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Making 'Conservation' Work for the 21st Century: Enabling Resilient Place

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MAKING ‘CONSERVATION’ WORK FOR THE 21ST CENTURY: ENABLING RESILIENT PLACE

*Jerrold A. Long**

“The government tells us we need flood control and comes to straighten the creek in our pasture. The engineer on the job tells us the creek is now able to carry off more flood water, but in the process we lost our old willows where the cows switched flies in the noon shade, and where the owl hooted on a winter night. We lost the little marshy spot where our fringed gentians bloomed.”¹

ABSTRACT: During the New Deal, as part of a larger effort implementing Progressi ve-Era “conservation” regimes, the federal government authorized the structurally-invasive Flood Control Act of 1936. At the same time, the Standard State Soil Conservation Districts Law promoted the creation of local, place-based efforts to protect or restore locally-valued resources. “Conservation” thus came to signify both the invasive, structural, engineering approach of mid-20th Century flood control, and the local, more responsive and flexible nature of soil conservation districts. But our understandings of our place in the natural world have changed subtly but significantly over the past century. Any legitimate natural resource regime must achieve its resource management goals while balancing its demands with local cultural expectations, which now generally include some desire to protect the natural environment. This article argues—using a case study focused on a small flood control district—that local conservation districts can be used to implement 21st-Century understandings of “conservation” that more accurately reflect local culture and needs. These locally-driven and place-based conservation efforts can improve and protect the aesthetic, health, ecological, and economic resources of a particular landscape, even as they manage that landscape—in part—to satisfy human needs. A system succeeding on all goals would be truly socio-ecologically resilient, promoting resilient ecosystems, a resilient local culture and economy, and a resilient local legal system—together creating a resilient place.

I. INTRODUCTION 360

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1. ALDO LEOPOLD, THE ROUND RIVER—A PARABLE, *in* ROUND RIVER: FROM THE JOURNALS OF ALDO LEOPOLD 158, 165 (Luna B Leopold ed., reprint.1993).

II. EVOLVING UNDERSTANDINGS OF CONSERVATION	363
A. Progressive-Era Conservation Focused on “Development”	363
B. Toward a 21st-Century Conservation	367
III. WHY IS FLOOD CONTROL USEFUL AS A CONSERVATION TOOL?	371
A. The Need for Restoration	372
B. Naturally-Functioning Stream Systems Can Provide Protection from Flooding	375
C. Case Studies in Local Flood Control	378
1. Small Scale Flood Control—Teton Creek, Idaho	379
2. A Problem, and Solution, at All Scales: The Sacramento River	385
IV. THE CONSERVATION STATUTE LANDSCAPE	390
A. Revisiting Teton Creek	403
V. RESILIENT <i>PLACE</i> – LOCAL STREAM RESTORATION PRODUCES RESILIENT SOCIO-ECOLOGICAL SYSTEMS AND RESILIENT LEGAL REGIMES	409
A. Place: Law, Culture, and the Meaning of Landscape	410
B. Resilient Ecological Systems	413
C. Resilient Places	415
VI. CONCLUSION: ENABLING RESILIENT PLACE	420

I. INTRODUCTION

During Montana’s original constitutional convention in 1889, John Wesley Powell famously recommended that governmental units in the western United States be organized around watershed boundaries.² While this and others of Powell’s recommendations were ignored,³ over the past few decades scholars from a range of disciplines have taken up the

2. WALLACE STEGNER, *BEYOND THE HUNDREDTH MERIDIAN: JOHN WESLEY POWELL AND THE SECOND OPENING OF THE WEST* 315–16 (1954).

3. *See id.* In his *Report on the Lands of the Arid Region of the United States, With a More Detailed Account of the Lands of Utah*, John Wesley Powell also recommended that the homestead laws allocate 2,560 acres for non-irrigated farms or ranches in the arid West. *See id.* at 225 n.19. This too was ignored.

mission to think bigger and more naturally, to return to Powell's notion of a watershed commonwealth.⁴

While this article respects and generally supports those arguments in favor of watershed governance, there is also a benefit to thinking *smaller*. Rather than trying to think of watershed governance exclusively in a regional, or "large," watershed or ecosystem sense,⁵ there are issues, problems, or benefits that are better addressed on a smaller, more local scale. This is particularly the case where specific residents, landowners, or voters are asked to bear the costs of place-specific watershed efforts. One of those issues is flood control. While large-watershed-scale flood control planning and efforts remain a vital component of any flood control program, there are circumstances that warrant community, place, and even parcel specific efforts. These local efforts can also incorporate evolving place-specific cultural norms about aesthetic, ecological, and economic value of natural, healthy stream systems and riparian corridors.

But flood control is not the only area that might benefit from empowering local communities to pursue their own aesthetic, ecological, or economic goals. This argument proceeds as a case study, using the example of flood control—particularly local flood control—to demonstrate the broader potential of a modern conservation regime. My approach in this article is necessarily limited in geography, focusing on the western United States. In this article, I use "conservation" in multiple ways, with the common theme across those uses being the relationship between humans and their natural environment and the recognition that these are not two different systems. In this sense, conservation as used here includes, but is not limited to, the meaning of the word used in the field conservation biology, which is understood as "the scientific

4. See generally Robert W. Adler, *Addressing Barriers to Watershed Protection*, 25 ENVTL. L. 973 (1995); C.B. Griffin, *Watershed Councils: An Emerging Form of Public Participation in Watershed Management*, 35 J. AM. WATER RESOURCES ASS'N 505 (1999); Jon Cannon, *Choices and Institutions in Watershed Management*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 379 (2000); J.B. Ruhl et al., *Proposal for a Model State Watershed Management Act*, 33 ENVTL. L. 929 (2003).

5. See generally Anastasia Telesetsky, *Ecoscapes: The Future of Place-Based Ecological Restoration Laws*, 14 VT. J. ENVTL. L. 493 (2013) (arguing for an "ecoscape" approach to ecological restoration that focuses on very large scale socio-ecological landscapes).

study of the phenomena that affect the maintenance, loss, and restoration of biological diversity.”⁶

This is a goal, but not the only goal, of a modern conservation regime. Conservation also reflects a Progressive-Era understanding that nature must “work” for both current and future generations, but with a much-reduced emphasis on use and development and an increased emphasis on restoration and preservation; or put another way, a modern conservation has a broader understanding of resources to be valued. Because the focus of this article is the evolution of federal-state-local cooperative programs, “conservation regime” in this context describes a cooperative program in which local entities are authorized (and potentially funded) with the express purpose of engaging in place-based efforts to achieve the conservation (including preservation) of local and regional socio-ecological resources. I refer to this approach as “21st-Century Conservation.”

Therefore, the basic practical or actionable argument of this article is that state and local governments should authorize and encourage the creation of local conservation districts with taxing and land-use authority that can focus on the restoration and preservation of natural systems. The article will justify this recommendation in three ways. First, the article will discuss how the nation’s notion of conservation has evolved over the last century. There is now a greater emphasis on a Leopoldian focus on the inherent value of the natural environment, rather than the Pinchot-influenced understanding of the natural environment as primarily a tool to promote human flourishing, often at the expense of non-beneficial—from a narrow human perspective—natural systems. Second, using flood control as both case study and context, the article will demonstrate that naturally functioning systems can achieve a community’s conservation goals at lower economic, social, cultural, and ecological costs than traditional invasive techniques, such as dams, levees, channelization, etc. Finally, the article will describe how 21st-Century Conservation regimes will yield social, ecological, and cultural systems that are more resilient, and thus from a legal and cultural perspective, more legitimate.

6. See *Who We Are*, SOC’Y FOR CONSERVATION BIOLOGY, <http://www.conbio.org/about-scb/who-we-are> (last visited Jan. 14, 2015).

II. EVOLVING UNDERSTANDINGS OF CONSERVATION

A. *Progressive-Era Conservation Focused on "Development"*

National flood control regimes originated largely in New Deal-era programs steeped in a continuation of Progressive-Era conservation.⁷ Although both legal and lay use of the word has evolved,⁸ as will be discussed below, these early- to mid-20th Century conservation regimes focused on ensuring that natural resources were used for human benefit in the most efficient manner possible. As Gifford Pinchot argued in *The Fight for Conservation*, "[t]he first great fact about conservation is that it stands for *development*."⁹ In the water resources context, conservation meant ensuring the maximum beneficial use of water, while avoiding erosion or other negative consequences. As Professor Adler noted about Progressive-Era watershed management proposals, they "were aimed not at watershed-based protection, but at the 'comprehensive development of river basins for multiple purpose use of water resources,' with the purposes being largely utilitarian: navigation, irrigation, flood control, and hydropower."¹⁰ The end result was a system of largely artificial rivers, created through costly and intensive federal programs that benefitted a fairly small part of the country's land.¹¹

Flood control statutes enacted in the mid-20th Century reflect this Progressive-Era understanding of conservation. When it enacted the 1936 Flood Control Act, Congress made its first effort to implement comprehensive watershed study

7. See Adler, *supra* note 4, at 1008 ("Like the Progressive Era proposals before them, however, the New Deal watershed proposals were fundamentally rooted in human use of water and economic development.").

8. See generally Michael Williams, *Conservation and Environmental Concern*, in THE SAGE HANDBOOK OF GEOGRAPHICAL KNOWLEDGE 581, 581–94 (John Agnew & David N. Livingstone eds., 2011).

9. GIFFORD PINCHOT, *THE FIGHT FOR CONSERVATION* 42 (Univ. of Wash. Press 1967) (1910) (emphasis added). For a somewhat different perspective on Pinchot's understanding of conservation, and how it fit in early 20th-Century natural resource politics, see generally TIMOTHY EGAN, *THE BIG BURN: TEDDY ROOSEVELT AND THE FIRE THAT SAVED AMERICA* (2009).

10. Adler, *supra* note 4, at 1006.

11. See generally KAREN M. O'NEILL, *RIVERS BY DESIGN: STATE POWER AND THE ORIGINS OF U.S. FLOOD CONTROL* (2006) (discussing large federal flood control programs that focused on the Sacramento and Mississippi river basins).

and planning, but with rather limited effect.¹² Much more significant was Congress's continued emphasis on engineering solutions: "Consistent with the belief that natural problems could be solved through engineering, the law called for flood protection by 'improving' waterways; it did not promote modification of land uses that exacerbate erosion and runoff, much less restoration of natural land and water functions and interactions."¹³ In a symposium article honoring the fiftieth anniversary of the 1936 Act, sponsored by the U.S. Army Corps of Engineers, Joseph Arnold argued: "They [Congress] wanted to protect property and life on the nation's flood plains and accepted unquestioningly the Corps' solution: dams, levees, and channel improvements . . . [n]o one ever mentioned any non-structural solutions or suggested that restrictions on construction on the flood plains might also be included in the act."¹⁴ In 1936, despite some experience with levees breaking or otherwise not controlling floods,¹⁵ the primary approach to flood control remained highly-engineered, structural, and invasive.

Congress had a second chance to create less invasive flood control programs when it enacted the Watershed Protection and Flood Prevention Act of 1954.¹⁶ Although this act created a "small watersheds" program with the ability to work with local organizations to implement watershed-based, nonstructural flood control projects,¹⁷ the funding approaches taken by the two statutes motivated continuation of the more invasive approach.¹⁸ The 1936 Act provided one hundred percent funding for dams, channelization, or other engineering approaches, while the 1954 Act only provided fifty percent federal match funding for the watershed programs. For income-starved local governments, the one hundred funding

12. Adler, *supra* note 4, at 1026

13. *Id.* at 1027.

14. Joseph L. Arnold, *The Flood Control Act of 1936: A Study in Politics, Planning, and Ideology*, in *THE FLOOD CONTROL CHALLENGE: PAST, PRESENT, AND FUTURE* 13, 20 (Howard Rosen & Martin Reuss eds., 1988).

15. Martin Reuss, *Introduction*, in *THE FLOOD CONTROL CHALLENGE: PAST, PRESENT, AND FUTURE*, at 9 (Howard Rosen & Martin Reuss eds., 1988).

16. Watershed Protection and Flood Prevention Act of 1954, Pub. L. No. 83-566 (1954) (codified as amended at 16 U.S.C. §§ 1001–1012 (2012)).

17. 16 U.S.C. § 1002.

18. Adler, *supra* note 4, at 1031.

provided by the 1936 Act for structural changes was difficult to pass up. It was not until the 1990 amendments to the 1954 Act that Congress explicitly authorized the acquisition of perpetual conservation easements “to perpetuate, restore and enhance the natural capability of wetlands and floodplains to retain excessive floodwaters, improve water quality and quantity, and provide habitat for fish and wildlife.”¹⁹ But even with this addition, the local project sponsors are still required to provide up to fifty percent of the costs of the easements.²⁰ Whatever the case, these statutes had significant effects on the nation’s waterways. As Robert Adler noted, “[t]he 1936 Flood Control Act and, to a lesser extent, the 1954 watershed law, have contributed substantially to this wholesale structural re-engineering of the nation’s waters.”²¹

These federal programs reflect a particular cultural understanding of the best way to achieve flood control goals. That understanding also influenced state flood control laws, many of which were enacted specifically to take advantage of the cooperative programs created by the federal statutes.²² For example, Wyoming’s Water Conservancy District statute, enacted in 1957, provides that a “conservancy” district could be created “essentially for the public benefit and advantage of the people of the state of Wyoming.”²³ Montana’s Water Conservation and Flood Control Projects Statute similarly allows projects “for the conservation, development, storage, distribution, drainage, and utilization of water for purposes beneficial to the district.”²⁴ The principle *noscitur a sociis* suggests that in this Montana statute, “conservation” should be considered to have a meaning similar to the other words in the list, particularly where all of those words share a similar meaning, i.e., something akin to *use* rather than *preservation*.²⁵ And Idaho’s Watershed Improvement Districts statute, enacted to take advantage of the cost sharing

19. 16 U.S.C. § 1003a(a).

20. *Id.* § 1003a(b).

21. Adler, *supra* note 4, at 1032.

22. *Id.*

23. WYO. STAT. ANN. § 41-3-701(a)(i) (2013).

24. MONT. CODE ANN. § 76-5-1101(b) (2013).

25. For an early discussion of this principle by the Montana Supreme Court, see *Barnes v. Montana Lumber & Hardware Co.*, 216 P. 335, 336 (Mont. 1923).

authorized by the 1954 federal act,²⁶ declares it to be the public policy of the state to “provide for the prevention of flood damage and the conservation[,] development, utilization and disposal of water in the watersheds of this state and thereby to protect and promote the health, safety and general welfare of the people of this state.”²⁷

During the mid-20th Century, we retained the Progressive-Era understanding of conservation that focused on development. A 1969 text on conservation continued these Progressive and New Deal Era understandings of “conservation,” while hinting at beginning transition toward a new understanding. Characterizing “conservation” as a “problem-solving technique,” Harold Rose argued that the former “emotional connotation associated with conservation will have to be minimized in order to deal rationally with problems that have far-reaching implications for present and future national development.”²⁸ Much like Progressive-Era conservation, the emphasis in this text, even on the eve of the first Earth Day, was on resource development.²⁹

With respect to flood control, a chapter within that same text demonstrates the effect a development-focused conservation has on stream systems.³⁰ In its discussion of available flood control techniques, the text provides channel improvements (deepening and straightening), levees, spillways and floodways, and artificial retarding basins.³¹ The primary “controversy” in flood control concerned not so much the flood control techniques, but rather the location where those techniques are implemented—lots of small dams in the headwaters or fewer large projects on the main stems of large

26. See IDAHO CODE ANN. § 42-3708(5) (West 2006).

27. *Id.* § 42-3702.

28. Harold M. Rose, *Conservation in the United States*, in CONSERVATION OF NATURAL RESOURCES 13 (Guy-Harold Smith ed., 3d ed. 1965).

29. For example, a later chapter explains the need to consider the “reclamation of wet and overflow lands”—i.e., the draining of wetlands—to provide for more agricultural land, claiming that up to 100,000,000 acres might be available after “reclamation.” The only costs and benefits discussed are economic, with no attention paid to ecological, aesthetic, or social concerns. Lowry B. Karnes, *Reclamation of Wet and Overflow Lands*, in CONSERVATION OF NATURAL RESOURCES 133, 134 (Guy-Harold Smith ed., 3d ed. 1965).

30. See Guy-Harold Smith, *Floods and Flood Control*, in CONSERVATION OF NATURAL RESOURCES 297 (Guy-Harold Smith ed., 3d ed. 1965).

31. *Id.* at 309–13.

ivers.³² This section of the text recognizes the role of vegetation and forests in the headwaters that might absorb precipitation and reduce runoff velocities, but still emphasizes invasive techniques: “Small dams constructed on the numerous tributaries to the master streams are presumed to be adequate to prevent or at least reduce flooding downstream.”³³ The alternative, downstream approach, involves “levees, dams, floodways, and other protective structures in areas where the floods occur.”³⁴ A 1954 book written by two government engineers and hydrologists, one of whom was Aldo Leopold’s son, expressed this same understanding, characterizing the “flood control controversy” as being a conflict “between the proponents of little dams and the proponents of big dams.”³⁵

During the mid-20th Century, conservation as a concept still retained Pinchot’s focus on development. The “essence” of conservation focused on *use*: “[Conservation’s] essence was rational planning to promote efficient development and use of all natural resources.”³⁶ In this era, the Tennessee Valley Authority could be described as a conservation organization.³⁷ But that understanding of conservation has changed.

B. *Toward a 21st-Century Conservation*

While the Pinchot-style conservation reflected the culture and knowledge of the early and mid-20th Century, our cultural understandings of the purpose of, and our relationships with, the natural environment have changed significantly since then.³⁸ Of course, there have been competing understandings of the purpose of the natural environment since before Pinchot and the Progressive Era, and the conservation versus preservation disputes personified by Pinchot and John Muir

32. *Id.* at 314–15.

33. *Id.* at 314.

34. *Id.*

35. LUNA B. LEOPOLD & THOMAS MADDOCK, JR., *THE FLOOD CONTROL CONTROVERSY: BIG DAMS, LITTLE DAMS, AND LAND MANAGEMENT* 3 (1954).

36. SAMUEL P. HAYS, *CONSERVATION AND THE GOSPEL OF EFFICIENCY: THE PROGRESSIVE CONSERVATION MOVEMENT 1890-1920*, at 2 (1959). This text discussed the early periods of the conservation movement, but the concept expressed here extended through the New Deal programs, as discussed in the text.

37. Rose, *supra* note 28, at 10.

38. See generally Williams, *supra* note 8, at 581–94.

are the subject of many introductory classes in natural resources management.³⁹ And even as Congress was enacting the Flood Control Act of 1936, Aldo Leopold was developing the ideas that led to his “land ethic” and understanding of “conservation” as a “state of harmony between men and land.”⁴⁰ But as the 20th Century matured, the Pinchot-era focus gave way almost completely to an understanding of conservation that recognized inherent, non-human, value in the natural environment.

Where early conservation texts focused on topics like “reclamation of wet and overflow lands,” “irrigation in the United States,” and “waterways and their utilization,”⁴¹ texts from the latter parts of the 20th Century acknowledged the existence of different values. A 1965 text, while still generally focusing on development and use—as demonstrated by the chapter titles just listed—recognized a “growing importance of spiritual values,” which presumably would be relevant to natural resource management.⁴² Another text from 1975 argued that a “conservation viewpoint must challenge the right of human institutions and individuals to engage in activities that impair the long-term well-being of other humans, other species, or the environments on which they all depend.”⁴³ A 1984 text written by the same author, originally published in 1959, described “environmental conservation as the use of the environment to sustain the greatest possible diversity of life while insuring for humanity the physical basis for continued well-being.”⁴⁴ That text includes chapters on “the wildest lands,” discussing on the importance of protected areas.⁴⁵ It also discusses a new type of development, called

39. See CHARLES F. WILKINSON, *CROSSING THE NEXT MERIDIAN: LAND, WATER, AND THE FUTURE OF THE AMERICAN WEST* 129–31 (1992); Michael B. Smith, *The Value of a Tree: Public Debates on John Muir and Gifford Pinchot*, 60 *HISTORIAN* 757 (1998); Christine Oravec, *Conservation vs. Preservationism: The “Public Interest” in the Hetch Hetchy Controversy*, 70 *Q. J. OF SPEECH* 444 (1984).

40. LEOPOLD, *supra* note 1, at 145.

41. These are all chapter titles from a text on conservation originally published in 1950. *CONSERVATION OF NATURAL RESOURCES*, at ix-x (Guy-Harold Smith ed., 3d ed. 1965).

42. Rose, *supra* note 28, at 13.

43. RAYMOND F. DASMANN, *THE CONSERVATION ALTERNATIVE* 2 (1975).

44. RAYMOND F. DASMANN, *ENVIRONMENTAL CONSERVATION* 7 (5th ed. 1984).

45. *Id.* at 341.

“ecodevelopment,” which takes into account the specific ecological and cultural needs of each ecoregion.⁴⁶ While this approach is consistent with Pinchot’s notion of conservation, it reflects a new focus on interests that were not necessarily a part of Pinchot’s world.

By the early years of the 21st Century, the word “conservation” as used in academic and other texts had largely lost its Progressive-Era influenced focus on development. While it still retains some notion of use for human benefit, or there would be nothing to distinguish it from “preservation,” 21st-Century conservation texts articulate a different philosophy than that expressed by similar texts just a few decades earlier. In *Conservation for a New Generation*, the authors emphasize that conservation is about Leopoldian land health.⁴⁷ The Society for Conservation Biology’s first organizational value provides that “[t]here is intrinsic value in the natural diversity of organisms, the complexity of ecological systems, and the resilience created by evolutionary processes.”⁴⁸ And in 2014, environmental reporters can legitimately refer to “conservationists” as being people who prefer wilderness protections—with no allowed development—for large swaths of the public lands.⁴⁹

Our federal environmental laws followed this transition. The Endangered Species Act (ESA), enacted in 1973, defines conservation as “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.”⁵⁰ The ESA therefore views “conservation” as ensuring viable habitat, reducing human overutilization, and generally providing for the continued survival of plant and animal species.⁵¹ However, even the ESA retains a bit of Progressive-era human-first

46. *Id.* at 428–51.

47. Richard L. Knight, *Introduction*, in *CONSERVATION FOR A NEW GENERATION* 1, 1 (Richard L. Knight & Courtney White eds., 2008).

48. Society for Conservation Biology, *supra* note 6.

49. *See, e.g.*, Jessica Estepa, *Obama Signs First Wilderness Bill in 5 Years*, E&E NEWS (March 13, 2014), <http://www.eenews.net/eenewsp/2014/03/13/stories/1059996121>.

50. 16 U.S.C. §1532(3) (2012).

51. *See id.* §1533(a) (providing the factors to consider in determining whether to list a species as threatened or endangered).

conservation, excluding from the definition of threatened or endangered species those insects that “present an overwhelming and overriding risk to man.”⁵² This is consistent with an understanding of conservation that must balance human and ecological needs.

Perhaps the most significant evidence of the transition to a 21st-Century Conservation is also the most banal, ordinary, and maybe unapparent, at least to most Americans. Although local governments have regulated private land use since colonial America,⁵³ comprehensive local land-use regulation did not become a national phenomenon until well into the 20th Century.⁵⁴ As one example, the state of Idaho did not adopt its Local Land Use Planning Act—authorizing and mandating both comprehensive planning and zoning—until 1975.⁵⁵ But even with its relatively short history—and more significant, even though it deals with private property, considered by many to be the foundation of liberty and all other rights⁵⁶—local land-use regulations now routinely implement environmental, ecological, and even aesthetic controls.⁵⁷ As a practical example, Teton County, Wyoming’s land use code contains comprehensive regulations governing ecological, scenic, agricultural, and tourism resources. These include protections for, inter alia, a number of plant and animal

52. *Id.* §1532(6).

53. See generally John F. Hart, *Colonial Land Use Law and its Significance for Modern Takings Doctrine*, 109 HARV. L. REV. 1252 (1996).

54. The Department of Commerce published the nation’s first model land-use ordinance in 1922. See ADVISORY COMM. ON ZONING, DEP’T OF COMMERCE, A STANDARD STATE ZONING ENABLING ACT: UNDER WHICH MUNICIPALITIES MAY ADOPT ZONING REGULATIONS 4–5 (1926). It remains the primary influence for most state land-use enabling acts—at some point, all 50 states adopted the Standard Zoning Enabling Act, and it remains in effect in basic form in 47 states. See NORMAN WILLIAMS, JR. & JOHN M. TAYLOR, *AMERICAN LAND PLANNING LAW: LAND USE AND THE POLICE POWER* 490 (3d ed. 2003). After the United States Supreme Court upheld zoning as a legitimate exercise of local government in 1926 the use of zoning by local governments became much more common across the country. See *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926).

55. See IDAHO CODE ANN. §§ 67-6501 to -6538 (West 2006).

56. For a brief discussion of the importance of private property, see Jerrold A. Long, *Waiting for Hohfeld: Property Rights, Property Privileges, and the Physical Consequences of Word Choice*, 48 GONZ. L. REV. 307, 311–23 (2013), and the materials cited therein.

57. See generally John R. Nolon, *In Praise of Parochialism: The Advent of Local Environmental Law*, 26 HARV. ENVTL. L. REV. 365 (2002); DANIEL R. MANDELKER, *LAND USE LAW* §§ 12-1 to -29 (5th ed. 2003).

species, water resources, and view sheds, and environmental analysis requirements.⁵⁸

This rapid transition toward a more Leopoldian local land use ethic, even if not explicitly recognized as such, has occurred in the face of continued and significant pro-growth, pro-development forces that influence all local governments.⁵⁹ While the transition has not been universal, of course, local communities across the country have decided that the development of private lands must consider aesthetic, ecological, and other non-economic resources. The Pinchot-Muir disagreements still resonate today, and what counts as an 'appropriate' use of land remains contested. But our understandings of the role of humans in the natural environment continue to evolve from human as conqueror to human as plain member of a broader ecological community. This transition suggests not only that a new type of conservation regime is appropriate for the 21st Century, but also that a new regime implementing our evolving understandings of conservation and our role in the natural environment is *necessary*.

III. WHY IS FLOOD CONTROL USEFUL AS A CONSERVATION TOOL?

But why the focus on flood control regimes? Or more specifically, why focus on using flood control regimes as an approach to achieve the preservation or restoration of stream systems? There are two reasons. First, many waterways in the United States are already significantly degraded and in need of restoration.⁶⁰ This is particularly, although not uniquely,

58. See TETON COUNTY, TETON COUNTY LAND DEVELOPMENT REGULATIONS, ARTICLE III, NATURAL, SCENIC, AGRICULTURAL, AND TOURISM RESOURCES PROTECTION (2006), available at <http://www.tetonwyo.org/plan/docs/ComprehensivePlan/LDR-ArticleIII-2009Apr08.pdf>.

59. See generally Harvey L. Molotch, *The City as a Growth Machine: Toward a Political Economy of Place*, 82 AM. J. SOC. 309 (1976); Harvey L. Molotch, *The Political Economy of Growth Machines*, 15 J. URB. AFFAIRS 29 (1993); Tore Sager, *Neo-liberal Urban Planning Policies: A Literature Survey 1990-2010*, 76 PROGRESS IN PLAN. 147 (2011).

60. For a summary of impaired waters and causes, see *National Summary of Impaired Waters and TMDL Information*, ENVTL. PROTECTION AGENCY, http://iaspub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T (last visited Jan. 14, 2015).

true in the western United States. And second, streams that retain or mimic their natural functions provide flood control capacity that matches, and even can exceed, the capacity of highly engineered systems. The most highly engineered river system in the United States is the Mississippi River and its tributaries. Much of the work done on the Mississippi has yielded benefits. But it has also, perhaps paradoxically, increased the severity of flooding when it does occur.⁶¹ Flood control contains both of the elements required of any conservation approach: some activity that achieves a human benefit while simultaneously ensuring the same benefit to future generations.

A. *The Need for Restoration*

Across the western United States, thousands of stream miles fail to satisfy the beneficial uses desired by state residents.⁶² In Idaho, for example, over 7,000 miles of stream channels are impaired by the physical conditions of the stream,

61. See Nicholas Pinter et al., *Cumulative Impacts of River Engineering, Mississippi and Lower Missouri Rivers*, 26 RIVER RES. APPLIC. 546 (2010); C.B. Belt, Jr., *The 1973 Flood and Man's Constriction of the Mississippi River*, 189 SCIENCE 681, 684 (1975) ("The 1973 flood's record was man-made."); Robert E. Criss & Everett L. Shock, *Flood Enhancement Through Flood Control*, 29 GEOLOGY 875 (2001) ("[W]e similarly conclude that increasing flood stages are primarily attributable to engineering works."); Fredrik Huthoff et al., *Theoretical Analysis of Wing Dike Impact on River Flood Stages*, 139 J. HYDRAULIC ENGINEERING 550, 555 (2013) ("[T]he presented theoretical analysis is consistent with previous empirical studies that have ascribed increases in flood levels on the Mississippi River to construction of wing dikes and other navigational structures over the past 100–150 years."); Nicholas Pinter et al., *Flood Trends and River Engineering on the Mississippi River System*, 35 GEOPHYSICAL RES. LETTERS L23404 (2008) ("[T]he largest and most pervasive contributors to increased flooding on the Mississippi River system were wing dikes and related navigational structures, followed by progressive levee construction."); U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-41, MISSISSIPPI RIVER: ACTIONS ARE NEEDED TO HELP RESOLVE ENVIRONMENTAL AND FLOODING CONCERNS ABOUT THE USE OF RIVER TRAINING STRUCTURES (2011), available at <http://gao.gov/assets/590/586782.pdf>. It is perhaps unsurprising that the U.S. Army Corp of Engineers, responsible for installing and maintaining many of the structures in the Mississippi system, disagrees with this emerging consensus, at least with respect to river training structures. See E.J. BRAUER, THE EFFECT OF RIVER TRAINING STRUCTURES ON FLOOD HEIGHTS ON THE MIDDLE MISSISSIPPI RIVER (2012), available at http://mvs-wc.mvs.usace.army.mil/arec/Documents/Physical_Effects/BRATEO.pdf.

62. The Clean Water Act requires state governments to survey all waters within a state and designate each water for specific uses, with associated water quality standards. See 33 U.S.C. §1313(c)(2)(A) (2012).

either through flow or physical-habitat alterations.⁶³ In other words, due to dewatering, stream channelization, erosion, and land use practices that result in degradation of the stream channels and floodplains, these 7,000 miles of streams cannot serve the beneficial uses designated by the people of Idaho.⁶⁴ An additional 4,895 miles of streams are impaired due to increased temperatures, and 3,414 miles are impaired by sediment or siltation.⁶⁵ Idaho is not the only state with degraded stream and river systems. Across the Intermountain West, silt, sediment, temperature, low flows, and other morphological alterations impair thousands of stream miles. In Montana, nearly half of the assessed stream miles are impaired by altered stream-side vegetation, sediment and silt, or other habitat or flow alterations.⁶⁶ In Oregon the situation is worse, with two-thirds of all assessed streams suffering impairment, largely due to sedimentation or increased temperatures.⁶⁷ In California, a state with much more industrial development⁶⁸ and population compared to other western states, increased temperatures, reduced flows, and sediment and siltation are the primary causes of stream and

63. See IDAHO DEP'T OF ENVTL. QUALITY, IDAHO'S 2012 INTEGRATED REPORT, at xi tbl. A (2014), available at <http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report.aspx>.

64. The Clean Water Act requires States to adopt water quality standards for all interstate waters. See generally 33 U.S.C. §1313. Those standards must be sufficient to allow the water to achieve the "designated uses" of the particular waters, as determined by the state: "Each State must specify appropriate water uses to be achieved and protected. The classification of the waters of the State must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States." 40 C.F.R. § 131.10(a) (2014).

65. See *National Summary of Impaired Waters and TMDL Information*, ENVTL. PROTECTION AGENCY (Oct. 28, 2014), http://iaspub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T.

66. *Id.*

67. *Id.*

68. While the EPA classifies forestry operations as "industrial," see 40 C.F.R. §122.26(b)(14)–(15), when I say that California has greater industrial development than the other western states I am referring to traditional industrial activities that produce point source pollution, such as mining or manufacturing. For example, the manufacturing sector of California's economy is larger than the manufacturing sectors of all the other ten western states combined. See *Interactive Data*, BUREAU OF ECON. ANALYSIS, U.S. DEP'T OF COMMERCE, <http://www.bea.gov/itable/> (last visited Jan. 14, 2015).

river impairment.⁶⁹ These streams and rivers are compromised both ecologically and aesthetically. And because the impairments often modify the natural stream channels, they now also lack their natural flood control properties, leading to increased frequency and severity of flood events in some cases.⁷⁰

The primary water quality impairments, and their causes, vary. But across the eleven western states, land use changes, such as channelization, sedimentation, vegetation alterations, erosion, or similar activities, impair more stream miles than traditional pollutants. Because the causes of these impairments are largely structural—i.e., the causes are changes to the physical structure of the land itself, rather than industrial activities adding pollution to the water—land use changes, improvements, or restoration activities can alleviate some of the impairments. And because land use and land-use changes are regulated at a local level,⁷¹ local communities have the capacity to remedy some of these failures to achieve locally-desired stream uses and restore degraded stream systems. What is more, existing legal tools often provide funding, authority, and other resources to make this happen. In many cases, state laws already allow for grassroots, place-based, locally-managed efforts to restore degraded stream systems to allow for the natural control and mitigation of floodwaters, while simultaneously providing for the conservation and preservation of water resources.⁷²

Unfortunately stream protection and restoration generally have not coincided with activities of flood control or other conservation districts. Historically, flood control districts have mitigated floods by implementing physical, stream-channel-altering flood control methods such as dikes, levees, dams, and

69. *Id.*

70. Perhaps the best western example of how channel modifications can increase the severity of flood events is the Sacramento River, discussed in more detail in Section III.

71. The regulation of private lands is the “quintessential state and local power.” *Rapanos v. United States*, 547 U.S. 715, 738 (2006). All states delegate the majority of authority over land use decisions to county, municipal, or other local governments. *See* NORMAN WILLIAMS, JR. & JOHN M. TAYLOR, *AMERICAN LAND PLANNING LAW: LAND USE AND THE POLICE POWER* 490 (3d ed. 2003) (describing how all 50 states adopted the Standard Zoning Enabling Act at some point).

72. *See infra* Part 4.

canals.⁷³ In contrast, the water-quality-impairing activities occur farther from the immediate streamside (e.g., agriculture, timber harvesting, or increases in impermeable surfaces), and thus the stream-channel altering activities are not necessarily the cause of impairment. But the destruction of riparian areas, flood plains, or other near-stream environments eliminates the stream's capacity to absorb floodwaters, filter sediments or other pollutants, or provide habitat for locally-important plant and wildlife species. Thus even where pollution, for example, might originate outside of a stream, floodplain, or riparian area, the integrity of those stream or near-stream environments plays a crucial role in mitigating water quality problems.

B. Naturally-Functioning Stream Systems Can Provide Protection from Flooding

“Some engineers are beginning to have a feeling in their bones that the meanderings of a creek not only improve the landscape but are a necessary part of the hydrologic functioning.”⁷⁴

The great and troubling disconnect in our conservation conversations and efforts—particularly those from most of the 20th Century—is the notion that preservation and human benefit are in conflict. This is particularly the case with flood control. Floods represent one of the scariest forms of “nature,”⁷⁵ and early flood control efforts naturally and

73. See Adler, *supra* note 4, at 1032.

74. LEOPOLD, *supra* note 1, at 165.

75. The last decade unfortunately has provided a lot of examples of the power of floods. Hurricane Katrina in 2005 was the deadliest hurricane to strike the United States since 1928, killing approximately 1,200 people and causing \$108 billion in damages. See ERIC S. BLAKE ET AL., NAT'L OCEANIC & ATMOSPHERIC ADMIN., THE DEADLIEST, COSTLIEST, AND MOST INTENSE UNITED STATES TROPICAL CYCLONES FROM 1851 TO 2010 (AND OTHER FREQUENTLY REQUESTED HURRICANE FACTS) (2011), available at <http://www.nhc.noaa.gov/pdf/nws-nhc-6.pdf>. Hurricane Sandy in 2012 killed 117 people in the United States, with drowning being the most common cause. See Ctrs. for Disease Control & Prevention, *Deaths Associated with Hurricane Sandy—October–November 2012*, 62 MORBIDITY & MORTALITY WKLY. REP. 393 (2013). Hurricane Sandy also caused an estimated \$72 billion in overall economic loss. See IMPACT FORECASTING, HURRICANE SANDY EVENT RECAP REPORT 38 (2013), available at http://thoughtleadership.aonbenfield.com/Documents/20130514_if_hurricane_sandy_event_recap.pdf. Outside of the United States, flooding events have had even greater impacts. Typhoon Haiyan in late 2013 killed as many as 6,000 people in the Philippines, with many more still missing. See Per Lijas, *Supertyphoon Haiyan: Death Toll Reaches 5,719*, TIME.COM (Dec. 4, 2013),

understandably were concerned with controlling or taming natural forces.⁷⁶ But in many cases, this taming approach was only required because of poor locational decisions and misunderstandings of how flood-prone systems “work.”⁷⁷ Humans settled in precisely the least secure places, failing to understand the effects natural conditions would have on future success.⁷⁸

Floodplains and other riparian systems are simultaneously the most valuable ecosystems on earth—from an ecological, wildlife, social, and economic perspective—and among the most threatened.⁷⁹ For that reason alone, we must change our approach to floodplain management. But we also should change our approach because natural stream conditions serve flood control purposes, in addition to all of the other benefits. The evidence that naturally functioning stream or wetland systems can help control flooding is overwhelming. As demonstrated tragically by Hurricanes Katrina in 2005 and Sandy in 2012, and through hundreds of on-the-ground research projects over several decades, natural riparian systems play a vital role in absorbing flood waters and reducing the harm to land and structures built near flood plains—a role that cannot be replicated fully by artificial flood control approaches.⁸⁰ Natural stream systems contain many mechanisms to control floodwaters, and restoring an altered

<http://world.time.com/2013/12/04/supertyphoon-haiyan-death-toll-reaches-5719/>.

76. See generally JEREMY PURSEGLOVE, *TAMING THE FLOOD: A HISTORY AND NATURAL HISTORY OF RIVERS AND WETLANDS* (1988); Larry W. Hesse, *Taming the Wild Missouri River: What Has it Cost?*, 12 *FISHERIES*, no. 2, Mar.–Apr. 1987, at 2, 2–9; Peter Kareiva et al., *Domesticated Nature: Shaping Landscapes and Ecosystems for Human Welfare*, 316 *SCIENCE* 1866 (2007).

77. See ROBERT KELLEY, *BATTLING THE INLAND SEA: AMERICAN POLITICAL CULTURE, PUBLIC POLICY, AND THE SACRAMENTO VALLEY 1850–1986*, at 3–21 (1989) (discussing some of the poor locational choices made by early settlers in the Sacramento Valley).

78. For a detailed conversation of this issue in a different natural system, see NANCY LANGSTON, *FOREST DREAMS, FOREST NIGHTMARES* (1996) (discussing how well-intentioned but ignorant mismanagement of forest ecosystems in the 19th Century contributed to widespread ecological and economic collapse during the Twentieth Century).

79. See Jeffrey J. Opperman et al., *Sustainable Floodplains Through Large-Scale Reconnection to Rivers*, 326 *SCIENCE* 1487 (2009); Richard E. Sparks, *Need for Ecosystem Management of Large Rivers and their Floodplains*, 45 *BIOSCIENCE* 168 (1995); N. LeRoy Poff et al., *The Natural Flow Regime*, 47 *BIOSCIENCE* 769 (1997).

80. See Opperman et al., *supra* note 79 at 1488.

stream to its natural state can improve the flood control capacity of that stream.⁸¹

While this article focuses most directly on flood control and flood plains, my broader concern is facilitating the preservation, restoration or conservation of broader stream systems, including adjacent wetlands, riparian ecosystems, and other near-stream habitats and structures. Natural flow regimes, including the natural seasonal pulse of floodwaters and inundation of floodplains, play a crucial role in sustaining biodiversity and river system ecology.⁸² Stream systems regulated by dams support riparian ecosystems much reduced in size and biodiversity compared to their non-regulated cousins.⁸³ Both dams and channelization reduce the active area of a river or stream system, reducing available habitat, floodplain size, and land-water interactions.⁸⁴ These changes in hydrologic regimes reduce riparian wetland size and complexity. As a result, water development projects—i.e., dams and water diversions—contribute more to declines in threatened or endangered species than any other type of resource development project, including hard rock mining, logging, grazing, and recreation.⁸⁵

Wetlands provide a significant number of functions—valuable from both an ecological and economic perspective—that cannot be replicated by engineered systems, including: recharge and discharge of ground water; retention and removal of nutrients; habitat for aquatic, terrestrial and avian species; flood control and storm buffering; and sediment stabilization.⁸⁶ Thus even artificial systems that are designed to mimic natural conditions provide greater benefits over more invasive techniques. For example, the Yolo Bypass, an engineered

81. See *id.* at 1488; see also SANDRA POSTEL & BRIAN RICHTER, RIVERS FOR LIFE: MANAGING WATER FOR PEOPLE AND NATURE 7–8 (2003).

82. See Poff et al., *supra* note 79.

83. See William L. Graf, *Downstream Hydrologic and Geomorphic Effects of Large Dams on American Rivers*, 79 GEOMORPHOLOGY 336, 357 (2006).

84. *Id.*

85. See Elizabeth Losos et al., *Taxpayer-Subsidized Resource Extraction Harms Species*, 45 BIOSCIENCE 446, 448 (1995).

86. See Richard T. Woodward & Yong-Suhk Wui, *The Economic Value of Wetland Services: A Meta-Analysis*, 37 ECOLOGICAL ECON. 257, 259 (2001); see also William J. Mitsch & James G. Gosselink, *The Value of Wetlands: Importance of Scale and Landscape Setting*, 35 ECOLOGICAL ECON. 25 (2000).

floodplain in the Sacramento River watershed designed to mimic the historic Sacramento River flooding, contains far greater biodiversity and habitat diversity than the channelized and diked Sacramento River.⁸⁷ The Bypass's seasonal flooding also better mimics historic natural cycles, providing a competitive advantage to native species that evolved with the Sacramento's winter and early-spring flooding cycle.⁸⁸ The floodplain also contributes significant quantities of organic carbon (primarily phytoplankton) to the San Francisco estuary, providing "an important carbon subsidy to the downstream estuarine food web."⁸⁹ Even taking into account the vast amount of land required for the bypass (which can be used for seasonal agriculture), this type of approach can be much more cost effective than the alternatives. A study of flood control options in the Netherlands determined that when all potential costs and benefits are considered—including social, ecological, aesthetic, and other amenity values—alternative flood control measures like land use change and floodplain restoration are more efficient than traditional dike strengthening, even ignoring the original costs of existing dikes.⁹⁰

C. Case Studies in Local Flood Control

Whatever the particular resource at issue, the *local* conservation concept is the most important component of my argument. This article uses "flood control districts"—independent local taxing districts and municipal corporations empowered to manage specific watersheds – as the case to demonstrate the how 21st-Century Conservation regimes might work at a smaller, local scale. The particular governmental structure is largely irrelevant, so long as local communities are empowered to engage in stream restoration efforts funded by local taxing districts. I will continue to use

87. Ted Sommer et al., *California's Yolo Bypass: Evidence that Flood Control Can Be Compatible with Fisheries, Wetlands, Wildlife, and Agriculture*, 26 FISHERIES, no. 8, Aug. 2001, at 6, 6.

88. *Id.* at 11.

89. *Id.* at 14.

90. See Roy Brouwer & Remco van Ek, *Integrated Ecological, Economic and Social Impact Assessment of Alternative Flood Control Policies in The Netherlands*, 50 ECOL. ECON. 1, 18 (2004).

“flood control district” as a generic title for the structural implementation for this concept, but there is no reason cities, counties, soil conservation districts, or any other municipal corporation could not be empowered to serve the same place-based, ecological restoration goals.

This article simultaneously argues that existing state conservation laws already allow for both floodplain and riparian preservation and restoration as viable flood control approaches, and that those existing state laws should be amended to specifically authorize and promote those techniques. It is not a recommendation for a wholesale reconsideration of watershed governance, but the benefit of thinking small is that things are more likely to happen. When local communities have local problems or local goals, those communities should be capable—legally and financially—of acting.

This argument emerged from a specific project in a small watershed in southeastern Idaho. While that project is rather limited in scope, the ideas and tools suggested here are useful across a wide range of watersheds and localities. To demonstrate that point, I will continue in this section by describing two case studies from different states and of dramatically different scales. In each case, a variety of flood control techniques have been used, but both are transitioning toward flood control approaches that take advantage of natural conditions. I will then include a brief survey of conservation regimes across several western states to begin thinking about how 21st-Century flood control might work with existing law.

1. *Small Scale Flood Control—Teton Creek, Idaho*

Teton Creek begins on the west side of the Tetons, in the Alaska Basin above 10,000 feet.⁹¹ It descends north through a

91. The South Fork of Teton Creek begins in Alaska Basin. The smaller and shorter North Fork begins a few miles north in a cirque below the Wigwams and Table Mountain. The headwaters of Teton Creek's South Fork (in Alaska Basin) can be found on the USGS 7.5 minute series quadrangle topographic map “Grand Teton.” The creek flows into the northeast corner of the “Mount Bannon” quad, then across the southern parts of the “Granite Basin” quad before crossing the southeastern corner of the “Clawson” quad. The creek enters Idaho just after it flows into the “Driggs” quad. The creek flows southwest across the “Driggs” quad before entering the “Bates” quad where it reaches its confluence with the Teton River. The North Fork starts in the southwest corner of the Mount Moran quad and then quickly joins the South Fork. The author

glacially-carved canyon in the Jedediah Smith Wilderness before turning west, then southwest as it enters the Teton Valley, where it meets the Teton River. The Teton River is a tributary of the more well known Henry's Fork River, which is in turn the largest tributary to the Upper Snake River. The Teton River, a popular fly-fishing destination, is most known (and infamous) for the Teton Dam disaster in 1976.⁹²

Teton Creek flows through the largest canyon on the west side of the Tetons, home to a Boy Scout camp, several public campgrounds, and the prettiest alfalfa field in the West, where the canyon walls to the east perfectly frame the Grand Teton. Teton Creek is the largest of the Teton River's headwaters streams and enters the Teton Valley at its widest point. The valley's first town, Driggs, Idaho, emerged on Teton Creek's banks in the 1880s,⁹³ and the creek has felt the human presence ever since.

While Teton Creek's origins in the shadow of the West's most iconic mountain range might give it some claim to uniqueness, it is in fact a typical western stream, condensing the life history of many of the West's larger rivers into a short, approximately twenty-five mile journey.⁹⁴ Like many streams in the West, it originates in a protected or partly-protected public lands landscape, which protects it from development and some diversion. Once the creek enters a private landscape, most of those protections dissolve. Teton Creek begins disappearing before it leaves the Caribou-Targhee National Forest, with the first irrigation diversion occurring several miles upstream of the forest boundary. The largest diversion occurs about one mile into the Teton Valley, just before the

has visited the headwaters of both the North and South Forks, and has hiked, ridden, skied, or driven the entire length of the creek multiple times (albeit not all at once, and not using all those forms of transportation at the same time nor during the same trip).

92. For an excellent discussion of the Teton Dam, from its origins to failure, see MARC REISNER, *CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER* 384–410 (1987).

93. See BENJAMIN W. DRIGGS, *HISTORY OF TETON VALLEY* 145–48 (1926).

94. Because Idaho has assessed the creek's water quality, we know with some precision that it runs 11.059 miles from the Idaho/Wyoming state line to the confluence with the Teton River (calculated using Idaho's interactive map, see *Final 2012 §305(b) Integrated Report*, IDAHO DEP'T OF ENVTL. QUALITY, <http://mapcase.deq.idaho.gov/wq2012/> (last visited Jan. 14, 2015). Wyoming has not assessed Teton Creek. Its length in Wyoming was estimated using Google Earth.

creek flows into Idaho. The Grand Teton Canal Company holds rights to 320 cubic feet per second of the stream's flow, which is diverted through a canal constructed in the late 19th Century.⁹⁵ This diversion is sufficient to completely dewater Teton Creek for a five mile stretch during most of the summer, before subsurface flow returns some water to the creek bed just upstream from its confluence with the Teton River.

But summer dewatering is not the only thing Teton Creek has in common with the Teton River, or even the Snake and Colorado Rivers, all of which "run" dry over parts of their journeys during the driest summer months. Teton Creek, like many rivers across the county, no longer flows in its historical channel.

During the 1980s and 1990s, a Teton County, Idaho developer Charles Lynn Moses slowly converted a one-mile stretch of Teton Creek's wide floodplain and riparian area, which historically contained three distinct stream channels, into a single, straight, deep channel.⁹⁶ The consequences were predictable. No longer able to spread out across the natural floodplain, seasonal floodwaters flowed more quickly, causing increased erosion, transporting more sediment, and routinely damaging lands and installations of the riparian property owners.⁹⁷ If this sounds inappropriate, it is. The developer's activities violated sections 301 and 404 of the Clean Water Act, which require a federal permit before discharging any dredged

95. The Grand Teton Canal Company possesses decreed water rights that total 320 cubic feet per second, with priority dates of 1892 (109.97 cfs) and 1916 (210 cfs). *See Water Right Research, IDAHO DEP'T OF WATER RES.*, <http://www.idwr.idaho.gov/apps/ExtSearch/WRAJSearch/WRADJSearch.aspx> (last visited Jan. 14, 2015). The decreed water rights can be found by entering "Grand Teton Canal" in the "name" search box. The stream's average annual flow was approximately 110 cfs in the mid-20th Century. Bankfull conditions in 2008 carried approximately 400 cfs. At almost any flow less than bankfull, the Canal completely dewateres the creek.

96. *See United States v. Moses*, 496 F.3d 984, 986 (9th Cir. 2007), *cert. denied*, 554 U.S. 918 (2008) ("Beginning in the 1980s, and continuing for more than 20 years, Moses has worked to reroute and reshape Teton Creek, in an attempt to convert the original three channels of the Creek into one broader and deeper channel, which would carry all of the seasonal flow of water.").

97. Erosion caused by stream channel modifications has destroyed portions of a bike path, damaged irrigation diversion structures, and continues to threaten a county road which is collapsing on both sides of a culvert. Numerous residences are situated near the channelized portion of the stream channel.

or fill material into “waters of the United States.”⁹⁸ While Moses did not go willingly, the developer ultimately served time in federal prison for criminal violations of the Clean Water Act.⁹⁹

Charles Lynn Moses was not alone in altering Teton Creek. A series of unpermitted activities in the stream channel over the last twenty five years, including the extraction of gravel to build a Forest Service road, significantly degraded the stream system.¹⁰⁰ The Moses stream alterations were the most significant, creating an eroding headcut that continues to travel upstream about 200 feet per year, with 2,000 feet of stream corridor already severely degraded upstream of the Moses channelization.¹⁰¹ Downstream of the Moses channelization, two-and-one-half miles of the stream suffered significant erosion, down-cutting of the channel, bank failure, and loss of streamside vegetation.¹⁰² The Moses alterations removed approximately 120,000 cubic yards of material from a one-mile stretch of the stream, either due to erosion from the headcut, or the use of the materials for levees or other activities outside of the flood plain.¹⁰³ This is the equivalent of almost thirty-seven Olympic-sized swimming pools (fifty meters by twenty-five meters) of missing floodplain material in just this one-mile stretch of the stream. And because of the erosion migrating both up and downstream, many additional thousands of cubic yards of sediment have entered the system from eroding streambanks, depositing downstream, filling the

98. 33 U.S.C. §§ 1311, 1344, 1362 (2012).

99. See *United States v. Moses*, No. CR-05-061-E-BLW, 2006 WL 1459836 (D. Idaho May 25, 2006), *aff'd*, 496 F.3d 984 (9th Cir. 2007), *cert. denied*, 554 U.S. 918 (2008); see also *United States v. Moses*, 642 F. Supp. 2d 1216 (D. Idaho 2009) (post-conviction relief dismissed). Mr. Moses was not the only cause of the stream’s degraded condition. The stream served as a gravel pit for a Forest Service road construction project in 1983, and another developer channelized and deepened part of the stream channel to facilitate subdivision development in the 2000’s.

100. FED. EMERGENCY MGMT. AGENCY, FINAL ENVIRONMENTAL ASSESSMENT: TETON CREEK RESTORATION PROJECT § 2 (2012), available at http://www.fema.gov/media-library-data/20130726-1832-25045-9811/tetoncounty_finalea1.pdf. FED. EMERGENCY MGMT. AGENCY, *supra* note 102, § 2-1.

101. *Id.* § 4.2; Personal Communications with Mike Lien, Restoration Dir., Friends of the Teton River.

102. FED. EMERGENCY MGMT. AGENCY, *supra* note 100, § 4-3.

103. Email from Mike Lien, Restoration Dir., Friends for the Teton River (Oct. 3, 2013) (on file with author).

channel, covering riparian vegetation, and increasing downstream flood risk.¹⁰⁴

Although the local government and community organizations have begun restoring part of the degraded stream corridor, much of the damage still remains, and local land and homeowners and the city of Driggs continue to face an increased risk of harm from flooding. Before significant restoration occurred during the fall of 2013, the degraded stream channel could not carry a moderate flood event (i.e., a ten-year flood event).¹⁰⁵ The degraded portion of the stream passes through two subdivisions built along its banks, immediately upstream of the city of Driggs, placing all of those homes at risk from flooding.¹⁰⁶

Just as significant, Teton Creek no longer provides the ecological and aesthetic resources that are an increasingly important component of the local economy.¹⁰⁷ Driggs and the Teton Valley are a classic “New West” community, currently experiencing a transition from an agricultural economy to a service and tourism economy.¹⁰⁸ Ironically, the developments that caused most of the harm to Teton Creek, the Aspens and Aspen Pointe condominiums, were intended to take advantage of the Teton Valley’s natural amenities.¹⁰⁹

While Teton Creek might be somewhat atypical because the developer brazenly disregarded legal requirements, ignoring multiple Army Corps of Engineers warnings and EPA orders to stop his channelizing activities,¹¹⁰ the stream-channel alterations unfortunately are not. In fact, in most cases across the county, stream channel modifications were intentional and not only legally sanctioned, but legally promoted.¹¹¹ Across the

104. For example, the channel under a bridge in the Creekside Subdivision near Driggs, Idaho has largely filled in with sediment, reducing the carrying capacity of the bridge and increasing the likelihood of flooding at that location.

105. See FED. EMERGENCY MGMT. AGENCY, *supra* note 102, § 2-1.

106. See *id.* at app. A, fig. 1.

107. See *id.* at 4–7.

108. See Jerrold A. Long, *Private Lands, Conflict, and Institutional Evolution in the Post-Public-Lands West*, 28 PACE ENVTL. L. REV. 670, 711 (2011).

109. The developments at issue here—the Aspens and Aspen Pointe condominiums—are relatively high-end units targeting retirees, second home owners, or other non-residents seeking to take advantage of local natural and scenic amenities.

110. See *United States v. Moses*, 496 F.3d 984, 986 (9th Cir. 2007).

111. See Arnold, *supra* note 14, at 13, 20.

United States, thousands of river miles have been channelized, hundreds of thousands of acres of wetlands drained, thousands of miles of levees built, and countless rivers and streams modified or degraded.¹¹²

Of course, that does not need to be the end of the story. Recognizing the harm that could result due to Teton Creek's degraded condition, a local conservation organization teamed with landowners, developers, and local, regional, and federal government agencies in 2006 to create the Teton Creek Subwatershed Committee. The committee's primary goal is to restore Teton Creek to its approximate natural condition and function. Over the past six years, the committee's efforts have raised \$2.3 million in government grants and private funds to implement a long-term restoration effort. The efforts replaced a bridge on a county road to increase its carrying capacity. And the largest phase of the restoration occurred in the fall of 2013, stabilizing approximately 1.2 miles of the stream channel.¹¹³

At this point we encounter the Teton Creek's confluence with this article. Recognizing that even with a \$1 million FEMA grant and \$2.3 million in total funds they could not permanently restore and maintain Teton Creek, the Subwatershed Committee began exploring additional funding options. Across the United States, states have enacted laws authorizing local taxing districts to achieve a wide variety of public purposes. Idaho is no different, with three separate conservation programs authorizing taxing districts to fund conservation efforts: soil conservation districts,¹¹⁴ watershed improvement districts,¹¹⁵ and flood control districts.¹¹⁶ Based in part on the advice of the Idaho Department of Water Resources, and the relatively broad statutory language available, the Subwatershed Committee decided to pursue creation of a flood control district, a local taxing district that

112. *See id.*

113. Email from Mike Lien, Restoration Dir., Friends of the Teton River, to the Teton Creek Subwatershed Comm., (Mar. 10, 2014) (on file with author) (announcing completion of the project). *See also* FED. EMERGENCY MGMT. AGENCY, *supra* note 102, at 3-1-2.

114. *See* IDAHO CODE ANN. §§ 22-2715 to -2135 (West 2006).

115. *See id.* §§ 42-3701-3717.

116. *See id.* §§ 42-3101-3128.

could provide some base-level funding to restore and maintain Teton Creek.¹¹⁷

Unfortunately, as I will discuss below, Idaho law does not provide a clear pathway to achieve what the Teton Creek community desires. But we will return to Teton Creek later. At this point, it is important to note that Teton Creek is not very big. The total degraded section of the creek only amounts to three-and-one-half miles.¹¹⁸ Approximately fifty-six residences are directly threatened by flooding in this degraded reach,¹¹⁹ and only 1,660 people called Driggs home in 2010.¹²⁰ If this place is so small, how useful is a legal approach used here in different context or places? The following sections travel beyond the Teton Valley to discuss how similar tools have been used in dissimilar places. After that brief detour, we'll return to Teton Creek to conclude the conversation about local conservation districts.

2. *A Problem, and Solution, at All Scales: The Sacramento River*

Although the proposed Teton Creek flood control district is fairly small and focused, the conservation district concept is applicable to problems at multiple geographic scales. Perhaps the most powerful and wide-reaching conservation district is the Sacramento Area Flood Control Agency (SAFCA).¹²¹ The California legislature and Sacramento-area governments created SAFCA in 1991 in response to the continued threat of

117. On July 19, 2013, members of the Subwatershed Committee submitted a petition to the Director of the Idaho Department of Water Resources to create a flood control district on Teton Creek. The author advised the Subwatershed Committee throughout the process, and assisted in drafting the petition. IDWR held a public hearing on the petition in Driggs, Idaho on January 14, 2014. The Department issued an order recommending creation of the Teton Creek Flood Control District on April 23, 2014. See IDAHO DEP'T OF WATER RES., ORDER RECOMMENDING ORGANIZATION OF FLOOD CONTROL DISTRICT NO. 18 (2014), *available at* http://www.idwr.idaho.gov/WaterManagement/WaterRelatedDistricts/floodcontrol/PDFs/OrderRecommendingOrganizingTCFCD_04232014.pdf.

118. See FED. EMERGENCY MGMT. AGENCY, *supra* note 102, § 2-1.

119. See *id.*

120. *American FactFinder*, U.S. CENSUS BUREAU, <http://factfinder.census.gov/bkmk/cf/1.0/en/place/Driggs> city, Idaho/POPULATION/DECENNIAL_CNT (last visited Jan. 14, 2015).

121. See SACRAMENTO AREA FLOOD CONTROL AGENCY, <http://www.safca.org/> (last visited Jan. 14, 2015).

catastrophic flooding in the Sacramento area and the need for a coordinated regional approach to address that flood risk.¹²² Much like the flood control district proposed for Teton Creek, albeit in a much different context, SAFCA is a place-based conservation entity authorized to raise funds through taxation, and implement flood control projects.¹²³ SAFCA and the system it regulates represent both ends of the “conservation” spectrum, from an invasive, highly-engineered, structural approach to the emerging recognition of the value of natural environment.¹²⁴

Sacramento’s flood control (and flooding) history is somewhat unique, given the effect of the high intensity placer mining in the Sierra, the size and runoff potential of the watershed, and the rapid transition of high mountains to a very low elevation floodplain.¹²⁵ The Sacramento and its tributaries descend rapidly from the high elevations of the Sierra and Coast Ranges to the broad and flat Sacramento Valley. The Sacramento Valley is not an erosional valley, created by the river cutting through preexisting features. Rather, the Sacramento Valley is an aggraded plain.¹²⁶ Other geologic forces created the larger structural depression, and the river itself created the plain, building it up over millennia by continually depositing sediments.¹²⁷ The end result is a long, low, and flat valley with fairly consistent elevation.¹²⁸ The river did form a consistent channel with natural stream-side levees. But when the river breached those levees (which apparently occurred on a fairly regular, perhaps even annual, basis), the resulting floods covered most of the valley floor.¹²⁹ This regular flooding of the valley floor and consequent

122. See CAL. WATER CODE § 130-20 (2009); SACRAMENTO AREA FLOOD CONTROL AGENCY, JOINT EXERCISE OF POWERS AGREEMENT (1991), available at <http://www.safca.org/documents/JPA%20January%201991.pdf>.

123. See SACRAMENTO AREA FLOOD CONTROL AGENCY, *supra* note 122.

124. Obviously, flood risk on the Sacramento River predates SAFCA’s creation by almost 150 years. Prior to SAFCA’s creation, a wide variety of state and local entities engaged in flood control activities. SAFCA is a continuation of those formerly uncoordinated, at least formally, efforts.

125. See O’NEILL, *supra* note 11, at 69–71.

126. KELLEY, *supra* note 77, at 5.

127. See Kenneth Thompson, *Historic Flooding in the Sacramento Valley*, 29 PAC. HIST. REV. 349, 351 (1960); John McPhee, ASSEMBLING CALIFORNIA FARRAR (1993).

128. MCPHEE, *supra* note 122, at 172–78.

129. See Thompson, *supra* note 127, 355–59.

sediment deposition over thousands of years created the fertile soils that are a crucial component of the regional economy.¹³⁰

So while the Sacramento and its tributaries were already prone to regular and significant flooding, human alterations to the watershed increased the flooding's severity. And human occupation of the floodplains dramatically increased the harm the flooding caused. The discovery of gold at Sutter's Mill in 1848 had a well-known effect on human settlement of the Sacramento Valley—by the end of 1849, California's non-European population increased to over 100,000 from about 10,000 in early 1848.¹³¹ Although John Sutter, Sr.'s New Helvetia existed near present day Sacramento prior to 1848, the city of Sacramento was established in 1849 and grew rapidly as gold seekers flooded the region.¹³² The city was chartered in 1849, and just four years later became the official capital of California.¹³³ Sacramento's location at the confluence of the American and Sacramento Rivers, and near the mining camps, gave it a competitive advantage over other towns¹³⁴

Sacramento discovered the perils of its location immediately. In January 1850, both the Sacramento and American rivers crested at the same time, flooding and destroying the new town.¹³⁵ Just two months later, a second flood threatened the rebuilt city.¹³⁶ A levee proponent gathered a group of men to begin building a levee.¹³⁷ He succeeded in protecting the city from that flood, and the city's citizens were impressed enough by his work to elect him Sacramento's new mayor just a few weeks later.¹³⁸ Thus the city began its now over 150-year-long effort in flood control. While his first effort was successful, conditions would soon change, further increasing Sacramento's risk of catastrophic flooding.

130. *See id.*

131. KELLEY, *supra* note 77 at 7, n.79.

132. THE NEW ENCYCLOPEDIA OF THE AMERICAN WEST 995 (Howard R. Lamar ed., 1998).

133. *Timeline*, SACRAMENTO HISTORY ONLINE, http://sacramentohistory.org/resources_timeline.html (last visited Jan. 14, 2015).

134. THE NEW ENCYCLOPEDIA OF THE AMERICAN WEST, *supra* note 132, at 995.

135. KELLEY, *supra* note 77, at 10–11.

136. *Id.* at 13.

137. *Id.*

138. *Id.*

After early gold miners found most of the easily accessible gold within a few years, new strategies emerged. The most significant new approach was called “hydraulicking,” and involved the large-scale washing away of hillsides to access the gold buried within the long-ago deposited gravels.¹³⁹ Hundreds of millions of tons of earth were removed from the California mountains and deposited in hundreds of streams and rivers, where that earth was soon washed downstream into the Sacramento Valley.¹⁴⁰ This mining debris quickly filled the river beds, increasing the elevation of the river without increasing the height of the river banks.¹⁴¹

The combination of a natural system prone to significant flooding, large population centers in those flood prone areas, and human activities that reduced the already limited capacity of natural stream channels to carry flood water had predictable and catastrophic consequences.¹⁴² Sacramento endured significant flooding in, at least, 1861, 1862, 1878, multiple times between 1902 and 1909, 1951, 1956, 1964, 1986, and 1997.¹⁴³ The last five of those floods are all characterized as “record” floods.¹⁴⁴

Given the nature of the Sacramento River system, the large number of people that currently live in flood prone areas, and the value of the flood prone areas as agricultural lands, a single flood control approach—either “natural” or structural—would likely be insufficient for the Sacramento River.¹⁴⁵ Since its founding, Sacramento has employed a significant number of dams, levees,¹⁴⁶ and other structural approaches.¹⁴⁷ But for the

139. ROBERT KELLEY, *GOLD V. GRAIN: THE HYDRAULIC MINING CONTROVERSY IN CALIFORNIA'S SACRAMENTO VALLEY, A CHAPTER IN THE DECLINE OF THE CONCEPT OF LAISSEZ FAIRE* 21–56 (1959).

140. *Id.*

141. *Id.*

142. Under natural conditions, the Sacramento River channel only had the capacity to carry approximately 10% of peak flood discharges. See L. Allen James & Michael B. Singer, *Development of the Lower Sacramento Valley Flood-Control System: Historical Perspective*, 9 NAT. HAZARDS REV. 125, 126 (2008).

143. See *Sacramento Area Flood History*, SACRAMENTO AREA FLOOD CONTROL AGENCY, <http://www.safca.org/history.html> (last visited March 11, 2014).

144. See *id.*

145. James & Singer, *supra* note 142, at 125 (“The tectonically influenced valley required a more innovative approach to flood control that incorporated natural geomorphic features into the design.”).

146. Approximately 1,100 miles worth. See James & Singer, *supra* note 142, at 131..

last eighty years, the Sacramento system has benefitted from engineered bypasses designed to reconnect the river to at least part of the original flood plain.¹⁴⁸ The largest of the bypasses—the Yolo Bypass, a 24,000 hectare floodplain—is capable of carrying eighty two percent of large flood events on the Sacramento River.¹⁴⁹ Combined with a system of weirs and additional bypass channels, this system takes advantage of the natural capacity of floodplains to slow and store storm water, while also providing ecological and economic benefits.¹⁵⁰ Even with the system of multiple major dams in the Sierra foothills, the lower Sacramento valley relies primarily on these weirs and bypasses for flood protection.¹⁵¹

While the Sacramento system's early efforts to use or mimic natural systems for flood control were done out of necessity rather than because of an evolved understanding of conservation, contemporary efforts demonstrate a trend toward a 21st-Century Conservation. California law requires SAFCA to “carry out its responsibilities in ways which provide for the optimum protection of the natural environment, especially riparian habitat and natural stream channels suitable for native plant and wildlife habitat and public recreation.”¹⁵² While some environmental awareness is required by state and federal law, this additional statutory mandate ensures that ecological values, even those that do not necessarily provide benefits to human communities, are an integral part of SAFCA's activities.

In addition to demonstrating the value of using or mimicking natural systems and floodplains for flood control, the Sacramento system also demonstrates that local conservation districts can operate at multiple scales. While SAFCA is perhaps an extreme example, and it entered the Sacramento flood control arena only relatively recently, the SAFCA experience provides lessons for smaller systems.

147. KELLEY, *supra* note 77, at 11.

148. See Sommer et al., *supra* note 87 at 7, n.89.

149. See Opperman et al., *supra* note 79, at 1488; James & Singer, *supra* note 142, at 132; Sommer et al., *supra* note 87, at 6.

150. See Sommer et al., *supra* note 87 at 7, n.89.

151. See Michael B. Singer, *The Influence of Major Dams on Hydrology Through the Drainage Network of the Sacramento River Basin*, 23 RIVER RES. & APPLICATIONS 55, 63 (2007).

152. CAL. WATER CODE § 130-52 (West 2009).

SAFCA is now responsible for “coordinat[ing] a regional effort to finance, provide, and maintain facilities and works necessary to ensure a reasonable and prudent level of flood protection.”¹⁵³ It does so using the same basic tools available to much smaller conservation districts, like the one proposed for Teton Creek.¹⁵⁴

IV. THE CONSERVATION STATUTE LANDSCAPE

Given the substantial geographic, population, political, and cultural diversity that exists among the western states, it should be unsurprising that the states take a variety of approaches to the issue of whether, and how, to empower local conservation districts. Much of the difference is likely cultural, as the statutory authority does not vary by a substantial amount, even if the on-the-ground practices apparently do. What follows is a brief overview of the approaches used in a few of the western states, with examples of a few on-the-ground applications. This discussion is necessarily somewhat limited and incomplete. While the focus of this article is on flood control districts as a general example of local conservation districts, and on the protection and restoration of stream systems specifically, there are a wide variety of conservation districts with overlapping authority.¹⁵⁵ In some cases, not even the state agencies tasked with administering the local conservation district programs necessarily understand how they were originally intended to work.¹⁵⁶ Many of the conservation district statutes appear to have been enacted in response to federal programs and funding that required local partners. To avoid getting lost in the details of

153. *Id.* § 130-20(c).

154. *Id.* § 130-20.

155. In Oregon, there are (or were) “Irrigation Districts,” *see* OR. REV. STAT. § 545 (2013); “Drainage Districts,” *see id.* § 547; “Flood Control Districts,” *see id.* § 550; “Diking Districts,” *see id.* § 551; “Water Improvement Districts,” *see id.* § 552; and “Water Control Districts,” *see id.* § 553. Washington has “Diking Districts,” *see* WASH. REV. CODE § 85.05 (2014); “Drainage Districts,” *see id.* § 85.06; “Flood Control Districts” *see id.* § 86.09; “Flood Control Zone Districts,” *see id.* § 86.15; and “Irrigation Districts,” *see id.* § 87.03.

156. For example, in Idaho, before the proposal discussed in this article, no one had requested a flood control district since 1984. State agency staff had no personal experience with the statute or its application. Telephone Interviews with Tim Luke, Water Compliance Bureau Chief, Idaho Dep’t of Water Res. (October 2013).

each state's multiple local conservation districts, this discussion will focus on those related to flood control by name and specific purpose. Many other conservation districts address streams, riparian areas, and flooding in a variety of ways. But since it is highly unlikely that a "diking district," for example, would engage in the type of floodplain protection and restoration contemplated by this article, I will focus on those districts most superficially similar to the district at issue in the Idaho case study that motivated this discussion.

As an initial matter, many of the western states *do not* use flood control districts for 21st-Century Conservation, if they use flood control districts at all.¹⁵⁷ While Wyoming has a flood control district statute,¹⁵⁸ it is considered "obsolete" and superseded by other programs.¹⁵⁹ The Wyoming Water Conservancy Act has been used for limited stream restoration and protection purposes (primarily fencing of riparian areas),¹⁶⁰ but its primary purpose is to ensure the maximum beneficial use of the state's water.¹⁶¹ In this context, "beneficial use" means the appropriation and diversion (i.e., removal from the streambed) of water for consumptive uses.¹⁶² Nevada uses flood control districts, with a focus on structural improvements

157. I am excluding Colorado from this part of the discussion (about flood control districts). Colorado does use local conservation districts to achieve flood control ends, including through 21st-Century Conservation means. Telephone Interview with Tom Browning, Deputy Dir., Integrated Water Res., Colo. Water Conservation Bd. (July 2, 2012). But Colorado conservation districts of this type must be created by the state legislature, and it appears that only two currently exist: the "Fountain Creek Watershed, Flood Control, and Greenway District" in El Paso and Pueblo Counties, *see* COLO. REV. STAT. §§ 32-11.5-101 to -102 (West 2009) and the "Urban Drainage and Flood Control District" in parts of metro Denver, *see id.* §§ 32-11-101 to 817.

158. *See* WYO. STAT. ANN. §§ 41-3-801–803 (2013). The fact that this regime contains only three sections might suggest something about its perceived need and value. In contrast, Wyoming's "Water Conservancy Act" required 41 sections. *See id.* §§ 41-3-701 to-779.

159. Telephone Interview with John Barnes, Surface Water Adm'r, Wyo. State Eng'r's Office (June 14, 2012).

160. *Id.*

161. *Id.*; *see also* WYO. STAT. ANN. § 41-3-701.

162. *See id.* § 41-3-701; *see also id.* § 41-3-102 (establishing the order of preference for the preferred uses of Wyoming's water). That order of preference is: "(i) Water for drinking purposes for both man and beast; (ii) Water for municipal purposes; (iii) Water for the use of steam engines and for general railway use, water for culinary, laundry, bathing, refrigerating (including the manufacture of ice), for steam and hot water heating plants, and steam power plants; and (iv) Industrial purposes."

to control floods.¹⁶³ The Nevada flood control districts (FCDs) have not engaged in stream restoration activities, but presumably could if a district could demonstrate that restoration was the best method of minimizing flood risk.¹⁶⁴ Utah does not use flood control districts as understood in this article, and apparently does not authorize stream restoration by local conservation districts.¹⁶⁵

Several states do, however, authorize local conservation districts to engage in a wider variety of conservation activities. For example, Oregon created two water-related conservation regimes in 1969: a “water improvement district” regime¹⁶⁶ and a “water control district” regime.¹⁶⁷ Both types of districts include flood control among their specified purposes,¹⁶⁸ but the other designated purposes suggest that the water improvement district has a potentially broader reach. Water control districts “may be created . . . for the purpose of acquiring, purchasing, constructing, improving, operating and maintaining drainage, irrigation, and flood and surface water control works in order to prevent damage and destruction of life and property by floods, to improve the agricultural and other uses of lands, and to improve the public health, welfare and safety.”¹⁶⁹ These purposes reflect the mid-20th century understanding of conservation. Although the water improvement district is also authorized to control floods, among other mid-20th-Century conservation goals, the statute

163. *See, e.g.*, NEV. REV. STAT. § 543.170 (2011) (declaring the value of “facilities” in protecting from floods); *id.* § 543.360 (authorizing “projects and improvements”); *id.* § 543.186 (defining “project and improvement” as “any structure, facility, undertaking or system which a district is authorized to acquire, improve, equip, maintain or operate.”).

164. Phone Interview with Kevin Eubanks, Assistant Gen. Manager, Clark Cnty. Reg'l Flood Control Dist. (June 14, 2012).

165. Phone Interview with John Crofts, State Floodplain Manager, Utah Dep't of Public Safety; *see also* UTAH CODE ANN. § 17D-3-103 (West 2010) (describing the authority and duties of Utah Conservation Districts).

166. OR. REV. STAT. §§ 552.005–.992 (2013).

167. *Id.* §§ 553.010–.850. These are not the only water-related conservation districts in Oregon, but they are the two most closely related to the subject of this article. Oregon also authorizes “Diking Districts” and “Drainage Districts.” *See generally* OR. REV. STAT. Title 45: Water Resources: Irrigation, Drainage, Flood Control, Reclamation.

168. *See id.* § 552.108 (“Purpose of Water Improvement District”) and § 553.020 (“Creation of Water Control Districts; Purposes”).

169. *Id.* § 553.020

also authorizes activities to promote the public health, safety and welfare generally, as well as specifically providing for recreation and enhancing water quality, pollution control, and fish and wildlife resources.¹⁷⁰

The significance of adding recreation, water quality, pollution control, and fish and wildlife resources to the legitimate purposes can be best demonstrated by looking at a specific example. Devils Lake is a small, coastal lake near Lincoln City, Oregon. As of 1970, it was Oregon's most polluted lake, largely due to a malfunctioning sewage treatment facility.¹⁷¹ Although the sewage treatment facility problem was corrected, pollution continued to enter the lake from residential septic tanks, farmyards, cattle pastures, and nearby disturbed lands.¹⁷² The end result was a highly eutrophic lake, suffering from both excess sediment deposition and heavy aquatic weed growth.¹⁷³

Largely because the vegetation growth was fouling boat propellers, creating bad odors, making swimming unpleasant, and reducing the value of lake-side properties,¹⁷⁴ Lincoln City voters approved creation of the Devils Lake Water Improvement District ("DLWID") in 1984.¹⁷⁵ Apparently, the first Water Improvement District created under the 1969 statute, the DLWID's first action, was to develop a plan to restore Devils Lake.¹⁷⁶ The 1987 Devils Lake Coordinated Resource Management Plan, developed at the request of the DLWID, provided as its purpose: "Locate and identify sources

170. *Id.* § 552.108.

171. See ROBERT A. MCHUGH, DEP'T OF ENVTL. QUALITY LAB. & APPLIED RESEARCH, SOME HIGHLY EUTROPHIC OREGON LAKES, WITH RECOMMENDATIONS FOR THE RESTORATION OF THEIR QUALITY 15 (1979), *available at* <http://library.state.or.us/repository/2007/200710020808212/index.pdf>.

172. *Id.*

173. *Id.*; see also KENNETH F. BIERLY & MARK WALSTROM, DEVILS LAKE AQUATIC VEGETATION ANALYSIS (1982), *available at* <http://www.dlwid.org/Research/1982-Bierley-et-al.pdf>.

174. See, e.g., *id.*; see also KRAMER, CHIN & MAYO, INC., DEVILS LAKE DIAGNOSTIC & FEASIBILITY STUDY (1983), *available at* <http://www.dlwid.org/Research/1983-KCM.pdf>

175. See ASSESSMENT & WATERSHED PROT. DIV., ENVTL. PROT. AGENCY, A COMMITMENT TO WATERSHED PROTECTION 21 (1992); see also *History & Legend*, PRESERVATION ASS'N OF DEVILS LAKE, <http://www.devilslakeor.us/history.html> (last visited Jan. 9, 2015).

176. See Q.D. ISHAM, DEVILS LAKE RESTORATION PROGRAM (1985), *available at* <http://www.dlwid.org/Research/1985-Isham.pdf>.

of nutrient and sediment input into Devils Lake watershed, assess possible improvements and seek corrective action.”¹⁷⁷ This purpose reflected the DLWID’s own goals: “Improve and maintain water quality; improve the economy of North Lincoln; restore the beauty of Devils Lake; improve the environment for fish, wildlife, and humans; increase public access to Devils Lake; reestablish safe and efficient navigation in Devils Lake; increase recreational opportunities.”¹⁷⁸ The DLWID’s mission remains largely the same today.¹⁷⁹

The DLWID demonstrates the value of flexibility for local conservation districts. Although the first-mentioned purpose of Oregon’s water improvement districts is flood control, the DLWID’s primary concern has been largely unrelated to flooding. Perhaps the most significant action the DLWID has undertaken has been the introduction of non-reproducing triploid grass carp to control aquatic vegetation.¹⁸⁰ While excessive aquatic vegetation can increase peat formation, and thus reduce the lake’s carrying capacity, this exercise was not intended as a flood control effort. It was, however, vitally important to the local community to reduce the amount of aquatic vegetation, and thus restore and maintain the lake’s aesthetic and recreational resources.

Oregon is not alone in providing flexibility for, or at least recognizing flexibility in, local conservation districts. In addition to “Diking” and “Drainage” districts, Washington law contains two options for water-related local conservation districts:¹⁸¹ the flood control district¹⁸² and the more recently created flood control zone district.¹⁸³ This section will focus on the flood control zone district, since it appears to be the more

177. DLWID & PARTNERS, DEVILS LAKE COORDINATED RESOURCE MANAGEMENT PLAN 3 (1987), available at <http://www.dlwid.org/Research/1987-CRMP.pdf>.

178. CLEAN LAKES PROGRAM, DEVILS LAKE RESTORATION PROGRAM 2 (1988), available at http://www.dlwid.org/Research/1988-Clean_Lakes_Program.pdf (last visited Jan. 9, 2015).

179. See *About Us*, DEVILS LAKE WATER IMPROVEMENT DISTRICT, <http://www.dlwid.org/About%20Us.html> (last visited Jan. 9, 2015).

180. See, e.g., Scott A. Bonar et al., *Effect of Triploid Grass Carp on the Aquatic Macrophyte Community of Devils Lake, Oregon*, 13 N. AM. J. OF FISHERIES MGMT. 757 (1993).

181. Washington also authorizes “Diking” and “Drainage” Districts; see WASH. REV. CODE §§ 85.05–.08 (2014).

182. *Id.* § 86.15.100.

183. *Id.* § 86.15.020.

common contemporary approach. Washington law does not explicitly authorize flood control zone districts (FCZD) to engage in stream channel restoration or preservation activities. In fact, in some ways, Washington law is much less flexible than the Idaho statute used for Teton Creek.¹⁸⁴ Washington law contains a general grant of authority to provide flood protection.¹⁸⁵ The Washington FCZD statute further authorizes a range of “improvements,” all of which reflect the old conservation approach: “improvements may include, but shall not be limited to the extension, enlargement, construction, or acquisition of dikes and levees, drain and drainage systems, dams and reservoirs, or other flood control or storm water control improvements; widening, straightening, or relocating of stream or water courses[.]”¹⁸⁶ A 2011 amendment to the Washington FCZD statute expands a FCZD’s authority by authorizing “cooperative watershed management arrangements and actions . . . for purposes of water supply, water quality, and water resource and habitat protection and management.”¹⁸⁷

But notwithstanding the lack of any explicit authorization, several Washington flood control zone districts engage in substantial stream restoration efforts. For example, the Donald Wapato Levee Removal Project in Yakima County—funded and implemented by the Yakima County Flood Control Zone District¹⁸⁸—removed an old levee and restored 100 acres of floodplain, reducing flood overflows and improving riparian habitat, native plant communities, and fish populations.¹⁸⁹ In addition, the Whatcom County FCZD has engaged in several projects to restore reaches of the Nooksack River.¹⁹⁰ According

184. See *infra* note 64.

185. WASH. REV. CODE § 86.15.080.

186. *Id.* § 86.15.100.

187. *Id.* § 86.15.035.

188. See *Flood Control Zone District, YAKIMA COUNTY*, <http://www.yakimacounty.us/surfacewater/FCZD.htm> (last visited Jan. 9, 2015).

189. See YAKIMA CNTY. WATER RES. DIV., Donald Wapato Levee Removal Project, *available at* http://www.yakimacounty.us/surfacewater/Donald_Wapato_Levee_Removal.pdf (last visited Jan. 9, 2015).

190. See, e.g., Interlocal and Contractual Agreement Between Whatcom County, Whatcom County Flood Control Zone District and Lummi Nation for the Saxon Reach In-stream Restoration Project, South Fork Nooksack (Dec. 13, 2011), on file with author; see also Michael Maudlin et al., South Fork Nooksack River, Acme-Saxon

to the Whatcom County River and Flood Manager, the FCZD routinely uses its taxing power and authority to implement restoration projects, but the primary focus of each project must be flood control and/or habitat restoration.¹⁹¹ Given the nature of the Washington statute, it appears that FCZD's cannot engage in restoration activities independent of their flood control properties. But as the Washington State Supreme Court recognized, flooding is not an activity of government, it is rather something that government might protect against: "Nature has placed [the land] where it is and, if [the government actor] had done nothing with respect to flood-plain zoning, the property would still be subject to physical realities."¹⁹² For this perhaps obvious reason, in Washington "flood fighting is a fundamental purpose of government and has long been recognized as an activity within the powers of state and local government."¹⁹³ This same reasoning might be used to justify work focused on ecological integrity, even where it does not necessarily address flood risks.

Much like Oregon and Washington, New Mexico's approach sits between the old and new conservation approaches, borrowing from each as conditions warrant. The New Mexico Flood Control District Act does not include an express authorization to engage in restoration or preservation of floodplains or waterways.¹⁹⁴ In fact, the express authorization focuses on "projects," defined as "any structure, facility or system relating to the flood control system which a district is authorized by the Flood Control District Act to acquire, improve, equip, maintain or operate[.]"¹⁹⁵ The closest the New Mexico statutes get to recognizing a 21st-Century conservation approach is the authorization to "protect the watercourses,

Reach Restoration Planning: Analysis of Existing Information and Preliminary Recommendations (2002).

191. Telephone Interview with Paula J. Cooper, River & Flood Manager, Whatcom County (June 2012).

192. *Maple Leaf Investors, Inc. v. Dep't of Ecology*, 88 Wash. 2d 726, 734, 565 P.2d 1162, 1166 (1977).

193. *Citizens Protecting Res. v. Yakima County*, 152 Wash. App. 914, 921, 219 P.3d 730, 734 (2009), *denying rev.*, 168 Wash. 2d 1024, 228 P.3d 18 (2010).

194. *See* N. M. STAT. ANN. §§ 17-18-3, 20 (1997).

195. *Id.*

watersheds, public highways, life and property in the district from floods or storm waters[.]”¹⁹⁶

But notwithstanding any lack of express authority, New Mexico flood control districts do attempt to engage in non-structural flood control approaches. For example, the Southern Sandoval County Arroyo Flood Control Authority’s¹⁹⁷ primary goal is to maintain arroyos in a natural state wherever possible, and to minimize use of concrete lined channels.¹⁹⁸ However, perhaps due to the flashy nature of New Mexico arroyos, the Authority does manage a significant number of artificial, channel-altering, traditional flood control projects. The Lomitas Negras project will attempt to reduce the sediment volume entering two previously-channelized arroyos.¹⁹⁹ It will include, among other activities, the construction of five soil cement check dams and the raising of inlet dikes by two feet.²⁰⁰ Additionally, the Authority’s capital improvement plan for fiscal years 2015-2019 contains multiple dams or other structural changes.²⁰¹ Therefore, despite the claimed goal of minimizing structural changes to its waterways, the Authority’s primary approach appears to include dams, channelization, or other invasive techniques.

Arizona has most clearly authorized a 21st-Century Conservation approach to flood control. Arizona’s flood control

196. *Id.* § 17-18-20.

197. In 1990, the New Mexico legislature directly authorized the Southern Sandoval County Arroyo Flood Control Authority, outside of the process defined in the Flood Control District Act. *See id.* §§ 72-19-1 to -103. The New Mexico legislature has created four flood control districts in this fashion. Two of them were created before the passage of the Flood Control District Act in 1981, and two after. *See id.* §§ 72-16-1 to -103 (Albuquerque Metropolitan Flood Control Act—enacted in 1963); *id.* §§ 72-17-1 to -103 (Las Cruces Metropolitan Flood Control Act—enacted in 1967); *id.* §§ 72-19-1 to 103 (Southern Sandoval County Arroyo Flood Control Act—enacted in 1990), and *id.* §§ 72-20-1 to -103 (Supp. 2012) (Eastern Sandoval County Arroyo Flood Control Act—enacted in 2007).

198. Interview with Chuck Thomas, Executive Dir., S. Sandoval Cnty. Arroyo Flood Control Auth. (June 19, 2012).

199. *See, Open House Presentation, Lomitas Negras Water Quality Facility Project, Phase 1*, S. SANDOVAL CNTY. ARROYO FLOOD CONTROL AUTH. (Jan. 28, 2014), <http://sscafca.org/wp-content/uploads/2014/02/FINAL-Open-House-presentation-Lomitas-Negras-2-12-14.pdf>.

200. *See id.*

201. *See Draft Infrastructure Capital Improvement Plan 2015-2019*, S. Sandoval County Arroyo Flood Control Auth. (Aug. 16, 2013), <http://sscafca.org/wp-content/uploads/2013/08/Summary-Report.pdf>.

district statute specifically advocates for flood control solutions that use stream restoration practices: Arizona flood control districts may “implement flood control enhancement solutions including. . . preservation and restoration of the floodplain.”²⁰² In the Arlington Valley Flood Plain Acquisition Project,²⁰³ the Maricopa County Flood Control District purchased an elementary school in a flood prone area, demolished the building, and restored the floodplain’s natural conditions. While this might seem a drastic measure, relocating the school was more cost-effective than leaving it in place and attempting to protect it from the flooding Gila River.²⁰⁴ The Pima County Regional Flood Control District engages in a wide variety of “environmental projects,” including, among other things, riparian habitat and ecosystem restoration projects that restore degraded areas, and land management projects that protect sensitive areas.²⁰⁵ The direct focus on ecological restoration by these Arizona conservation districts demonstrates the value of the express statutory authorization and provides a model for a revised 21st-Century Conservation regime.

One final example revisits the point made at the beginning of this section—that conservation districts address a wide variety of issues in a wide variety of ways. There are other types of conservation districts that might engage in 21st-Century Conservation practices in our waterways. My initial research in Montana suggested that it would not yield interesting insights into how we might adapt old conservation regimes for new purposes. One individual opined that the flood control district statute is a “dead piece of legislation” that apparently does not get used because of a perception that most flood control projects are federal.²⁰⁶ The single flood control

202. See ARIZ. REV. STAT. § 48-3603(C)(20)(b) (2014).

203. See *Projects & Structures*, FLOOD CONTROL DIST. OF MARICOPA CNTY., <http://www.fcd.maricopa.gov/Projects/PPM/projStructDetails.aspx?ProjectID=5> (last visited Jan. 9, 2015).

204. *Id.*

205. See *Projects*, PIMA CNTY. REG’L FLOOD CONTROL DIST., <http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=57629> (last visited Jan. 9, 2015).

206. Telephone Interview with Lawrence Siroky, Chief of Water Operations Bureau, Water Res. Div., Dep’t of Natural Res. & Conservation (June 18, 2012).

district in Montana exists solely to maintain a levee.²⁰⁷ However, a brief visit to Montana does demonstrate why we must think a bit more broadly when we consider conservation regimes. And more significant, Montana demonstrates the potentially far-reaching value of local conservation efforts.

The Montana Constitution contains a unique provision, adopted at Montana's 1972 Constitutional Convention: "All persons are born free and have certain inalienable rights. They include the right to a clean and healthful environment[.]"²⁰⁸ In response to this new Constitutional guarantee, the Montana legislature enacted "The Natural Streambed and Land Preservation Act of 1975."²⁰⁹ This Act declares the "policy of the state of Montana that its natural rivers and streams and the lands and property immediately adjacent to them within the state are to be protected and preserved to be available in their natural or existing state[.]"²¹⁰ Standing alone, this Act demonstrates remarkable foresight, creating a state-wide policy of environmental protection at the very beginning of the modern environmental era. But the most interesting aspect of the 1975 Act is not necessarily what it did, but how it did it.

The Streambed Preservation Act of 1975 did not land on a blank, unregulated landscape. Montana had already enacted its Stream Protection Act in 1965,²¹¹ with the goal of ensuring "that its fish and wildlife resources and particularly the fishing waters within the state are to be protected and preserved to the end that they be available for all time, without change, in their natural existing state[.]"²¹² Most state environmental laws vest implementation and regulatory authority in state agencies. Montana's long history of preserving and protecting its natural resources follows this same pattern. The Stream

207. Telephone Interview with Todd Kleitz, Floodplain Adm'r, Missoula Cnty. (June 18, 2012).

208. MONT. CONST. art. II, § 3.

209. MONT. CODE ANN. § 75-7-102 (2013). This Act is also "commonly known as the '310 Law' after its original legislative designation as Senate Bill 310." *Bitterroot River Protective Ass'n, Inc. v. Bitterroot Conservation Dist.*, 198 P.3d 219, 221 (Mont. 2008).

210. MONT. CODE ANN. § 75-7-102.

211. The legislature originally enacted the Stream Protection Act in 1963 as a two-year temporary measure. It was adopted permanently in 1965. See Tom Dickson, *Bridging the Divide: 50 Years Ago, Montanans Came Together and Decided That Streams Were Worth Saving*, MONTANA OUTDOORS, May–June 2013, at 34, 38 available at <http://fwp.mt.gov/mtoutdoors/pdf/2013/StreamProtection.pdf>.

212. MONT. CODE ANN. § 87-5-501.

Protection Act grants regulatory authority to the Montana Department of Fish, Wildlife, and Parks.²¹³ Unlike the 1975 Act, which addressed private actors, the Stream Protection Act only addressed stream channel modifications proposed by the state government or its subdivisions, e.g., counties, municipalities, or state agencies.²¹⁴ The Stream Protection Act focused on transportation projects, and the stream channelization they often require.²¹⁵ While clearly a significant problem, this narrowed focus limited the reach and potential of the 1965 Act.

The 1965 Act's narrow focus in terms of contemplated projects, regulated entities, *and* the regulator, demonstrates the significance of the 1975 Act. A crucial component of conservation, as discussed in this article, is its *local* nature. Montana enacted its original conservation district statute in 1939. The purpose of that statute is to:

provide for the conservation of soil and soil resources of this state, for the control and prevention of soil erosion, for the prevention of floodwater and sediment damages, and for furthering the conservation, development, utilization, and disposal of water and thereby to preserve natural resources, control floods, prevent impairment of dams and reservoirs, preserve wildlife, protect the tax base, protect public lands, and protect and promote the health, safety, and general welfare of the people of this state.²¹⁶

Nothing in this grant of authority suggests that Montana conservation districts are any closer to a 21st-Century Conservation approach than any other type of conservation district. Even considering the “preserve wildlife” language in the statute, the authorized activities still reflect a Progressive-

213. *Id.* §§ 87-5-502 to -505.

214. *Id.* § 87-5-502.

215. See Dickson, *supra* note 211.

216. MONT. CODE ANN. § 76-15-102. In Oregon, the “Policy of Legislative Assembly regarding conservation” is similar to Montana’s law, but in some ways even closer to my “21st-Century Conservation,” since it includes as Oregon policy to “preserve wildlife, conserve natural beauty, promote recreational development, promote collaborative conservation efforts to protect and enhance healthy watershed functions...[.]” OR. REV. STAT. § 568.225 (2013). In contrast to the Montana law, Oregon’s policy statement was adopted in 1971. The actual powers granted to the conservation districts, originally adopted in 1955, *id.* § 568.550, and 1961, *id.* § 568.552, do not necessarily reflect the policy statement.

Era understanding of conservation. But for our purposes, there is one interesting aspect of the Montana conservation districts: the Montana legislature authorized *local conservation districts* to implement the Natural Streambed and Land Preservation Act of 1975. This includes the authority to deny proposed projects in a streambed, or to require modifications to ensure the purposes of the Act are achieved.²¹⁷ Where the Stream Protection Act regulates state entities, the 1975 Act regulates all other non-governmental actors, including “any individual, corporation, firm, partnership, association, or other legal entity[.]”²¹⁸ Because most of Montana’s waterways flow over private lands,²¹⁹ the regulatory reach of the local conservation districts is thus potentially far greater than the state agency.²²⁰

After the Dust Bowl of the 1930s, many states adopted soil conservation district enabling legislation, modeled on the Standard State Soil Conservation Districts Law prepared by the U.S. Department of Agriculture.²²¹ At some point, all fifty states adopted legislation creating soil conservation districts.²²² The model law recommended five general types of

217. See generally MONT. CODE ANN. §§ 75-7-101 to -125.

218. *Id.* § 75-7-103.

219. For a discussion of how ownership of the banks and beds of streams in Montana, and elsewhere, was determined, see *PPL Mont., LLC v. Montana*, 132 S.Ct. 1215 (2012).

220. I do not mean to overstate the significance of the difference between the two acts, but there is a significant difference. Both focus on the streambed itself. Activities outside of the streambed are covered by other statutes. It is possible that state actors are more likely to engage in activities that modify streambeds, given their authority over transportation projects. But there are more “small,” i.e., non-navigable, streams than navigable streams. Thus most streams are privately owned. And those smaller, privately-owned streams are more easily modified, whatever their ecological significance. As anyone who has wandered around the rural West has witnessed, these small streams are routinely channelized, rip-rapped, diked, or otherwise modified to protect homes, agricultural infrastructure, pastures, fields, or other areas. Although a local conservation district may never affect an interstate highway, there are thousands of small ways in which they influence stream integrity.

221. See *75 Years Helping People Help the Land: A Brief History of the NRCS, NATURAL RES. CONSERVATION SERV.*, http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/about/history/?cid=nrcs143_021392 (last visited Jan. 9, 2015).

222. See Huong N. Tran & Liu Chuang, *State Conservation District Laws Development and Variations, Working Paper No. 3*, NATURAL RES. CONSERVATION SERV. n.14 (July 1996), http://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs143_014208 (listing all of the state statutes authorizing soil conservation districts).

authority: the ability to address (1) soil conservation, (2) flood prevention, (3) drainage, (4) water supply, (5) irrigation, and (6) sediment prevention.²²³ While many states modified the standard act to meet each state's individual needs, the soil conservation districts largely retained the focus of the standard act.²²⁴ The Montana approach appears special, at least in the Western United States, in that it authorizes local conservation districts to engage in significant regulatory activity, specifically the protection of streambeds.²²⁵ Of course, this provision simultaneously demonstrates a significant limitation of this very specific statutory authorization: while the local conservation districts regulate activities by non-governmental actors in streambeds, they have no authority over floodplains or riparian areas, which are regulated by multiple other entities.²²⁶

Our visit to Montana suggests several things. First, in thinking about how to implement 21st-Century Conservation approach, we must remember that a wide variety of local conservation districts already exist, with a wide variety of purposes and authorities. Perhaps more troubling for the purposes of this article, the Montana story suggests that many of those conservation districts will retain a focus on a Progressive-Era understanding of conservation, even in a state with a constitutional guarantee of a clean and healthful environment. But more positively, the Montana story also demonstrates the potential for conservation districts to engage

223. *See id.*

224. *See id.* Some states did expand the purposes of the conservation districts to include things like "conserving wildlife", *see* WYO. STAT. §11-16-102 (2013), or even "conserve natural beauty," *see* OR. REV. STAT. § 568.225 (2013). But for many others, the conservation districts retain the limited focus of the model act. *See, e.g.*, UTAH CODE § 17D-3-103 (West 2010); IDAHO CODE ANN. §§ 22-2716, 2722 (West 2006); N. M. STAT. ANN. § 73-20-26 (Supp. 2012); COLO. REV. STAT. § 35-70-108. (2013).

225. MONT. CODE ANN. §§ 75-7-101 to -125 (2013).

226. Projects in the streambed proposed by federal, state, or local governments are regulated by the Montana Department of Fish, Wildlife, & Parks. *See* MONT. CODE ANN. §§ 87-5-501 to -509 (2013). Development within 100-year floodplains is regulated by a local floodplain administrator, subject to state and federal minimum standards. *See id.* §§ 76-5-101 to -406. The discharge of dredged or fill material into "waters of the United States," which includes hydrologically-connected wetlands, is regulated by the U.S. Army Corps of Engineers under section 404 of the Clean Water Act. *See* 33 U.S.C. § 1344 (2012). And all other private land uses are regulated by local governments. *See* MONT. CODE ANN. §§ 76-2-101 to -340.

in more substantial land-use regulation that might more broadly promote a new conservation.

While this tour of western conservation regimes is necessarily brief and partial, it serves two primary purposes. First, and most significantly, it demonstrates the on-the-ground validity and value of using flood control and other conservation districts to implement 21st-Century Conservation ideas, both from a physical and social science perspective. Second, it demonstrates the complexity of using existing or old legal regimes to pursue new conservation ends. With the exception of six words in the Arizona statute, ecological restoration or preservation is only a secondary, indirect, and—*maybe*—assumed option. In cases where the need for a local conservation district is contested, even by a vocal minority, this lack of express authority can be problematic. Returning to the Teton Creek case study will help illustrate this point.

A. *Revisiting Teton Creek*

As discussed previously,²²⁷ the flood control needs and restoration opportunities on Teton Creek are relatively obvious. Perhaps less obvious, but no less important, the changing socio-economic and cultural characteristics of the Teton Valley mean that Teton Creek is valued for different things and valued in different ways than it had been previously.²²⁸ The proposal for a Teton Creek Flood Control District (“FCD”) demonstrates these changing values, as well as the difficulties that will arise in attempting to use old conservation regimes to implement a 21st-Century Conservation.

The Idaho Flood Control District statute differs from many other conservation regimes in that it does not require a vote of the residents in the proposed district.²²⁹ Rather, the Idaho

227. See *supra* note 64.

228. See Jerrold A. Long, *Private Lands, Conflict, and Institutional Evolution in the Post-Public-Lands West*, 28 PACE ENVTL. L. REV. 670 (2011).

229. See, e.g., N.M. STAT. ANN. § 72-18-10 (1997) (flood control districts); IDAHO CODE ANN. § 22-2719(5) (West 2006) (soil conservation districts); OR. REV. STAT. § 545.037 (2013) (irrigation districts). Not all states require a direct vote to create a conservation district. In Washington and Nevada, for example, the flood control zone districts and flood control districts (respectively) can be created by a county's legislative body. See WASH. REV. CODE § 86.15.020 (2014); NEV. REV. STAT. § 543.250 (2011).

statute places the decision-making authority in the Director of the Idaho Department of Water Resources (“IDWR”).²³⁰ The residents of the proposed district do play an initial role in creating the district.²³¹ Voters must initiate the process by submitting a petition to the IDWR Director, signed by at least one-third of the registered voters in the district, requesting creation of a flood control district.²³² While the statute does contain some standards that constrain the Director’s discretion,²³³ the ultimate authority does reside with the Director rather than the voters.

This process conceivably could create political problems should a majority of voters oppose creation of the district. But because there is no vote to provide legitimacy for the district, even a small number of loud objections can create the perception of political risk in a district’s creation. The Teton Creek FCD petitioners attempted to address these political risks by having over fifty percent of registered voters sign the petition.²³⁴ For the same reason, the petitioners gathered statements of support from the affected city and county governments, as well as many non-resident (and thus non-voter) landowners.²³⁵ In contrast, public opposition to the

230. IDAHO CODE ANN. § 42-3108.

231. *Id.* § 42-3105.

232. *See id.*

233. It is unclear how much these standards might constrain the Director’s discretion, or create standards that might allow for review by a court. No flood control districts have been created in Idaho since 1984, and only two court cases (dealing with the same conflict) address the FCD statute, but both of those cases considered the potential liability of the FCD should flood events occur.

234. Because this district is relatively small, with both large parcels and many second homes, the total number of registered voters is somewhat small. The petitioners determined there are 53 registered voters, and IDWR determined there are 54. Twenty-seven voters signed the petition. In gathering signatures, volunteers chose not to approach voters who rented their homes unless the landlord had already expressed support for the proposal. In addition, volunteers stopped gathering signatures once they reached fifty percent of registered voters. According to the volunteer, and local resident, who organized the signature gathering effort, they could have obtained more signatures had they approached all of the voters, but they stopped largely due to fatigue. Personal Communication with author (July 19, 2013).

235. *See* Petition to the Director of the Idaho Department of Water Resources to Establish a Flood Control District on Teton Creek in Teton County, Idaho, IDAHO DEPT OF WATER RESOURCES, at Ex. E, F (July 19, 2013), http://www.idwr.idaho.gov/WaterManagement/WaterRelatedDistricts/floodcontrol/PDFs/20130722_Petition%20to%20establish%20a%20Flood%20Control%20Dist%20on%20Teton%20Creek.pdf. [hereinafter Teton County Petition]

proposal has been rather limited, and has come primarily from non-voters (i.e., landowners who are not residents of the district, or even the state), or from individuals who live outside the district boundaries. Of the five formal written comments submitted, two supported the proposal and three were opposed.²³⁶ Of the three commenters that were opposed, one does not own land in the district, and a second owns land in the district but lives in Wyoming.²³⁷ Similarly, at the January 14, 2014 public hearing on the proposal, most of the negative testimony came from individuals who *did not* own land within the proposed district.²³⁸ In contrast, twenty four non-voter landowners signed statements of support for the proposal.²³⁹

The basic political landscape of this proposal is one of wide-spread voter, landowner, local government, and non-profit support, and limited—albeit sometimes loud—opposition.²⁴⁰ However, the broader political landscape is much different. Idaho has a well-deserved reputation for conservatism, and a substantial distaste for property taxes of any kind.²⁴¹ Although in this case, the individuals who would be taxed are *requesting* that they be taxed (rather than having increased taxes imposed on them), IDWR expressed significant concerns about approving the district due—apparently entirely—to the complaints of a limited number of landowners about the potential tax increases: “as a representative of an agency in a very conservative state where a majority of legislators are opposed to any form of tax increase or additional taxing

236. Public Comments from January 14 Hearing, IDAHO DEPT OF WATER RESOURCES (Jan. 14, 2014), <http://www.idwr.idaho.gov/WaterManagement/WaterRelatedDistricts/floodcontrol/TetonCreek.htm>.

237. Personal Communication with Mike Lien, Restoration Dir., Friends of the Teton River (Jan. 14, 2014).

238. Notes on file with author. *See also Teton Creek Flood Control District Public Hearing*, IDAHO DEPT OF WATER RESOURCES, (Jan. 14, 2014), <http://www.idwr.idaho.gov/WaterManagement/WaterRelatedDistricts/floodcontrol/TetonCreek.htm>.

239. *See Teton County Petition*, *supra* note 234, at Ex. E.

240. *See, e.g., Ken Levy, Flood Control District Facing Opposition*, TETON VALLEY NEWS, Jan. 18, 2012, http://www.tetonvalleynews.net/news/flood-control-district-facing-opposition/article_a7ee953c-422c-11e1-a26f-0019bb2963f4.html. The landowner mentioned in the article, Paul Gilroy, is a Wyoming resident and business owner.

241. The state's Department of Commerce has a page on its website titled “Low Taxes,” bragging about the state's low tax burden. *Low Taxes*, IDAHO COMMERCE, <http://commerce.idaho.gov/site-selection/low-taxes> (last visited Jan. 9, 2015).

districts, I am somewhat sensitive to moving forward”²⁴² The maximum increase in property tax available to the district is 0.06%.²⁴³ To put that into context, one of the landowners opposed to the project²⁴⁴ owns a parcel valued at \$135,649 after applying the state’s agricultural exemption.²⁴⁵ The approximate property tax for this parcel is currently \$1,362.80.²⁴⁶ The FCD tax increment would therefore increase this tax bill by \$81.39, for an approximate total tax of \$1,444.19—a six percent increase in the total tax bill.²⁴⁷

The substance of the proposal is less problematic. The Department’s report on the proposal concluded: “IDWR finds that the formation of the [Teton Creek Flood Control District] provides a practical entity under Idaho law that is reasonably necessary to aid in the prevention of flood damage in a manner that is consistent with the conservation and wise development of water resources and thereby protect and promote the health, safety and people of the City of Driggs, Teton County, and the State of Idaho.”²⁴⁸ According to the IDWR, the Teton Creek proposal satisfies all of the procedural and substantive requirements of the statute.²⁴⁹ The only obstacle appears to be a concern for raising taxes, which is the very purpose of a local taxing district. In other words, IDWR’s understandable concern with the proposal was that the Teton Creek FCD will do precisely what the Idaho legislature authorized FCDs to do. Ultimately, this concern did not defeat the proposal, and on

242. E-mail to author (Feb. 28, 2014).

243. The FCD tax increment can only exceed this amount if approved by a vote of registered voters in the district. IDAHO CODE ANN. § 42-3115(1) (2006).

244. It is actually a bit more complicated than this. This particular landowner is not opposed to the flood control district as such. He is opposed to the FCD including the upland portions of his property that are outside of the 1% Annual Risk Flood Hazard Zone (i.e., the 100-year floodplain).

245. For a more complete discussion of this issue, see Comments from Jerry Long, Teton Creek Flood Control Dist. & Teton Creek Stakeholders Comm., to Idaho Dep’t of Water Res. (Jan. 22, 2014), available at http://www.idwr.idaho.gov/files/districts/FCD18_20140122_Comments_Jerold_Long_Petitioners.pdf.

246. See *id.* at 2.

247. See *id.*

248. See IDAHO DEP’T OF WATER RES., REPORT ON THE ESTABLISHMENT OF THE PROPOSED TETON CREEK FLOOD CONTROL DISTRICT 6 (2014), available at http://www.idwr.idaho.gov/WaterManagement/WaterRelatedDistricts/floodcontrol/PDFs/TetonCkFCD-DWR-rept12_2013.pdf.

249. See *id.*

April 23, 2014, the IDWR director signed an order recommending creation of the Teton Creek Flood Control District.²⁵⁰

While an institutional aversion to raising taxes was always a risk with this project, the petitioners' primary concern was not that the FCD would not be approved, but rather that it would be approved and then *do too much*. Much like other old conservation regimes, Idaho law authorizes FCDs to engage in a range of invasive, structural approaches that can radically alter a stream's structure and behavior.²⁵¹ FCD's can, among other things, "construct, operate and maintain structural works of improvement[.]"²⁵² These structural works can include "reservoirs, dams, levees, dikes, power plants, plans of irrigation and drainage improving, enlarging, widening, deepening, or straightening existing watercourses or rivers[.]"²⁵³ The purpose of the Teton Creek FCD would be to avoid these techniques, and to restore harm caused by their use in the past.²⁵⁴

The primary concern for the Teton Creek petitioners was therefore whether Idaho law would both allow an FCD to engage in stream and floodplain restoration and protection, and preclude the use of structural, invasive techniques unless absolutely necessary.²⁵⁵ The statute authorizes FCDs "to use natural streams and to improve the same for use as a flood control structure."²⁵⁶ The state's policy, as described in the statute, is to provide for flood control "in a manner consistent with the conservation and wise development of our water resources[.]"²⁵⁷ As discussed previously,²⁵⁸ our understandings of "conservation and wise development" have changed, and thus should now incorporate both restoration and preservation. Further, the statute requires a petition to

250. This is not the end of the process. After receiving authorization from IDWR, the new FCD must submit a petition to the district court requesting that it affirm that all procedural requirements in the FCD statute were followed.

251. See IDAHO CODE ANN. § 42-3115 (West 2006).

252. *Id.* § 42-3115(14)(a).

253. *Id.* § 42-3105(4).

254. See Teton County Petition, *supra* note 235, at 5–6.

255. See, e.g., *id.* at 8–9.

256. IDAHO CODE ANN. § 42-3115(14)(b).

257. *Id.* § 42-3102.

258. See *supra* Section III.

describe the “object of the organization of the district.”²⁵⁹ If the object were limited to flood control as historically understood, this provision would be redundant and unnecessary, since the obvious overall goal of any FCD is already flood control. The petitioners hope that these provisions, considered together, can be interpreted to both authorize 21st-Century Conservation approaches and limit the FCD’s activities to those approaches.²⁶⁰

But the “old conservation” nature of the Idaho statute might make achieving the petitioners’ goals more complicated than is necessary. While the statute’s broad language does suggest that restoration and protection of the natural floodplain is an appropriate activity for an FCD, and the IDWR’s report on the petition and its proposed methods supports this interpretation,²⁶¹ the lack of any explicit statutory authorization might be used to challenge, at least politically, FCD restoration efforts. Idaho does not even have the benefit of Wyoming’s “protect wildlife resources” statutory language, much less Arizona’s specific authorization to implement projects that include preservation and restoration of the floodplain.²⁶² The Idaho statute does provide a broad grant of authority, does authorize using the natural stream channel for flood control purposes, and the IDWR does support the proposed restoration activities. However, this particular FCD would benefit from specific authorization to engage in its desired activities. As described in the petition, all of the proposed activities are specifically intended to use the stream’s natural flood control capacity to protect land and property in and out of the floodplain.²⁶³ It is in this way that the Teton Creek FCD differs from a 21st-Century Conservation district. A 21st-Century Conservation district would be able to engage

259. IDAHO CODE ANN. § 42-3105(1).

260. For a more detailed discussion of this legal argument, see Jerrold A. Long & Samuel Finch, *Local Flood Control: Using Idaho’s Flood Control District Statute to Enable Place-Based Stream Restoration*, THE ADVOCATE, June/July 2013, at 51, 51–54.

261. IDAHO DEP’T OF WATER RES., REPORT ON PETITION TO ESTABLISH A FLOOD CONTROL DISTRICT ON TETON CREEK (2014), available at http://www.idwr.idaho.gov/files/districts/FCD18_20140107_Teton_Ck_FCD_DWR_Report.pdf.

262. ARIZ. REV. STAT. ANN. § 48-3603(C)(20)(b) (2014).

263. See Teton County Petition, *supra* note 235, at 8–16.

in ecological restoration for its own sake, without the need to tie it to flood control.

While it is likely impossible to determine what motivated the Idaho Legislature in 1971, the statute's lack of a voting requirement reflects the Progressive Era's trust in the wisdom of experts.²⁶⁴ In the abstract, this vesting of authority in the IDWR Director could create legitimacy problems for any local conservation district. While this is not a problem for the Teton Creek proposal, given the broad support it enjoys from voters, non-voting landowners, local governments, and non-profits, the lack of a local vote could seem to remove the local culture and values from the "local" conservation district. That might threaten both the legitimacy of the district itself, as well as all of the actions it undertakes, particularly without an express grant of authority to engage in 21st-Century Conservation. If the goal is a resilient place, we must find an approach that achieves resilient landscapes and ecosystems, resilient cultures, *and* resilient laws. That is the topic of the next section.

V. RESILIENT *PLACE* – LOCAL STREAM RESTORATION PRODUCES RESILIENT SOCIO-ECOLOGICAL SYSTEMS *AND* RESILIENT LEGAL REGIMES

While the primary benefits of enabling local conservation efforts to restore degraded stream systems might be ecological, aesthetic, or economic, there are equally important social, cultural, and legal benefits. Regulatory or other institutional systems function best when the individuals asked to constrain their options are closely connected to the benefits that justify the constraints.²⁶⁵ We can identify whether law "works" in two ways: whether it achieves its original purpose (e.g., to reduce risks from flooding),²⁶⁶ and whether it satisfies the desires of

264. SAMUEL P. HAYS, CONSERVATION AND THE GOSPEL OF EFFICIENCY: THE PROGRESSIVE CONSERVATION MOVEMENT 1890-1920, at 2 (1959) ("[Conservation's] essence was rational planning to promote efficient development and use of natural resources.... The new realms of science and technology, appearing to open up unlimited opportunities for human achievement, filled conservation leaders with intense optimism.").

265. See Jerrold A. Long, *From Warranted to Valuable Belief: Local Government, Climate Change, and Giving Up the Pickup to Save Bangladesh*, 49 NAT. RESOURCES J. 743 (2009).

266. J.B. Ruhl, *The Fitness of Law: Using Complexity Theory to Describe the*

the affected community. A law that reduces flood risks at an unacceptable cost—as defined by the community—is as unsuccessful as a law that completely fails to affect flood risks in any fashion. A successful legal regime achieves both its varied ecological goals while maintaining some cultural appropriateness. Because they emerge from the regulated community and culture, *locally* designed, funded, and implemented conservation projects may have a higher likelihood of achieving both measures of success over the long term, compared to larger scale projects. These local efforts are more likely to promote a resilient place.

A. *Place: Law, Culture, and the Meaning of Landscape*

Scholars studying evolving systems have identified a particularly useful system trait: “resilience.” Resilience describes a system’s capacity to absorb internal and external shocks or changes while maintaining a similar or consistent set of structures or system processes.²⁶⁷ Resilience theory proves particularly useful in understanding (or attempting to understand) complex, dynamical systems, such as socio-ecological, legal, or other coupled human-nonhuman systems.

In discussing complex dynamical systems, legal scholars often describe these systems as socio-legal or socio-ecological. Both descriptions seem inadequate. Although “socio-legal” remains widely used in the legal academy,²⁶⁸ it draws an

Evolution of Law and Society and Its Practical Meaning for Democracy, 49 VAND. L. REV. 1407, 1451 (1996) (“Fitness of laws, just as for species, is measured in terms of how successful the law is in meeting its goals. The goals of laws are those expressed as the motivation for legislative enactment or judicial decision—what we might call the law’s policy. A law is fit if it achieves its policy.”)

267. C.S. Holling, *Resilience and Stability of Ecological Systems*, 4 ANN. REV. OF ECOLOGY & SYSTEMATICS 1, 7 (1973); Melinda Harm Benson & Ahjond S. Garmestani, *Can We Manage for Resilience? The Integration of Resilience Thinking into Natural Resource Management in the United States*, 48 ENVTL. MGMT. 392, 393 (2011). Legal scholars have also begun thinking about legal systems in a resilience context. See J.B. Ruhl, *General Design Principles for Resilience and Adaptive Capacity in Legal Systems—With Applications to Climate Change Adaptation*, 89 N.C. L. REV. 1373 (2011); Barbara Cosens, *Resilience and Law as a Theoretical Backdrop for Natural Resource Management: Flood Management in the Columbia River Basin*, 42 ENVTL. L. 241 (2012).

268. A search of the term “socio-legal” in Westlaw’s “Law Reviews & Journals” database yields 4,823 results. A title search for the term in the same database yields 93 different works with “socio-legal” in the title. Many of these works are in the land and society tradition, which generally recognizes the place of the law within a broader

artificial and unhelpful distinction between things “social” and things “legal.” Law is but the formalization of social and cultural agreements, and while law can be studied independently, it remains a subset of those broader social and cultural arrangements. A “society” is the constellation of humanly created organizations and systems of interrelationships that connect individuals within a common culture, and includes all of the products of human interactions—including law. The law is itself a social structure, so to distinguish between the “social” and the “legal” systems is not helpful.²⁶⁹ Social arrangements exist on a continuum, from informal to formal. “Laws” are those arrangements that occupy the more formal end of the continuum, with other working rules and highly formalized and durable property relations. Norms, habits, or other less formalized patterns of behavior (also often very durable) occupy the less formal end, albeit with significant overlap amongst all. Of course, this is a generalization, as some norms can be highly formalized, and some laws much less so.²⁷⁰

social system. See, e.g., *Interests of our Members*, LAW & SOC'Y ASSN., <http://www.lawandsociety.org/interests.html> (last visited Jan. 9, 2015); see also Felice J. Levine, *Goose Bumps and “The Search for Signs of Intelligent Life” in Sociolegal Studies: After Twenty-Five Years*, 24 LAW & SOC'Y REV. 7 (1990) (describing the origins and evolution of the Law and Society Association).

269. There is a difference between talking about complex, dynamical *systems*, as is the case here, and identifying a *theory* (or body of theories) about those systems. The descriptions or names I use here are attempts, in my understanding, to describe the relevant system and its components, which is why “ecological,” or some better term, should be included in any system descriptor. But when using “socio-legal” to describe theory, the descriptor might have a different purpose, e.g., to make explicit the theoretical argument that law is in fact a social or cultural construct, rather than something with an essential nature. Edward Rubin described socio-legal theory as “a body of scholarship that attempts to analyze law and legal institutions in the same manner that other human practices and institutions are analyzed.” Edward Rubin, *Scholars, Judges and Phenomenology: Comments on Tamanaha’s Realistic Socio-Legal Theory*, 32 RUTGERS L.J. 241, 245 (2000) (explicitly recognizing that the law is itself a social structure, not something independent of social structures).

270. While the written and recorded nature of law suggests it is always highly formalized, and in fact, a rigid adherence to a strict, literal interpretation of legal rules irrespective of practical effects is referred to as “legal formalism,” many legal regimes demonstrate somewhat informal characteristics. For example, many statutory regimes—from federal environmental statutes to local land use codes—require that particular decisions be in the “public interest.” In the local government context, what is determined to be “in the public interest” can be determined by how many people show up to oppose or support a specific proposal. The public interest is thus somewhat amorphous and subject to variation across a wide latitude, even in a single place. It is thus, almost by definition, informal. In contrast, many unwritten norms can seem

“Socio-ecological” represents something of an improvement over “socio-legal,” as it explicitly acknowledges that the systems occupy, and influence, physical space. But it still conveys a limited understanding of that physical space. For example, it potentially ignores culture on the human side, and the value or influence of the aesthetic features of a landscape on the natural world side. Even so, it is an improvement in its acknowledgment that the system contains human and non-human components.

A more satisfying system description is simply “place,” which incorporates all of the relationships, structures, and components that make-up a particular location-bound (at least partly so) experience. While the concept of place remains somewhat contested among scholars in geography,²⁷¹ for our purposes, it will represent the constellation of human (social, cultural, legal, etc.) relationships, structures, behaviors, and institutions with the physical, biological, and ecological relationships, resources, structures, consequences, or other components that might define a particular geography. Place thus signifies the physical location, structures, and process, as well as the meanings attached to those.²⁷² Because place combines both the physical characteristics or properties of a physical location with the social and cultural meanings attached to them, place is at once bounded and unbounded. When we name a particular place, we generally think of a specific, discrete physical location at the same time we intuitively grasp the external influences—cultural, ecological, or other—on that physical location, and the meanings we attach to them.

While place is understood and contested intuitively by a particular place’s inhabitants (i.e., by those who give place meaning, and thus are integral components of a place), it is less simple to describe it in writing or to grasp theoretically. There is a reason an entire academic discipline focuses on

highly structured and formal. For example, “[w]e all know that we are not supposed to shout in a library or walk naked down a public highway.” See Tim Cresswell, *Place*, in 7 INT’L ENCYCLOPEDIA OF HUMAN GEOGRAPHY 169, 173 (Rob Kitchin & Nigel Thrift eds., 2009)

271. *Id.*; see also John A. Agnew, *Space and Place*, in THE SAGE HANDBOOK OF GEOGRAPHICAL KNOWLEDGE 316, 316–31 (John Agnew & David N. Livingstone eds., 2011).

272. See Cresswell, *supra* note 270, at 169–77.

understanding place.²⁷³ For this reason, we must exercise care in describing the relevant “system” that might, or might not, be resilient.

B. *Resilient Ecological Systems*

One aspect of the resilience literature that warrants additional consideration is how it describes the boundaries and behaviors of the relevant system, and particularly the role or place of the law in that system. Resilience theorists adopt a ball and saucer heuristic to represent the system, with the ball representing the current state of the system, and the saucer the movement latitude of the system.²⁷⁴ When the system is shocked, the ball moves within the saucer, ultimately settling at or near its original location.²⁷⁵ If the shock is too great—i.e., beyond the capacity of the saucer to contain—the ball will leave the saucer, thus entering a new regime.

As one simple example of resilience in an ecological system, consider the forest fire regimes in the Intermountain West.²⁷⁶ Lodgepole pine forests evolved in the presence of fire and mountain pine beetles.²⁷⁷ The pine beetle kills large stands of trees, allowing for large, stand-replacing fire events.²⁷⁸ The Lodgepole evolved in these conditions, developing serotinous cones that open and release seeds at high temperatures.²⁷⁹ The Lodgepole also prefers open areas that allow it to out-compete more shade-tolerant species.²⁸⁰ Under historic conditions, the “shock” of fire or mountain pine beetle outbreaks likely would

273. Agnew, *supra* note 271, 316–31; *see generally* Cresswell, *supra* note 270, at 169–77 (recognizing that the study of geography has been defined as the study of place).

274. *See* Lance H. Gunderson, *Ecological Resilience—In Theory and Application*, 31 ANN. REV. ECOLOGY & SYSTEMATICS 425 (2000). J.B. Ruhl adopted this heuristic for legal systems. *See* Ruhl, *supra* note 267, at 1377.

275. Some systems might have multiple stable states—or basins of attraction—within the larger “saucer.”

276. Of course, it is hard to characterize a fire regime in the Intermountain West as being solely “ecological,” given the significant effects of human activity on both frequency and severity of fire. But for the moment, this conversation focuses on the ecological aspects of the system.

277. *See* Jesse A. Logan & James A. Powell, *Ghost Forests, Global Warming, and the Mountain Pine Beetle (Coleoptera: Scolytidae)*, 47 AM. ENTOMOLOGIST 160, 160 (2001).

278. *See id.*

279. *Id.*

280. *Id.* at 162.

not push the Lodgepole pine ball out of its saucer.²⁸¹ To the contrary, large scale fire events allow Lodgepole pine forests to regenerate and expand.²⁸²

The Whitebark pine is the Lodgepole's non-fire-loving counterpoint.²⁸³ It evolved in a different regime, occupying higher elevation locations where fire is much less common.²⁸⁴ Although the Whitebark pine has a relatively limited range, it plays a crucial role in western montane ecosystems.²⁸⁵ The Whitebark pine co-evolved with the Clark's nutcracker, relying on the bird to spread its seeds.²⁸⁶ And although the nutcracker has an incredible ability to remember where it hid the pine nuts, enough stashes are forgotten to replenish the Whitebark population, while also providing an important food source for a wide range of additional animals.²⁸⁷ Red squirrels also cache large amounts of Whitebark pine seeds.²⁸⁸ The caches from both animals are raided by grizzly bears, providing an important source of food while the bears are preparing for hibernation.²⁸⁹

Climate change provides a new shock to the Whitebark pine system, outside of the range in which the tree evolved.²⁹⁰ The Mountain pine beetle that plays an important role in the Lodgepole pine ecology is now invading, and surviving in, Whitebark pine populations.²⁹¹ Climate change has altered the wintertime conditions enough that the pine beetle can survive in the now warmer temperatures of the Whitebark ecosystem.²⁹² The pine beetle might kill enough trees to

281. *See id.*

282. *Id.*

283. Jesse. A. Logan, William W. Macfarlane & Louisa Wilcox, *Whitebark Pine Vulnerability to Climate-Driven Mountain Pine Beetle Disturbance in the Greater Yellowstone Ecosystem*, 20 *ECOLOGICAL APPLICATIONS* 895, 898 (2010).

284. *See id.*

285. *Id.* at 896.

286. *Id.* at 899.

287. *See id.* at 898–99.

288. *Id.* at 896.

289. *Id.*

290. *Id.*

291. *Id.*; *see also* Kenneth F. Raffa et al., *Cross-scale Drivers of Natural Disturbances Prone to Anthropogenic Amplification: The Dynamics of Bark Beetle Eruptions*, 58 *BIOSCIENCE* 501 (2008).

292. *Id.*

promote the type of stand-replacing fire that benefits Lodgepole pine establishment.²⁹³ This new shock thus might push the Whitebark pine ecosystem out of its historical saucer, creating a new ecosystem—without the Whitebark pine—that can survive in the new climate-change-altered regime.²⁹⁴ Resilience describes the size and shape of the saucer, and thus the amount of shock (from the combination of fire and climate change) that both the Lodgepole pine and Whitebark pine systems can absorb before transitioning to a new regime.²⁹⁵ In this case—with fire, pine beetles, and climate change—we might say that the Lodgepole pine ecosystem is the more resilient, having a greater capacity to absorb climate change shocks while maintaining the same basic function and structure. In an alternate universe in which climate change is reducing temperatures, increasing winter precipitation (as snow), and reducing fire frequency, the Whitebark pine ecosystem might be more resilient.

C. *Resilient Places*

Understanding the system, and thus its resilience, gets a bit more complicated when we include human-designed and implemented legal regimes. We can think of the law's role in a given place in one of (at least) three discrete ways: as system “designer,” as system component, and as both system designer and component (i.e., as designer of a system that exists within a larger, discrete system).²⁹⁶ Because the ball and saucer

293. *Id.*

294. Because Lodgepoles evolved with fire, increased fire frequency might also cause Lodgepole forests to replace other plant communities.

295. See, e.g., Carl Folke et al., *Regime Shifts, Resilience, and Biodiversity in Ecosystem Management*, 35 ANN. REV. ECOLOGY, EVOLUTION, & SYSTEMATICS 557 (2004).

296. Ruhl recognizes the first two, but does not explicitly discuss the third, at least as I will describe it here. See Ruhl, *supra* note 267, at 1382 (“[I]t is important to distinguish between resilience of the legal system and resilience of other natural and social systems the law is aimed at addressing.”). Later in this same work, Ruhl discusses how these systems can operate at multiple scales: “These design choices, moreover, operate at multiple scales within and across the vast domain of the legal system. Resilience theory does not posit that a system as complex as law is entirely either a vase or a saucer; rather, it is more a set of landscapes over which we find engineering and ecological resilience strategies mixing in different blends to form topographies of various contours depending on where in the system we look.” *Id.* at 1383. This is a different understanding of the multi-scalar interactions I describe below.

heuristic is necessarily simplistic, none of these three can fully and accurately describe the role law plays. But considering all three gets us closer to a more complete understanding.

In the first, with the law as designer of the system, a socio-ecological system, for example, is the object of law. Law exists independent of the system it creates. When scholars talk about designing *for* resilience, they are primarily thinking of law in this fashion.²⁹⁷ For example, as ecosystems react to, migrate, and disappear due to climate change, Kostyack, et al., argue that we must adopt policies that not only expand protected area networks and their connectivity, but also facilitate the actual transport of imperiled species, by humans, across human-dominated landscapes.²⁹⁸ The goal here is to create a system that allows the species and their habitats to adapt to climate change, at least in some form. In this approach, generally there is no explicit mention of the resiliency of the legal system itself.

In the second understanding, the law is itself a system, designed by something beyond it. Ruhl uses the common law and the U.S. Constitution to demonstrate how “the” legal system can demonstrate differing levels of resilience.²⁹⁹ The common law has a broad and flat saucer that allows the ball to wander across a broad range without jumping to a new regime. The Constitution allows much less movement, more narrowly constraining what the ball can do in response to system shocks. The Constitution, as a saucer, is also very tall, requiring a significant shock before the ball can jump completely to a new state.³⁰⁰

In the third understanding identified above, with law as both designer and component, the law simultaneously creates a system and exists itself as a separate system. The

297. See, e.g., Alyson C. Flournoy, *Protecting a Natural Resource Legacy While Promoting Resilience: Can It be Done?*, 87 NEB. L. REV. 1008 (2009).

298. See Johh Kostyack et al., *Policy Solutions to Facilitate the Movement of Plants and Animals in a Changing Climate*, 61 BIOSCIENCE 713 (2011).

299. See Ruhl, *supra* note 267, at 1380–81.

300. Resilience scholars would refer to the common law as having ecological resilience, the ability to move relatively far from an equilibrium without jumping to a new state; and the Constitution as having engineering resilience, with the goal being to stay near the equilibrium whatever the system shock. See, e.g., Barbara Cosens, *Legitimacy, Adaptation, and Resilience in Ecosystem Management*, 18 ECOLOGY & SOC'Y 3 (2013).

Endangered Species Act (ESA) designed a specific system of wildlife management that creates (or could create) some measure of resilience (or a lack thereof) for particular imperiled species. By protecting individuals of a given species, and indirectly, and to a lesser extent, the species' habitats, the ESA might allow the listed species to absorb particular negative effects without crossing a threshold to a new state, i.e., extinction. Of course, this system might not in fact be particularly resilient, with a small saucer and narrow movement latitude due to its inability to address habitat, ecosystems, and biodiversity more broadly. But it is, as law, the designer of a particular system.

The ESA is also a single component itself within a broader system—a system of federal governance. While the ESA is subject to multiple critiques that it fails to work as a conservation regimes (i.e., it does not achieve its stated purposes), the most significant criticisms have been political—that the law does, or takes, too much. Like both the common law and the constitution examples mentioned above, the ESA must also work for the regulated communities. If it is either insufficiently flexible, or insufficiently robust, it will be unable to withstand the various shocks that come from dissatisfied regulated communities.

But none of these three understandings are completely satisfactory, and it should be obvious by this point that these are artificial distinctions. The ball and saucer are reciprocally constituted and recursively interactive.³⁰¹ Any movement of the ball necessarily affects the nature of the saucer. Law is simultaneously an influence on future conditions, and determined by past and present conditions—more specifically, by our reactions to the conditions created by our previous choices, some of which are formalized as law.³⁰² No ecosystems on earth remain independent of human choice. Land-use change, species extinctions, invasive species, climate change—it is now impossible to imagine a world untouched by human action.³⁰³ And human behavior is ultimately the consequence

301. Arthur F. McEvoy, *A New Realism for Legal Studies*, 2005 WIS. L. REV. 433, 436 (2005).

302. See, e.g., Jerrold A. Long, *Private Lands, Conflict, and Institutional Evolution in the Post-Public-Lands West*, 28 PACE ENVTL. L. REV. 670 (2011).

303. See WILLIAM CRONON, *CHANGES IN THE LAND: INDIANS, COLONISTS, AND THE ECOLOGY OF NEW ENGLAND* (1983) (discussing how the ecological systems first

of the particular institutional arrangements of a place and time. Natural ecosystems are as much a cultural artifact as any given social setting or arrangement. We cannot think of humans without human culture, and we cannot think of “ecology” without humans. Even the concept of an ecosystem is a human construct, designed to place specific names on and boundaries around a constellation of potentially unknowable relationships.

So while the ball and saucer heuristic is useful for thinking about how a discrete, artificially isolated system might react to particular inputs, a more accurate—albeit hopelessly complex—metaphor is some type of *n*-dimension, *a*-directional, Möbius fractal.³⁰⁴ There are potentially limitless balls and saucers that exist within each other, both creating and being created by their interactions.³⁰⁵ This is not an exercise in abstraction for its own sake. Thinking about the multi-scalar, recursive interaction of law and culture, law and society, law and ecology, land and landscape, or all at the same time—i.e., a “place”—provides an opportunity to think both about designing law for resilience at the same time we design resilient law. We gain little if our efforts to design laws that allow for ecological resilience are not themselves resilient. Imagine a national habitat conservation law that allowed the taking, with no local or landowner input, of private land to protect unoccupied, but potential, habitat and habitat

encountered by European settlers had already been somewhat significantly altered by native peoples); *see also* William Cronon, *The Trouble with Wilderness: Or, Getting Back to the Wrong Nature*, 1 ENVTL. HIST. 7 (1996) (discussing how supposedly untrammelled wilderness is itself a product of human culture).

304. This description is consistent with Holling and Gunderson’s description of the interaction and evolution of the four ecosystem functions. *See* C.S. Holling & Lance H. Gunderson, *Resilience and Adaptive Cycles*, in PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN AND NATURAL SYSTEMS 25, 34 (Lance H. Gunderson & C.S. Holling eds., 2002).

305. To some extent, this concept is similar to the concept “Panarchy,” a theoretical approach intended to develop understandings of the cross-scale, complex dynamical nature of the interactions between and among economic, ecological, and institutional systems. *See generally* PANARCHY: UNDERSTANDING TRANSFORMATIONS IN HUMAN AND NATURAL SYSTEMS (Lance H. Gunderson & C.S. Holling eds., 2002). But to the extent that Panarchy focuses on multiple scales, my approach is consistent but slightly different. While recognizing that any system, however described, is influenced by events in multiple places and at multiple scales, my focus is on how various systems interact to create a specific place. Panarchy is obviously a part of this, but my hope is to be more focused, more local, if possible.

connection corridors. The resulting habitat might allow for increased resilience of particular species and ecosystems, but the law itself would not be particularly resilient.

The necessity of understanding law as part of intertwined cultural and socio-ecological systems becomes obvious when we consider stream systems. Absent human investment in and occupation of the natural floodplains of a stream system or watershed, the annual flood cycle would be largely irrelevant. There is a reason that although the Mackenzie River is about two-thirds the size of the Mississippi, and the largest and longest river in Canada, we rarely hear about catastrophic flooding on the Mackenzie, even though it has relatively limited flood-control structures in the system. The Mackenzie certainly floods, with peak flood flows over three times the annual average flow. But compared to the Mississippi system, there are many, many fewer people—and no large settlements to experience those floods.³⁰⁶

For this reason, thinking about resilient stream systems necessarily requires thinking about resilient communities, and resilient legal regimes that shape those communities. Without development in floodplains, there would be no flooding of development in floodplains. But because land-use controls—and particularly land-use prohibitions—touch directly on both constitutionally- and culturally- protected property rights, overly aggressive and rigid legal regimes are unlikely to survive the inevitable system shocks that the aggressiveness engenders. Resilient legal regimes emerge from the ongoing community deliberations about a place; they cannot be imposed on a place.

Thinking back to our nth-dimension, a-directional, Möbius-fractal ball and saucer, a 21st-Century Conservation district—like the Teton Creek FCD—promotes a resilient place by contributing to a broader, and perhaps deeper, saucer. This is true considering all of the recursively interacting and reciprocally constituted aspects of our fractal place—law, culture, landscape, ecology, and society. Because local

306. Of course, that does not mean that there are no people to suffer from flooding. In summer 2012, the village of Nahanni Butte was completely flooded, forcing all of its 115 residents to evacuate. See *Nahanni Butte, N.W.T., Almost Entirely Flooded*, CBC NEWS (Jun. 14, 2012), <http://www.cbc.ca/news/canada/north/nahanni-butte-n-w-t-almost-entirely-flooded-1.1147929>.

conservation districts emerge from the regulated communities, they are more likely to reflect the cultural understandings of those communities. When local landowners request increased property taxes, for example, and then directly witness and enjoy the benefits of the programs those taxes fund, those landowners are less likely to object to that taxing regime with enough political force to cause a regime shift. The direct, local elections of conservation district commissioners, and the improved communication available in smaller communities, promote more resilient social structures that can withstand inevitable social conflicts. And the 21st-Century Conservation focus of these local conservation districts will purposefully consider the integrity and resilience of local ecosystems and landscapes. Place-based conservation efforts can contain richer, more detailed and nuanced understandings of local cultural and ecological needs, thus empowering local citizens. Empowered places, places that have control over their own identity and future, are resilient places.

VI. CONCLUSION: ENABLING RESILIENT PLACE

It remains to be seen whether the Teton Creek proposal—as an example of an attempted 21st-Century Conservation regime—will be successful, but the story, and the principles and concepts it concerns, raises a few questions that are worth considering more broadly. Flood control districts, and other similar conservation districts, emerged from a Progressive-Era understanding of conservation that emphasized development as “wise use” of natural resources. In the flood control context, this generally meant dams, channelization, levees, and other structural modifications to river systems. Because of that history, existing conservation laws reflect an understanding of conservation that might no longer be relevant in the 21st Century. And on the practical side, the reactive nature of our conservation approaches, continually creating new approaches to solve new problems as they arise, created a complicated and confusing jungle of overlapping and often redundant conservation regimes with authority that is often vaguely defined. Consequently, while the tools exist, they often remain unused.

So can a flood control district statute created with an old conservation understanding of flood control be used to authorize and fund both the restoration and protection of a stream’s natural conditions, including its ecological, aesthetic,

and social resources? Should modern conservation statutes be amended to promote those ends and reflect a 21st-Century understanding of conservation? The answer, of course, should be yes to both questions. Our cultural understandings of the purpose of natural systems have changed since the early- and mid-20th Century. And because local efforts better connect the benefits of restoration efforts to the costs, state and local governments should encourage the use of flood control or similar local improvement or conservation districts to achieve locally-identified stream restoration—and flood control—goals. This may—and likely will—require that state governments revisit and reimagine their existing conservation regimes to both explicitly authorize new conservation approaches, and simplify and facilitate local conservation district creation and operation.

The goal of a 21st-Century conservation regime should be to reach a balance between the needs of human communities and the “land community,”³⁰⁷ ultimately reaching a state that recognizes they are one and the same. Only by acknowledging the relationships among local communities, cultures, ecologies, and landscapes, and then respecting the rights and needs of each, can we create places that can endure. This might require reimagining how we approach environmental, land use, and other community regulation and reallocating authority to new conservation districts empowered (or re-empowered) to effect cultural values on the landscape. For stream restoration and preservation, or any other conservation approach, to work, it must succeed in achieving objective flood control or other conservation ends, in matching demands, both on monetary and land resources, with local cultural preferences, and in realizing the community’s collective vision for its landscape. A system succeeding on all goals would be truly socio-ecologically resilient, promoting a resilient stream system, a resilient local culture, and a resilient local legal system—i.e, a resilient place.

307. *See generally*, ALDO LEOPOLD, A SAND COUNTY ALMANAC AND SKETCHES HERE AND THERE 201–26 (Oxford Univ. Press 1987) (1949).