminent danger of collapse, the Council issued permits for two rock revetments to protect condominium developments near petitioner's property from erosion; one of the revetments extends more than halfway onto one of his lots.

Id. at 1036 (Blackmun, J., dissenting).

251. *Id.* at 1024 n.11.

252. *Id.*

253. Mayci McLeod, *Isle of Palms Working to Rebuild After Irma*, NEWS2 (Sept. 17, 2017), https://www.counton2.com/news/isle-of-palms-working-to-rebuild-after-irma_20180228082028309/997630821.

254. Bo Petersen, *South Carolina Regulators Allow Temporary Sea Walls to Remain on Isle of Palms Beaches*, POST & COURIER (Mar. 9, 2017), https://www.postandcourier.com/news/south-carolina-regulators-allow-temporary-sea-walls-to-remain-on/article_4750460e-04fe-11e7-87c3-13fffa1f397e.html (describing experimental use since 2013 of removable sea walls to protect millions of dollars' worth of beachfront property from coastal storms and erosion).

255. *Lucas*, 505 U.S. at 1070 n.5, 1071 (Stevens, J., dissenting).

256. *Id.*

257. *Id.* at 1070 n.5 (Stevens, J., dissenting).

the knowledge that if the law changes adversely, they will be entitled to compensation."[258] Thus, similar to *First English*, *Lucas* was intended to shift the costs of floodplain safety from landowners to state and local regulators.

B. THE MECHANISM: CHALLENGING GOVERNMENT REGULATION AND ACTIVITY

Sorting through the classifications of Fifth Amendment "takings" can be daunting. The most straightforward application involves exercises of eminent domain, under which a governmental authority "condemns" and takes title to private property for "public use"[259] in exchange for the payment of just compensation. The quintessential example of eminent domain would be the case where a state or the federal government condemns numerous private strips of land (and pays compensation) along a highway to widen it. Such condemnations have sometimes been called "explicit takings."[260] In contrast, courts have found that other types of governmental actions that impact private property constitute "takings," even though the actions stop short of transferring title from private owner to governmental entity. Some commentators refer to these as "implicit takings"[261] to distinguish them from exercises of eminent domain. This section discusses the impact on national flood protection policy of two types of "implicit takings" under the Fifth Amendment—regulatory takings[262] and physical takings.[263]

1. Regulatory Takings—Challenging Floodplain Regulation

When federal, state, or local officials adopt regulations that "go too far" in their impact on private property, such regulation can be deemed a taking that requires compensation of the affected property owner.[264] The type of state and local regulations required of communities participating in the NFIP would potentially fall into this category of implicit takings.[265] Most challenged floodplain regulations would be evaluated under the test established in *Penn Central Transportation Co.*

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258. *Id.*

259. "Public use" is a well-litigated and controversial term of art, which has been interpreted broadly enough to encompass "public purposes" such as urban renewal and economic revitalization, even if the public does not physically "use" the condemned property. *See, e.g.*, Kelo v. City of New London, 545 U.S. 469 (2005), *reh'g denied*, 545 U.S. 1158 (2005); *see generally* CHRISTINE A. KLEIN, PROPERTY: CASES, PROBLEMS, AND SKILLS 688–708 (2016).

260. *See, e.g.*, Krier & Sterk, *supra* note 189, at 40.

261. *See, e.g.*, *id.*; Sandra B. Zellmer, *Takings, Torts, and Background Principles*, 52 WAKE FOREST L. REV. 193, 204 (2017) ("'Implicit takings' includes inverse condemnation by regulation and takings by invasion or occupation, where the government did not intend to take title but effectively did so by its actions."); Thomas W. Merrill, *Anticipatory Remedies for Takings*, 128 HARV. L. REV. 1630, 1637 (2015).

262. *See infra* Part III.B.1.

263. *See infra* Part III.B.2.

264. Penn. Coal Co. v. Mahon, 260 U.S. 393 (1922) (asserting the general rule that "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking").

265. *See infra* Part I.B.2.

v. New York City.[266] Under *Penn Central*, courts engage in ad hoc factual inquiries, with factors of "particular significance" including, (1) "the economic impact of the regulation on the claimant," (2) "the extent to which the regulation has interfered with distinct investment-backed expectations," and (3) the "character of the government action."[267] With respect to the third factor, *Penn Central* explained that a taking "may more readily be found when the interference with property can be characterized as a physical invasion by government . . . than when interference arises from some public program adjusting the benefits and burdens of economic life to promote the common good."[268] That language seems well-suited to support land-use regulations enacted in compliance with NFIP against regulatory takings challenges.

The Supreme Court subsequently reinforced this suggestion in *Murr v. Wisconsin* in 2017. Plaintiffs alleged that a lot merger ordinance preventing them from separately using or selling two adjacent lots that they owned constituted an uncompensated taking.[269] The lots were located along the St. Croix River, which has been designated a "wild and scenic river" entitled to protection under a federal law that takes a cooperative federalism approach.[270] In rejecting the plaintiffs' claim, the Court discussed application of the third *Penn Central* factor to river areas, explaining "the governmental action was a reasonable land-use regulation, enacted as part of a coordinated federal, state, and local effort to preserve the river and surrounding land"[271]—language that arguably supports local floodplain ordinances enabling a community to participate in the NFIP.[272]

The NFIP itself was the subject of a facial challenge in *Texas Landowners Rights Association v. Harris*, a case decided in 1978 less than one month before

266. 438 U.S. 104 (1978).

267. *Id*. at 124 (internal citation omitted).

268. *Id*. (internal citation omitted).

269. Murr v. Wisconsin, 137 S. Ct. 1933 (2017). *Murr* was a 5–3 decision (with Justice Gorsuch taking no part in the consideration or decision of the case).

270. *Id*. at 1940 (citing to the Wild and Scenic Rivers Act of 1972, 16 U.S.C. § 1274 (1972), and noting that "[t]ourists and residents of the region have long extolled the picturesque grandeur of the river and surrounding area"). Like the NFIP, the legislation requires a cooperative approach between federal and state governments. *Id*. (explaining roles of the federal government and the states of Wisconsin and Minnesota).

271. *Id*. at 1949–50.

272. *See supra* notes 52–53, 95–98 and accompanying text. The *Murr* Court also articulated three factors that seem to apply to the second *Penn Central* factor related to the landowner's distinct, investment-backed expectations. *See supra* notes 266–67 and accompanying text. Of import to the NFIP, the Court stated "it may be relevant that the property is located in an area that is subject to, or likely to become subject to, environmental or other regulation." *Murr*, 137 S. Ct. at 194–46 (quoting Justice Kennedy's *Lucas* concurrence, "Coastal property may present such unique concerns for a fragile land system that the State can go further in regulating its development and use than the common law of nuisance might otherwise permit"); *see generally* John Echeverria, *Big Victory for State and Local Governments in* Murr, TAKINGS LITIGATION: A BLOG ABOUT TAKINGS LAW (June 26, 2017), https://takingslitigation.com/2017/06/26/big–victory–for–state–and–local–governments–in–murr/.

the Supreme Court decided *Penn Central*.[273] The District Court for the District of Columbia rejected a challenge by Texas, political subdivisions in twelve states, and landowners that the NFIP's "carrot and stick" scheme worked a regulatory taking of their floodplain property because it denied nonparticipating communities certain federal financial assistance and federally-related financing by private lenders for the purchase or construction of property.[274] The plaintiffs did not allege that the statutory scheme rendered their property useless or valueless, and therefore a *Lucas*-like analysis was inapplicable.[275] Instead, the district court decided the case under a loose balancing test that can be seen as a precursor to the *Penn Central* analysis. In particular, the court rejected plaintiffs' argument that sanctions applied under the NFIP for the failure of individuals or communities to participate in the program worked an unacceptable "diminution in property value" that triggered a compensation requirement.[276] As the court explained, the case "turns upon the usual balancing test of social policy and public interest versus the rights of a landowner to be unencumbered in the use of his property."[277] The court found that the NFIP promoted a legitimate national goal to "equitably spread the costs of flood disasters among those landowners who most benefit from publicly funded flood disaster relief."[278] It concluded that the NFIP does not constitute a taking without compensation and that the "scales tip" in favor of the important public safety, health, and welfare goals of the program.[279]

At first blush, cases such as *Penn Central*, *Murr v. Wisconsin*, and *Texas Landowners Rights Association* would seem to give comfort to local officials considering the adoption of floodplain regulations. And yet, the Supreme Court took great pains in *First English* and *Lucas* to design two specialized tests more favorable to landowners than the default *Penn Central* test.[280] Government regulators know that they tread a fine line between constitutionality and unconstitutionality whenever they venture into the realm of land-use regulation. If regulators guess incorrectly about the state of the law (as noted by Justice Stevens in his *Lucas* dissent),[281] they face penalties potentially beyond their economic reach.

273. Texas Landowners Rights Ass'n v. Harris, 453 F. Supp. 1025 (D.D.C. 1978), *aff'd*, 598 F.2d 311 (D.C. Cir. 1979), *cert. denied*, 444 U.S. 927 (1979). The *Texas Landowners* district court opinion was handed down on May 31, 1978, whereas the U.S. Supreme Court handed down its *Penn Central* opinion on June 26, 1978.

274. *Id.* at 1027–28, 1030.

275. *Id.* at 1032. As Justice Scalia asserted, the *Lucas* rule found its roots in Agins v. Tiburon, 447 U.S. 255, 260 (1980), making a *Lucas*-type analysis possible before the actual *Lucas* decision of 1992. *See Lucas*, 505 U.S. 1003, 1015–18 (1992).

276. *Texas Landowners*, 453 F. Supp. at 1031.

277. *Id.* at 1032.

278. *Id.*

279. *Id.*

280. *See supra* Part III.B.1.

281. *See supra* text accompanying note 256.

2. Physical Takings—Challenging the Operation of Federal Flood Control Structures

The NFIP is but one support in the three-legged stool—federal flood control structures, federal disaster relief, and federal flood insurance—built by Congress to keep the nation safe from floods.[282] As explained in the previous section, the *regulatory* takings doctrine takes direct aim at the land-use regulations essential to the proper functioning of the flood insurance program. This theory was successfully employed in the Houston area, for example, to deter the city from regulating certain development restrictions within floodways.[283] In contrast, as this section will discuss, the *physical* takings doctrine attacks the first leg of the stool—federal flood control structures such as reservoirs, dams, and levees. This doctrine figures prominently in the pending class action lawsuits brought after Hurricane Harvey. In those cases, the plaintiffs claim that the federal government's failure to contain the deluge of floodwaters in the Addicks and Barker Reservoirs created a taking of their land for which compensation is required.[284] The stakes are huge. The post-Harvey class action cases, for example, involve up to 20,000 plaintiffs and could subject the federal government and taxpayers to an estimated three billion dollars in damages.[285] Despite its potential impact, the physical takings doctrine is in flux as courts struggle to determine whether government flooding of private land should sound in takings or in tort.[286] The post-Harvey litigation has the potential to provide much-needed clarity or to take a wrong turn in the development of legal doctrine.[287]

Two modern cases are particularly relevant. The Supreme Court first sets the stage for physical takings claims in its 2012 opinion, *Arkansas Game & Fish Commission v. United States*.[288] In that case, the U.S. Army Corps of Engineers periodically released water from a federal dam.[289] To benefit downstream farmers, the Corps deviated from its usual rates of release as specified in the Corps' own water control manual.[290] The petitioner, Arkansas Game and Fish Commission, alleged that the modified releases flooded its downstream forest lands, damaged or destroyed its timber crop, and disrupted the Commission's use and enjoyment of its property.[291] As framed before the Supreme Court, the issue

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282. *See supra* Part I.A.

283. *See supra* text accompanying notes 155–57.

284. *See supra* text accompanying notes 170–71; *see also supra* Part I.A.1 (discussing the federal government's first venture into flood control through the construction of levees and other structures).

285. Jack Witthaus, *Houston Law Firms Named to Consolidated Harvey Flood Cases*, HOUS. BUS. J. (Nov. 21, 2017), https://www.bizjournals.com/houston/news/2017/11/21/houston–law–firms–named–to–consolidated–harvey.html.

286. *See generally*, Zellmer, *supra* note 261, at 193.

287. *See* Echeverria, *supra* note 272.

288. Ark. Game & Fish Comm'n v. United States, 568 U.S. 23 (2012).

289. *Id*. at 28.

290. *Id*. at 27–28.

291. *Id*. at 26.

was quite narrow, asking "whether temporary flooding can ever give rise to a [physical] takings claim."[292] Citing *First English*[293] and other cases, the Court concluded, "[n]o decision of this Court authorizes a blanket temporary-flooding exception to our Takings Clause jurisprudence, and we decline to create such an exception in this case."[294]

Going beyond that narrow holding, the Court then proceeded to discuss how the case might be resolved under *Penn Central* and its situation-specific, factual inquiries.[295] In this case, particularly relevant inquiries would include, according to the Court, (1) the duration of the temporary flooding, (2) "the degree to which the invasion is intended or is the foreseeable result of authorized government action," (3) the landowner's reasonable investment-backed expectations, taking into consideration the character of the land as a floodplain below a dam, and (4) the severity of the interference with the land's use.[296] On remand, the Federal Circuit affirmed the judgment of the Court of Federal Claims that the flooding constituted a compensable temporary taking.[297] Its discussion further blurred the distinction between tort and takings law.[298]

Five years after it decided *Arkansas Game & Fish* on remand, the Federal Circuit decided another flood-related takings case that spanned the tort/takings divide. This time, it employed a broader analysis more favorable to government actors. In its 2018 decision, *St. Bernard Parish Government v. United States*,[299] the Federal Circuit likely brought an end to long-running litigation dating back to Hurricane Katrina in 2005. The court considered whether the increased flooding from a navigation channel known as the Mississippi River-Gulf Outlet that

292. *Id.* at 32.

293. *First English* is discussed *supra* Part III.A.1.

294. *Ark. Game & Fish Comm'n*, 568 U.S. at 34.

295. *Id.* at 31–32.

296. *Id.* at 38–40. Scholars have found the Court's discussion ambiguous. *See, e.g.*, Ilya Somin, *Is Federal Government Flooding of Houston Homes a Taking?*, WASH. POST (Oct. 31, 2017), https://www.washingtonpost.com/news/volokh-conspiracy/wp/2017/10/31/is-federal-government-flooding-of-houston-homes-a-taking/ (asserting "the Court's decision was far from a model of clarity when it comes to the question of how to figure out whether a given case of deliberate temporary flooding should be considered a taking or not"); *see generally* Robert Haskell Abrams & Jacqueline Bertelsen, *Downstream Inundations Caused by Federal Flood Control Dam Operations in a Changing Climate: Getting the Proper Mix of Takings, Tort, and Compensation*, 19 U. DENV. WATER L. REV. 1, 11 (2015) (observing that *Arkansas Game & Fish* will encourage litigation by flood-affected landowners).

297. Ark. Game & Fish Comm'n v. United States, 736 F.3d 1364, 1367 (Fed. Cir. 2013).

298. *Id.*; *see* Zellmer, *supra* note 261, at 193 (arguing that the case and its progeny "produce a chilling effect, making officials less likely to restrict improvident floodplain and coastal development for fear of takings claims" and may also "inhibit governments' willingness to . . . construct, retrofit, or operate dams, levees, and other types of flood control structures for any purpose other than flood control, such as environmental quality, recreation, or wildlife habitat"). Zellmer also argues "the vast majority of cases involving temporary physical occupations by flooding are torts, not takings, and those that are characterized as takings may only be successful if a reasonable investment-backed expectation in a lawful activity or development is adversely affected such that the landowner has experienced greater losses than gains at the hands of the government." Zellmer, *supra* note 261, at 195.

299. St. Bernard Par. Gov't v. United States, 887 F.3d 1354 (Fed. Cir. 2018).

channeled storm surge directly into New Orleans during Hurricane Katrina constituted a temporary taking under *Arkansas Game & Fish*. The Federal Circuit found no taking because the plaintiffs failed to consider all government action as a whole—including the construction of a series of protective levees.[300] Under this so-called "net benefits" test,[301] the government's actions, taken together, likely placed the plaintiffs in a better position than if the government had taken no action at all.[302] In addition, the court made clear that allegations of government *inaction* were insufficient to support a takings claim: "While the theory that the government failed to maintain or modify a government-constructed project may state a tort claim, it does not state a takings claim. A property loss compensable as a taking only results when the asserted invasion is the direct, natural, or probable result of authorized government action."[303]

As suggested above, the regulatory takings doctrine seeks to shift the costs of flood safety from floodplain occupants to government regulators.[304] A robust physical takings doctrine could bring about a similar result: If plaintiffs can circumvent tort immunity by instead bringing a physical takings claim, then they, in effect, make the federal government an insurer of their safety, without undertaking the necessary development sacrifices envisioned by the NFIP. The two doctrines combined could place government officials in an untenable bind: If state or local governments regulate risky development, they may subject themselves to ruinous regulatory takings liability. But if they allow risky development to go forward, then the federal government may be subject to enormous liability for the maintenance of flood control structures, the payment of disaster relief and flood insurance benefits, and the payment of physical takings claims if the federal government's infrastructure is unable to successfully contain excess floodwaters. In the wake of storms and hurricanes, floodwaters must go somewhere, but who should bear the cost of the damage they inflict?

C. LOOKING BACK: UNDERMINING FEDERAL FLOOD PROTECTION

The takings doctrine undermines federal flood protection in subtle ways. As discussed below, the regulatory takings doctrine can deter regulation essential to

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300. *Id.* at 1363.

301. *See generally* Edward P. Richards, *A Radical Proposal: Does St. Bernard Par. Gov't v. United States Allow the Federal Government to Step Away from Flood Protection and Create Wild Seashores and Wild Rivers*, VT. ENVTL. F. 11 (2018) *available at* https://biotech.law.lsu.edu/blog/Richards-Net-Benefits-Analysis-in-Takings-Cases-The-St-Bernard-Flooding-Case.pdf.

302. *Id.*

303. *St. Bernard Par.*, 887 F.3d at 1354, 1360. The plaintiffs filed an action in tort based on the same facts. In 2012, the Fifth Circuit ruled against the plaintiffs' torts claims, holding that the federal government was immune under the Flood Control Act (claims related to levee breaches) and under the discretionary function exception to the Federal Tort Claims Act (claims related to dredging of navigation canal and other claims). *In re* Katrina Canal Breaches Litigation, 696 F.3d 436, 446 (5th Cir. 2012), *cert. denied*, 570 U.S. 926 (2013).

304. *See supra* Part III.A.

the NFIP's success. The physical takings doctrine, in turn, serves to shift the cost of risky development onto the federal government and federal taxpayers.

1. Liability and Deterrence

Based on the Supreme Court's reluctance to defer to government regulators, as articulated in *First English* and *Lucas*,[305] one would expect that NFIP-related land-use regulations routinely would be declared unconstitutional. Early commentary in the wake of the NFIP's 1968 enactment feared just such a result, worrying that the takings doctrine would "effectively kill" the NFIP.[306] Although those fears may have been overblown, this section will discuss how the takings doctrine proved a powerful opponent to federal flood protection through liability and deterrence.

First, the takings doctrine can undermine federal flood protection by imposing potentially ruinous costs on communities that enact land-use regulation. When communities lose a takings challenge, the consequences can be devastating. A cautionary tale—no doubt well-known among local officials—involves the thirty-six million dollar judgment against Half Moon Bay, California, a small municipality with a population of only 12,000.[307] In the face of such staggering liability, Half Moon Bay suspended its police department and recreation services, and even considered dissolution of the municipality itself.[308] But takings claimants do not have to prevail in court to subject regulators to financial losses. The cost of mounting a takings defense can be quite high, even if the defense successfully wards off liability on the underlying claims.[309]

Second, the mere threat of takings litigation can deter regulators from enacting land-use restrictions.[310] This phenomenon of regulatory chill persists, despite the fact that takings claims are remarkably *unsuccessful*. Professors James Krier and Stewart Sterk developed an extensive empirical database designed to test the

305. *Id.*

306. *See generally* Saul Jay Singer, *Flooding the Fifth Amendment: The National Flood Insurance Program and the "Takings" Clause*, 17 B.C. ENVTL. AFF. L. REV. 323, 323 (1990) (expressing concern that a judicial finding that floodplain regulations "constitute 'takings,' thereby invoking the fifth amendment requirement that the government tender 'just compensation,' would effectively kill the NFIP"); Zygmunt J. B. Plater, *The Takings Issue in a Natural Setting: Floodlines and the Police Power*, 52 TEX. L. REV. 201, 223 (1974) (discussing a "variety of constitutional onslaughts directed at floodplain regulations").

307. Yamagiwa v. City of Half Moon Bay, 523 F. Supp. 2d 1036, 1087 (N.D. Cal. 2007).

308. Christopher Serkin, *Insuring Takings Claims*, 111 NW. U. L. REV. 75, 77 (2016) (noting the high litigation costs of defending takings claims even if the local government ultimately prevails). Serkin noted the conventional wisdom that "successful regulatory takings claims are vanishingly rare" but argued nevertheless that the "problem of uninsured risk of regulatory takings may lead to underregulation and may also have distributional consequences between local governments." *Id.* at 110.

309. *Id.* at 77 (adding happy postscript, from Half Moon Bay's perspective, that the "municipality was saved, however, when it successfully sued a former insurer for coverage under an 'occurrence-based' policy that had lapsed more than twenty years earlier").

310. *See supra* text accompanying notes 151–53 (discussing the example of Houston).

operation of takings doctrine "on the ground" outside the Supreme Court.[311] Their database encompasses more than 2,000 implicit takings cases decided by state and lower federal courts between 1979 and 2012.[312] Overall, Krier and Sterk found that landowners succeeded in fewer than 10% of all regulatory takings cases.[313] That figure may be even lower for cases aimed specifically at floodplain restrictions. Takings scholar John Echeverria found an "apparently unbroken string of precedent from around the country holding that floodplain development restrictions do not represent [regulatory] takings."[314] With respect to physical (as opposed to regulatory) takings involving flooding, Krier and Sterk tallied a reasonably high success rate, with landowners prevailing at a rate of about 33%.[315]

Despite high landowner losses, there may be a strategic advantage in continuing to prosecute takings lawsuits: Opponents of regulation may seek to deter what they refer to as "overregulation." Krier and Sterk pondered whether "the prospect of litigation serve[s] to deter overregulation even when, in fact, the litigation is likely to be unsuccessful[.]"[316] They concluded in the affirmative, positing that the Supreme Court's forceful takings language—even if not determinative in a particular case—could have an on-the-ground effect on local officials' decisions whether to enact regulation. Krier and Sterk asked why lawyers "persist in litigating [regulatory takings] cases to judicial decision when the prospect of success is so low."[317] One potential response, they suggested, is that developers have an incentive to bring low-probability claims because "reputation as a litigious developer may increase the likelihood that a litigation-averse municipal entity will make concessions on future development applications."[318] Litigants, too, acknowledge the strategy of lawsuit as a deterrent. In *First English*, the plaintiff Church's brief challenged the view that the takings doctrine chills regulation, but nevertheless cheered such a potential result: "One might even be so bold as to suggest that 'chilling' unconstitutional conduct is a good

311. *See* Krier & Sterk, *supra* note 189, at 95.

312. *Id.* at 39. Krier and Sterk chose January 1979 as the starting date because they considered Penn Central Transportation Co. v. New York City, 438 U.S. 104 (1978), decided the year before, as the "first of the *modern* takings cases." *Id.* at 52 (emphasis in original). They selected 2012 as the ending date of their survey because the monthly reporting service they relied upon, *Just Compensation*, ceased publication in June 2012. *Id.*

313. *Id.* at 64. Krier and Sterk noted that the actual success rate may have been even lower because they had aggregated the results of all of their cases, which did not account for subsequent reversals on appeal. *Id.*

314. John Echeverria, *Floodplain Regulation Not a Taking in South Carolina*, TAKINGS LITIG. (Aug. 13, 2015), https://takingslitigation.com/2015/08/13/floodplain-regulation-not-a-taking-in-south-carolina/; *see generally* John Echeverria, TAKINGS LITIGATION: A BLOG ABOUT TAKINGS LAW, https://takingslitigation.com/author/ (last visited Jan. 27, 2019).

315. Krier & Sterk, *supra* note 189, at 58 (Table 2).

316. *Id.* at 95 (asking whether "the prospect of litigation serve[s] to deter overregulation even when, in fact, the litigation is likely to be unsuccessful?").

317. *Id.* at 64.

318. *Id.* (internal citation omitted).

idea. Indeed, it is the hallmark of the Bill of Rights."[319] Beyond commentators and litigators, Supreme Court justices have also flagged the potential deterrent effect of the takings doctrine. In both his *First English* and *Lucas* dissents, Justice Stevens complained, "[c]autious local officials and land-use planners may avoid taking any action that might later be challenged and thus give rise to a damages action. Much important regulation will never be enacted, even perhaps in the health and safety area."[320]

State and local officials may be reluctant to regulate land-use for many reasons apart from the takings doctrine, such as a desire to maintain the community's tax base by approving as much development as possible. Still, the potential of the takings doctrine to discourage flood hazard regulation is sufficiently robust to merit the exploration of counter-incentives to bolster the NFIP's inducements for local floodplain regulation.

2. The Government as Insurer of Risky Development

The regulatory takings doctrine allows landowners to externalize (or "upshift") the costs of risky development. If floodplain landowners are not allowed to build because of local land-use regulations that comply with (or go beyond) the minimum standards of the NFIP, they may seek compensation from government regulators. Even if unsuccessful, landowners (particularly repeat players such as developers, builders' associations, and property rights groups) may be able to enjoy relaxed regulation in the future due to the deterrent effect of the costs or threatened costs of litigation defense.[321] In this way, the regulatory takings doctrine can undermine the design of the NFIP.

Likewise, the physical takings doctrine can thwart important flood safety measures. The federal government's historical willingness to tackle flood control (rather than leave it to local self-help measures) was based on a delicate balance: Although the federal government could do much to engineer and insure against floods *ex ante*, and to provide disaster relief *ex post* when flooding inevitably occurred despite the federal government's efforts, it insisted on caps on the government's liability for undertaking such efforts through tort immunity when flood control efforts failed;[322] through limits on the purposes and amounts of disaster relief;[323] and through the NFIP's quid pro quo of local land-use regulations to minimize flood exposure.[324] If plaintiffs can circumvent tort immunity by instead bringing a physical takings

319. Brief for Appellant, First English Evangelical Lutheran Church of Glendale v. Cty. of L.A., 482 U.S. 304 (1986), 1986 WL 727409, at 38 n.47.
320. *See supra* text accompanying notes 227–23.
321. *See supra* text accompanying note 316.
322. *See supra* text accompanying notes 26–29.
323. *See supra* text accompanying notes 40–42.
324. *See supra* text accompanying notes 96–98.

claim—thereby blurring the tort/takings distinction[325]—then they in effect make the federal government an insurer of their safety, without undertaking the necessary development sacrifices envisioned by the NFIP. As one commentator worried, takings cases might become "a kind of social insurance program" for development risks, including those associated with climate change, at least for those victims "fortunate enough to be able to point to a deep-pocketed defendant like the United States."[326] Moreover, such lawsuits "may actually impede initiative to take steps to avoid the worst effects of climate change, undermining our collective ability to build more resilient communities."[327]

IV. THE WAY FORWARD

The NFIP offers communities powerful incentives to regulate hazard-prone floodplain and coastal development. But in light of actual or threatened regulatory takings litigation, the NFIP's incentives may not be powerful enough. Even if communities do satisfy the NFIP's bare regulatory minimum, they may be afraid to go further to ensure an adequate margin of safety, as by limiting unwise development outside the 1%-chance floodplain used by FEMA as the basis for its often-outdated federal insurance rate maps. At the same time, application of the physical takings doctrine to temporary or permanent flooding can cast the federal government as an insurer of development, wherever located. Together, the two doctrines can prod communities to under-regulate risky land-use while seeking to hold the federal government responsible for the failure to provide near-perfect flood control. As a result, federal taxpayers bear the burden of development in known flood areas—precisely the result Congress designed the NFIP to avoid.

This Part considers reforms to both the NFIP and the takings doctrine that can simultaneously protect human life and property, as well as the government's purse. These measures could help to realize the original goals of the NFIP which might be paraphrased as—borrowing from the language *Armstrong v. United States*—"to bar *private* landowners and developers from forcing the *public* alone from bearing private burdens—which, in all fairness and justice, should be borne by those who choose to undertake risky development."[328]

A. FLOOD INSURANCE: BACK TO BASICS

The path forward calls for a return to the first principles articulated in the National Flood Insurance Act of 1968—providing only temporary subsidies, ensuring enactment of sound land-use regulation, encouraging partial retreat, and advancing social equity. A February 2018 Public Opinion poll shows strong

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325. *See supra* Part III.B.2.

326. John Echeverria & Robert Meltz, *The Flood of Takings Cases After Hurricane Harvey*, CPRBLOG (Oct. 23, 2017), https://perma.cc/6FRM-TUDP (emphasis added).

327. *Id.*

328. Armstrong v. United States, 364 U.S. 40, 49 (1960).

public support across political parties for policies that more fairly allocate the costs of flood insurance and emphasize prevention rather than just recovery by incorporating sensible mitigation measures.[329]

1. Phase Out Federal Subsidies

An important concern of the 1968 legislators was to "encourage persons to become aware of the risk of occupying the flood plains."[330] Appropriate pricing of flood insurance is a critical way of accomplishing this goal. The Biggert-Waters Flood Insurance Reform Act of 2012 tried to phase out subsidies rapidly but was met with a severe political backlash by those who feared their insurance rates would escalate rapidly. The subsequent Homeowner Flood Insurance Affordability Act of 2014 also included a phase-out of subsidies, albeit on a more gradual schedule. Importantly, the 2014 legislation also called for measures to enhance affordability, hearkening back to an original component of the flood insurance program.[331]

In some cases, those with financial means are able to remain in the floodplain and to elevate their structures so as to qualify for federal flood insurance, or to buy property without a federally-backed mortgage and therefore to escape the need for federal flood insurance. Care needs to be taken in subsidizing insurance policies—even for the poor—because they may only work to keep people in the path of danger. Premium support must be coupled with steps that reduce the risk to vulnerable populations.[332]

2. Reinvigorate State and Local Land-Use Regulation

It is time to live up to one of Congress' original purposes in enacting the flood insurance program: to encourage strong, state and local land-use regulation. This may require action at the federal, state, and local levels, and by the judicial as well as legislative branches.

Congress should review and strengthen the incentives for local governments to adopt tough limits on new development in floodplains and areas subject to flooding in extreme events. In April 2018, Houston adopted building standards which, according to one report, "could have spared 84 percent of the buildings flooded by Hurricane Harvey."[333] The standards increased the elevation required for new buildings from one foot to two feet of elevation above the 0.2%-chance

329. *See* Bill McInturff & Lori Weigel, *Survey Findings on Flooding and Related Policies*, PUBLIC OPINION STRATEGIES (Feb. 1, 2018), https://perma.cc/9T7Z-WDS2.

330. H.R. Rep. No. 90-1585, at 2966–67.

331. NAT'L RES. COUNCIL, *supra* note 55, at 23.

332. *See* Flavelle, *supra* note 138.

333. Scott Wilson, *Fresh from Hurricane Harvey's Flooding: Houston Starts to Build Anew—In the Floodplain*, WASH. POST (May 22, 2018), https://www.washingtonpost.com/national/fresh-from-hurricane-harveys-flooding-houston-starts-to-build-anew–in-the-flood-plain/2018/05/22/2c5ccab8-53b6-11e8-a551-5b648abe29ef_story.html?utm_term=.a5dc0dd23f44.

floodplain. Through regulation, FEMA could enact a similarly-protective standard as the baseline for communities that want to make federal flood insurance available to their residents. Congress should also strengthen the requirements of the NFIP to insist that flood maps on which the federal insurance program, local communities, and residents rely are updated to reflect the true risk presented in an era of climate change.

3. Encourage Partial Floodplain Retreat

Beyond phasing out subsidies for insurance premiums, it is important to encourage the removal of more buildings from the floodplain altogether through voluntary buyout programs. This would help to solve the well-documented "repetitive loss" problem, under which a small number of high-risk properties take up a disproportionately large proportion of insurance payouts. Section 1323 of the National Flood Insurance Act, added in 2004, provides a repetitive flood claims grant program to mitigate structures, which includes acquisition or relocation of at-risk structures.[334] Even before the most recent rounds of hurricanes, for example, Harris County, Texas bought out more than 3,000 flood-prone properties between 1985 and 2015, using federal and local loans and funds. This amounted to a purchase of more than 1,000 acres that were restored as natural floodplains; the county estimated that this saved at least 1,500 homes from flooding during one storm alone (the so-called "Tax Day Flood" in April 2015).[335] This program could be expanded, perhaps partially funded through premium increases over time, emphasizing buyouts and retreats over the partial solution represented by vertical retreat through the elevation of structures or the filling and raising of lot elevations.[336]

4. Provide Better Signaling

There are many sources that document the inaccuracy of FEMA's floodplain maps, how they fail to take advantage of the best available data, and how they fail to take into account the reality of climate change.[337] In Houston, for example, many homeowners did not realize they were within identified "flood pools"

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334. *Repetitive Flood Claims Grant Program Fact Sheet*, FED. EMERGENCY MGMT. AGENCY (March 2, 2018 9:30 AM), https://perma.cc/B9LY-FL45.

335. *Mitigation Best Practices: Buyouts a Win–Win for Harris County and Residents*, FED. EMERGENCY MGMT. AGENCY, https://perma.cc/Y3MG-A6D2 (last visited Dec. 17, 2018); *see also* Zack Colman, *Disaster Prep Saves More Money Than Previously Thought*, E&E NEWS (Jan. 19, 2018), https://www.eenews.net/climatewire/2018/01/19/stories/1060071409.

336. Some propose phasing out federal insurance policies for new construction in the floodplain. The Trump Administration, for example, has called for rendering newly built houses in the floodplain ineligible for federal flood insurance by 2021. Mary Williams Walsh, *A Broke, and Broken, Flood Insurance Program*, N.Y. TIMES, Nov. 4, 2017, at A1.

337. Jen Schwartz, *National Flood Insurance Is Underwater Because of Outdated Science*, SCI. AM. (Mar. 23, 2018), https://www.scientificamerican.com/article/national-flood-insurance-is-underwater-because-of-outdated-science/.

where stored floodwaters could be released periodically. This represents a failure of signaling as well as an abdication of responsibility by local government by allowing homes to be built within the known flood pool.[338]

Requiring disclosure of a property's location within a flood zone, as some states require, is only meaningful if the flood zones reflect risk accurately. Sellers may already be required to disclose past flooding under state statutory common law standards, but this can be difficult and costly for a misled buyer to enforce. State legislatures should update their disclosure statutes to account for this.

5. Enhance Equity

Since its enactment, the NFIP has included a focus on supporting the most vulnerable in our communities. Reforms of all aspects of the NFIP should incorporate need-based distinctions and provide relief to those who need it most. With the growing deficit in the NFIP and the prospect of more extreme storms, subsidizing those with adequate resources may not be a sustainable strategy. In addition, greater transparency by FEMA in reporting the types of assistance provided, income levels of those receiving assistance, and overall cost could help ensure that support is directed where it is needed.[339]

B. FLOOD TAKINGS: INTERNALIZING EXTERNALITIES

The takings doctrine has had a perverse impact on the National Flood Insurance Program. Nevertheless, various measures can help minimize that impact. This section considers first the regulatory takings doctrine and then the physical takings doctrine.

1. Regulatory Takings

Educating local regulators, developing a litigation strategy, and educating landowners could help ensure that the regulatory takings doctrine does not deter local regulators from enacting robust floodplain regulations in the name of public safety.

Educate local regulators: Whenever possible, local regulators should be made aware of the relatively low risk (about 10%) that regulatory takings challenges will be successful so that they will enact critical floodplain development

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338. ZEHL & ASSOCS., *supra* note 160 (Houston law firm website asserting "The government may be liable if your home or business was flooded due to the Addicks & Barker Reservoirs" and offering free consultations).

339. *See* FED. EMERGENCY MGMT. AGENCY, THE WATERMARK (NFIP FINANCIAL STATEMENTS) (2018), *available at* https://www.fema.gov/media-library/assets/documents/161889 (described as a "quarterly report that provides transparency on the financial state of the National Flood Insurance Program (NFIP). The goal is to give interested stakeholders one central location to secure answers to reoccurring questions pertaining to the NFIP.").

regulations with confidence.[340] Making this relatively low risk known to community residents could also discourage regulators from using the threat of takings lawsuits as a pretense to mask their desire to prop up tax revenues, sometimes at the expense of public safety. Regulators could take advantage of resources provided by the Association of State Floodplain Managers, including explanations of how to use the "no adverse impact" approach to enact floodplain regulations that are both fair and likely to withstand legal challenge.[341] To defray the costs of defending against even an unsuccessful takings lawsuit, creative approaches such as takings insurance should be explored.[342]

The Association of State Floodplain Managers[343] has developed a floodplain management policy it calls "no adverse impact."[344] The Association's central message is that "we are continuing to induce flood damage even while enforcing the minimum standards of the NFIP," which were designed as part of an insurance program and "not necessarily to control escalating flooding."[345] The NFIP standards essentially call for a vertical retreat from the floodplain, by elevating structures or the floodplain itself by filling it with dirt, but they do not provide a comprehensive approach for safely accommodating floodwaters. As the Association explains, current standards allow dangerous floodplain practices. Among other things, they allow development activity

> to divert flood waters onto other properties; to reduce the size of natural channel and overbank conveyance areas; to fill essential valley storage space; and to alter water velocities—all with little or no regard for how these changes affect other people and property in the floodplain or elsewhere in the watershed. The net result is that our own actions are intensifying the potential for flood damage.[346]

Overall, the Association concludes,

> a system has developed through which local and individual accountability has been supplanted by federal programs . . . . The result is that the burden of

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340. *See supra* text accompanying note 313.

341. *See, e.g.*, *No Adverse Impact Legal Issues*, ASSOC. OF STATE FLOODPLAIN MANAGERS, http://www.floods.org/index.asp?menuID=352&firstlevelmenuID=187&siteID=1 (last visited July 28, 2018).

342. *See* Serkin, *supra* note 308.

343. The ASFPM strives to be "a respected voice in floodplain management practice and policy in the United States because it represents flood hazard specialists of local, state and federal government, research community, insurance industry and the fields of engineering, hydrologic forecasting, emergency response, water resources and others." *About ASFPM*, ASSOC. OF STATE FLOODPLAIN MANAGERS, https://perma.cc/M7SX-DKP6 (last visited July 28, 2018). Its mission is "to promote education, policies and activities that mitigate current and future losses, costs and human suffering caused by flooding, and to protect the natural and beneficial functions of floodplains—all without causing adverse impacts." *Id.*

344. *NAI—No Adverse Impact Floodplain Management*, ASSOC. OF STATE FLOODPLAIN MANAGERS (Mar. 10, 2008), https://perma.cc/V38J-AW73.

345. *Id.*

346. *Id.*

> [floodplain development]—increased flood damage and flood disasters—is transferred from those who make (and benefit from) the local decisions about land-use to those who pay for the flood disaster—principally the federal taxpayers.[347]

As an antidote to this problem, the Association suggests adoption of a "no adverse impact" floodplain management standard under which "the actions of one property owner are not allowed to adversely affect the rights of other property owners."[348]

If one takes seriously the Association's warning that the actions of one landowner can cause physical harm to others' property (and perhaps even endanger lives), then local governments should enact floodplain regulations that go well beyond the floor of the NFIP. In this context, the admonitions of *Armstrong v. United States*—which undergird the takings doctrine—ring hollow.[349] That is, the suggestion that flood safety is a "public burden[] which, in all fairness and justice, should be borne by the public as a whole" inverts the original scheme of the NFIP, which calls for local governments and floodplain occupants to assume the costs of and responsibility for risky development, primarily through the enactment of floodplain regulations.[350]

Litigation strategy: In litigation under *Penn Central* (which should be most cases), government defendants should pay particular attention to the "character of the government action" factor. In particular, they should link floodplain and coastal regulations, where feasible, to the comprehensive, cooperative federalism design of the NFIP, casting it as a "public program adjusting the benefits and burdens of economic life to promote the common good" (in the language of *Penn Central*[351]); as part of a program to "equitably spread the costs of flood disasters among those landowners who most benefit from publicly funded flood disaster relief" (in the words of *Texas Landowners Rights Association v. Harris*[352]); or as "a reasonable land-use regulation, enacted as part of a coordinated federal, state, and local effort to preserve [rivers, coasts], and surrounding land" (in the language of *Murr v. Wisconsin*[353]).

Educate landowners: Citizens might not be aware of the benefits to be gained from federal flood insurance, as well as from local land-use regulation. Perhaps

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347. *Id.*
348. *Id.*
349. *See supra* text accompanying note 227.
350. *See supra* Parts I.A–B.
351. *See supra* text accompanying note 268 (quoting Penn Central Transp. Co. v. New York City, 438 U.S. 104, 124 (1978)).
352. *See supra* text accompanying note 278 (quoting Texas Landowners Rights Ass'n v. Harris, 453 F. Supp. 1025, 1031 (D.D.C. 1978), *aff'd*, 598 F.2d 311 (D.C. Cir. 1979), *cert. denied*, 444 U.S. 927 (1979)).
353. *See supra* text accompanying note 271 (quoting Murr v. Wisconsin, 137 S. Ct. 1933, 1949–50 (2017)).

the lessons from *Texas Landowners Rights Association v. Harris* (the early facial challenge to the NFIP) can be appropriate, where landowners prodded their local regulators to enact zoning ordinances making the community eligible for federal flood insurance.[354] Although some local regulators may be reluctant to enact NFIP-compliant or stronger land-use regulations, some floodplain property owners are eager for their communities to participate in the program so that they can purchase federal flood insurance. As the court recounted in 1978 in *Texas Landowners Rights*, "[o]ne result of the Program . . . has been that property owners who find themselves saddled with . . . sanctions due to their communities' non-participation in the Program have been lobbying and threatening legal action against their local officials in an effort to compel flood insurance eligibility."[355]

2. Physical Takings

A more comprehensive litigation strategy clarifying the distinction between torts and takings could minimize the physical takings doctrine's propensity to discourage Congress from funding federal flood control measures. Litigators could emphasize how plaintiffs' choice to frame their complaints in terms of takings law could be an attempt to circumvent the tort immunity provisions Congress carefully inserted into the Flood Control Act and the Federal Tort Claims Act.[356] They could focus broadly on how Congress' three approaches to flood control (flood control structures, disaster relief, and federal insurance supported by local land-use regulation)[357] together make landowners far more secure from flooding than if the government had taken no action (drawing on the language in *Saint Bernard Parish* that plaintiffs' causation analysis "must consider both risk-increasing and risk-decreasing government actions over a period of time to determine whether the totality of the government's actions caused the injury").[358] They could also prevent the spending of limited federal dollars on piecemeal compensation to flood victims with the resources to prosecute litigation against the federal government, rather than on proactive, comprehensive measures to enhance flood safety for all.

CONCLUSION

Over the past fifty years, the National Flood Insurance Program has drifted from its original moorings and has evolved into an unwieldy and financially unsustainable behemoth. We pour more and more money into the leaky bucket of insurance payouts and premium subsidies, and yet we are no safer. The problem

354. *See supra* text accompanying notes 273–79.
355. *Texas Landowners Rights*, 453 F. Supp. at 1032 n.14.
356. *See supra* text accompanying notes 26–29.
357. *See supra* Part I.A.
358. St. Bernard Par. Gov't v. United States, 887 F.3d 1354, 1471 (Fed. Cir. 2018). *See generally supra* text accompanying notes 299–303.

is widespread, affecting rich and poor alike. But through the NFIP and other federal programs, Congress has sent the perverse signal that it is safe to live in floodplains, insured by the NFIP, tucked away behind federal dams and reservoirs, and backstopped by federal disaster relief. Given these perverse incentives, it is no wonder that people continue to move into known flood-danger areas but continue to be taken by surprise when the floodwaters inevitably come.

Courts, for their part, have reinforced the hydrologic fantasy that laws and legal doctrines can somehow make floodwaters go away or make people whole after they are flooded. Under the judicially-created regulatory takings doctrine, landowners seek compensation when they are restricted from building in the floodplain. And under the physical takings doctrine, landowners who *are* permitted to build in the floodplain seek compensation when the next flood comes. In effect, the takings doctrine serves as a shadow insurance program that perpetuates the perception that we can build in the floodplain without consequence.

Congress has been well-aware of the NFIP's failings for years and has struggled to come up with a solution that is both politically feasible and financially sustainable. But surprisingly, the national dialogue has ignored the other half of the puzzle—the takings doctrine. There is no doubt that we need to find a way to keep ourselves safe in our homes, without worry that we will be the next victim of a hurricane along the coasts, or a flooding river inland. But any durable solution must look at the entire problem. It must harness the power of both Congress and the courts to send the signal that floodplains are not safe and to create robust incentives for people to stay out of harm's way.