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Field Notes from an Alternative Water Quality Reality

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FIELD NOTES FROM AN ALTERNATIVE WATER QUALITY REALITY

Dave Owen[†]

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INTRODUCTION

Ask any expert to identify the biggest failing of water quality regulation in the United States, and the answer is likely to be the same: controlling nonpoint source pollution.¹ The Congresses that enacted and amended the Clean Water Act² had different concerns: they were worried about wastewater treatment plants and industrial outfalls, and the prohibitions and permitting systems they created for those sources

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1. See, e.g., William L. Andreen, *No Virtue Like Necessity: Dealing with Nonpoint Source Pollution and Environmental Flows in the Face of Climate Change*, 34 VA. ENV'T L.J. 255, 257 (2016); Jonathan Cannon, *A Bargain for Clean Water*, 17 N.Y.U. ENV'T L.J. 608, 610 (2008) (describing the importance of agricultural water pollution); George A. Gould, *Agriculture, Nonpoint Source Pollution, and Federal Law*, 23 U.C. DAVIS L. REV. 461, 463–66 (1990).
2. 33 U.S.C. §§ 1251–1389 (formerly amended by Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92–240, 86 Stat. 47, then amended by Clean Water Act of 1977, Pub. L. No. 95–217, 91 Stat. 1566).

have been effective.³ Water quality in many American waterways is better—in some places, much better—than it was in 1972.⁴ But the failings also are significant, and have been documented in article after article, including some of the works in this symposium issue.⁵ For nonpoint sources of water pollution, including but not limited to agricultural pollution, the Act creates a variety of measures that are likely to be effective only if implemented by enthusiastic state authorities.⁶ In most places, that enthusiasm has been lacking.⁷ Consequently, nonpoint sources remain major causes of water quality impairment,⁸ and many water quality lawyers are pessimistic about the prospects for change.⁹

Rather than simply retell that story, this Article considers a place where things are different. California delegates much of the work of Clean Water Act implementation to regional water quality control boards. In recent years, one of those boards—the North Coast Regional Water Quality Control Board (the “North Coast Board”)—has been building ambitious regulatory programs to address nonpoint source

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3. *E.g.*, Wendy E. Wagner, *Stormy Regulation: The Problems that Result when Stormwater (and Other) Regulatory Programs Neglect to Account for Limitations in Scientific and Technical Information*, 9 CHAP. L. REV. 191, 198–201 (2006) (describing this focus and its successes).
 4. *See* David A. Keiser & Joseph S. Shapiro, *Consequences of the Clean Water Act and the Demand for Water Quality*, 134 Q.J. ECON. 349, 373 (2019) (“We find large declines in most pollutants that the Clean Water Act targeted.”). As Keiser and Shapiro show, however, significant declines predated the Clean Water Act’s passage. *Id.* at 390.
 5. Erin Ryan, *How the Successes and Failures of the Clean Water Act Fueled the Rise of the Public Trust Doctrine and Rights of Nature Movement*, 73 CASE W. RES. L. REV. 475, 477–78, 481–84 (2022); *see also* Margot J. Pollans, *Drinking Water Protection and Agricultural Exceptionalism*, 77 OHIO ST. L.J. 1195, 1197–98 (2016); J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263, 298–304 (2000).
 6. *See* Andreen, *supra* note 1, at 258–59; *infra* notes 30–41 and accompanying text.
 7. Andreen, *supra* note 1, at 259.
 8. *See* U.S. ENV’T PROT. AGENCY, EPA 841-R-16-011, NATIONAL WATER QUALITY INVENTORY: REPORT TO CONGRESS (2017).
 9. *See* Jan G. Laitos & Heidi Ruckriegle, *The Clean Water Act and the Challenge of Agricultural Pollution*, 37 VT. L. REV. 1033, 1070 (2013) (“The problem of agricultural pollution from nonpoint sources appears to be almost intractable.”); David Zaring, *Agriculture, Nonpoint Source Pollution, and Regulatory Control: The Clean Water Act’s Bleak Present and Future*, 20 HARV. ENV’T L. REV. 515, 541–42 (1996) (arguing that nonpoint source control is a case study in special-interest domination of politics).

water pollution.¹⁰ The North Coast Board has developed, or is in the process of developing, programs to address nonpoint source water pollution from dairies, vineyards, cannabis farming, forestry operations, and rural roads, among other sources.¹¹ It also has used Clean Water Act and state-law tools to address legacy impacts from past forestry practices and ongoing impacts from dams.¹² Many of the efforts are relatively new, but the North Coast Board is working toward the kind of integrative, holistic water quality regulatory program that many water quality advocates have long seen as a wishful fantasy.

This Article describes the North Coast Board's efforts. As with any case study, particularly one of mostly recent initiatives, the ability to draw generalizable lessons is limited, and that is particularly true because the North Coast Board governs a unique place, even by California standards. Nevertheless, the study supports several conclusions. Most importantly, a somewhat comprehensive nonpoint source regulatory program is not just a mythical creature; it can exist. Such a program also can draw on traditional regulatory tools,¹³ rather than requiring some major rethinking of environmental law, and it can emerge incrementally.¹⁴ No one suggests that nonpoint source regulation is easy, but it is well within the realm of the possible.

This Article's analysis proceeds as follows. Part I describes the Clean Water Act's troubled history with nonpoint sources. Because other authors have chronicled that history eloquently and in great depth, the review will be brief. Part II describes California's North Coast region and its water quality challenges and then explains how the North Coast Board has gone about regulating those challenges. The discussion in Part II draws on documentary research and interviews with environmental advocates, farmers, and regulators.¹⁵ Part III explains lessons, conclusions, and possibilities for additional research.

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10. The North Coast Board is not the only regional board to take proactive steps on nonpoint source pollution, and innovations have come from other regions and from the state. I focus on it here partly because its programs seem particularly ambitious and partly to give this Article a more manageable scope.
 11. For an overview of the North Coast Board's programs, with links, see *North Coast Regional Water Quality Control Board: Nonpoint Source Pollution*, CAL. WATER BOARDS, https://www.waterboards.ca.gov/northcoast/water_issues/programs/non_point_source/ [https://perma.cc/8YD2-DJL9] (June 6, 2019).
 12. See *North Coast Regional Water Quality Control Board: Restoration Program*, CAL. WATER BOARDS, https://www.waterboards.ca.gov/northcoast/water_issues/programs/Restoration/ [https://perma.cc/WF39-HWX2] (Mar. 11, 2020).
 13. See *infra* notes 163–75 and accompanying text.
 14. See *infra* notes 200–11 and accompanying text.
 15. I promised anonymity to all interview subjects.

I. THE CLEAN WATER ACT AND NONPOINT SOURCES

In 1972, when Congress enacted the Federal Water Pollution Control Act (later renamed the Clean Water Act), many American waterways were open sewers.¹⁶ Municipal wastewater treatment technologies existed, but they were unevenly deployed, and fecal waste clogged many rivers.¹⁷ Industrial pollution was also rampant.¹⁸ The Cuyahoga River had famously burned not long before,¹⁹ and fumes off some rivers were so strong that they peeled the paint off nearby houses.²⁰ Not surprisingly, one of Congress's central focuses in drafting the statute was pollution from municipal and industrial waste disposal.²¹

Initially, that municipal and industrial focus led to regulatory exemptions for agricultural sources.²² But regulatory exemptions soon hardened into specific statutory text. The heart of the Clean Water Act is section 301, which prohibits unpermitted discharges of pollutants from point sources.²³ In the early years of Clean Water Act implementation, EPA chose not to apply that prohibition to agricultural sources and to stormwater runoff, and environmental groups sued, challenging this choice.²⁴ The environmental groups won,²⁵ but Congress reacted by amending the statute²⁶ to exempt "agricultural stormwater discharges and return flows from irrigated agriculture" from the definition of "point source."²⁷ The 1977 Congress did not exempt

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16. See William L. Andreen, *The Evolution of Water Pollution Control in the United States—State, Local, and Federal Efforts, 1789-1972: Part I*, 22 STAN. ENV'T L.J. 145, 197–98 (2003).
 17. *Id.* at 196.
 18. See *id.* at 197–98.
 19. See David A. Keiser & Joseph S. Shapiro, *U.S. Water Pollution Regulation over the Past Half Century: Burning Waters to Crystal Springs?*, 33 J. ECON. PERSPS. 51, 51–52 (2019).
 20. *Presumpscot Watershed Initiative*, CASCO BAY ESTUARY P'SHIP (2010), http://muskie.usm.maine.edu/cascobay/pdfs/pwi_exec_summ_factsheet.pdf [<https://perma.cc/E66N-8K55>] (describing Maine's Presumpscot River).
 21. See *United States v. Plaza Health Lab'ys, Inc.*, 3 F.3d 643, 646 (2nd Cir. 1993).
 22. See *Nat. Res. Def. Council v. Costle*, 568 F.2d 1369, 1372 (D.C. Cir. 1977) (describing EPA's first Clean Water Act regulations and the exemptions they created).
 23. 33 U.S.C. § 1311.
 24. *Costle*, 568 F.2d at 1372–73.
 25. *Id.* at 1383.
 26. Clean Water Act of 1977, Pub. L. No. 95–217, 91 Stat. 1566 (codified as amended in scattered sections of 33 U.S.C.).
 27. 33 U.S.C. § 1362(14).

other forms of stormwater runoff from the definition, and many of them still are defined as point sources.²⁸ But it created a default presumption that stormwater runoff would not require permitting unless it fell into several discrete categories of sources, none of which, according to EPA and the Supreme Court, explicitly includes silviculture activities.²⁹ Consequently, agriculture and silviculture—activities that cover much of the American landscape and that create huge amounts of water pollution—were largely exempted from the Act’s primary prohibition and its flagship permitting program.

Congress did enact other provisions designed to address nonpoint as well as point sources of water pollution.³⁰ But a common and problematic theme unites these other provisions. All envision implementation primarily by state authorities, and all lack federal teeth to compel state activity.³¹ Section 303, for example, requires states to develop water quality standards and to identify waterways that fail to meet those standards.³² Section 303 also requires states to prepare total maximum daily loads (TMDLs), which are essentially reports that document the causes of water quality impairment and establish budgets for allowable pollutant loading.³³ If states fail to fulfill any of these steps, EPA is obliged to act in the state’s stead.³⁴ But EPA has no obligation or ability to compel states to implement their TMDLs, except to the extent those TMDLs govern point sources of water pollution.³⁵ The Act does require states to have “continuing planning process[es]” for addressing nonpoint source pollution, but there is no federal-law remedy if states prepare ineffectual plans, or if states prepare strong plans but then leave them on shelves to collect dust.³⁶

Section 303 is not unique in this respect. Section 208 requires states to develop areawide management plans for nonpoint source water pollution, but it does not specify the content of those plans or mandate

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28. See Dave Owen, *Urbanization, Water Quality, and the Regulated Landscape*, 82 U. COLO. L. REV. 431, 448–49 (2011) (describing the Clean Water Act’s approach to stormwater).
29. See *Decker v. Nw. Env’t Def. Ctr.*, 568 U.S. 597, 601–02 (2013).
30. See 33 U.S.C. § 1288(b)(2)(F) (requiring planning for nonpoint source control); *id.* § 1313(d) (requiring water quality standards and total maximum daily loads); *id.* § 1329(H)(1) (authorizing grants for nonpoint source controls).
31. See Pollans, *supra* note 5, at 1219.
32. 33 U.S.C. § 1313(a), (d).
33. *Id.* § 1313(d).
34. *Id.* § 1313(d)(2).
35. See *Pronsolino v. Nastri*, 291 F.3d 1123, 1140 (9th Cir. 2002).
36. 33 U.S.C. § 1313(e)(1); see also Dave Owen, *After the TMDLs*, 17 VT. J. ENV’T L. 845, 858–59 (2016) (describing the limits of the Clean Water Act’s mandates).

that they be implemented at all, let alone implemented effectively.³⁷ Section 319 authorizes grant funding for state nonpoint source control programs, but participation is voluntary, and the amounts of funding are too small to give the federal government any real leverage.³⁸ The Coastal Zone Management Act³⁹ also mandates planning for nonpoint sources, albeit only for portions of some states, and again without strong enforcement mechanisms.⁴⁰

In theory, this soft approach might have been enough. The Congresses that enacted early environmental laws were clearly exasperated with slow state progress on environmental protection,⁴¹ but some progress did exist,⁴² and one might have thought that the same shifting politics that energized federal environmental law would achieve similar results at state levels, especially with a few pushes from EPA. That is not how things worked out. Study after study has documented the failings of state regulation of nonpoint sources, and particularly of agriculture.⁴³ In most states, programs are largely voluntary and there is little evidence of volunteers.⁴⁴ Consequently, agriculture remains among the nation's largest sources of water quality impairment.⁴⁵ Agricultural exemptions also are economically inefficient, as Sheila Olmstead's contribution to this symposium pointed out.⁴⁶ The lack of

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37. 33 U.S.C. § 1288; see Laitos & Ruckriegle, *supra* note 9, at 1041–42 (critiquing the section 208 program).
 38. 33 U.S.C. § 1329; see Laitos & Ruckriegle, *supra* note 9, at 1043–45 (explaining why the section 319 program has had minimal effects).
 39. 16 U.S.C. §§ 1451–1467 (1972).
 40. See Robert W. Adler, *Agriculture and Water Quality: A Climate-Integrated Perspective*, 37 VT. L. REV. 847, 864–66 (2013) (describing the program).
 41. See Oliver A. Houck, *Cooperative Federalism, Nutrients, and the Clean Water Act: Three Cases Revisited*, 44 ENV'T L. REP. NEWS & ANALYSIS, 10426, 10427–28 (2014) (quoting multiple legislators expressing their distrust of and frustration with state-led water quality regulation).
 42. See Jonathan H. Adler, *Fables of the Cuyahoga: Reconstructing a History of Environmental Protection*, 14 FORDHAM ENV'T L.J. 89, 95–96 (2002).
 43. See, e.g., Andreen, *supra* note 1, at 260; Cannon, *supra* note 1, at 610–11; Gould, *supra* note 1, at 461–62; Pollans, *supra* note 5, at 1198–99; Ruhl, *supra* note 5, at 266–68.
 44. See Andreen, *supra* note 1, at 259.
 45. U.S. ENV'T PROT. AGENCY, A NATIONAL EVALUATION OF THE CLEAN WATER ACT SECTION 319 PROGRAM at 5 (2011); see Thomas C. Brown & Pamela Froemke, *Nationwide Assessment of Nonpoint Source Threats to Water Quality*, 62 BIOSCIENCE 136, 137–42 (2012) (mapping agricultural watershed stressors).
 46. Sheila Olmstead, Professor of Pub. Affs., Univ. of Tex. at Austin, *The CWA and the Economic Damages from Nutrient Pollution*, Address at

effective nonpoint source regulation often means that regulators must ratchet up restrictions on point sources, even when less costly nonpoint source controls would do much more environmental good.⁴⁷ Likewise, many urban areas must spend huge sums on drinking water treatment—sums that would be smaller if agricultural water pollution were more effectively controlled.⁴⁸ Many of the resulting problems do not stay in the states that have chosen to leave agricultural water pollution largely unregulated. The most notorious example is the massive dead zone that forms at the mouth of the Mississippi River, largely because of nutrient pollution from corn and soybean fields in the Upper Midwest.⁴⁹

Nonpoint source agricultural pollution is our largest poorly addressed water pollution problem, but it is not the only one. In many waterways, dams and diversions are major sources of water quality impairment,⁵⁰ but the Clean Water Act provides only modest federal levers to deal with the former problem⁵¹ and none to deal with the latter.⁵² State regulation is likewise uneven, and many states have relegated water quantity and water quality regulation to largely separate spheres.⁵³ Groundwater pumping also is a common source of water quality impairment; lower groundwater levels often mean lower

the Case Western Reserve University of Law Symposium: The Clean Water Act at 50 (Apr. 8, 2022), https://www.youtube.com/watch?v=8IPIS2Z_oUQ&t=1679s [<https://perma.cc/BQ25-R8H3>]; see also Karen Fisher-Vanden & Sheila Olmstead, *Moving Pollution Trading from Air to Water: Potential, Problems, and Prognosis*, 27 J. ECON. PERSP. 147, 149 (2013) (“[M]arginal abatement costs for point sources which have faced stringent regulation over the past 40 years tend to be high relative to those for nonpoint sources, which have been unregulated.”).

47. See Cannon, *supra* note 1, at 613–14.
48. See Pollans, *supra* note 5, at 1197–1200.
49. See J.B. Ruhl & James Salzman, *Climate Change, Dead Zones, and Massive Problems in the Administrative State: A Guide for Whittling Away*, 98 CALIF. L. REV. 59, 60, 85, 87–88 (2010).
50. See U.S. ENV’T PROT. AGENCY, *supra* note 8, at 8, 21 (identifying hydromodification as a leading source of impairment).
51. Clean Water Act section 401 allows states to impose water quality–based conditions on hydropower licenses issued by the Federal Energy Regulatory Commission. See PUD No. 1 of Jefferson Cnty. v. Wash. Dep’t of Ecology, 511 U.S. 700, 707–09 (1994).
52. If they choose to do so, states can incorporate water quality standards into their water rights permitting. See, e.g., United States v. State Water Res. Control Bd., 227 Cal. Rptr. 161, 192 (Ct. App. 1986) (upholding water quality–based conditions on water rights held by the United States Bureau of Reclamation).
53. See Reed D. Benson, *Pollution Without Solution: Flow Impairment Problems Under Clean Water Act Section 303*, 24 STAN. ENV’T L.J. 199, 204–05 (2005).

surface water flows, which in turn can reduce pollution dilution and create warmer, more algae-filled waterways.⁵⁴ Again, the Clean Water Act does not address these issues,⁵⁵ and integrating groundwater and surface water regulation is largely a matter of state discretion, with that discretion often unexercised.⁵⁶ The broader theme is straightforward. Clean Water Act implementation has focused primarily on urban and industrial wastewater outfalls and, to a secondary extent, on urban and industrial stormwater. It has done wonders with the former problems, has made fitful progress with the latter, and has had little influence on everything else.

There is nothing new about this summary. Commentators, including some of the participants in this symposium, have been documenting these problems for years.⁵⁷ Yet at the federal level, the political will to address these issues has long seemed nonexistent. Instead, the political and judicial battles of recent years have arisen from efforts, spearheaded by agricultural lobbyists, to *shrink* the scope of Clean Water Act jurisdiction.⁵⁸ At state levels, some high-profile efforts have tried to turn TMDLs into effective controls on nonpoint source water pollution; restoration efforts for the Chesapeake Bay and Lake Champlain are the most famous examples.⁵⁹ But the overall picture that emerges is of a nation where comprehensive efforts to address nonpoint source pollution do not exist and seem unlikely to emerge any time soon.

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54. See Dave Owen, *Taking Groundwater*, 91 WASH. U. L. REV. 253, 264–66 (2013) (describing water quality impacts of groundwater pumping).
55. See Cnty. of Maui, Haw. v. Haw. Wildlife Fund, 140 S. Ct. 1462, 1472 (2020) (“Congress left general groundwater regulatory authority to the States.”).
56. See generally Christine A. Klein, *Groundwater Exceptionalism: The Disconnect Between Law and Science*, 71 EMORY L.J. 487 (2022) (describing many ways in which federal and state laws treat groundwater and surface water separately); Dave Owen, Alida Cantor, Nell Green Nysten, Thomas Harter & Michael Kiparsky, *California Groundwater Management, Science-Policy Interfaces, and the Legacies of Artificial Legal Distinctions*, 14 ENV’T RSCH. LETTERS 1, 3–7 (2019).
57. See, e.g., *supra* notes 5, 40–44, 46–49, 53–54 and accompanying text.
58. See William W. Buzbee, *The Antiregulatory Arsenal, Antidemocratic Can(n)ons, and the Waters Wars*, 73 CASE W. RESV. L. REV. 293, 297, 303–15 (2022).
59. See *Am. Farm Bureau Fed’n v. U.S. Env’t Prot. Agency.*, 792 F.3d 281, 291–92 (3d Cir. 2015) (describing the Chesapeake Bay TMDL); David K. Mears & Trey Martin, *Foreword: Restoring and Maintaining the Ecological Integrity of Lake Champlain*, 17 VT. J. ENV’T L. 470, 474–77 (2016) (describing the Lake Champlain TMDL).

II. WATER QUALITY PROTECTION AND CALIFORNIA'S NORTH COAST

The question this Article poses is what one might learn from a place where the regulatory picture is quite different. To answer that question, I turn to northwestern California, a region of redwood forests and innovative water quality regulation. This Part begins by describing the area, then discusses some of the innovations, and then explains lessons those innovations can offer.

A. The Setting

The North Coast Board is the lead water quality regulator for a boomerang-shaped swath of land stretching from the northern edge of Marin County to the Oregon border to the north and almost to the Nevada border at California's northeastern corner.⁶⁰ The area is huge—approximately the same size as the state of Vermont⁶¹—but lightly populated.⁶² With the exception of desert areas in the northeast, it is California's wettest region.⁶³ That precipitation feeds hundreds of streams and some of California's largest rivers, including the Klamath and the Eel.⁶⁴ But the climate is Mediterranean, which means little or no rain falls during summer months, and below the mountaintops and beyond the reach of coastal fog, temperatures can ascend above 100

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60. *See State and Regional Water Boards*, CAL. WATER BDS., https://www.waterboards.ca.gov/waterboards_map.html [<https://perma.cc/FR2G-V2FG>] (Feb. 22, 2022).
61. *Water Quality Control Plan for the North Coast Region*, N. COAST REG'L WATER QUALITY CONTROL BD. 1-1.00, 1-6.00 (2011), <https://www.epa.gov/sites/default/files/2014-12/documents/ca1-northcoast.pdf> [<https://perma.cc/N4WP-VNU2>] (describing the area of the basin).
62. *See Map of California (Population Density)*, WORLDOFMAPS.NET, <https://www.worldofmaps.net/en/north-america/map-california/map-population-density-california.htm> [<https://perma.cc/BJS8-SY9F>] (last visited Nov. 27, 2022).
63. *See California Precipitation*, CAL.-NEV. CLIMATE APPLICATIONS PROGRAM, https://cwc.ca.gov/-/media/CWC-Website/Files/Documents/2019/08_August/Dettinger_CA_Precipitation.pdf [<https://perma.cc/A4AY-SBCD>] (last visited Nov. 27, 2022); N. COAST RES. P'SHIP, CAL. DEP'T WATER RES., NORTH COAST INTEGRATED WATER RESOURCES MANAGEMENT PLAN PHASE III at 1 (2014) ("The North Coast represents only 12% of the state, yet produces about 40% of statewide runoff.").
64. *See North Coast Rivers*, WATER EDUC. FOUND., <https://www.watereducation.org/aquapedia/north-coast-rivers> [<https://perma.cc/DJ7X-E4WK>] (last visited Nov. 27, 2022); TIM PALMER, RIVERS OF CALIFORNIA: NATURE'S LIFELINES IN THE GOLDEN STATE 27–46 (2010) (providing photographs and descriptions of North Coast rivers).

degrees.⁶⁵ For waterways, that climate creates enormous fluctuations in flow.⁶⁶



Figure 1: California's Regional Water Board Territories⁶⁷

Politically and economically, the North Coast is a distinctive place. The population is small and scattered. The region's largest city—Santa Rosa—is at its southernmost edge and is home to approximately 180,000 people, and no other city is even close to that size.⁶⁸

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65. See *California Precipitation*, *supra* note 63, at 1; *Water Quality Control Plan for the North Coast Region*, *supra* note 61, at 1-5.00 (describing inland and coastal temperatures).
66. See Ronald M. Yoshiyama & Peter B. Moyle, *Historical Review of Eel River Anadromous Salmonids, with Emphasis on Chinook Salmon, Coho Salmon and Steelhead*, 12 (Feb. 1, 2010) (working paper, Center for Watershed Sciences, University of California, Davis) (on file with author) (describing the Eel River basin's climate and associated flow fluctuations).
67. Illustration of California's regional water board territories, in *How Do the Water Boards Protect Groundwater?*, STATE OF CAL. (Aug. 23, 2018), https://www.waterboards.ca.gov/water_issues/programs/groundwater/protecting_gw.html [<https://perma.cc/CBM6-KS4A>]. The North Coast Board governs region 1.
68. *QuickFacts: Santa Rosa City, California*, U.S. CENSUS BUREAU, <https://www.census.gov/quickfacts/santarosacitycalifornia> [<https://perma.cc/5CXQ-9M95>] (last visited Nov. 27, 2022). Eureka, which is the second-largest

Traditionally, the North Coast economy was driven largely by timber harvesting, and to a lesser extent fishing,⁶⁹ but timber output has dropped⁷⁰ and the fishing industry is a shadow of its former self,⁷¹ partly because of the water quality challenges described in more depth later in this Article.⁷² While much of the land is too steep for most types of farming, a few flat valleys produce wheat, hay, orchards, and lily bulbs, and some areas support high concentrations of dairy farms.⁷³ The region also is famed for its cannabis and grapes, with the latter attracting tourists seeking excellent wine and some relief from the Napa and Sonoma Valley crowds.⁷⁴ Politically, the region is polarized, though most of it leans right. Its western portion is part of a congressional district that consistently elects Democrats; it is currently represented by Jared Huffman, who worked for the Natural Resources Defense

city, has a population around 26,000. *Quickfacts: Eureka City, California*, U.S. CENSUS BUREAU, <https://www.census.gov/quickfacts/eurekacitycalifornia> [<https://perma.cc/L2MR-HYRR>] (last visited Nov. 27, 2022).

69. See Steven C. Hackett, *The Humboldt County Economy: Where Have We Been and Where Are We Going?*, HUMBOLDT ECON. INDEX (Feb. 1999), <https://econindex.humboldt.edu/content/humboldt-county-economy-where-have-we-been-and-where-are-we-going> [<https://perma.cc/V3HP-ZUF5>]; CAROLINE POMEROY, CYNTHIA J. THOMSON & MELISSA M. STEVENS, U.C. SAN DIEGO: CAL. SEA GRANT COLL. PROGRAM, CALIFORNIA'S NORTH COAST FISHING COMMUNITIES: HISTORIC PERSPECTIVES AND RECENT TRENDS: EUREKA FISHING COMMUNITY PROFILE 1-9 (2011) (describing the Port of Eureka's historic importance to California's fishing industry).
70. See, e.g., Daniel Mintz, *Humboldt County, an Economy in Transition*, CAL. FORWARD (Nov. 13, 2018), <https://cafwd.org/news/Humboldt-county-an-economy-in-transition/> [<https://perma.cc/FCJ3-M635>]. Though output has dropped, timber harvesting remains important to the regional economy. See James E. Henderson, Richard B. Standiford & Samuel G. Evans, *Economic Contribution of Timber Harvesting and Manufacturing to North Coast Redwood Region Counties*, PROC. OF THE COAST REDWOOD SCI. SYMP. 371, 378-79 (2016).
71. Pomeroy et al., *supra* note 69, at 4-5.
72. See CARL SAFINA, SONG FOR A BLUE OCEAN 117-263 (1998) (describing the author's perception of the effects of logging on Pacific Northwest water quality and fisheries).
73. See *Agricultural Lands Discharge Program*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/ [<https://perma.cc/M2KV-7EDR>] (May 17, 2019) (listing agricultural activities and areas and providing links to regulatory information for those activities and areas).
74. See, e.g., *Wine Road to the Mendocino Coast*, ANDERSON VALLEY WINES, <https://www.avwines.com/> [<https://perma.cc/GPD7-FFP3>] (last visited Nov. 23, 2022).

Council before entering politics.⁷⁵ The northeastern portion is represented by Doug LaMalfa, a conservative Republican.⁷⁶

Another notable feature of the region is its stunning beauty. In the southern and inland parts of the region, vineyards, grasslands, and oak forests alternate with Douglas fir and redwood forests.⁷⁷ Further north and west, the forests cover nearly all the land, and the high peaks of the Marble Mountains and Trinity Alps stay buried in snows that melt late in the year, revealing alpine lakes and meadows strewn with wildflowers.⁷⁸ The coasts are rugged, foggy, and dangerous, and near-coastal stream valleys contain the world's tallest trees.⁷⁹ Elk, mountain lions, and sasquatch rumors wander through the savannahs and woods.⁸⁰ Enormous and cantankerous grizzly bears once patrolled the coast, feasting on whale carcasses.⁸¹ The bears are long gone, but farther east, wolves are coming back.⁸² On the dry side of the coast ranges, the landscape looks more like the Interior West; rangelands and pine forests resemble Montana, except with the giant, glacier-draped cone of Mount Shasta looming incongruously over everything.

The waters that flow off this stunning landscape once supported enormous runs of anadromous fish, which in turn were central to the livelihoods and cultures of the Native American tribes that inhabited

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75. See *Meet Jared*, JARED HUFFMAN: U.S. CONGRESSMAN SERVING CALIFORNIA'S 2ND DISTRICT, <https://huffman.house.gov/meet-jared> [<https://perma.cc/Y2A4-42EZ>] (last visited Jan. 21, 2022).
76. See *About*, CONGRESSMAN DOUG LAMALFA: SERVING CALIFORNIA'S 1ST DISTRICT, <https://lamalfa.house.gov/> [<https://perma.cc/3L6K-DTXW>] (last visited Nov. 23, 2022).
77. For a land cover map, see DATA BASIN, <https://databasin.org/maps/new/#datasets=d4e86f603f864de2861ff75d3fd920e> (last visited Nov. 25, 2022).
78. On one short backpacking trip, my daughter counted thirty-two species.
79. See George W. Koch, Stephen C. Sillett, Gregory M. Jennings & Stephen D. Davis, *The Limits to Tree Height*, 428 NATURE 851, 853 (2004) (describing Humboldt Redwoods State Park as the location of many of the tallest redwoods).
80. See Mark Lallanilla, *Looking for Bigfoot? New Map Shows Where to Search*, LIVESCIENCE (Sept. 19, 2013), <https://www.livescience.com/39785-bigfoot-map-sasquatch-sightings-gis.html> [<https://perma.cc/YJJ5-DMUX>] (showing many alleged bigfoot sightings in northwestern California—though not quite as many as in the wilds of northern Ohio).
81. See TRACY L. STORER & LLOYD P. TEVIS, JR., CALIFORNIA GRIZZLY 16–17, 58 (1955) (describing historical accounts of large and abundant bears feasting on whale carcasses).
82. See Hillary Richard, *Wolves Returned to California. So Did 'Crazy' Rumors.*, N.Y. TIMES (Mar. 11, 2022), <https://www.nytimes.com/2022/03/11/science/california-wolves-misinformation.html> [<https://perma.cc/EKM9-B2SU>] (describing wolf populations in Siskiyou County, as well as in other areas outside the North Coast region).

the area.⁸³ They also remain important to many of the area's other residents; one regulator noted that many regulated landowners highly value fish, and that, throughout much of the region, "salmon is God."⁸⁴ But dams and water diversion projects decimated some of the salmon runs, and in the middle of the twentieth century, heavy logging released huge amounts of sediment into the region's streams.⁸⁵ To this day, supporting cold-water fisheries remains a central goal of water quality regulators, and the legacy effects of those past logging practices pose major continuing challenges for water quality protection.⁸⁶ Water quality managers in the region also have new challenges to address, including a cannabis industry that still sometimes operates with more concern for avoiding law enforcement than for protecting the environment.⁸⁷ Perhaps most importantly, California is already being hammered by climate change, which has made a series of bad droughts significantly worse than they otherwise would have been.⁸⁸ The state is currently emerging from the most intense megadrought since the first century,⁸⁹ and the combination of sporadic precipitation and record heat has depleted stream flows and dried out forests, turning them into tinderboxes that now burn at rates not seen for decades.⁹⁰

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83. See *Blake v. Arnett*, 663 F.2d 906, 909 (9th Cir. 1981) (describing the importance of salmon to the Yurok Tribe).
84. Zoom Interview with Anonymous Regulator 1 (May 6, 2022) (notes on file with author).
85. See, e.g., California State Water Resources Control Board—Web Support, *Garcia River Watershed and Monitoring Program—Overview, Status, and Trends*, YOUTUBE (Oct. 19, 2016), <https://www.youtube.com/watch?v=068DYcHsOhY&t=124s> [<https://perma.cc/3S4F-9ZGR>] (describing historic logging and its impacts in the Garcia River watershed).
86. *Id.* See generally Ellen Wohl, *Forgotten Legacies: Understanding and Mitigating Historical Human Alterations of River Corridors*, 55 WATER RES. RSCH. 5181 (2019) (describing how historic land use practices can have lasting legacies for river systems, and using examples from the Pacific Northwest and elsewhere).
87. See Ryan B. Stoa, *Weed and Water Law: Regulating Legal Marijuana*, 67 HASTINGS L.J. 565, 567–69 (2016) (describing state enforcement actions against marijuana operations that allegedly were illegally diverting water).
88. See Michael E. Mann & Peter H. Gleick, *Climate Change and California Drought in the 21st Century*, 112 PNAS 3858, 3858–59 (2015).
89. A. Park Williams, Benjamin I. Cook & Jason E. Smerdon, *Rapid Intensification of the Emerging Southwestern Megadrought in 2020–2021*, 12 NATURE CLIMATE CHANGE 232, 232–34 (2022).
90. See Michael Goss, Daniel L. Swain, John T. Abatzoglou, Ali Sarhadi, Crystal A. Kolden, A. Park Williams & Noah S. Diffenbaugh, *Climate Change Is Increasing the Likelihood of Extreme Autumn Wildfire Conditions Across California*, 15 ENV'T RSCH. LETTERS, Sept. 2020, at 1, 6–7.

B. The Regulators and Their Authority

The Clean Water Act is a cooperative federalism statute, and Congress crafted the statute to facilitate substantial state involvement in a shared national project of water quality protection.⁹¹ In California, the state's involvement occurs through a statute called the Porter-Cologne Water Quality Control Act,⁹² which Californians refer to in shorthand as “the Porter-Cologne Act” or just “Porter-Cologne.” The statute parallels the federal Clean Water Act in some ways; in 1972, the California Legislature amended the statute so the state could receive delegated authority to implement parts of the federal statute.⁹³ In other ways, it goes beyond federal requirements. Most importantly, in contrast to its federal counterpart, the Porter-Cologne Act expressly requires regulatory programs for nonpoint source water pollution.⁹⁴

The Porter-Cologne Act also sets up an interesting implementation structure—a system I have elsewhere referred to as “cooperative subfederalism.”⁹⁵ Primary authority for water quality protection rests with the California State Water Resources Control Board, which is a subdivision of the California Environmental Protection Agency.⁹⁶ But some of that authority is then subdelegated to nine regional water quality control boards, each of which has its own staff and is governed by a board appointed by the governor.⁹⁷ The North Coast Board is headquartered in Santa Rosa, and it currently has about eighty staff members.⁹⁸

The North Coast Board does not operate in isolation. The area's largest landowner, by a huge margin, is the U.S. government; approximately 40 percent of the land within the region falls within

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91. See 33 U.S.C. § 1251 (calling for nationwide achievement of state water quality goals and for significant state involvement in achieving those goals).
 92. CAL. WATER CODE §§ 13000–16104 (West 2022).
 93. See *City of Burbank v. State Water Res. Control Bd.*, 108 P.3d 862, 865 (Cal. 2005) (describing this history).
 94. CAL. WATER CODE § 13369.
 95. Dave Owen, *Cooperative Subfederalism*, 9 U.C. IRVINE L. REV. 177, 183–89 (2018) (describing cooperative subfederalist systems and providing examples of programs).
 96. See CAL. WATER CODE §§ 174–189.5, 13160–13194.
 97. CAL. WATER CODE § 13201(a); see *The Nine Regional Water Quality Control Boards in California*, STATE WATER RES. CONTROL BD., https://www.waterboards.ca.gov/publications_forms/publications/factsheets/docs/region_brds.pdf [<https://perma.cc/6BM8-7R85>] (June 12, 2013).
 98. See *North Coast Region Staff Phone List*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/about_us/phone_list/ [<https://perma.cc/JT6D-LB5H>] (Nov. 8, 2022).

national forests.⁹⁹ For that reason, and because a little-known provision of the Clean Water Act requires federal land managers to comply with some state water quality protections,¹⁰⁰ the North Coast Board and the United States Forest Service must work closely together. Much of the timberland that is not held by the Forest Service is managed by private landowners, whose activities are regulated by the California Department of Forestry and Fire Protection, which works with the North Coast Board.¹⁰¹ Because anadromous fish protection is central to the Board's work, and because many of the North Coast's fish runs are threatened or endangered, the Board often works with federal wildlife agencies, particularly the National Marine Fisheries Service, and with the California Department of Fish and Wildlife.¹⁰² The North Coast Board also works with local governments and with tribal representatives.¹⁰³ Some of California's largest Indian reservations fall within the North Coast Board's area of jurisdiction,¹⁰⁴ and because of

99. *Federal Lands Permitting*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/forest_activities/US_forest_service/ [<https://perma.cc/4G7N-8D8Q>] (Sept. 22, 2022).

100. *See* 33 U.S.C. § 1323. Section 1323 states, in relevant part:

Each department, agency, or instrumentality of the executive, legislative, and judicial branches of the Federal Government (1) having jurisdiction over any property or facility, or (2) engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants, and each officer, agent, or employee thereof in the performance of his official duties, shall be subject to, and comply with, all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity including the payment of reasonable service charges.

101. *See Private Forest Land*, CAL WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/forest_activities/private_forest_land/ [<https://perma.cc/B576-VR7S>] (Aug. 23, 2021) (describing the regulatory program and interagency relationship).

102. *See, e.g.*, REG'L WATER QUALITY CONTROL BDS., N. COAST REGION, EXECUTIVE OFFICER'S SUMMARY REPORT (2016) (describing the National Marine Fisheries Service's presentation of a coho salmon recovery plan and "the types of actions that the Regional Water Board may take to assist in implementing the Recovery Plan"); Letter from Matthias St. John, Exec. Dir., N. Coast Reg'l Water Quality Control Bds., to David Johnson, U.S. Fish & Wildlife Serv. (Sept. 13, 2017) (describing the North Coast Board's Clean Water Act section 401 certification of a restoration project jointly pursued by the Fish and Wildlife Service and the California Department of Fish and Game).

103. *See, e.g.*, N. COAST RES. P'SHIP, *supra* note 63, at 15 (describing intergovernmental collaborations).

104. *See Air Quality Analysis: California Tribal Lands and Reservations*, U.S. ENV'T PROT. AGENCY., <https://www3.epa.gov/region9/air/maps/ca>

their traditional dependence on salmon, water quality is profoundly important to the tribes.¹⁰⁵

C. The Programs

The discussion below explains, at a fairly general level, what the North Coast Board has done with this authority. I begin with the Garcia River, and with a story that will be partly familiar to many environmental lawyers, and then discuss a series of more recent regulatory initiatives.

One key starting point for the North Coast Board's regulation of nonpoint sources is a widely taught case. *Pronsolino v. Nastri*,¹⁰⁶ which appears in many environmental law textbooks, involved the Garcia River, which flows from the redwood forests of southern Mendocino County, along the trace of the San Andreas Fault, and out to the coast just north of Point Arena.¹⁰⁷ The watershed is almost entirely forested,¹⁰⁸ and traditional point sources of water pollution are absent,¹⁰⁹ which could have boded well for water quality. But decades of heavy logging deprived the river and its tributary streams of shade and woody debris and flushed them with sediment, decimating fish populations.¹¹⁰ By the 1990s, the pace of logging had slowed, but with almost all the watershed in private hands, timber operations were ongoing. California initially declined to list the waterway as impaired or to prepare a TMDL, and EPA initially did not step into the breach.¹¹¹ The Pacific Coast Federation of Fishermen's Associations then sued, eventually compelling EPA to issue its own 303(d) list and draft its own TMDLs, including a TMDL for the Garcia River.¹¹² Timber and agricultural

_tribe.html [<https://perma.cc/N2XW-CU2U>] (Nov. 18, 2022) (showing reservation lands in California).

105. See KLAMATH TRIBAL WATER QUALITY CONSORTIUM, <https://klamathwaterquality.com/> [<https://perma.cc/9JTK-L3R8>] (last visited Nov. 27, 2022).

106. 291 F.3d 1123 (9th Cir. 2002).

107. See CAL. REG'L WATER QUALITY CONTROL BD., N. COAST REGION, REFERENCE DOCUMENT FOR THE GARCIA RIVER WATERSHED WATER QUALITY ATTAINMENT PLAN FOR SEDIMENT 2 (2000) [hereinafter *Reference Document*].

108. *Id.* at 19 ("It is a forested watershed consisting of mixed conifer (primarily fir and redwood) and hardwood (primarily tan oak and madrone) forests.").

109. *Pronsolino*, 291 F.3d at 1126 ("The Garcia River is polluted only by nonpoint sources.").

110. See *Reference Document*, *supra* note 107, at 10–13, 37–38. See generally California State Water Resources Control Board—Web Support, *supra* note 85 (displaying logging practices in the watershed).

111. *Pronsolino*, 291 F.3d at 1129–30.

112. *Id.* at 1129.

interests then filed a lawsuit of their own, arguing that EPA could not prepare a TMDL for a waterway that was impaired solely by nonpoint sources.¹¹³ In *Pronsolino*, the Ninth Circuit rejected that claim.¹¹⁴

Pronsolino v. Nastri teaches well because it captures several larger themes about water quality standards and TMDLs. At the time the case arose, California's intransigence about submitting 303(d) lists and TMDLs was typical; many states took these steps only when compelled by litigation, or they left it to EPA to act.¹¹⁵ The case therefore illustrates state reluctance to even begin programs of nonpoint source regulation.¹¹⁶ Similarly, Judge Berzon's succinct summary of states' obligations to implement TMDLs for nonpoint sources—"States must implement TMDLs only to the extent that they seek to avoid losing federal grant money; there is no pertinent statutory provision otherwise requiring implementation of § 303 plans or providing for their enforcement"¹¹⁷—captures the conventional after-story of TMDL preparation, which often involves limited or nonexistent attempts to turn TMDLs into genuine controls on nonpoint source water pollution.¹¹⁸ In short, the case works well for teaching the troubled history of TMDLs, and of nonpoint source regulation more generally.

But the story of the case turns out to be much more complicated. Even as the state of California was missing deadlines for TMDL submission, North Coast Board staff began preparing a TMDL implementation plan,¹¹⁹ and once EPA's TMDL issued, the California Department of Forestry began incorporating the TMDL's pollution budgets into timber harvesting permits.¹²⁰ The resulting requirements, which included limits on timber harvesting close to the river and its tributaries, were not trivial in their effects.¹²¹ The North Coast Board also continued work on implementing its TMDL implementation plan,

113. *Id.* at 1129–30.

114. *Id.* at 1140–41.

115. *See Owen*, *supra* note 28, at 450–51.

116. Agencies are complicated, however, and the litigation positions selected by leadership don't always reflect the preferences of staff. For the Garcia River, North Coast Board staff were working on TMDL implementation plans even as the state was declining to finalize a TMDL, and former regulators told me they viewed the environmental groups' lawsuits as friendly cases. Zoom Interview with Anonymous Regulator 1, *supra* note 84.

117. *Pronsolino*, 291 F.3d at 1140.

118. *See Owen*, *supra* note 28, at 451–53.

119. *See generally* CAL. REG'L WATER QUALITY CONTROL BD., N. COAST REGION, ACTION PLAN FOR THE GARCIA RIVER WATERSHED SEDIMENT TMDL (2001) [hereinafter *Action Plan*].

120. *See Pronsolino*, 291 F.3d at 1130.

121. *See id.* (describing landowners' claimed losses).

which it finalized in 2002.¹²² Landowners in the watershed now have several different compliance options—they can choose between site-specific and more standardized pollution control plans—but implementation of pollution controls is mandatory.¹²³ Most importantly, the plan seems to be working, though parsing out the impacts of the plan and the influence of other conservation measures is difficult. Conditions in the river’s mainstem are improving, and conditions in the tributaries are improving faster.¹²⁴ Fish populations are rebounding, even amid a succession of drought years.¹²⁵

In some ways, the Garcia River restoration effort was pioneering, but it also built on other prior efforts.¹²⁶ Under California’s Z’berg Nejedly Forest Practices Act,¹²⁷ the Department of Forestry and Fire Protection already was charged with reviewing timber harvest plans, and addressing water quality impacts was a mandatory element of timber harvest planning.¹²⁸ Those requirements meant that TMDLs and implementation plans, once drafted, were linked to existing regulatory

122. *See generally* *Action Plan*, *supra* note 119.

123. *See id.* at 4-49.00 (“Landowners must comply with this Action Plan, including TMDL, Implementation Plan and Monitoring Plan through one of these three options or face potential permitting and/or enforcement action in the event of discharges of sediment.”).

124. *See* California State Water Resources Control Board—Web Support, *supra* note 85.

125. *See* Craig Bell, *The Garcia: A River in Strong Recovery After a Thirty-Year Effort*, TREES FOUNDATION (July 16, 2021), <https://treesfoundation.org/2021/07/the-garcia-a-river-in-strong-recovery-after-a-30-year-effort/> [https://perma.cc/2G3P-G7YC].

126. Telephone Interview with Anonymous Regulator 2 (March 25, 2022) (notes on file with author).

I would say that because of the amount of timberlands in our region, our region has been a leader in timber regulation from the very beginning. That’s an area where I think we really outshine the other regions of the state. That’s largely because our staff are focused on timber, going back to the seventies, when a lot of other regions were working with wastewater treatment plants and dealing with their point source discharges.

Id.

127. CAL PUB. RES. CODE §§ 4511–4517 (1973).

128. *See Private Forest Land*, *supra* note 101; Anne G. Short & Timothy P. Duane, *Regulatory Spillover: How Regulatory Programs Influence Voluntary Efforts to Adopt Best Management Practices to Manage Non-Point Source Pollution*, 35 ENVIRONS: ENV’T L. & POL’Y J. 37, 61–62 (2011) (describing regulation under the Z’berg-Nejedly Forest Practice Act of 1973).

processes with real consequences.¹²⁹ Outside the realm of forestry, regulated entities and conservation groups also had been developing voluntary programs designed to limit nonpoint source pollution. The Fish Friendly Farming program, for example, is a private certification program for environmentally friendly farming practices.¹³⁰ Begun in 1999 as a purely private initiative, it has become intertwined with water quality regulatory programs. A Fish Friendly Farming certificate now doubles as documentation of compliance with some TMDL implementation plans.¹³¹

The North Coast Board also has expanded its regulatory efforts beyond the Garcia River watershed. In 2004, the North Coast Board adopted a resolution directing staff to develop a general implementation plan for all of the sediment-impaired waterways in the region.¹³² In 2008, that plan was officially adopted.¹³³ Regulators whom I spoke with generally described the larger sediment plan as a weaker initiative than the Garcia River restoration; if they had the funds to support it, they would have preferred to replicate the more labor-intensive effort they pursued for the Garcia River watershed.¹³⁴ The effectiveness of their efforts in other watersheds also is somewhat harder to judge.¹³⁵ But even if resources are spread thinner than regulators would prefer, those efforts do provide a starting point.

The North Coast Board has since fleshed that program out through a series of sector-specific regulatory initiatives, including some that have been implemented for several years and others that are still under development. For example, the North Coast Board has been regulating

129. *See, e.g.*, *Pronsolino v. Nastri*, 291 F.3d 1123, 1129–30 (9th Cir. 2002); Telephone Interview with Anonymous Regulator 3 (March 22, 2022) (notes on file with author) (“[T]hey’re very intertwined, and compliance with Porter-Cologne is written into the Forest Practice Act and rules.”).

130. *See generally Fish Friendly Farming: About*, CAL. LAND STEWARDSHIP INST., <https://www.fishfriendlyfarming.org/about> [<https://perma.cc/3C6S-E8W3>] (last visited Jan. 20, 2023).

131. *Fish Friendly Farming: Why Farmers Enroll*, CAL. LAND STEWARDSHIP INST., <https://www.fishfriendlyfarming.org/why-farmers-enroll> [<https://perma.cc/9T6W-RZXR>] (last visited Jan. 20, 2023).

132. *See generally* CAL. REG’L WATER QUALITY CONTROL BD., N. COAST REGION, RESOLUTION NO. R1-2004-0087, TOTAL MAXIMUM DAILY LOAD IMPLEMENTATION POLICY STATEMENT FOR SEDIMENT-IMPAIRED RECEIVING WATERS IN THE NORTH COAST REGION (2004).

133. STATE OF CAL., N. COAST REG’L WATER QUALITY CONTROL BD., REGIONAL WATER BOARD STAFF WORK PLAN TO CONTROL EXCESS SEDIMENT IN SEDIMENT-IMPAIRED WATERSHEDS (2008).

134. As one North Coast Board staff member explained, having dedicated watershed stewards focused on TMDL implementation is valuable, but “[t]hat is an expensive way to go about implementing TMDLs.” Telephone Interview with Anonymous Regulator 2, *supra* note 126.

135. *Id.*

dairies for decades, but controls on nonpoint source pollution from dairies have become increasingly demanding.¹³⁶ The waste discharge requirements applicable to dairies now require a series of best management practices designed to isolate cows, and their manure, from waterways, including prohibitions on grazing in streams and a series of limits on land applications of manure.¹³⁷ Dairies also must monitor “stormwater runoff and/or surface waters near the facility” along with groundwater wells, and they are obligated to report the results of their monitoring.¹³⁸ The North Coast Board also has developed specific regulatory programs for lily bulbs growing in the Smith River Plain,¹³⁹ for irrigated agriculture in the Shasta¹⁴⁰ and Scott River basins,¹⁴¹ and for a range of activities on national forest lands.¹⁴² A separate program

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136. Telephone Interview with Anonymous Farmer (May 9, 2022) (notes on file with author); see CAL. REG’L WATER QUALITY CONTROL BD., N. COAST REGION, ORDER NO. R1-2019-0001, GENERAL WASTE DISCHARGE REQUIREMENTS FOR DAIRIES WITHIN THE NORTH COAST REGION 7–9 (2019) (listing a series of orders addressing dairies) [hereinafter ORDER No. R1-2019-0001].
137. See ORDER NO. R1-2019-0001, *supra* note 136, at 16–34 (describing best management practices).
138. *Id.* at 7.
139. *North Coast Regional Water Quality Control Board Plan for Discharges of Waste Associated with the Production of Lily Bulbs*, CAL. WATER BODS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/ [<https://perma.cc/C72T-4UJK>] (Dec. 10, 2021). Almost all of the world’s Easter lily bulbs are grown in one river valley near the California-Oregon border. *The Easter Lily Capital of the World Sits Right Here in Northern California*, ACTIVE NORCAL (Apr. 17, 2022), <https://www.activenorcal.com/the-easter-lily-capital-of-the-world-sits-right-here-in-northern-california/> [<https://perma.cc/5MWA-QDYV>].
140. CAL. REG’L WATER QUALITY CONTROL BD., N. COAST REGION, ORDER NO. R1-2018-0019, SHASTA RIVER TMDL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS 4-79.00–80.00 (2018) [hereinafter ORDER No. R1-2018-0019].
141. See *generally* CAL. REG’L WATER QUALITY CONTROL BD., N. COAST REGION, ORDER NO. R1-2018-0018, SCOTT RIVER TMDL CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS (2018) [hereinafter ORDER No. R1-2018-0018].
142. CAL. REG’L WATER QUALITY CONTROL BD., N. COAST REGION, ORDER NO. R1-2015-0021, WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR NONPOINT SOURCE DISCHARGES RELATED TO CERTAIN FEDERAL LAND MANAGEMENT ACTIVITIES ON NATIONAL FOREST SYSTEM LANDS IN THE NORTH COAST REGION 2–3 (2015) [hereinafter ORDER No. R1-2015-0021] (describing coverage for timber harvesting, road construction and maintenance, grazing, recreation, vegetation management, restoration projects, fire suppression, and fire recovery).

for nonpoint source pollution from vineyards is currently in the works,¹⁴³ as is a program for irrigated lands in the Tule River basin, which occupies the easternmost part of the region,¹⁴⁴ and the North Coast Board is implementing and supplementing a recent statewide order for cannabis cultivation.¹⁴⁵ The programs vary in their level of demands, particularly with respect to monitoring and reporting, and some (as discussed in more detail below) are preliminary forays into regulatory fields rather than fully developed programs.¹⁴⁶ But across the region, there is, or soon will be, at least some level of genuine regulatory coverage for nearly all major sources of nonpoint source pollution.¹⁴⁷

These programs vary in their elements, but they generally incorporate a few basic ingredients. The first is a general-but-conditional permission for certain categories of nonpoint source discharges. The Porter-Cologne Act refers to these general-but-conditional prohibitions as “waste discharge requirements” (WDRs).¹⁴⁸ A typical WDR might prohibit some types of activity, like allowing cattle to graze in a waterway,¹⁴⁹ or might allow other activities only if the regulated entity complies with a series of conditions, like developing

143. *North Coast Regional Water Board Program for Discharges of Waste Associated with Vineyards*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/Vineyards/ [<https://perma.cc/Y9S8-FTYQ>] (Aug. 11, 2022).

144. *North Coast Regional Water Board Program for Discharges of Waste Associated with Agricultural Lands in the Tule Lake Basin*, CAL. WATER BDS., https://waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/tule_lake/ [<https://perma.cc/4JNZ-WUHQ>] (Aug. 15, 2017).

145. See STATE WATER RES. CONTROL BD., ORDER WQ 2019-0001-DWQ, GENERAL WASTE DISCHARGE REQUIREMENTS AND WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF WASTE ASSOCIATED WITH CANNABIS CULTIVATION ACTIVITIES (2019); see also N. COAST REG’L WATER QUALITY CONTROL Bd., INVESTIGATIVE ORDER NO. R1-2019-0023 (REVISED): NORTH COAST REGIONAL SUPPLEMENT TO ANNUAL MONITORING AND REPORTING REQUIREMENTS FOR CANNABIS CULTIVATION GENERAL ORDER WQ 2019-0001-DWQ (2020).

146. See *infra* notes 198–207 and accompanying text.

147. For a series of general links to programs, see *Nonpoint Source Pollution*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/non_point_source/ [<https://perma.cc/5MJS-7Z7J>] (June 6, 2019).

148. CAL. WATER CODE § 13243 (“A regional board, in a water quality control plan or in waste discharge requirements, may specify certain conditions or areas where the discharge of waste, or certain types of waste, will not be permitted.”). See generally *id.* §§ 13260–13276 (setting forth requirements for WDRs).

149. *E.g.*, ORDER NO. R1-2019-0001, *supra* note 136 (“All confined animals shall be fenced or excluded from any surface water . . .”).

site-specific erosion control plans and submitting monitoring reports.¹⁵⁰ Second, most of the regulatory programs allow for waivers from the WDR, but the waivers also come with limits and conditions.¹⁵¹ Waivers generally are narrower in their coverage than WDRs, though some are still quite broad. Sometimes they are site- or company-specific,¹⁵² and sometimes they cover a class of activities across a region.¹⁵³ Third, most WDRs and conditional waivers require implementation of best management practices (BMPs), which are standardized practices expected to reduce or eliminate pollutant discharges.¹⁵⁴ Fourth and finally, the programs typically involve monitoring and reporting requirements. Sometimes those requirements exist as a default matter for all entities in the regulated group; dairy regulation, for example, works this way.¹⁵⁵ For other programs, like the regulatory programs for Scott and Shasta River valley agriculture, monitoring and reporting requirements only exist, for now, for properties for which the North Coast Board has issued a specific request.¹⁵⁶

III. LESSONS FROM THE NORTH COAST

This Part considers some preliminary lessons from the North Coast experience. They are preliminary because most of the programs described here are relatively new and because the payoff from nonpoint source regulation often comes slowly.¹⁵⁷ Additionally, the standard caveats about a limited and qualitative case study apply. But even with those limitations, the North Coast experience can offer some guidance

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150. *See, e.g.*, CAL. REG'L WATER QUALITY CONTROL BD., N. COAST REGION, ORDER NO. R1-2004-0030, GENERAL WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES RELATED TO TIMBER HARVEST ACTIVITIES ON NON-FEDERAL LANDS IN THE NORTH COAST REGION (2004).
151. *E.g.*, CAL. REG'L WATER QUALITY CONTROL BD., N. COAST REGION, ORDER NO. R1-2014-0011, CATEGORICAL WAIVER OF WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES RELATED TO TIMBER HARVEST ACTIVITIES ON NON-FEDERAL LANDS IN THE NORTH COAST REGION (2014) [hereinafter ORDER NO. R1-2014-0011]; *see* CAL. WATER CODE § 13269(a)(2) (authorizing conditional waivers).
152. *E.g.*, *Private Forest Land*, *supra* note 101 (providing links to multiple company-specific waivers).
153. *E.g.*, ORDER NO. R1-2014-0011, *supra* note 151.
154. *E.g.*, ORDER NO. R1-2015-0021, *supra* note 142 (describing the role of BMPs in regulating activities on Forest Service lands).
155. ORDER NO. R1-2019-0001, *supra* note 136.
156. ORDER NO. R1-2018-0018, *supra* note 141; ORDER NO. R1-2018-0019, *supra* note 140.
157. Zoom Interview with Anonymous Regulator 1, *supra* note 84 (describing the importance of using “fifty-year planning” for nonpoint sources).

to people in other places who are contemplating taking on water quality regulation's greatest remaining challenge.

A. The Possibility of Nonpoint Source Regulation

Perhaps the most important lesson from the North Coast is the simplest and most obvious: nonpoint source regulation can happen. After so many years of leaving nonpoint sources outside the scope of meaningful Clean Water Act coverage,¹⁵⁸ it can seem as though nonpoint source regulation is very nearly impossible. Or, at least, it can seem like it is possible only where a particularly prominent resource, like the Chesapeake Bay, is under threat, and even then, only in controversial and geographically focused ways.¹⁵⁹

In the North Coast, in contrast, multiple regulatory programs have emerged, and they cover broad areas. The programs also have emerged over time, rather than just in one anomalous burst of activity, and they appear to be politically durable. In interviews, farming industry representatives told me their focus is on finding regulatory systems they can live with, winnowing away unnecessary constraints, and working with other farmers to anticipate and get ahead of regulatory initiatives, not eliminating regulatory coverage altogether.¹⁶⁰ That does not mean enacting regulatory programs was easy; it took a long time to get started, and regulators spoke of “hellacious” public meetings at initial stages of program development.¹⁶¹ And environmental advocates worry

158. See, e.g., David Zaring, *Best Practices*, 81 N.Y.U. L. REV. 294, 337 (2006) (citing J.B. Ruhl, *The Environmental Law of Farms: 30 Years of Making a Mole Hill Out of a Mountain*, 31 ENV'T L. REP. 10,203, 10,203 (2001)) (noting the common perception that nonpoint source regulation is a “regulatory failure”).

159. See *Frequent Questions About the Chesapeake Bay TMDL*, U.S. ENV'T PROT. AGENCY, <https://www.epa.gov/chesapeake-bay-tmdl/frequent-questions-about-chesapeake-bay-tmdl> [<https://perma.cc/7JMK-2G8U>] (Apr. 26, 2022) (describing the TMDL, but also noting that it is “unique”). Even for the Chesapeake Bay, progress toward effective regulation of agricultural pollution has been difficult. See Karl Blankenship, *New Data Shows Less Progress Toward Chesapeake Cleanup Goals*, BAY J. (Feb. 20, 2022), https://www.bayjournal.com/news/pollution/new-data-shows-less-progress-toward-chesapeake-cleanup-goals/article_d18b07a6-9274-11ec-b18f-2375dcb10056.html [<https://perma.cc/QB3P-XJ5R>]; see also *Chesapeake Bay and Nonpoint Source Programs/TMDLs*, HARV. L. SCH. (Sept. 27, 2017), <https://eelp.law.harvard.edu/2017/09/chesapeake-bay-and-non-point-source-programs-tmdls/> [<https://perma.cc/5V27-VZ36>] (providing a recent timeline of TMDL implementation and a summary of some implementation-related political conflicts).

160. Telephone Interview with Anonymous Farmer, *supra* note 136; Zoom Interview with Anonymous Agricultural Representative (May 4, 2022) (notes on file with author).

161. Telephone Interview with Anonymous Regulator 2, *supra* note 126.

that the programs that exist do not have strong enough teeth.¹⁶² But they do exist, and they don't appear to be going away, and that alone is significant.

B. The Potential of Familiar Regulatory Models

A second striking feature of nonpoint source regulation in the North Coast is how much it has drawn on familiar regulatory tools. Some of the academic literature on nonpoint source regulation suggests that this might not work; authors have argued that regulating sources so diffuse will require innovative new regulatory mechanisms that are quite different from the toolboxes of traditional environmental law.¹⁶³ But while nonpoint source regulation in the North Coast does involve innovation, it also relies heavily on established practices.

One set of familiar tools comes from the Clean Water Act itself. The Act's much-maligned toolbox for nonpoint source regulation primarily involves TMDLs and state planning.¹⁶⁴ In many places, writing TMDLs and crafting plans have both been empty exercises.¹⁶⁵ But in the North Coast, both have mattered. The Garcia River TMDL and implementation plan, for example, are widely perceived as transformational documents that helped restore a river.¹⁶⁶ Likewise, regulatory permitting systems in the Shasta and Scott River valleys have arisen directly out of TMDLs.¹⁶⁷ The overall story is mixed; regulators and environmental advocates alike told me that other TMDLs had been less effective as spurs to action, and regulators worried that staff time devoted to TMDL preparation might sometimes have been better spent in other ways.¹⁶⁸ But while TMDLs and plans

162. Zoom Interview with Anonymous Environmental Advocate (Mar. 25, 2022) (notes on file with author).

163. *E.g.*, Ruhl, *supra* note 5, at 329, 333–34 (“[F]arms present a special case in environmental law and require a special response.”). Ruhl follows this observation with a series of suggestions for innovative ways to address agricultural pollution, and I think his suggestions are valuable. My point here is just that more traditional regulatory approaches can also work.

164. *See supra* notes 30–36 and accompanying text.

165. *See* Owen, *supra* note 28, at 461–64.

166. *See* California State Water Resources Control Board—Web Support, *supra* note 85.

167. *See Fact Sheet: Implementation of the Scott River TMDL Conditional Waiver of Waste Discharge Requirement Program*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/scott_river/180530/20180514_ScottTMDLWaiverApproach_FACT_SHEET.pdf [<https://perma.cc/XE5U-MHRA>] (last visited Nov. 25, 2022); *Shasta River TMDL*, CAL. WATER BDS., https://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/shasta_river/ [<https://perma.cc/5H9C-DZM8>] (Nov. 23, 2022).

168. Zoom Interview with Anonymous Regulator 1, *supra* note 84 (describing “mixed feelings” about the emphasis on TMDL production).

might not have been the optimal way to spend resources in all circumstances, they also clearly are not sideshows.

A second set of tools—the use of WDRs, categorical waivers, and site-specific waivers—comes from the Porter-Cologne Act,¹⁶⁹ but its basic structure will be familiar to any Clean Water Act lawyer. WDRs and categorical waivers are much like general permits, and site-specific waivers are much like specific permits.¹⁷⁰ The basic idea, with both the WDR waiver system and with general and specific permits, is to create a standardized default set of requirements that regulated entities can follow, thus providing predictability and streamlining, while also allowing those regulated entities that want something more individually tailored to spend the time and money necessary to help regulators develop a more site-specific approach.¹⁷¹

A third main tool employed for nonpoint source regulation—BMPs—will again be familiar to most water quality lawyers.¹⁷² BMPs already are widely used for stormwater regulation, as well as in many other areas of environmental regulation.¹⁷³ They make sense in settings where the effectiveness of a practice is widely understood but monitoring site-specific outcomes is difficult. In addition, the specific BMPs the North Coast Board tends to use are often familiar. Fencing cattle out of streams, keeping dirt roads in good repair, and limiting logging in riparian buffer zones and on steep slopes are all relatively straightforward and traditional measures, many of which would probably be similarly effective in other states.¹⁷⁴

169. See CAL. WATER CODE § 13263 (requiring waste discharge requirements); *id.* § 13269 (allowing waivers).

170. See Dave Owen, *Regional Federal Administration*, 63 UCLA L. REV. 58, 97–98 (2016) (describing tailoring of general permits); Eric Biber & J.B. Ruhl, *The Permit Power Revisited: The Theory and Practice of Regulatory Permits in the Administrative State*, 64 DUKE L.J. 133, 162–63 (2014) (describing Clean Water Act general and specific permitting).

171. See Biber & Ruhl, *supra* note 170, at 190–91.

172. See Gould, *supra* note 1, at 479–80 (describing BMPs and the Clean Water Act provisions that emphasize them).

173. See *id.*; Zaring, *supra* note 158, at 326–30 (describing EPA’s use of BMPs to address nonpoint source pollution). Zaring’s account treats BMPs as voluntary, and sometimes they are, but in the settings I describe (as well as in stormwater permitting), BMPs are generally mandatory—though sometimes flexibly defined—permit conditions.

174. See U.S. ENV’T PROT. AGENCY, EPA-841-B-05-001, NATIONAL MANAGEMENT MEASURES TO CONTROL NONPOINT SOURCE POLLUTION FROM FORESTRY (2005) (listing standard types of BMPs); U.S. ENV’T PROT. AGENCY, EPA-841-B-03-004, NATIONAL MANAGEMENT MEASURES FOR THE CONTROL OF NONPOINT POLLUTION FROM AGRICULTURE (2003) (describing livestock exclusion from sensitive areas as a basic BMP for grazing).

The point here is not that nonpoint source regulation is cookie-cutter. There are important differences from place to place, and regulators and regulated entities alike cautioned that attention to the distinctive human relationships within regulated areas is crucially important.¹⁷⁵ But even if regulation of nonpoint source pollution is in some ways a sophisticated craft, it is not rocket science, and it does not require the invention of dramatically new regulatory tools.

C. The Challenges of Nonpoint Source Regulation

The discussion so far has emphasized that in the North Coast, at least, political and technical obstacles to nonpoint source regulation have proven surmountable, at least so far. But that does not mean nonpoint source regulation is easy. Regulators, the regulated, and environmental advocates all identified several significant challenges.

One challenge is spatial scale. The North Coast region is huge, and the North Coast Board does not have enough staff for regulators to get to know each stream bend and human relationship in each watershed.¹⁷⁶ That means monitoring, enforcement, and dialogue are all spread thin. Additionally, unlike industrial or wastewater treatment plant effluent, which often comes from a relatively small set of major sources, nonpoint source pollution can come from many places across a landscape.¹⁷⁷ For these reasons, it is often difficult to determine, based on data, the extent to which a particular waterway's problems are coming from a particular source, or the extent to which a change in practices will improve water quality. Regulators instead can rely on generalized knowledge. That generalized knowledge may be informed and accurate,¹⁷⁸ but the absence of source-specific analysis for complex water quality concerns, like sediment, can be frustrating to landowners, many of whom would prefer a more defined attribution of the problems they are being asked to help solve.¹⁷⁹

175. See Zoom Interview with Anonymous Regulator 4 (May 9, 2022) (notes on file with author) (“This isn’t a thing you can regulate from afar.”); Zoom Interview with Anonymous Regulator 5 (Apr. 25, 2022) (notes on file with author) (emphasizing the importance of understanding and working with the culture of farming communities).

176. See Zoom Interview with Anonymous Regulator 1, *supra* note 84.

177. See *Simsbury-Avon Pres. Soc’y, LLC v. Metacon Gun Club, Inc.*, 575 F.3d 199, 220–21 (2d Cir. 2009) (noting the “diffuse” nature of nonpoint source pollution).

178. For many types of BMPs, as one North Coast Board staff member explained, “Just through experience, we’ve seen what doesn’t work and we see what does work.” Telephone Interview with Anonymous Regulator 3, *supra* note 129.

179. Zoom Interview with Anonymous Agricultural Representative, *supra* note 160.

A related challenge is the difficulty of measuring the outcomes of regulatory interventions.¹⁸⁰ Monitoring overall watershed health can be straightforward in some ways; salmonids are useful indicator species.¹⁸¹ But collecting good monitoring data can be difficult and expensive.¹⁸² Additionally, even where those data are available, determining why a watershed's recovery is proceeding or stagnating can be challenging. Many water quality problems are at least partly the legacy of historic logging and road-building practices, and some improvements may still be deriving from the decades-ago cessation of those activities rather than from current regulatory requirements.¹⁸³ As one North Coast Board staff member explained, "The bottom line is that in the nonpoint source world, it's just a grand landscape experiment. Everybody's really using their best professional judgment as to what the right BMPs are to accomplish protections."¹⁸⁴ And being in the middle of an experiment can be challenging for everyone involved.

A final challenge is the relationship-driven nature of nonpoint source regulation. Setting nonpoint source controls is not like setting fuel-economy standards for the automobile industry; regulators cannot just establish a simple, clear set of standards for an entire industry and then focus on the compliance of a discrete set of products. Instead,

180. Telephone Interview with Anonymous Regulator 2, *supra* note 126 ("We talked about adaptive management, which is great in concept, but we're not collecting enough information in the form of water quality monitoring, for example, or even habitat monitoring, to really be able to adapt quickly when we see that a given set of techniques isn't really panning out as we wish.").

181. See *Understanding Napa County Watersheds: Steelhead and Salmon*, NAPA CNTY. RES. CONSERVATION DIST., https://www.napawatersheds.org/managed_files/Document/3261/Steelhead%20&%2338;%20Salmon%20Factsheet.pdf [<https://perma.cc/RF8G-PKMR>] (last visited Nov. 26, 2022) ("Migratory fish, including steelhead and salmon, are *indicator species*, meaning they are highly sensitive to environmental disturbance such as habitat alteration and pollution, and therefore, provide an early warning sign of ecosystem deterioration.").

182. See Eric Biber, *The Problem of Environmental Monitoring*, 83 U. COLO. L. REV. 1, 4 (2011).

183. The regulator explained:

When it comes to impairments, nonpoint source impairments in most of our North Coast watersheds, there's also the question of legacy impacts that still remain on the landscape from even going back to the 1850s and the large-scale logging that began then, and the way in which that logging was done. Which transformed stream channel—the hydrology of a lot of our streams What that means is that source control, contemporary source control, is only going to ever get us so far, and that [what] we really need is some way to invest in restoration.

Telephone Interview with Anonymous Regulator 2, *supra* note 126.

184. *Id.*

establishing nonpoint source programs requires going onto people's property, listening to their concerns, and talking with them, all in hopes of building both acceptance of the program and controls that will respond meaningfully to site-specific challenges.¹⁸⁵ That does not mean everything must be bespoke; a generalized prohibition on letting cattle graze in streams, for example, is both reasonable and potentially enforceable. But regulators and the regulated alike consistently emphasized that in many settings, moving from non-regulation to meaningful regulation requires extensive dialogue and attention to relationships.¹⁸⁶

D. The Importance of Complementary Tools

While North Coast Board staff see value in their nonpoint source programs, they are not relying solely on nonpoint source regulatory controls. In many places in the watershed, they—along with a variety of conservation partners—are also pursuing dam and culvert removals or replacements.¹⁸⁷ Many of these projects are small; one is the most ambitious dam-removal project in history.¹⁸⁸ Conservation groups and public agencies also are working on a variety of other restoration projects, including placing woody debris in stream channels and planting shade vegetation.¹⁸⁹ Government grants and private funding

185. See interviews cited *supra* note 175.

186. Telephone Interview with Anonymous Regulator 2, *supra* note 126 (“[W]e have one staff in Scott and another staff in the Shasta, and their jobs were to call up ranchers and one by one schedule appointments to go inspect their property, share with them the requirements of this new waiver, get screamed at, sometimes get threatened. Slowly but surely, help people understand this new regulatory landscape.”).

187. See *North Coast Regional Water Quality Control Board, Restoration Projects*, CALIFORNIA WATER BOARDS, https://www.waterboards.ca.gov/northcoast/water_issues/programs/Restoration/ (last visited June 26, 2022) [<https://perma.cc/C3TH-UY83>].

188. See *Klamath River Renewal Project*, KLAMATH RIVER RENEWAL CORPORATION, <https://klamathrenewal.org/the-project/> [<https://perma.cc/GD8K-NBT3>] (last visited June 26, 2022); *Overview of Klamath Dam Removal and Project Site Restoration Activities, Schedules, and Permitting Approach*, NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD (Dec. 10, 2020), https://www.waterboards.ca.gov/northcoast/board_info/board_meetings/12_2020/pdf/3/Klamath_Dam_Removal_Restoration_Activities_Overview_EOSR_Final.pdf [<https://perma.cc/N8HZ-BP9G>].

189. See, e.g., *Eel River*, TROUT UNLIMITED, <https://www.northcoastcohoproject.org/new-page-2> [<https://perma.cc/Z2RW-TPJW>] (last visited June 27, 2022) (listing and linking to additional descriptions of many restoration projects); *Shasta River Habitat Restoration Builds Salmon's Resilience to Rising Temperatures*, NOAA FISHERIES (July 21, 2021), <https://www.fisheries.noaa.gov/feature-story/shasta-river-habitat-restoration-builds-salmons-resilience-rising-temperatures> [<https://perma.cc/5M3A-W9AC>].

have allowed significant conservation purchases.¹⁹⁰ In the Garcia River watershed, for example, such purchases have removed huge areas of land, much of it along the river and its major tributaries, from clear-cutting.¹⁹¹

Other regulatory programs also apply, and they often intertwine with nonpoint source regulation. Perhaps most importantly, and as discussed above, private timber harvests are subject to the Z'berg Nejedly Forest Practices Act, which includes extensive requirements designed to protect water quality and assigns the North Coast Board a complementary role in timber harvest plan review.¹⁹² Many of the North Coast's salmonid runs are protected by the federal Endangered Species Act,¹⁹³ which means the National Marine Fisheries Service also plays an important regulatory role.¹⁹⁴ In addition to regulating water quality, California's State Water Resources Control Board also regulates water diversions,¹⁹⁵ as does the California Department of Fish and Wildlife.¹⁹⁶ And local governments also have sometimes added their own regulatory

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190. *See, e.g., Places We Protect: Shasta River, California*, THE NATURE CONSERVANCY, <https://www.nature.org/en-us/get-involved/how-to-help/places-we-protect/shasta-river/> [<https://perma.cc/KDP4-KFQ3>] (last visited June 27, 2022); *Eel River Canyon Preserve Acquisition*, THE WILDLANDS CONSERVANCY, <https://wildlandsconservancy.org/conservation/eelrivercanyonpreserveacquisition> [<https://perma.cc/BGT7-BGW9>] (last visited June 27, 2022).
191. *See Garcia River Forest*, THE CONSERVATION FUND, <https://www.conservationsfund.org/projects/garcia-river-forest> [<https://perma.cc/NQ9X-HSWU>] (last visited June 26, 2022). As The Conservation Fund's website explains, timber harvesting does still occur, but subject to a conservation easement and using methods designed to sequester carbon and protect water quality. *Id.*
192. *See supra* notes 128–29 and accompanying text; CAL. PUB. RES. CODE § 4582.6 (West 2021).
193. 16 U.S.C. §§ 1531–1544.
194. *See Coho Salmon (Protected)*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/species/coho-salmon-protected> [<https://perma.cc/6VKC-XUUF>] (last visited June 27, 2022); *California Coastal Chinook Salmon*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/california-coastal-chinook-salmon> [<https://perma.cc/SYU5-YS6H>] (last visited June 27, 2022); *Northern California Steelhead*, NOAA FISHERIES, <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/northern-california-steelhead> [<https://perma.cc/2D4Y-62WP>] (last visited June 27, 2022).
195. *See Siskiyou Cnty. Farm Bureau v. Dept. of Fish & Wildlife*, 188 Cal. Rptr. 3d. 141, 169–70 (Ct. App. 2015) (describing the California State Water Resources Control Board's role in regulating water rights).
196. *See generally id.* (upholding the Department of Fish and Wildlife's authority to regulate water diversions).

overlays, including ordinances designed to address cannabis production.¹⁹⁷

Teasing out the relative payoffs of these different activities isn't easy, and North Coast Board staff consistently agreed that using a portfolio of approaches is important.¹⁹⁸ But they also assigned nonpoint source regulation an important role within that portfolio. As one explained:

I think that the benefit we're gaining in a place like the Scott and Shasta Rivers and the Klamath River, certainly in the Garcia River, is that by virtue of our presence and . . . using a nonpoint source regulatory tool, we're able to coordinate with others who have additional authorities and additional resources and help to be a motivator for bringing those other resources and tools into some common purpose.¹⁹⁹

E. The Value of Phased Regulation

Perhaps the most important lesson from the North Coast experience concerns the ways in which a nonpoint source regulatory program can develop. From reading some historical accounts of environmental law, one might think that this emergence would happen rapidly. That literature often speaks of the rapid development of environmental law in the 1970s and 1980s and then of subsequent stasis.²⁰⁰ As a description of federal legislative activity, that account is mostly true (though legislation providing subsidies for environmentally beneficial technologies has continued to be popular). But a narrow focus on legislative development can obscure the extent to which implementation approaches can evolve, often incrementally.²⁰¹

The North Coast's nonpoint source regulatory programs offer a case study in incremental-but-significant evolution. The programs did not burst into existence immediately following their legislative authorization, or even for many years after Congress and the California Legislature enacted the statutes that laid the foundation for present-day action.²⁰² Instead, new programs have emerged over time and are continuing to develop.

197. See Ryan Stoa, *Marijuana Agricultural Law: Regulation at the Root of an Industry*, 69 FLA. ST. L. REV. 297, 357–61 (2017) (describing Humboldt County's ordinance).

198. *E.g.*, Telephone Interview with Anonymous Regulator 2, *supra* note 126.

199. *Id.*

200. See Dave Owen, *Little Streams and Legal Transformations*, 2017 UTAH L. REV. 1, 45–46, 52 (summarizing and critiquing these narratives).

201. See *id.* at 53.

202. The California Legislature enacted the Porter-Cologne Act in 1969, and Congress passed the Clean Water Act in 1972. See *City of Burbank v.*

Importantly, the North Coast's regulatory initiatives also do not burst onto the scene fully formed. In areas where regulators have not previously worked, they sometimes begin with programs that establish requirements but do not require monitoring and reporting unless regulators specifically ask for it, and they initially target their site visits.²⁰³ Those programs might later evolve so that monitoring and reporting become mandatory and BMPs are more demanding, but the initial touch is gentle. Regulators told me this approach was deliberate. They stressed the importance of "getting them used to working with us"²⁰⁴ and the relative advantages of working with people who have already been regulated,²⁰⁵ and emphasized that starting with a soft regulatory approach and a lot of listening can be a way of building relationships and credibility and "getting our feet on the ground to learn and problem solve with the landowners."²⁰⁶ Agricultural representatives also emphasized the importance of incremental evolution and dialogue. "Work together," one advised. "You need to sit down at the table with regulators"²⁰⁷

From these accounts, a hopeful story begins to emerge—a story that explains how the United States might begin to move toward more effective water quality protection. Rather than needing to transition all at once into a new world of nonpoint source regulation, state regulators can proceed sector by sector, using extensive interaction to build their knowledge and credibility and to give regulated entities chances to learn to live with—and to help shape—the evolving legal regimes.²⁰⁸

State Water Res. Control Bd., 103 P.3d 862, 865 (Cal. 2005) (describing the enactment and amendment of the two statutes). With the exception of the integration of water quality protection into timber harvest permitting, the initiatives I have described are much more recent.

203. See *supra* note 156 and accompanying text (describing regulation in the Scott and Shasta River valleys); see also interviews cited *supra* note 175.

204. Telephone Interview with Anonymous Regulator 2, *supra* note 126.

205. Zoom Interview with Anonymous Regulator 1, *supra* note 84; Telephone Interview with Anonymous Regulator 2, *supra* note 126 ("[T]he first permit that we issued started out with very—it was baby steps. Basically just getting the dairymen into the regulatory fold, used to working with a regulatory agency, thinking about water quality protection, and making contacts with their [regional conservation districts] and the natural resource conservation district to get support for building the kinds of BMPs that would be helpful.").

206. See interviews cited *supra* note 175.

207. Telephone Interview with Anonymous Farmer, *supra* note 136.

208. A related question is how government agencies might fund this development of new programs. In California, one answer is fees; the Porter-Cologne Act authorizes regulators to charge fees for permits and other regulatory permissions. See Cal. Water Code § 13260(d)(1)(A). But additional funding for voluntary conservation efforts and restoration projects can be a valuable inducement and supplement.

Combinations of federal, state, and local staff can bring in general expertise while also relying on site-specific knowledge and communication. As programs grow, that knowledge and expertise can diffuse through both private and public sectors, leading to changed practices even where direct regulatory control does not yet exist.²⁰⁹ And while new legislation will sometimes be helpful, much can be done by starting with familiar legal tools.²¹⁰ None of this will be easy, and it will likely be harder in places that lack California's statewide environmental politics and the North Coast's inspiring landscapes.²¹¹ But it can be done.

CONCLUSION

This symposium comes at a fraught time for environmental law. The climate crisis is well underway, and other major environmental challenges remain, yet for four years, the Trump Administration flaunted its opposition to environmental protection. Now the Supreme Court, which may stay in ultraconservative hands for decades, is treating environmental regulation as a “bogeyman,” to use Justice Kagan's apt words,²¹² and is crafting new doctrines specifically designed to limit the scope of regulatory protections, even where the ordinary meaning of statutory text would lead to a different result.²¹³ As this Article goes to press, the scope of Clean Water Act jurisdiction appears to be the next item on the chopping block.²¹⁴ And the likelihood that Congress will check the Court—let alone enact major new regulatory statutes—seems slim.²¹⁵ Old protections seem brittle, and new solutions are hard to even contemplate.

209. See Short & Duane, *supra* note 128, at 69 (“[E]ffective regulations can lead to the adoption of prescribed BMPs beyond the regulated area and . . . third-party professional consultants facilitate this process.”).

210. See *supra* notes 176–86 and accompanying text.

211. See Zoom Interview with Anonymous Regulator 5, *supra* note 175 (noting that regulation is also easier to understand in the North Coast, and because many watersheds are small, “you can see the whole story”); see also Zoom Interview with Anonymous Regulator 4, *supra* note 175.

212. *West Virginia v. Env't Prot. Agency*, 126 S. Ct. 2587, 2630 (2022) (Kagan, J. dissenting).

213. See *id.* at 2632.

214. See *Sackett v. Env't Prot. Agency*, 142 S. Ct. 896 (2022) (granting review in a case addressing the geographic scope of Clean Water Act jurisdiction).

215. See Richard Lazarus, *The Supreme Court Just Upended Environmental Law at the Worst Possible Moment*, WASH. POST (June 30, 2022), <https://www.washingtonpost.com/opinions/2022/06/30/supreme-court-just-upended-environmental-law-worst-possible-moment/> [https://perma.cc/GG3X-HB64] (“Congress has been broken for more than 30 years in its essential lawmaking function . . .”).

The point of this Article is not to diminish these concerns. But it does illustrate how different pathways are possible and even underway, even in difficult times. In a relatively conservative part of California, a regulatory agency is making its way toward addressing the Clean Water Act's greatest unsolved problems. The Agency is making its progress slowly; fixing nonpoint source pollution is a technical, political, and administrative challenge, and many years of work are still to come. It also is working with a lot of help, including constructive engagement from many of the people whom it is regulating.²¹⁶ But if the recovering salmon populations of the Garcia River are a harbinger of things to come, then the North Coast story illustrates how old environmental laws can still deliver new results.

216. I say this based on multiple conversations with regulators and with regulated entities. Notwithstanding the standard stereotypes of adversarial dynamics, overbearing regulators, and knee-jerk anti-regulatory opposition, I have heard many stories, in this research project and others, of thoughtful, complex, and ultimately constructive relationships.