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MONEY, MANDATES, AND WATER MANAGEMENT: FORESHADOWING A FLORIDA DISASTER

Keith W. Rizzardi*

Repeated failures to properly regulate, manage and maintain water resources and infrastructure creates enormous risks and consequences, across the U.S. and beyond. Applying those lessons, this study of facts, data, and law foreshadows a water management disaster in Florida. At the South Florida Water Management District, a critical regional agency, budget and staffing are now below 1996 levels. Regulatory scrutiny and enforcement have declined. Infrastructure is inadequately maintained. Rainy day reserve funds are kept at bare minimums. Important new laws are merely unfunded mandates. Florida officials must recognize the magnitude of the problems, offer meaningful leadership to restore water management finances and capabilities, and protect the public before the next flood, harmful algal bloom, or other disaster comes.

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I. AN ANGRY PUBLIC

Budgets have serious legal consequences. They reflect priorities and determine an organization's capacity to act. When it comes to water management and flood control, history shows that our budgets and our laws can fail the people.

The low-lying nation of the Netherlands learned its hardest lessons during a devastating flood in 1953 because it failed to maintain its dikes. The United States experienced its share of water management catastrophes countless times along the Mississippi River, and more recently in New Orleans, New York, California, Texas, and North Carolina. Inevitably, Florida's turn will come, and, despite a parade of new laws and unfunded mandates, the facts and data portend disaster.

The South Florida Water Management District (SFWMD) is a vitally important political subdivision of the State of Florida. With jurisdiction over an area of 18,000 square miles, and more than 8 million people, the SFWMD operates and maintains a vast water management system of canals, dikes, levees, preserves, and structures that make the Greater Everglades and Kissimmee-Okeechobee-Everglades watershed inhabitable.[1] The SFWMD has regulatory permitting responsibilities, too.[2] Managing this complex region has long been a contentious affair, with stakeholders endlessly engaged in lobbying, legislating, and litigating.[3]

In 2018, U.S. Congressman Brian Mast, representing the Atlantic coast communities near Port Saint Lucie and Stuart, Florida, questioned a plan to lease publicly-owned lands to sugar growers.[4] Concerned that nutrient-enriched discharges from Lake Okeechobee had already triggered a series of harmful algal blooms along the Florida coastlines, Congressman Mast attended a public meeting and called on the SFWMD to consider other options.[5] The SFWMD Governing Board members declined, and Congressman Mast offered a harsh critique of the agency and its leaders in a

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1. *See Quick Facts and Figures*, S. FLA. WATER MGMT. DIST., https://www.sfwmd.gov/who-we-are/facts-and-figures (last visited Sept. 23, 2019) (listing SFWMD's primary water control system mechanisms).

2. *Permits*, S. FLA. WATER MGMT. DIST., https://www.sfwmd.gov/doing-business-with-us/permits (last visited Sept. 22, 2019).

3. John Fumero & Keith Rizzardi, *The Everglades Ecosystem: From Engineering to Litigation to Consensus-Based Restoration*, 13 ST. THOMAS L. REV. 667, 673 (2001).

4. Jim DeFede, *Congressman Calls On SFWMD Members To Resign*, CBS 4 MIAMI (Dec. 10, 2018), https://miami.cbslocal.com/2018/12/10/congressman-calls-sfwmd-mambers-resign/; *see also* Ali Schmitz, *Florida Gov. Ron DeSantis Asks All SFWMD Board Members to Resign*, J. SENTINEL (Jan. 10, 2019), https://www.jsonline.com/story/news/government/2019/01/10/gov-ron-desantis-asks-sfwmd-board-members-resign-florida/2540533002/ (describing debate regarding SFWMD).

5. DeFede, *supra* note 4.

televised interview: "I think the water management district is not being beholden to the people, being responsible to the residents of the state of Florida. I think they have been derelict in their duties and I think they should be replaced."[6]

Reasonable minds may differ over the Governing Board's decision that day,[7] and Congressman Mast will not be the last person to voice frustration with the SFWMD. But, as Professors Lawrence Susskind and Patrick Field explained in their book, *Dealing with an Angry Public*, public concern with institutional actions can become a spiraling problem:

> Such anger, absent a response, may lead to smaller government and lower tax levels, but it will undoubtedly also lead to cutbacks in essential public services, rising costs associated with privatization, holes in the safety net meant to guarantee public protection to those least able to fend for themselves, enormous increases in the cost of insurance, and huge losses in the value of private property currently protected by regulation and government action.[8]

Just as Susskind and Field predicted, Florida's water managers struggle to keep pace with the demands. Jim Moran, one of the SFWMD Governing Board members, acknowledged the funding crisis during a public meeting: "We need more money, we're broke . . . . It's one thing to cut back to the bone and still be able to run efficiently, but it's another thing to have the budget so lean you are not adequately doing flood control . . . ."[9]

Aware that accidents and extreme weather events will happen, this study explores the problems and the risks facing water managers, with special emphasis on the lessons that can be learned for South Florida. Part II provides comparative context, showing the billions of dollars at stake when water management fails. Part III turns to the varied responsibilities and risks facing the SFWMD. Part IV uses the agency's own reports and data to show how funding and staffing have fallen precipitously, raising concerns about the agency's capacity to pursue its mission and fulfill its legal responsibilities. Part V offers policy options requiring local leadership and legislative reform that could make a difference. Part VI offers the author's conclusions.

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6. *Id.*

7. *See* FLA. STAT. § 373.4598(3)(a) (2019) ("Any such lease must be terminated in accordance with the lease terms or upon the voluntary agreement of the lessor and lessee. In the event of any such lease termination, the lessee must be permitted to continue to farm on a field-by-field basis until such time as the lessee's operations are incompatible with implementation of the EAA reservoir project, as reasonably determined by the lessor.").

8. LAWRENCE SUSSKIND & PATRICK FIELD, DEALING WITH AN ANGRY PUBLIC 5 (1996).

9. Kim Miller, *No Tax Increase in Water District Budget, but Opposition from Unusual Source*, PALM BEACH POST (Sept. 25, 2018), http://weatherplus.blog.palmbeachpost.com/2018/09/25/no-tax-increase-in-water-district-budget-but-opposition-from-unusual-source/.

II. BILLION DOLLAR CONSEQUENCES

The unexpected will happen in water management. When it does, water managers scramble to respond, costs are incurred, and a study follows. Inevitably, the conclusion will be that the losses and deaths could have been mitigated or avoided. A brief—albeit anecdotal—suite of case histories put matters in perspective. The cases document similar underlying issues of high risks and dire consequences and illustrate repeated failures of governments to adequately prepare.

A. The Netherlands: The Great Flood of 1953

In 1953, the levee that protected the people of the Netherlands from the North Sea failed.[10] Thousands of people died because the dikes had been poorly maintained and because military bunkers and infrastructure, which were embedded into the dikes during World War II, further compromised the dikes' integrity.[11]

Today, the Dutch possess a "never again" mentality about the flooding they once endured. Dutch engineers are continually engaging in a comprehensive effort to upgrade their infrastructure. Preparing for rising seas, the current Delta Programme represents an expensive effort: the Netherlands, a nation 16,412 square miles, with a population of roughly 17 million people, is currently investing €1.3 billion annually into upgrading its water management regime, for an anticipated total of €17.5 billion (or roughly $19.8 billion).[12] The costs of realistic water defense are measured in billions. While many other stories could be told from elsewhere on Planet Earth, this article focuses on similar risks and events in the United States.[13]

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10. Herman Gerritsen, *What happened in 1953? The Big Flood in the Netherlands in Retrospect*, 363 PHIL. TRANSACTIONS ROYAL SOC'Y 1271, 1276 (2005).

11. *Id.* at 1271, 1275.

12. DELTA PROGRAMME 2019, CONTINUING THE WORK ON THE DELTA: ADAPTING THE NETHERLANDS TO CLIMATE CHANGE IN TIME 77 (2018); *see also Facts and Figures*, holland.com/global/tourism/information/facts-figures.htm (last visited Oct. 27, 2019) (noting population and surface area of the Netherlands).

13. This article uses the Netherlands as an international example because of its low-lying geography and use of technology, which made it a useful comparison with Florida. However, countless other examples of looming water management crises exist in the world. India, for example, is at risk of running out of water, while simultaneous dealing with massive flooding and water quality pollution problems. *See, e.g.*, Raj Bhagat Palanichamy, *How Does a Flood-Prone City Run Out of Water? Inside Chennai's "Day Zero" Crisis*, WORLD RES. INST. (June 25, 2019), https://www.wri.org/blog/2019/06/how-does-flood-prone-city-run-out-water-inside-chennai-day-zero-crisis (referencing the devastating 2015 Chennai flood caused by poor management during dry conditions that killed hundreds and displaced many more); Jessie Yeung et al., *India Has Just Five Years to Solve Its Water Crisis, Experts Fear. Otherwise Hundreds of Millions of Lives Will be in Danger*, CNN (July 3, 2019), https://www.cnn.com/2019/06/27/india/india-water-crisis-intl-

B. Southeast Louisiana: Hurricane Katrina in 2002

During Hurricane Katrina in 2005, the levees failed and devastated the New Orleans region.[14] More than 1,800 people died, thousands more were displaced, and property damages exceeded $40 billion.[15] In the ensuing litigation, victims and courts pointed to Congress and the U.S. Army Corps of Engineers.[16] The construction, operation, and failure to maintain the 76-mile-long navigational channel known as the Mississippi River-Gulf Outlet (or MR-GO) caused the disaster.[17] The Army Corps knew of the risks, but Congress failed to fund the necessary changes, as a court opinion explained:

> [B]y 2004, the Army Corps no longer had any choice but to recognize that a hurricane inevitably would provide the meteorological conditions to trigger the ticking time bomb created by a substantially expanded and eroded MR-GO and the resulting destruction of wetlands that had shielded the St. Bernard Polder for centuries.
>
> In August 2005, when Hurricane Katrina struck the St. Bernard Polder, the Army Corps was still discussing whether to close the MR-GO and whether Congress would fund the closure. Neither Congress nor the Army Corps had the opportunity to correct the situation before the MR-GO induced substantially increased storm

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hnk/index.html (discussing how around 100 million people across India are on the frontlines of a nationwide water crisis and how 21 cities are poised to run out of water by next year). Similar stories about water risks and the desperate need for adaptations could be told about China and South Africa. *See, e.g.*, Katelyn Newman, *China's Water Problems Run Deep: While Its Southern Taps Won't Run Dry, China's North Faces Pollution and Distribution Challenges*, U.S. NEWS & WORLD REP. (April 20, 2018), https://www.usnews.com/news/best-countries/articles/2018-04-20/chinas-history-of-water-problems-parallels-south-africas-day-zero (discussing China's massive South-to-North Water Diversion Project intended to redistribute resources from the country's water-rich south to its water-poor north); Christian Alexander, *Looking Back on Cape Town's Drought and 'Day Zero,'* CITY LAB (April 12, 2019), https://www.citylab.com/environment/2019/04/cape-town-water-conservation-south-africa-drought/587011/ (discussing South Africa's effort to stave off Day Zero and long-term efforts to diversify their water resources).

14. *See Hurricane Katrina*, HISTORY (Nov. 9, 2009), https://www.history.com/topics/natural-disasters-and-environment/hurricane-katrina-1-video (describing the effects of Hurricane Katrina).

15. *Hurricane Katrina Statistics Fast Facts*, CNN (Aug. 8, 2019), https://www.cnn.com/2013/08/23/us/hurricane-katrina-statistics-fast-facts/index.html.

16. Campbell Robertson & John Schwartz, *Decade After Katrina, Pointing Finger More Firmly at Army Corps*, N.Y. TIMES (May 23, 2015), nytimes.com/2015/05/24/us/decade-after-katrina-pointing-finger-more-firmly-at-army-corps.html.

17. St. Bernard Parish Gov't v. United States, 121 Fed. Cl. 687, 690-91 (2015).

> surge that caused catastrophic flooding on private property—as well as the loss of human life.[18]

Despite these facts, the Army Corps may eventually escape liability based on the doctrine of sovereign immunity.[19] Still, the deadly consequences of Katrina forced changes. To benefit a Southeast Louisiana region of 4,000 square miles and 1.5 million people, and to reduce the risk of hurricane and storm damage in metropolitan New Orleans, the U.S. Army Corps of Engineers embarked on the largest civil works project in history—investing $14 billion dollars.[20] At a local level, the City of New Orleans recognized the risks and pursued a referendum in 2017 to create a "rainy day" fund, a City Charter Amendment, and created the Savings Fund of the City of New Orleans.[21] Once again, the evidence shows that water infrastructure needs huge amounts of money, with costs in the billions.

C. New York: Hurricane Sandy in 2012

When Hurricane Sandy hit New York and New Jersey in October 2012, it had been downgraded to a post tropical cyclone with 80-mile-per-hour winds.[22] Still, the nine-foot storm surge inundated coastal communities.[23] Neighborhoods burned, nuclear power plants shut down, and the energy and transportation grids suffered lasting damage.[24] More than 40 people died, and direct damages totaled $19 billion.[25] The Federal Emergency Management

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18. *Id.* at 747.

19. *See* St. Bernard Parish Gov't v. United States, 887 F.3d 1354, 1362 n.6 (Fed Cir. 2018) (indicating that another group of plaintiffs lost in a tort action due to the government's immunity from liability).

20. U.S. ARMY CORPS OF ENG'RS, 1 COMPREHENSIVE ENVIRONMENTAL DOCUMENT PHASE I GREATER NEW ORLEANS HURRICANE AND STORM DAMAGE RISK REDUCTION SYSTEM ES-1 (2013), https://www.mvn.usace.army.mil/Portals/56/Users/194/42/2242/CED%20Volume%20I%20Compiled.pdf; *see also Regional Overview*, NEW ORLEANS REG'L PLAN. COMM'N, http://www.norpc.org/regional_overview.html (last visited Sept. 12, 2019) (providing additional statistics).

21. NEW ORLEANS, LA., CODE § 6-201(2)(a), (b) (2019); ADMINISTRATION OF MAYOR LATOYA CANTRELL, CITY OF NEW ORLEANS 2019 OPERATING BUDGET 18 (2018).

22. *Hurricane Sandy,* NAT'L WEATHER SERV., https://www.weather.gov/okx/hurricanesandy (last visited Sept. 11, 2019).

23. *See id.* (explaining record tide levels resulting from Hurricane Sandy storm surge occurring near the time of high tide along the Atlantic Coast).

24. *Hurricane Sandy Fast Facts*, CNN (Oct. 29, 2018), https://www.cnn.com/2013/07/13/world/americas/hurricane-sandy-fast-facts/index.html.

25. *Lower Manhattan Coastal Resiliency*, N.Y.C. ECON. DEV. CORP. (Apr. 8, 2019), https://www.nycedc.com/project/lower-manhattan-coastal-resiliency.

Agency (FEMA) estimated total costs at $70.2 billion.[26] Subsequent analysis attributed the problems to regulatory and planning missteps:

> The storm caused significant flooding and erosion in most of the areas the [FEMA Mitigation Assessment Team] visited. Flooding caused widespread damage to structures, critical facilities, and infrastructure. Most damage to low-rise buildings resulted from inundation, and oceanfront low-rise buildings were damaged by wave action, erosion, and scour. Many low-rise one- and two-family dwellings in coastal areas were of older construction that pre-dates community adoption of floodplain regulations. Very few of these homes were elevated to the appropriate base flood elevation (BFE). Most damage to mid- and high-rise buildings resulted from the inundation of mechanical, electrical, plumbing, and other critical systems. Many of these systems were not elevated to or above the BFE. In addition to building damage, utility outages were widespread.[27]

FEMA recommended numerous changes including modifying the building codes and standards; changing local ordinances and enhancing inspections; reevaluating flood zones, elevating residential construction; more resilient building techniques; and improved mechanical, electrical, plumbing, and fuel storage.[28] Since then, New York and New Jersey have engaged in substantial—and costly—planning efforts to make their communities more resilient to rising seas and future storms.[29] Efforts to modify regulatory standards are underway.[30] Plans exist for new infrastructure.[31] Five years after Sandy, upgrading just three New York City hospitals has consumed

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26. *FEMA Fact Sheet: Mitigation Assessment Team Results – Hurricane Sandy*, FED. EMERGENCY MGMT. AGENCY (June 19, 2018), https://www.fema.gov/mat-results-hurricane-sandy.

27. FED. EMERGENCY MGMT. AGENCY, MITIGATION ASSESSMENT TEAM REPORT: HURRICANE SANDY IN NEW JERSEY AND NEW YORK ii (2013).

28. *Id.* at ii-v.

29. Michael R. Bloomberg, *Forward* to CITY OF N.Y., PLANYC A STRONGER, MORE RESILIENT NEW YORK (2013); DAVID M. KUTNER, N. J. FUTURE, IN DEEP: HELPING SANDY-AFFECTED COMMUNITIES ADDRESS VULNERABILITY AND CONFRONT RISK 3, 7 (2015).

30. JAMES P. COLGATE, N.Y.C. DEP'T OF BLDGS., NEW YORK CITY AFTER SUPERSTORM SANDY REGULATORY REFORM 2 (2014).

31. *See* Bloomberg, *supra* note 29, at 4 ("In our vision of a stronger, more resilient city, many vulnerable neighborhoods will sit behind an array of coastal defenses. Waves rushing toward the coastline will, in some places, be weakened by offshore breakwaters or wetlands, while waves that do reach the shore will find more nourished beaches and dunes that will shield inland communities. In other areas, permanent and temporary floodwalls will hold back rising waters, and storm surge will meet raised and reinforced bulkheads, tide gates, and other coastal protections.").

$1.1 billion.[32] After Sandy, New York City approved a disaster recovery budget of $10.5 billion to rebuild and increase the climate resilience of the city's subway system.[33] Another $500 million investment will protect a few neighborhoods in lower Manhattan from surging seas.[34] Over time, the pursuit of resiliency in New York City will require many, many billions of dollars.

D. California: the Oroville Dam in 2017

Due to heavy winter rains in February 2017, the emergency spillway at the Oroville Dam in California—the tallest dam in the nation—suffered major damage and nearly failed.[35] With a watershed of 3,200 square miles, the water supply for millions of people was at risk, and 180,000 people were forced to evacuate.[36] Investigators blamed the problem on long-term systemic failures of a California agency to properly construct, operate, and maintain its infrastructure.[37] Estimated repair costs for this structure reached $1.1 billion.[38]

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32. Patrick McGeehan & Winnie Hu, *Five Years After Sandy, Are We Better Prepared*?, N.Y. TIMES (Oct. 29, 2017), https://www.nytimes.com/2017/10/29/nyregion/five-years-after-sandy-are-we-better-prepared.html.

33. N.Y. CITY ECON. DEV. CORP., LOWER MANHATTAN CLIMATE RESILIENCE STUDY 13 (2019).

34. *Id.* at 8.

35. *See* CAL. DEP'T OF WATER RES., LAKE OROVILLE SPILLWAY INCIDENT: TIMELINE OF MAJOR EVENTS FEBRUARY, https://water.ca.gov/LegacyFiles/oroville-spillway/pdf/2017/Lake%20Oroville%20events%20timeline.pdf.

36. Patrick May, *The Oroville Dam Story: By the Numbers,* EAST BAY TIMES (Feb. 13, 2017), https://www.eastbaytimes.com/2017/02/13/the-oroville-dam-story-by-the-numbers/; *Upper Feather River Watershed*, SACRAMENTO RIVER WATERSHED PROGRAM, www.sacriver.org/aboutwatershed/roadmap/watersheds/feather/upper-feather-river-watershed (last visited Oct. 27, 2019).

37. *See* JOHN W. FRANCE ET AL., OROVILLE DAM SPILLWAY INCIDENT S-1–S-3 (2018) ("The Oroville Dam spillway incident was caused by a long-term systemic failure of the California Department of Water Resources (DWR), regulatory, and general industry practices to recognize and address inherent spillway design and construction weaknesses, poor bedrock quality, and deteriorated service spillway chute conditions."); *see also* Dale Kasler, *Final Verdict on Oroville Dam: 'Long-term Systemic Failure,'* THE SACRAMENTO BEE (Jan. 5, 2018), https://www.sacbee.com/news/california/water-and-drought/article193151499.html (attributing incident to complex interaction of common factors).

38. Ryan Sabalow & Dale Kasner, *Oroville Dam Repairs Now Exceed $1 Billion and 'May Be Adjusted Further' as Work Continues,* THE SACRAMENTO BEE (Sept. 5, 2018), https://www.sacbee.com/news/state/california/water-and-drought/article217824370.html.

E. Texas: Hurricane Harvey in 2017

In August 2017, Hurricane Harvey hit Texas as a Category 4 storm, dousing Houston and eastern Texas with 40 inches of rain.[39] The storm produced catastrophic flooding, displaced more than 30,000 people, and caused estimated damages exceeding $125 billion.[40] Afterward, Zurich Insurance Group and the American Red Cross Global Disaster Preparedness Center contributed to a comprehensive study that reached two critical conclusions.[41] First, the study authors embraced government regulation as an inexpensive way to achieve water management benefits: **"Invest in regulation, coordinated floodwater detention and neighborhood drainage.** The collective impact of these efforts could significantly reduce city flooding at a fraction of the cost of large infrastructure projects, while at the same time laying the groundwork needed to maximize the operational flexibility and success of larger efforts."[42] Second, the authors called for budgetary investment into flood infrastructure:

> **Not acting now to build flood resilience in Houston and Harris County will potentially be very costly in the future.** Hesitancy on the part of leadership to take bold and potentially controversial action and unwillingness on the part of residents to self-tax and act is rapidly leading Houston back onto a business-as-usual trajectory. What appears to have been pushed aside is the reality that lack of action could be very costly for Houston in the future, in ways that could reverberate throughout the entire economy and region.[43]

After Harvey, the Harris County Flood Control District, which serves as local sponsor of U.S. Army Corps of Engineers projects, launched a voluntary buyout program for homeowners located in the floodplains.[44] In 2018, 85% of voters approved a $2.5 billion bond empowering the Harris County Flood Control District to build at least 230 projects over the next 10 to 15 years.[45] Flood control costs, as usual, reach well into the billions.

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39. ISET-INT'L ET AL., HOUSTON AND HURRICANE HARVEY: A CALL TO ACTION 3 (2018).
40. *Id.*
41. *See generally id.* at 5 (summarizing the comprehensive study).
42. *Id.* (emphasis in original).
43. *Id.* (emphasis in original).
44. *Home Buyout Program*, HARRIS CTY. FLOOD CONTROL DIST. (Aug. 2, 2019), https://www.hcfcd.org/hurricane-harvey/home-buyout-program/.
45. Zach Despart, *Harris County Voters Pass $2.5 Billion Flood Bond One Year After Harvey*, HOUS. CHRON. (Aug. 25, 2018), https://www.houstonchronicle.com/news/houston-weather/hurricaneharvey/article/Harris-County-voters-pass-2-5-billion-flood-bond-13182842.php.

F. North Carolina: Hurricane Florence in 2018

When Hurricane Florence hit North Carolina in September 2018, the public suffered once again. More than 1 million people in low-lying coastal Carolina were ordered to evacuate,[46] more than 600,000 homes received wind or water damage,[47] and Moody's estimates a loss to economic output of up to $2 billion.[48] Due to North Carolina's agricultural economy and water management infrastructure, the water-quality issues associated with the disaster were pronounced:

> Polluted flood waters swamped coal ash ponds at power plants. Rising waters engulfed private septic systems in back yards. The unwholesome mix inundated hog waste lagoons on farms. And the torrent overwhelmed municipal waste water treatment plants in towns large and small.
>
> In some cases these waste-handling facilities took on so much water they experienced structural damage and partially collapsed, disgorging their contents into the flood.[49]

The consequences of the flooding and the water-quality concerns were extraordinary, and the pollution flowing downstream became visible from satellites in space.[50] Drinking-water wells, waterbodies, and shellfish farms were seriously contaminated.[51] The drainage system required $57.5 million for debris removal, and $23.6 million for damages to 19 dams.[52] Additional

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46. *See* Richard Faussett*, As Hurricane Florence Threatens the Carolinas, 1 Million Ordered to Evacuate*, N.Y. TIMES (Sept. 10, 2018), https://www.nytimes.com/2018/09/10/us/hurricane-florence.html (reporting Governor McMaster called on more than a million residents in eight coastal counties to evacuate and head inland).

47. Clyde Hughes, *Carolinas Still Reeling from Florence Six Weeks After Storm*, UPI (Oct. 30, 2018), https://www.upi.com/Top_News/US/2018/10/30/Carolinas-still-reeling-from-Florence-six-weeks-after-storm/9071540835136/?ur3=1.

48. Patti Domm, *Hurricane Florence Damage Estimated at $17 Billion to $22 Billion and Could Go Higher – Moody's Analytics*, CNBC (Sept. 17, 2018), https://www.cnbc.com/2018/09/17/moodys-hurricane-florence-damage-estimated-at-17-to-22-billion.html.

49. John Murawski, *Hurricane Florence Bathed North Carolina in Raw Sewage. New Figures Show It Was Even Worse Than We Thought*, NEWS & OBSERVER (Dec. 27, 2018), http://www.govtech.com/em/disaster/Hurricane-Florence-Bathed-North-Carolina-in-Raw-Sewage-New-Figures-Show-it-was-Even-Worse-than-we-Thought.html.

50. Aristos Georgiou, *Pollution from Hurricane Florence is So Bad You Can See It from Space*, NEWSWEEK (Sept. 25, 2018), https://www.newsweek.com/pollution-hurricane-florence-so-bad-you-can-see-it-space-1137656.

51. Murawski, *supra* note 49.

52. ROY COOPER, HURRICANE FLORENCE RECOVERY RECOMMENDATIONS 24, 40 (Oct. 10, 2018).

costs of repairing, replacing, and upgrading water and sewer infrastructure were estimated at $100 million.[53] A post-disaster assessment report estimated that the economic damage approached $13 billion, and acknowledged the massive water-quality concerns but labeled costs as "unknown."[54] A report to Congress estimated damage as $17 billion.[55]

G. Disaster Relief: Priceless

Collectively, these examples remind water managers and policy makers that major crises will occur, especially if infrastructure is poorly maintained. Countless more examples could be cited, especially along the Mississippi River region, which suffered one of the greatest floods in human history in 1927, and nearly two dozen more thereafter.[56] These water management events can involve surging seas, massive rainfalls, or widespread flooding, which can harm water quality, damage water supplies and related infrastructure, and kill people. Admittedly, budgeting, calculating, and tracking expenditures for disaster mitigation, response, and relief can be complicated.[57] Nevertheless, when the inevitable disasters happen, state and territorial leaders have been able to turn to the federal government for emergency funding and recovery assistance that enable the communities to recover and continue to exist.[58]

FEMA has codified the process for seeking federal disaster assistance.[59] FEMA also has an approval and auditing process that ensures public assistance funds are properly spent.[60] All those funds come from the Disaster Relief Fund, "one of the most-tracked single accounts funded by

53. *Id.* at 34.

54. *Id.* at 3, 38.

55. *See* Letter from Roy Cooper, Governor, N.C., to N.C. Cong. Delegation (Nov. 28, 2018) (listing financial need in North Carolina); Letter from Henry McMaster, Governor, S.C., to S.C. Cong. Delegation (Nov. 16, 2018) (estimating South Carolina's damages at an additional $607 million).

56. *See Mississippi River Flood History 1543-Present,* NAT'L WEATHER SERV. (Aug. 10, 2019), https://www.weather.gov/lix/ms_flood_history (listing 22 different major floods since the Great Mississippi River Flood of 1927).

57. *See* PEW CHARITABLE TRUSTS, WHAT WE DON'T KNOW ABOUT STATE SPENDING ON NATURAL DISASTERS COULD COST US: DATA LIMITATIONS, THEIR IMPLICATIONS FOR POLICYMAKING, AND STRATEGIES FOR IMPROVEMENT 2 (2018) (discussing how many states experience difficulties tracking relief spending).

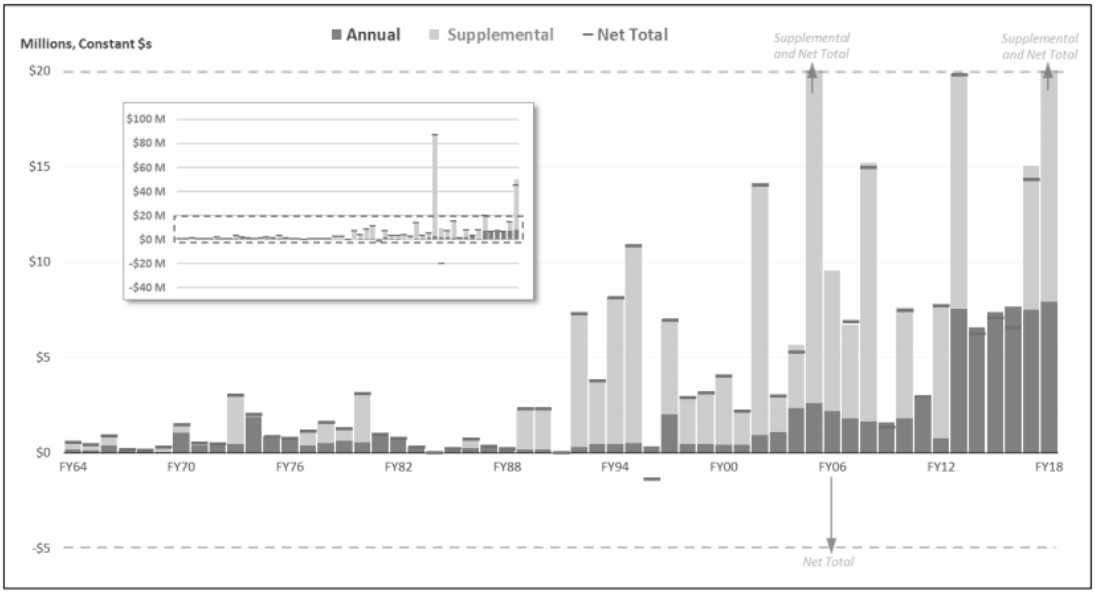
58. *See generally* Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42.U.S.C. §§ 5121–5207 (2018) (identifying the responsibilities of the federal government during disasters).

59. *See generally* 44 C.F.R. pt. 206 (2018) (codifying procedure for federal disaster assistance declared on or after November 23, 1988).

60. FED. EMERGENCY MGMT. AGENCY, PUBLIC ASSISTANCE PROGRAM AND POLICY GUIDE, FP-104-009-2, 5–6 (2018).

Congress."[61] If a major disaster strikes and the Disaster Relief Fund balance is low, funding of the response and relief efforts may depend on further Congressional appropriations.[62] A 2019 Congressional Research Service analysis, reproduced below, shows that federal disaster funding dramatically increased between 1964 and 2018.[63] Still, for now, the federal government offers a partial backstop when the states fall short—albeit one funded by massive deficit spending.[64]

Figure 2. FY2018 Dollar Disaster Relief Appropriations, FY1964-FY2018



Source: CRS Analysis of appropriations laws.

Ideally, some of these expenses could be avoided or minimized. As the examples above demonstrate, better environmental regulation and zoning, funding for infrastructure maintenance and upgrades, or disciplined financial

61. WILLIAM L. PAINTER, CONG. RESEARCH SERV., R45484, THE DISASTER RELIEF FUND: OVERVIEW AND ISSUES 1 (2019).

62. *See id.* at 10–11 (explaining that general disaster relief activities by the federal government under the Stafford Act may be funded by: ad hoc annual appropriations, such as to the Disaster Relief Fund; supplemental appropriations, often ad hoc for a specific event; or continuing appropriations, when annual appropriations work remains unresolved at the beginning of the new fiscal year).

63. *Id.* at 15.

64. *See* Demian Brady, *Budget for Disasters to Prevent a Budget Disaster*, NAT'L TAXPAYERS UNION FOUND. (May 23, 2019), https://www.ntu.org/foundation/detail/budget-for-disasters-to-prevent-a-budget-disaster (highlighting how federal emergency spending is at times added to the deficit).

management with adequate reserves for emergency response might have reduced costs. Yet, history suggests that water managers lack the vision needed. To the dismay of insurers and disaster managers, people assume that disaster relief will come to the rescue.[65]

It is irresponsible for our local and regional institutions to rely entirely on disaster relief. As the scale of disasters grow, disaster response becomes even more difficult, and the relief might take a long time to come (if ever).[66] Even if the disaster response comes, the process takes time, and people with insufficient assets get left behind.[67] And, as a political matter, Congress could stop delivering the massive amounts of funding. Consider recent events in the Caribbean. After Hurricanes Irma and Maria struck in September 2017, Puerto Rico received $4 billion in federal grants, but the Government Accounting Office says it needs $132 billion more to rebuild its energy, water, and housing systems.[68] Similarly, the two storms damaged more than half of the U.S. Virgin Islands' housing units and its hospitals, schools, and water and wastewater facilities.[69] By April 2019, "FEMA obligated approximately $1.8 billion for 583 public-assistance projects," whereas the U.S. Virgin Islands suffered an estimated $10.7 billion in total damages.[70] In other words, for Puerto Rico and the U.S. Virgin Islands, the disaster relief funding was insufficient.[71] Policy disagreements with the White House also delayed relief funding after President Donald Trump opposed waiving the requirement that Puerto Rico contribute matching dollars to cost-share in the

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65. *See* Eric Roston*, U.S. Spends Billions on Disaster Aid Over Investing in More Lasting Preparedness*, INS. J. (June 12, 2019), https://www.insurancejournal.com/news/national/2019/06/12/528943.htm (discussing Congressional reliance on disaster relief spending instead of pushing for preparatory measures).

66. Elizabeth F. Kent, *"Where's the Cavalry?" Federal Response to 21st Century Disasters*, 40 SUFFOLK U. L. REV. 181, 181 (2006) (quoting Department of Homeland Security Secretary Michael Chertoff: "The unusual set of challenges of conducting a massive evacuation in the context of a still dangerous flood requires us to basically break the traditional model and create a new model, one for what you might call kind of an ultra-catastrophe.").

67. *See* John K. Pierre & Gail S. Stephenson, *After Katrina: A Critical Look at FEMA's Failure to Provide Housing for Victims of Natural Disasters*, 68 LA. L. REV. 443, 460 (2008) (detailing shortcomings of federal disaster response); Melissa H. Luckman et. al., *Three Years Later, Sandy Survivors Remain Homeless*, 32 TOURO L. REV. 313, 313 (2016) (noting that a "few inches of water can damage a home for years, and long after the event, people may remain homeless.").

68. *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-19-256, PUERTO RICO HURRICANES: STATUS OF FEMA FUNDING, OVERSIGHT, AND RECOVERY CHALLENGES (2019) (reporting Puerto Rican estimates $132 billion in funding from 2018 through 2028 will be needed to repair and reconstruct the infrastructure damaged by the hurricanes).

69. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-19-662T, EMERGENCY MANAGEMENT: FEMA'S DISASTER RECOVERY EFFORTS IN PUERTO RICO AND THE U.S. VIRGIN ISLANDS 2 (2019).

70. *Id.* at 2, 9.

71. *See* Charley E. Willison et al., *Quantifying Inequities in US Federal Response to Hurricane Disaster in Texas and Florida Compared with Puerto Rico*, BMJ GLOB. HEALTH 1 (Jan. 18, 2019) (noting that the funding for Puerto Rico was less robust and slower than other efforts).

disaster relief.[72] Some organizations continued to lobby against Congressional efforts to pass supplemental disaster relief appropriations.[73]

As the examples above have shown, the existence of a community is priceless, but the cost of responding to emergencies and rebuilding routinely reaches multi-billion-dollar figures. Yet disaster management has financial limits, even when public safety is at stake.[74] Disaster relief is not guaranteed.

III. CHAOS MANAGEMENT: THE REALITIES OF SOUTH FLORIDA

South Florida knows about both water management and costly disasters. Public and private actors who were incentivized by governmental programs to build drainage systems that enabled human-development activities shaped Florida's early history.[75] Over time, the burdens of maintaining those systems necessitated a growing role for government and disaster relief. In the future, as Florida confronts the established risks of hurricanes, floods, and droughts—all likely to be intensified by warming oceans and rising seas—the role of government and its interaction with the stakeholders becomes ever more important.

A. History: From Speculation to Water Governance

The headwaters of the Everglades began just south of Orlando, Florida, where waters eventually gathered and flowed downstream along the Kissimmee River, a meandering river prone to exceeding its banks.[76] That

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72. *See, e.g.*, Statement of Administration Policy on H.R. 268 — Supplemental Appropriations Act, 2019 (Jan. 16, 2019) ("The Administration strongly objects to language waiving non-Federal cost shares for Puerto Rico and the U.S. Virgin Islands for Hurricanes Maria and Irma. Cost shares are critical to ensure that work with impacted jurisdictions is collaborative and that both partners have incentives to operate efficiently and control costs.").

73. Press Release, Nat'l Taxpayers Union, Representatives Should Oppose Updated Supplemental Spending Bill (May 9, 2019) (on file with author).

74. *See* Kate Lyons, *The Night Barbuda Died: How Hurricane Irma Created a Caribbean Ghost Town*, (Nov. 20, 2017), https://www.theguardian.com/global-development/2017/nov/20/the-night-barbuda-died-how-hurricane-irma-created-a-caribbean-ghost-town (noting delay in necessary financial investment to restore Barbuda despite some health concerns); *see also* Joe Pike, *Antigua and Barbuda: One Year After Irma*, TRAVEL PULSE (Sept. 14, 2018), https://www.travelpulse.com/news/destinations/antigua-and-barbuda-one-year-after-irma.html (describing the rebuilding process notably with funding from China and the European Union); Tracey Minkin & Sid Evans, *These 8 Caribbean Islands Hardest Hit by the 2017 Hurricanes Are Ready for Your Return*, COASTAL LIVING (Oct. 31, 2018), https://www.coastalliving.com/travel/caribbean-islands-comeback (noting that it took more than a year for the first hotel to reopen).

75. *See* MATTHEW C. GODFREY & THEODORE CATTON, RIVER OF INTERESTS: WATER MANAGEMENT IN SOUTH FLORIDA AND THE EVERGLADES, 1948–2010 1 (2011) (documenting the history of flood initiatives in the Everglades ecosystem from a federal perspective).

76. *Id.* at xi; *see also Everglades National Park Florida History and Culture*, NAT'L PARK SERV. (Apr. 14, 2015), https://www.nps.gov/ever/learn/historyculture/index.htm.

river drained into Lake Okeechobee, a shallow but very large freshwater lake.[77] Then circled by wetlands, the lake spilled over its boundary during peak wet seasons so that waters slowly flowed southward through the Everglades.[78] Eventually, the waters reached Florida Bay at the peninsula's end.[79]

Florida's settlers replumbed the Greater Everglades ecosystem. In 1881, a wealthy Philadelphian named Hamilton Disston purchased the rights to four-million acres of wetlands in Florida.[80] By constructing canals to drain the land, Disston sought to gain access and clean title to the upland properties, but his efforts ultimately failed.[81] Over time, many other resourceful Floridians and land speculators sought to build water management infrastructure to make the inland areas of Florida accessible to farmers and developers, but in 1926 and 1928 a pair of hurricanes flooded the lands and killed thousands of people who had settled in the region.[82] That proved to be a turning point.

Taking great interest in the region, the federal government enacted the River and Harbors Act of 1930 and further authorized the Army Corps of Engineers to construct 67.8 miles of levees along the south shore of Lake Okeechobee and 15.7 miles along the north shore.[83] The consequences of another major hurricane in 1947 convinced Congress to pass the Flood Control Act of 1948, which authorized a Central and South Florida Project (C&SF Project) to provide additional flood-damage reduction and water-control benefits.[84] By the late 1960s, a new "Herbert Hoover Dike" surrounded Lake Okeechobee.[85]

The State of Florida also provided its own impetus for changes in water management. Although the U.S. Army Corps of Engineers built part of the flood-control system, in 1949, the Central and Southern Florida Flood Control District, a regional governmental entity within the State of Florida, emerged as the local sponsor responsible for operating and maintaining the

77. GODFREY, *supra* note 75, at xi.

78. *Id.*

79. *Everglades National Park Florida History and Culture*, *supra* note 76.

80. Christopher F. Meindl, *On the Eve of Destruction: People and Florida's Everglades from the late 1800s to 1908*, 63 J. HIST. ASS'N S. FLA. 5, 7 (2003).

81. *Id.* at 8–9.

82. James C. Clark, *1926 and 1928 Hurricanes Were a Costly and Deadly One-Two Punch for Florida,* ORLANDO SENTINEL (Oct. 6, 1994), https://www.orlandosentinel.com/news/os-xpm-1994-10-16-9410120696-story.html.

83. *See About Herbert Hoover Dike*, U.S. ARMY CORPS OF ENG'RS, https://www.saj.usace.army.mil/Missions/Civil-Works/Lake-Okeechobee/Herbert-Hoover-Dike/ (last visited Sept. 27, 2019) (describing Rivers and Harbors Act of 1930).

84. *Id.*

85. *Id.*

system.[86] Later, Florida enacted the Florida Water Resources Act of 1972, extending the robust process for water management statewide.[87] The comprehensive statutory scheme created five state water management districts,[88] with the South Florida Water Management District assuming the responsibility to operate and manage the Everglades system and to continue the role as local sponsor of the C&SF Project.[89] Florida had modernized water law; rather than just an appendage of property law, it became a thoughtful and important modern policy tool.[90]

More recently, scholars have described the bifurcated system of water governance and the overlays of competing and conflicting state and federal authority as a "rigidity trap."[91] Instead of visionary policy, ecological, economic, political, or social crisis triggers changes.[92] Technology, flood events, or human (mis)management of the region causes change in abrupt, disjunctive, and unpredictable steps.[93] For example, since 1988, the state and federal governments, along with various agricultural and environmental activist groups, have been ensconced in complex litigation trying to find solutions to the water quality violations created by the system.[94] Court orders change the status quo.

Nonetheless, the water management districts inarguably must perform an essential and long-term role in the management of the greater Everglades

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86. *See* FLA. STAT. § 373.149 (2019) (noting it shall not affect chapter 25270 of the Laws of Florida creating a flood control district).

87. FLA. STAT. § 373.013; *see also* FLA. STAT. § 373.016 (expanding water resources management).

88. FLA. STAT. § 373.069(1).

89. *See* FLA. STAT. § 373.149 ("Existing districts preserved. The enactment of this act shall not affect the existence of the Central and Southern Florida Flood Control District created by chapter 25270, 1949, Laws of Florida"); FLA. STAT. § 373.1301 ("South Florida Water Management District as local sponsor.").

90. Christine A. Klein et al., *Modernizing Water Law: The Example of Florida*, 61 FLA. L. REV. 403, 418-19 (2009).

91. Lance H. Gunderson, et al., *Escaping A Rigidity Trap: Governance and Adaptive Capacity to Climate Change in the Everglades Social Ecological System*, 51 IDAHO L. REV. 127, 131 (2014).

92. *Id.* at 155 ("Environmental governance of the Everglades has had limited success because of entrenched organizational hierarchies, as well as the inability to resolve disagreements associated with implementation of federal and state law. Moreover, attempts at collaborative management have, in the end, resorted to an adversarial, litigation model for resolving uncertainties. This legal and organizational rigidity limits the experimentation necessary for environmental governance in light of our current understanding of the dynamics of social-ecological systems.").

93. *Id.* at 129.

94. *Id.* at 134 ("But litigation spawned and swamps the modern era of Everglades' restoration. The lawsuit filed in 1988, in which the United States sued the South Florida Water Management District, cited the adverse water quality effects of water management upon Everglades National Park and the Loxahatchee National Wildlife Refuge. In other words, the state governmental entity charged with responsibility to operate the regional flood control system was sued by the federal government for the consequences of operating the system that the federal government had designed, built and approved.").

watershed.[95] To govern water resources in the state, each water management district implements Chapter 373 of the Florida Statutes through its governing board, and with the assistance of the Florida Department of Environmental Protection.[96] These agencies have broad powers over state waters.[97] For example, in a declaration of policy, the Florida Legislature acknowledged that "waters in the state are among its basic resources" and that the SFWMD and Department of Environmental Protection shall "manage those resources in a manner to ensure their sustainability[.]"[98] The Legislature further noted that its policy was to manage, utilize, and conserve water resources to promote public health, safety, and welfare.[99] Some statutes are specific to regions or ecosystems, such as the Kissimmee River, Lake Okeechobee, or the Everglades.[100] Other parts separately address the regulation of ground waters, wells, surface waters, and springs.[101] As explained by the former Chairman of the SFWMD, Federico Fernandez, these sometimes-competing duties are commonly distilled into four concepts: (1) flood control; (2) water supply; (3) water quality; and (4) ecosystem protection.[102]

Responsible water management is expensive. The construction, operation, and maintenance of canals and other structures, and the

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95. *See id.* at 129–130 ("Such transformations are characterized by different ecological conditions (indicated by the designation of an endangered species, such as the Cape Sable sparrow) or institutional configurations (such as the creation of South Florida Water Management District).").

96. FLA. STAT. § 373.016(2) (2019) ("In implementing this chapter, the department and the governing board shall construe and apply the policies in this subsection as a whole").

97. FLA. CONST. art. II, § 7.

98. FLA. STAT. § 373.016(1)–(2) (2019).

99. *Id.* § 373.016(3) (declaring that it is the policy of the Legislature: (a) To provide for the management of water and related land resources; (b) To promote the conservation, replenishment, recapture, enhancement, development, and proper utilization of surface and groundwater; (c) To develop and regulate dams, impoundments, reservoirs, and other works and to provide water storage for beneficial purposes; (d) To promote the availability of sufficient water for all existing and future reasonable-beneficial uses and natural systems; (e) To prevent damage from floods, soil erosion, and excessive drainage; (f) To minimize degradation of water resources caused by the discharge of stormwater; (g) To preserve natural resources, fish, and wildlife; (h) To promote the public policy set forth in s. 403.021; (i) To promote recreational development, protect public lands, and assist in maintaining the navigability of rivers and harbors; and (j) Otherwise to promote the health, safety, and general welfare of the people of this state.)

100. *See, e.g.*, Everglades Forever Act, FLA. STAT. § 373.4592 (2019) (protecting the Everglades ecological system); Northern Everglades and Estuaries Protection Program, FLA. STAT. § 373.4595 (2019) (protecting and restoring surface water resources and achieve and maintain compliance with water quality standards in the Lake Okeechobee watershed, the Caloosahatchee River watershed, and the St. Lucie River watershed).

101. *See, e.g.*, FLA. STAT. §§ 373.203–373.250 (2019) (permitting of consumptive uses of water); FLA. STAT. §§ 373.302-373.342 (regulating wells); FLA. STAT. §§ 373.403–373.468 (managing and storing surface waters); Florida Springs and Aquifer Protection Act, FLA. STAT. §§ 373.801–373.813 (2019) (protecting springs).

102. *See, e.g., Welcome to SFWDM.com,* S. FLA. WATER MGMT. DIST., https://web.archive.org/web/20181224103141/https://www.sfwmd.gov/who-we-are/chairmans-message (last captured Nov. 9, 2018).

implementation of environmental regulations, require funds and people. While the state provides some funding, local governing boards also possess the discretion to impose *ad valorem* taxes on property to raise necessary funds for local benefits.[103] A series of statutes also set maximum rates and a public process for passing the budget.[104] Recent budget decisions, however, have impaired the SFWMD's ability to perform.

B. Risk Management: The Duty to Prepare and Respond.

Pursuant to its statutory scheme, and as history shows, the SFWMD has an important role in managing waters on a daily basis, and on implementing routine regulatory requirements. By definition, water management also includes the management of risks such as floods and droughts and operating complex systems that may fail catastrophically. [105] In our changing world, the risk calculus is becoming increasingly complex, especially for the low-lying land mass of South Florida that remains highly vulnerable to hurricanes, water quality turmoil, and rising seas.

1. Hurricanes

A breach of the Lake Okeechobee dike devastated the Everglades Agricultural Area in the 1920s and killed thousands.[106] While Hurricane Andrew was intensely damaging and bulldozed a 22-mile wide strip of land 25 miles to the south of Miami, it missed the urban core of South Florida and the water management infrastructure.[107] In contrast, during the 2004 season, Hurricanes Charley, Frances, Jeanne, and Ivan collectively caused more than $45 billion in damage and dumped 30 inches of rain on the region, stressing

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103. FLA. STAT. § 373.503(1) (2019).

104. *See generally* FLA. STAT. §§ 373.470–373.591 (2019) (mandating taxation processes and district budgets).

105. *See* Amahia Mallea, *As Flood Risks Increase Across the U.S., It's Time to Recognize the Limits of Levees,* GOV'T TECH. (July 17, 2019), http://www.govtech.com/em/preparedness/As-Flood-Risks-Increase-Across-the-US-Its-Time-to-Recognize-the-Limits-of-Levees.html (providing that many U.S. cities rely on levees from protection from floods and that most of these levees need repair).

106. Christine DiMattei, *Remembering the 1928 Storm That Unleashed "Lake O"*, WLRN (June 1, 2015), http://www.wlrn.org/post/remembering-1928-storm-unleashed-lake-o.

107. *Historical Vignette 055 - The Corps Came to the Aid of Florida in the Aftermath of Hurricane Andrew*, U.S. ARMY CORP OF ENG'RS (Aug. 2002), https://www.usace.army.mil/About/History/Historical-Vignettes/Relief-and-Recovery/055-Hurricane-Andrew/ ("The hurricane cut a broad path of destruction 22-miles wide, devastating the areas from Biscayne Bay to the Everglades. It leveled thousands of homes and other buildings, destroyed public utilities, ripped up trees, and left millions of cubic yards of debris. Its fierce winds tore down most of south Florida's power lines, leaving 1.4 million customers without electricity. It was one of the worst natural disasters of the century, killing twenty people and leaving a quarter of a million people homeless.").

the flood-control systems and sending Lake Okeechobee water levels dangerously high once again.[108] Hurricane Irma threatened the dike again in 2017.[109] Research suggests that extreme rainfall events of this type will increase in frequency, and short-duration storms lasting less than a day are increasing the magnitude and frequency of flash floods.[110] Experts even fear a future with "Category 6" hurricanes.[111] With 40 percent of all U.S. hurricanes hitting Florida, Miami remains the most vulnerable city in the world.[112] A recent analysis by Swiss Re Group warns of its own stunning calculations: insured losses of $100 to $300 billion.[113]

2. The quartet of climate risks, including rising seas

In 2009, an internal SFWMD report outlined a critical quartet of factors related to climate change that presented new risks for water management.[114] These were: (1) rising seas; (2) temperature and evapotranspiration; (3) rainfall, floods and drought; and (4) tropical storms and hurricanes.[115] Above all else, the report emphasized that the "only certainty is the uncertainty of the wide-ranging projections."[116] Ultimately, the report recommended that water managers needed to be especially attentive to the subject:

> Over the next two years, more work is needed to understand the current trends and uncertainties in climate projections, and to develop tools for understanding the exact vulnerabilities of the water management system and regional water resources. During this period

108. Press Release, Randy Smith, S. Fla. Water Mgmt. Dist., 1980-Today: Restoring the South Florida Ecosystem (July 21, 2009).

109. Craig Pittman, *Lake O Hits Highest Level Since 2005, Raising Concerns Its Dike Could Fail*, TAMPA BAY TIMES (Oct. 5, 2017), https://www.tampabay.com/news/environment/water/lake-o-hits-highest-level-since-2005-raising-concerns-its-dike-could-fail/2339994.

110. S. Westra et al., *Future Changes to the Intensity and Frequency of Short-Duration Extreme Rainfall*, 52 REVS. GEOPHYSICS 522, 548 (2014).

111. David Fleshler, *The World Has Never Seen a Category 6 Hurricane. But the Day May Be Coming*, SUN SENTINEL (July 6, 2018), https://www.sun-sentinel.com/news/florida/fl-reg-hurricanes-climate-20180703-story.html.

112. *Frequently Asked Questions*, NOAA, https://www.aoml.noaa.gov/hrd/tcfaq/E19.html (last visited Oct. 8, 2019); *see also* Jennifer Kay, *Swiss Re: Miami Is More Vulnerable to Hurricanes Like Andrew*, INS. J. (Aug. 10, 2017), https://www.insurancejournal.com/news/southeast/2017/08/10/460775.htm. (discussing Miami's vulnerability).

113. Kay, *supra* note 112.

114. INTERDEPARTMENTAL CLIMATE CHANGE GRP., S. FLA. WATER MGMT. DIST., CLIMATE CHANGE AND WATER MANAGEMENT IN SOUTH FLORIDA 2 (2009).

115. *Id.* at 5.

116. *Id.* at 19.

> and beyond, appropriate adaptation strategies will be developed and implemented.[117]

Ten years later, as the climate risks accumulate, the passive study continues.[118] Meanwhile, SFWMD staff keep warning that the risk of droughts rises as rates of evapotranspiration rise.[119] The water managers must store extra water for the worst dry seasons and quickly dump the excess if an intense wet season follows. This is a difficult balancing act.

Perhaps the greatest threat from the perspective of a water manager is sea-level rise. Tidal fluctuations are already flooding some areas of the Florida Keys.[120] Local flooding has risen by 400 % since 2006.[121] These tides cause salt water to push into ground water, jeopardizing drinking water sources.[122] These risks will continue to climb and can compromise the ability of the flood control system to drain water out to the oceans. Because canals rely on gravity, if the tailwater is elevated, water drains more slowly, and flooding grows higher and lasts longer.[123] The Southeast Florida Regional Climate Change Compact—a joint effort of four Florida counties relying upon expert technical input—projects up to 10-inches of sea level rise by 2030.[124]

In South Florida, the regional Lake Worth Drainage District (LWDD) manages a 200 square mile region of Palm Beach County and operates a system with 500 miles of canals, 1,000 miles of rights-of-way, and 20 major

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117. *Id.*

118. *See, e.g.*, JEFFREY R. KIVETT, S. FLA. WATER MGMT. DIST., IMPACT OF SEA LEVEL RISE ON DISTRICT OPERATIONS: IMPACTS AND ADAPTATIONS 1–13 (2015) (assessing future adaptations to future impacts from sea level rise); EDWIN WELLES, FLOOD AND DROUGHT RISK MANAGEMENT UNDER CLIMATE CHANGE: METHODS FOR STRATEGY EVALUATION AND COST OPTIMIZATION, PERFORMANCE PROGRESS REPORT 1–2 (2015) (using "robustness analysis" and other methods to analyze climate change impacts in SFWMD).

119. WOSSENU ABTEW, S. FLA. WATER MGMT. DIST., EVAPOTRANSPIRATION IN THE EVERGLADES AND ITS WATERSHED 26 (2012); Wossenu Abtew et al., *Pan Evaporation and Potential Evapotranspiration Trends in South Florida,* 25 HYDROLOGICAL PROCESSES 958, 968 (2011).

120. RHONDA HAAG, CLIMATE CHANGE & SEA LEVEL RISE: IMPACTS IN THE FLORIDA KEYS 7 (2018), https://apps.sfwmd.gov/webapps/publicMeetings/viewFile/14331 (presenting at the SFWMD Governing Board Meeting).

121. *See* Shimon Wdowinski, *Increasing Flooding Hazard in Coastal Communities Due to Rising Sea Level: Case Study of Miami Beach, Florida,* OCEAN & COASTAL MGMT., March 2016, at 3 ("Our analysis indicates that significant changes in flooding frequency occurred after 2006, in which . . . tide-induced events increased by more than 400%").

122. *See* MIAMI DADE CTY. OFFICE OF RESILIENCE, REPORT ON FLOODING AND SALT WATER INTRUSION 49 (2016) (identifying the risks of salt water intrusion).

123. *See* JOEL VANARMAN, FLA. ENVTL. INST., EVALUATING THE EFFECTS OF SEA LEVEL RISE ON FLOOD PROTECTION IN URBAN AREAS (2015) (reviewing how sea level rise will affect canals and other flood control infrastructure).

124. SEA LEVEL RISE WORK GRP., UNIFIED SEA LEVEL RISE PROJECTION: SOUTHEAST FLORIDA 1 (2015).

and numerous minor water-control structures.[125] Mr. Tommy Strowd, a licensed professional engineer, is the LWDD's incoming executive director, and previously served as a lead engineering official at the SFWMD, including a brief period as its acting-executive director.[126] In an interview, he considered the costs of adapting South Florida's regional water management infrastructure to rising seas:

> The South Florida Water Management District has a whole bunch of coastal flood control structures along the lower east coast of Florida that operate by gravity to spill inland flood waters to tide. If sea levels rise by just 12 inches, we will need new pumping facilities to move flood waters off the land and into the ocean.
>
> I estimate that as many as two dozen structures would need to be upgraded in order to maintain the flow capacities required to provide flood protection for the urban and agricultural areas in south Florida. It would be expensive, maybe as much as $10 to $20 million dollars per structure. And that is just for the capital costs. These structures need fuel to operate, too. That could run as high as 10 to 12% of the capital costs. And all that is just for the coastline.
>
> If weather patterns change significantly, and we have a crisis event like a pump station failure, flood damages could easily be measured in tens of millions of dollars, too. Throw in a major storm, and a levee failure in a community near the Everglades, and we could be talking about hundreds of millions of dollars. Those are just the scary possibilities.[127]

In other words, the capital costs of preparing the SFWMD for rising seas—if just 20 structures required an average of $15 million of investment—could reach $300 million. Operating costs for these structures are another $30 million annually. None of this accounts for the large-scale crisis that comes with a major hurricane or drinking water calamity; rather, this expense is

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125. *Who We Are,* LAKE WORTH DRAINAGE DIST., http://www.lwdd.net/about-us/who-we-are (last visited Oct. 3, 2019).

126. Christine Stapleton, *Pipeline? Water Management District Exec the Third to Head to Lake Worth Drainage District*, PALM BEACH POST (Mar. 25, 2014), https://www.palmbeachpost.com/news/state--regional-govt--politics/pipeline-water-management-district-exec-the-third-head-lake-worth-drainage-district/RZFxIXp9tMt3E8g5UU1jkN/.

127. E-mail from Tommy Strowd, Dir. of Operations & Maint., Lake Worth Drainage Dist., to Keith Rizzardi, Professor of Law, St. Thomas Univ. Sch. of Law (Feb. 16, 2019, 2:02 PM) (on file with the publisher).

merely to adapt and upgrade the system in a resilient way that allows it to function despite the changing baseline elevations of the ocean.

3. Harmful algal blooms

While climate change and rising seas may seem distant or abstract, toxic algae presents an immediate risk to South Florida. Harmful algal blooms (HABs) occur when tiny algae organisms grow out of control, and they occur in every U.S. coastal state.[128] NOAA has acknowledged that HABs produce toxic or harmful effects on people, fish, shellfish, marine mammals, and birds, and can be debilitating or even fatal.[129] Medical literature correlated toxic algae exposure with the development of ALS.[130]

In both 2005 and 2016, massive outbreaks of cyanobacteria occurred on Florida's shores.[131] Journalists photographed bright green waves lapping on the sand.[132] The Florida Department of Health posted public health warnings.[133] When it happened again in 2018, state and federal officials acknowledged that discharges of nutrient enriched waters from Lake Okeechobee were a contributing factor.[134] Governor Rick Scott issued an Executive Order that called the situation an emergency:

> WHEREAS, the release of water from Lake Okeechobee and increase in algae blooms, including overwhelming amounts of cyanobacteria (blue-green algae) which can produce hazardous toxins, has unreasonably interfered with the health, safety, and welfare of the State of Florida and its residents; and

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128. *Harmful Algal Blooms,* NAT'L OCEAN SERV., https://oceanservice.noaa.gov/hazards/hab/ (last updated Aug. 30, 2019).

129. *Id.*

130. Nathan Torbick et al., *Assessing Cyanobacterial Harmful Algal Blooms as Risk Factors for Amyotrophic Lateral Sclerosis*, 33 NEUROTOXICITY RES. 199, 199 (2018).

131. *Cyanobacteria (Blue-Green Algae)*, FLA. FISH & WILDLIFE CONSERVATION COMM'N, https://myfwc.com/research/wildlife/health/other-wildlife/cyanobacteria/ (last visited Sept. 12, 2019).

132. *See* Tyler Treadway, *Algae Blooms Return to St. Lucie River; Lake Okeechobee Discharges Will Make Them Stay*, TREASURE COAST NEWSPAPERS (Aug. 21, 2018), https://www.tcpalm.com/story/news/local/indian-river-lagoon/health/2018/08/21/blue-green-algae-blooms-back-st-lucie-river/1050046002/ (showing photographs of algae affected water).

133. Tyler Treadway, *Highly Toxic Blue-Green Algae at Dam Where Lake O Waters Enter St. Lucie River*, TREASURE COAST NEWSPAPERS (Aug. 29, 2018), https://www.tcpalm.com/story/news/local/indian-river-lagoon/health/2018/08/29/dep-highly-toxic-blue-green-algae-dam-leading-st-lucie-river/1131439002/.

134. BARRY H. ROSEN ET AL., SCI. INVESTIGATIONS REP. 2018–5092, UNDERSTANDING THE EFFECT OF SALINITY TOLERANCE ON CYANOBACTERIA ASSOCIATED WITH A HARMFUL ALGAL BLOOM IN LAKE OKEECHOBEE, FLORIDA, 1–3 (2018).

> WHEREAS, the toxic algae blooms have resulted in an increasing threat to our environmental and fragile ecosystems, including our rivers, beaches, and wildlife; and
>
> WHEREAS, the toxic algae blooms have led to the issuance of health advisories, closure of recreational areas, and economic losses in adjacent communities . . . .[135]

Governor Scott's Order designated the Florida Department of Environmental Protection as lead agency and required Florida agencies to "enter into agreements with any and all agencies of the United States Government as may be needed to meet the emergency."[136] The Order also provided budget authority for fund transfers needed to pay for the emergency.[137]

As summer ends and waters cool, the algal bloom emergencies end—the effects will linger. Even after beaches reopen, the declining water quality puts the fishing, boating, and tourism communities at risk.[138] Worse yet, in the absence of solutions, the harmful algal blooms are destined to return. The Center for Disease Control warns that blooms are becoming more frequent as temperatures warm and the levels of nutrients in our waters increase.[139] Thus, as harmful algal blooms reoccur and perceptions change, Florida's reputation as a tourist destination will be eroded, and the entire state economy and tax structure will decline. A 2018 study commissioned by Visit Florida evaluated out-of-state visitor spending at Florida-based businesses at $112 billion, noting the world-renowned beaches as part of the draw.[140] As much as 23 percent of Florida's state sales tax revenue—$4.9 billion in 2014—comes from tourism.[141] Use of the beaches and waterfront has been the top-ranked activity enjoyed by tourists coming to Florida.[142] The long-term economic risks of Florida's declining water quality are extraordinary.

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135. Fla. Exec. Order No. 18-191 2 (2018).

136. *Id.* at 3.

137. *Id.* at 4–6.

138. Mary Ellen Klas, *Fix Water Quality or Florida Tourism Will Suffer, Fishing and Boating Industries Warn*, MIAMI HERALD (Mar. 15, 2017), https://www.miamiherald.com/news/politics-government/state-politics/article138755918.html.

139. *Be Aware of Harmful Algal Blooms*, CTR. FOR DISEASE CONTROL & PREVENTION (July 5, 2019), https://www.cdc.gov/habs/be-aware-habs.html.

140. OXFORD ECON., THE ECONOMIC IMPACT OF OUT-OF-STATE VISITORS IN FLORIDA 2016 CALENDAR YEAR ANALYSIS 3 (2018).

141. *Tourism Fast Facts*, https://www.visitflorida.org/about-us/what-we-do/tourism-fast-facts/ (last visited Sept. 25, 2019).

142. *See* VISIT FLA., QUARTERLY REPORT JANUARY-MARCH 2016 22, 64 (2016) (noting that beach and waterfront activities are top activities for tourists).

C. Finances: Paying the Bill

Budgeting for water management contains vast amounts of discretion. Pursuant to Florida law, the SFWMD acts as local sponsor for the regional flood control system, and bears responsibility for operations and maintenance expenses of this system.[143] With more than $5 billion in capital assets, including more than $2 billion in water-control structures, canals, levees, buildings, and equipment,[144] those costs exceed $160 million annually.[145] In addition to managing its capital assets, SFWMD decides how to manage its regulatory responsibilities.[146] Unanticipated costs will arise, too, because the statutory budget hearing process explicitly notes the Agency's ability to plan for spending in an emergency to prevent a disaster:

> In the event of a disaster or of an emergency arising to prevent or avert the same, the governing board is not limited by the budget but may expend funds available for the disaster or emergency or as may be procured for such purpose. In such an event, the governing board shall notify the Executive Office of the Governor and the Legislative Budget Commission as soon as practical, but within 30 days after the governing board's action.[147]

Importantly, the budget process allows the SFWMD to maintain a budget that includes a reserve fund:

> The tentative budget must be based on the preliminary budget as submitted to the Legislature, and as may be amended by the district in response to review by the Legislature pursuant to ss. 373.503 and 373.535, as the basis for developing the tentative budget for the next fiscal year as provided in this subsection, and must set forth the proposed expenditures of the district, to which may be added an amount to be held as reserve.[148]

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143. *See* FLA. STAT. § 373.1501 (2019) (identifying SFWMD as local sponsor of identified projects); FLA. STAT. § 373.0693(10)(c) (2019) ("The local effort required in connection with construction, operation, and maintenance of the cooperative federal project referred to as the Central and Southern Florida Flood Control Project, which remains after the upper St. Johns portion is transferred to the St. Johns River Water Management District, shall be funded by tax levies on all taxable property within the Okeechobee Basin.").

144. S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT II-14 (2017).

145. *Id.* at III-2.

146. *See infra* Part IV B.

147. FLA. STAT. § 373.536(4)(d) (2019) (requiring a district budget and hearing thereon).

148. *Id.* § 373.536(5)(e).

Thus, the statutory scheme in Chapter 373 of the Florida Statutes anticipates that water managers will budget for emergencies and disasters and make reserve funds available. Ultimately, these funds are necessary to protect people and property; water management officials can exercise their authority and immediately employ "any remedial means to protect life and property," and take "such other steps as may be essential to safeguard life and property."[149]

While the state budget responsibilities are clear, South Florida's water managers should know to be cautious when it comes to federal emergency and disaster funding. After Hurricanes Charley, Frances, Jeanne, and Wilma effected the region in 2004–2005, the SFWMD sought and obtained federal funds to repair various flood control structures, including damaged levees.[150] But, federal auditors declared the expenses ineligible in 2011, demanding that the agency repay $18.4 million.[151] FEMA said that it lacked authority to fund permanent repairs of the levees, and that funding of the projects should have come from the U.S. Army Corps of Engineers Levee Rehabilitation Program or the Natural Resources Conservation Service's Emergency Watershed Protection Program.[152] On appeal, a federal court eventually sided with the SFWMD because FEMA lacked the authority to de-authorize expenses that it had previously approved.[153] The SFWMD's experience with FEMA is not unique. FEMA has engaged in similar "deauthorization" disputes with many other Florida cities and counties.[154] Floridians (and others) should know that FEMA funds are not guaranteed.

D. Politics: Satisfying the Stakeholders

With or without FEMA's help, the water managers have been given the authority to protect people from harm and to exercise powers as necessary in times of crisis. Water management is a serious responsibility, and pursuant to Florida's open-meeting and public-record laws, the decision-making

149. FLA. STAT. § 373.439 (2019).

150. Christine Stapleton, *Audits: South Florida Water Management District Should Repay FEMA $18 Million*, PALM BEACH POST (Nov. 16, 2012), https://www.palmbeachpost.com/weather/hurricanes/audits-south-florida-water-management-district-should-repay-fema-million/Zy5OyqeYzQBVMg3fjG6FfP/.

151. S. Fla. Water Mgmt. Dist. v. Fed. Emergency Mgmt. Agency, No. 13-80533-CIV, 2014 WL 4805856, at *4 n.9 (S.D. Fla. Sept. 18, 2014).

152. *Id.* at *3.

153. *Id.* at *7.

154. Letter from Grover C. Robinson, IV, President, Fla. Ass'n of Counties. & Lori Moseley, President, Fla. League of Cities, to Brad Kieserman, Acting Adm'r for Recovery, Fed. Emergency Mgmt. Agency (Oct. 24, 2014).

process takes place in a highly public and transparent way.[155] A wealth of information is made publicly available, and monthly governing board meetings, agendas, and documents are readily accessible.[156]

Given the risks, a large array of stakeholders participate in the water management process. These include: agricultural and utility interests concerned about water supply availability; boaters; fishermen; environmental interest groups focused on water quality, wildlife, and recreational issues; local governments and citizens concerned about regional drainage and flood control; taxpayer advocacy groups demanding smaller government; and countless other citizens. State governors have routinely organized or appeared at SFWMD events, especially those related to the Florida Everglades.[157] With 8 million people in the region—a number that keeps growing[158]—there are certainly many votes at stake.

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155. *See* FLA. ATTN'Y GEN., GOVERNMENT-IN-THE-SUNSHINE MANUAL 1 (2018) (establishing the public right of access to governmental proceedings).

156. *DBHydro (Environmental Data)*, S. FLA. WATER MGMT. DIST., https://www.sfwmd.gov/science-data/dbhydro (last visited Sept. 26, 2019); *Governing Board,* S. FLA. WATER MGMT DIST., https://www.sfwmd.gov/who-we-are/governing-board (last visited Sept. 26, 2019).

157. *See, e.g.*, Laura Parker, *Candor by Gov. Chiles Aids Everglades Cleanup*, WASH. POST (May 31, 1991) https://www.washingtonpost.com/archive/politics/1991/05/31/candor-by-gov-chiles-aids-everglades-cleanup/e40f4928-f824-47dc-9461-017ae71dddc8/?utm_term=.93dd3d2b266a (reporting Governor Lawton Chiles showed up in court to push for settlement of Everglades litigation); *see also, e.g.*, Michael Grunwald, *Jeb in the Wilderness*, POLITICO, (Mar. 2015), https://www.politico.com/magazine/story/2015/03/jeb-bush-everglades-115655_Page5.html; (reporting Governor Jeb Bush tried to accelerate the Everglades restoration); Jim Loney, *Florida Off for U.S. Sugar Came as a Big Surprise,* REUTERS (June 24, 2008), https://www.reuters.com/article/us-usa-sugar-interview/florida-offer-for-u-s-sugar-came-as-a-big-surprise-idUSN2436313220080624 (reporting Governor Charlie Crist made global news with a proposed $1.75 billion land acquisition proposal intended to benefit the Everglades restoration); Damien Cave, *For the Everglades, a Dream Loses Much of Its Grandeur*, N.Y. TIMES (Aug. 12, 2010), https://www.nytimes.com/2010/08/13/us/13everglades.html (reporting Crist's proposal was eventually downsized but still substantial enough to make national news); Kwik, *Some Nerve! Gov. Scott Travels to State Job Site to Revel in Employee Layoffs*, DAILY KOS (June 23, 2011), https://www.dailykos.com/stories/2011/6/23/987975/- (reporting on Governor Scott's subsequent different approach as he appeared at the agency headquarters to announce massive layoffs); Regan McCarthy, *700-Million Cut from Water Management Districts*, WFSU NEWS, https://news.wfsu.org/post/700-million-cut-water-management-districts (last visited Oct. 27, 2019) (indicating that Governor Scott cut $700 million from the water management district budgets); Rob Wile, *South Florida's Population Saw Huge Growth this Decade. That Could Soon Reverse*, MIAMI HERALD (April 18, 2019), https://www.miamiherald.com/news/business/article229321644.html.

158. *See* S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-15 (showing the growing population served by the SFWMD, which reached 8,253,146 in 2016).

IV. DECONSTRUCTING AN AGENCY: DOLLARS AND DATA

Hard lessons of history, already learned by the Netherlands, New Orleans, New York, California, Texas, North Carolina, and South Florida, establish the importance of managing, maintaining, and investing in water resources infrastructure. Water managers know the crisis will come. But, there is always room for disagreement over how, exactly, to manage water resources, and how much to spend.

In South Florida, however, the SFWMD has become less attuned to its physical and financial risks, and less responsive to the public concerns. A review of the SFWMD's own publicly available documents reveals a historic deconstruction of the agency, its resources, and capacity. The citizens of South Florida have been placed in a highly vulnerable position.

The following pages of this article relied extensively upon the SFWMD's own documents, especially the Comprehensive Annual Financial Reports (CAFRs).[159] A second important document used for this analysis was the annual South Florida Environmental Report (SFER), in which the SFWMD consolidates its required and voluntary reporting of water quality and project-related data, and subjects it to rigorous peer review.[160] These documents help to reveal how recent years have changed the agency.[161]

Of special note, these changes cannot be characterized as a simple byproduct of a swinging political pendulum. Lawton Chiles, a Democrat, was governor from 1990 to 1998,[162] but Florida has been led by Republican governors and legislatures ever since: Governor Jeb Bush served from January 1999 to January 2007; Governor Charlie Crist served from January 2007 to January 2011; Governor Rick Scott served from January 2011 to January 2019.[163] This article does not consider data related to the new

159. The author compiled data from multiple sources, including the SFWMD's CAFR reports, U.S. Bureau of Labor Statistics' Inflation Calculator, and the SFWMD's SFER reports, to establish these figures. A copy of the raw data and the author's calculations are on file with the publisher.

160. *See* S. FLA. WATER MGMT. DIST., SOUTH FLORIDA ENVIRONMENTAL REPORT (2019) (compiling the 2019 SFER's three volumes, its data-rich appendices, a consolidated project database, and a highlight report).

161. *See* S. FLA. WATER MGMT. DIST., ENFORCEMENT OUTPUT (current through Feb. 9, 2019) (on file with the publisher) (tracking enforcement cases from 2000 to present in a comprehensive regulatory database maintained by the Water Resources Department and obtained via a public records request).

162. *Chiles, Lawton Mainor, Jr,* BIOGRAPHICAL DIRECTORY OF THE U.S. CONG., http://bioguide.congress.gov/scripts/biodisplay.pl?index=c000356 (last visited Oct. 9, 2019).

163. *Florida Governors*, FLA. DEP'T OF STATE, https://dos.myflorida.com/florida-facts/florida-history/florida-governors/ (last visited Sept. 25, 2019); *see also Charlie Crist*, FLA. DEP'T OF STATE, https://dos.myflorida.com/florida-facts/florida-history/florida-governors/charlie-crist/ (last visited Oct. 29, 2019) (noting Governor Crist served as a Republican Governor, later becoming an independent, and

administration of Governor Ron DeSantis. The data shows that the district budget, staffing, regulatory enforcement and emergency reserves have all reduced dramatically in the last decade.

A. Lower Revenues

For past administrations, funding of the SFWMD served as a way to accomplish projects to benefit South Florida's flood control and water quality. After Lawton Chiles led the effort to settle a protected lawsuit between the state and federal government over water quality violations in the Everglades, [164] the Everglades Forever Act secured dedicated funding sources. The Act required the construction of the Everglades Construction Project, consisting of a vast system of wetland treatment marshes. [165] A portion of the toll revenue from Alligator Alley, the highway running east-west across the Everglades, was dedicated to these projects. [166] An Agricultural Privilege Tax (which was modified over time) required a payment of approximately $25 to $35 per acre.[167] The Act also included an *ad valorem* tax of $0.0001 per dollar of property value, representing $30 for a $300,000 property. [168] Demonstrating further commitment to the cause, voters passed two constitutional amendments in 1996, one creating an Everglades Trust Fund to manage those monies[169] and another requiring polluters to pay for their impacts to the Everglades.[170]

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eventually, a member of the Democratic Party); Glenna Milberg, *Florida Sees 20-Year Drought of Democratic Governors*, LOCAL10 (Aug.14, 2018), https://www.local10.com/news/elections/florida-sees-20-year-drought-of-democratic-governors (describing Florida's history of governors).

164. *See generally* United States v. S. Fla. Water Mgmt. Dist., 847 F. Supp. 1567 (S.D. Fla. 1992) (reporting federal government and local water district reach compromise putting procedures in place to preserve and restore national parks).

165. FLA. STAT. § 373.4592(2)(g) (2019); BURNS & MCDONNELL, EVERGLADES PROTECTION PROJECT ES-1 (1994) (describing conceptual plan for stormwater treatment areas).

166. *See* FLA. STAT. § 373.45931 (2019).

167. FLA. STAT. § 373.4592(6)(c)(1) (2019).

168. *Id.* § 373.4592(4)(a).

169. *See* FLA. CONST. art. X, § 17 (establishing the Everglades Trust Fund to be administered by the South Florida Water Management District or its successor agency, consistent with statutory law).

170. *See id.* at art. II, §7(b) ("Those in the Everglades Agricultural Area who cause water pollution within the Everglades Protection Area or the Everglades Agricultural Area shall be primarily responsible for paying the costs of the abatement of that pollution.") (passing first as "Amendment 5" on a 1996 ballot initiative by citizens, followed by an advisory opinion issued by the Florida Supreme Court to the Governor holding "Amendment 5 is not self-executing and cannot be implemented without the aid of legislative enactment because it fails to lay down a sufficient rule for accomplishing its purpose. . . . Amendment 5 raises a number of questions such as what constitutes "water pollution"; how will one be adjudged a polluter; how will the cost of pollution abatement be assessed; and by whom might such a claim be asserted." Advisory Opinion to the Governor, 706 So. 2d 278, 281 (Fla. 1997)).

During Governor Bush's administration, funding for the SFWMD significantly increased. Governor Bush proudly announced his plans to accelerate Everglades restoration through his Acceler8 initiative.[171] The agency began using bond mechanisms, including Certificates of Participation worth $546 million used to finance its Comprehensive Everglades Restoration Plan projects, including reservoirs, stormwater treatment areas, and pump stations.[172]

During the Crist Administration, a nationwide decline in the real estate market in 2007 caused a downturn in tax revenues.[173] Since *ad valorem* property tax revenues partly funded the SFWMD, the loss of home values reduced the budgeted revenues. Nevertheless, the Crist Administration continued to use the SFWMD to pursue projects, including an attempt to acquire 180,000 acres of lands from the U.S. Sugar Corporation.[174] Expanding and refinancing the Bush Administration's bond finance mechanisms, the plan would have cost in excess of $2 billion.[175] The ultimate agreement, however, was far smaller. The SFWMD closed on a "River of Grass" deal in October 2010 to acquire nearly 26,800 acres, at an investment of $194.5 million.[176] The agreement also included options to purchase another 153,000 acres should economic conditions allow in the future.[177]

The SFWMD never recovered from the real estate crash. In 2010 and 2011, at the end of the Crist Administration, *ad valorem* tax revenue averaged $425 million per year.[178] Rebounding and rising property values could have generated more revenue if tax rates had not changed. Instead, in the years thereafter, the Scott Administration reduced property tax rates for the period

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171. Dexter Filkins, *Swamped: Jeb Bush's Fight Over the Everglades*, NEW YORKER (Jan. 4, 2016), https://www.newyorker.com/magazine/2016/01/04/swamped-the-political-scene-dexter-filkins.

172. *See* JOHN W. WILLIAMS ET AL., OFFICE INSPECTOR GEN., AUDIT OF THE USES OF SERIES 2006 CERTIFICATES OF PARTICIPATION PROCEEDS 1–2, 4 (2008) (explaining use of funds for construction projects to benefit the Everglades); *see also infra* Section V, C (discussing the Comprehensive Everglades Restoration Plan).

173. *See* S. FLA. WATER MGMT. DIST., *supra* note 144, at II-19 (including a chart showing the real estate market decline based upon the Federal Housing Finance Agency's House Price Index).

174. Jim Loney, *Florida Approves $1.34 Billion U.S. Sugar Deal*, REUTERS (Dec. 16, 2008), https://www.reuters.com/article/us-florida-sugar-everglades/florida-approves-1-34-billion-u-s-sugar-deal-idUSTRE4BF7NS20081217.

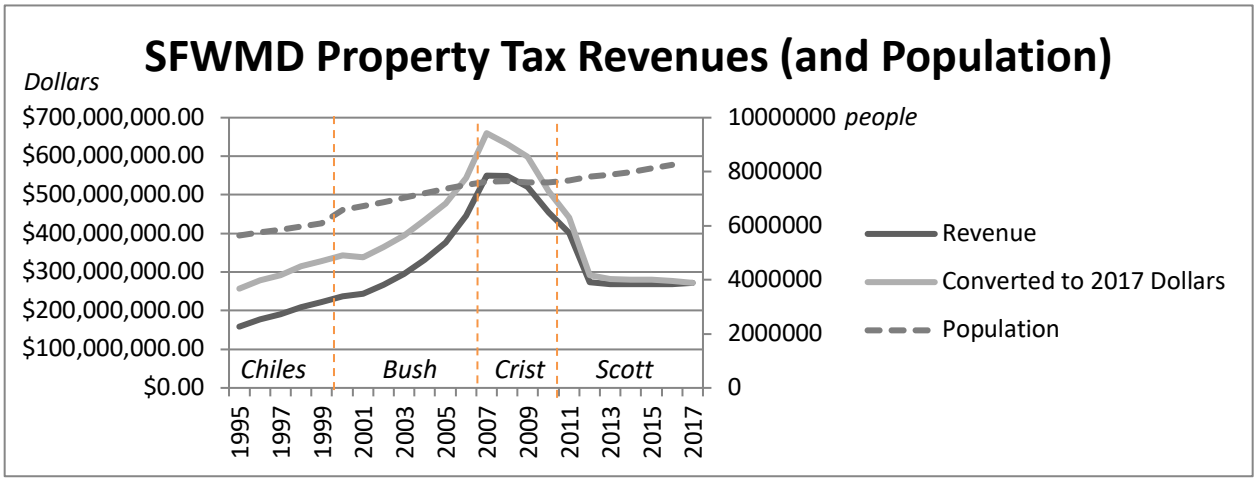
175. *See* S. FLA. WATER MGMT. DIST., REVIVING THE RIVER OF GRASS: ABOUT CERTIFICATES OF PARTICIPATE AND BOND VALIDATION (July 2009) ("[T]he District's Governing Board established a water resource financing program and approved up to $2.2 billion in certificates."); CHARLES V. STERN ET AL., CONG. RESEARCH SERV., R41383, EVERGLADES RESTORATION AND THE RIVER OF GRASS LAND ACQUISITION 1–2 (2010) (explaining the chronology and associated costs of the SFWMD plan).

176. S. FLA. WATER MGMT. DIST., 2011 SOUTH FLORIDA ENVIRONMENTAL REPORT 23 (2011).

177. Press Release, Kayla Bergeron, S. Fla. Water Mgmt. Dist., SFWMD Board Approves Affordable Plan for *River of Grass* Acquisition (Aug. 12, 2010).

178. S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-8.

from 2012 to 2017 and revenues held flat.[179] During this period, *ad valorem* revenues averaged just $270 million per year.[180] That level of tax income resembles that of 2002, when the 16-county district had 1.38 million fewer residents.[181] Adjusted for inflation, recent *ad valorem* revenues resemble those of 1996, when the district had 2.5 million fewer residents and far less responsibility.[182]



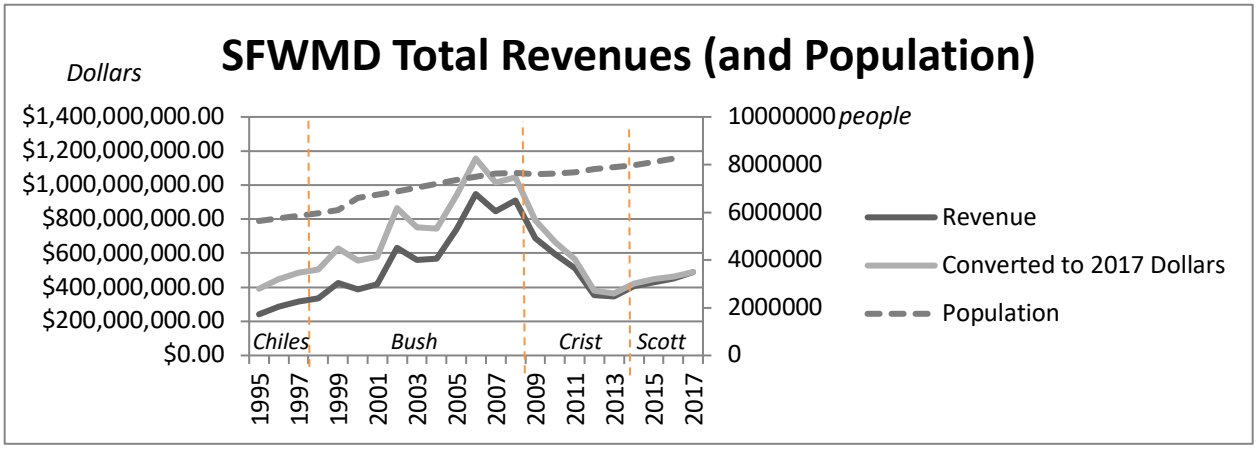
179. S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT III-29 (2012); S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT III-31 (2013); S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT III-31 (2014); S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT III-32 (2015); S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT III-34 (2016); S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at III-34.

180. S. FLA. WATER MGMT. DIST. (2012), *supra* note 179, at III-29; S. FLA. WATER MGMT. DIST. (2013), *supra* note 179, at III-31; S. FLA. WATER MGMT. DIST. (2014), *supra* note 179, at III-31; S. FLA. WATER MGMT. DIST. (2015), *supra* note 179, at III-32; S. FLA. WATER MGMT. DIST. (2016), *supra* note 179, at III-34; S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at III-34.

181. S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-6.

182. *Consumer Price Index Inflation Calculator*, BUREAU OF LABOR STATISTICS, https://data.bls.gov/cgi-bin/cpicalc.pl (last visited Sept. 12, 2019) (using January 2017 dollars).

The Scott Administration did not exercise the land acquisition option purchased by the Crist Administration, avoiding significant expenditures.[183] Although the Florida Legislature supplemented *ad valorem* taxes with additional funds, the modest uptick in total agency revenues after 2013 still leaves the water managers with funding akin to 1998, using inflation adjusted dollars.[184]



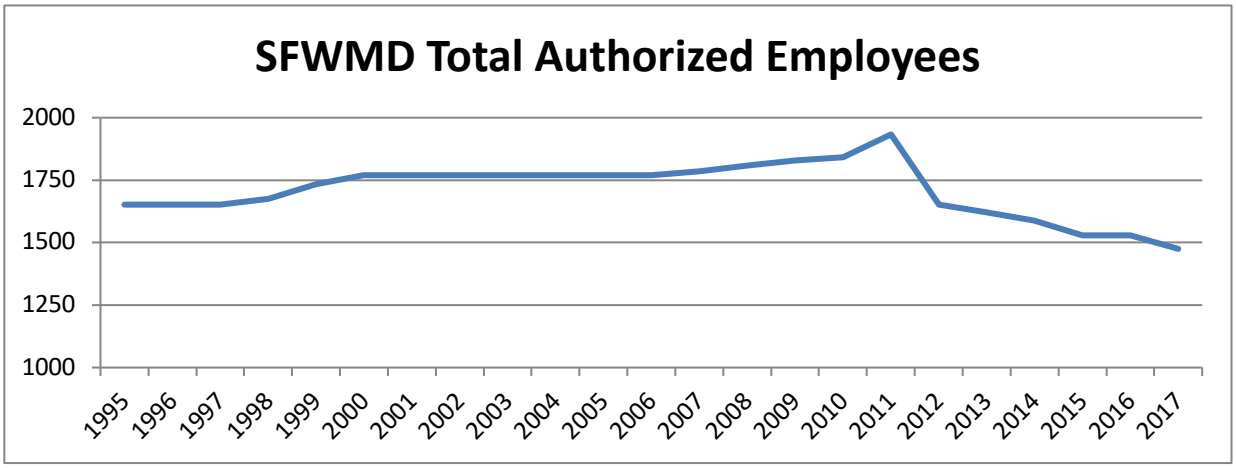
B. Fewer Personnel (and Increased Workload)

The SFWMD's budget decisions affected staffing at the agency. Data regarding the total number of authorized positions provides an important insight. The SFWMD's personnel positions gradually increased from 1,651 in 1995 to 1,771 in 2000, remained constant until 2006, climbed again to a peak of 1,933 in 2011, and fell to 1,475 in 2017.[185] Thus, total staffing at the agency is 10 percent lower than the levels held in 1995, and 24 percent lower than the 2011 peak.

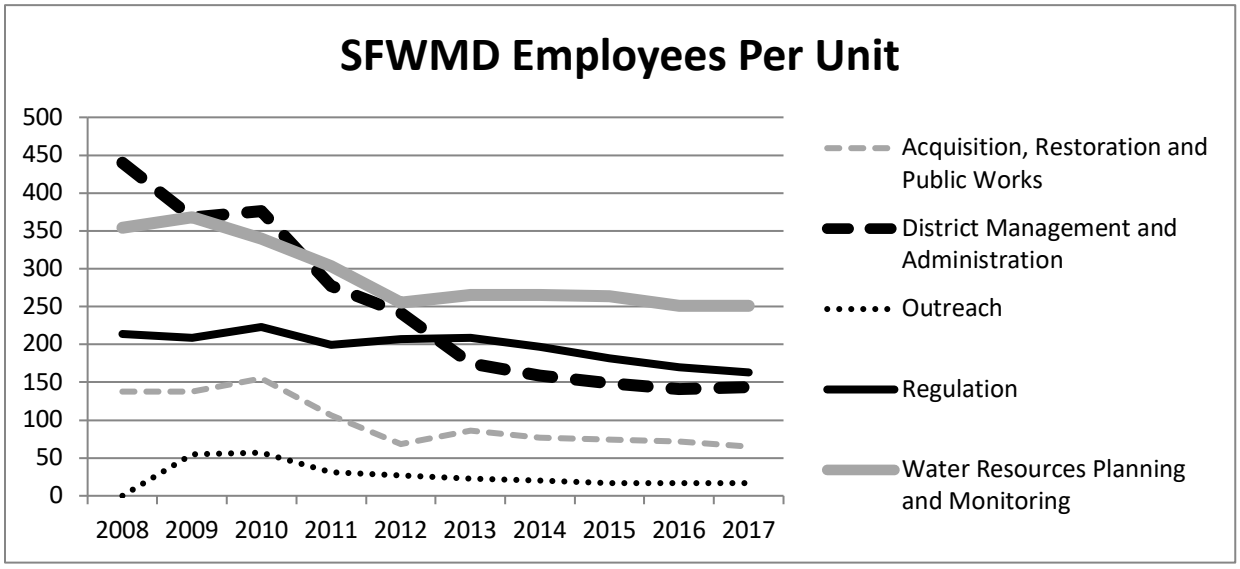
183. Amy Green, *South Florida Water Management District Terminates Sugar Land Purchase Option*, WGCU (Dec. 17, 2018), http://news.wgcu.org/post/south-florida-water-management-district-terminates-sugar-land-purchase-option.

184. S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT IV-2 (2004).

185. S. FLA. WATER MGMT. DIST. (2004), *supra* note 184, at IV-14; S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT VI-23 (2008); S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at VI-23.



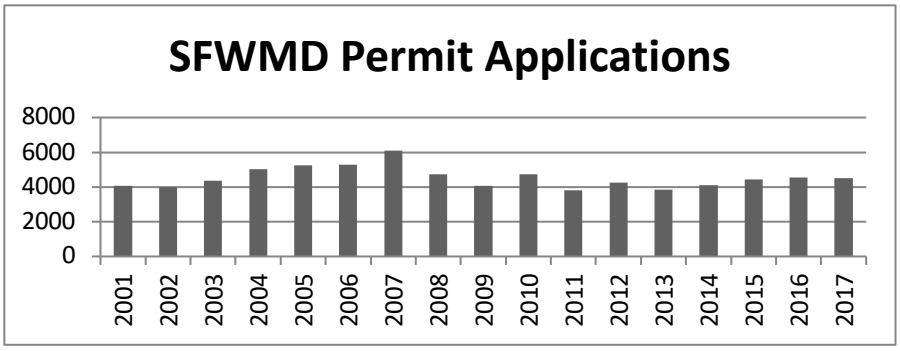
Data is available for individual units within the SFWMD for the period from 2008 to present due to an internal reorganization and restructuring of personnel in 2008. Operations and maintenance personnel increased 10 percent (from 650 in 2008 to 719 in 2017), but the number of personnel in every other unit trended downward from 2011 to 2017.[186] These trends reduced the agency's capacity to perform its statutory functions.



186. S. FLA. WATER MGMT. DIST. (2008), *supra* note 185, at VI-25; S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at VI-25.

1. Reduced Regulatory Scrutiny

Budget and staffing changes meaningfully affected the agency's implementation of its regulatory authority. For example, the SFWMD Regulation Division works on permits related to ground waters, wells, surface waters, and springs.[187] It tracks the numbers of permits issued and the enforcement actions taken. Of course, the total number of permits reviewed will vary annually due to economic and other factors. Still, total permit applications range in the thousands per year.[188]



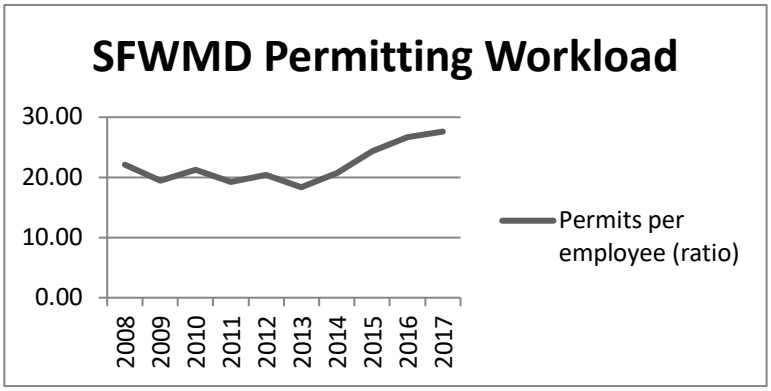
Staff reductions mean fewer people review each permit. For example, as part of the permitting process, staff must read and understand an application. They must compare the project to the statutory and regulatory criteria and may request additional information about the proposed project.[189] The application may require special permit conditions. Permit review can be a time-consuming task. A comparison of the total number of permits issued with the number of the permit reviewing staff suggests that individual workload is on the rise, which may mean less regulatory scrutiny.[190]

187. *See, e.g.*, FLA. STAT. §§ 373.203–373.250 (2019) (using water consumptively); *see also* FLA. STAT. §§ 373.302–373.342 (regulating wells); FLA. STAT. §§ 373.403–373.468 (2019) (managing and storing surface waters); FLA. STAT. §§373.801–373.813 (2019) (Florida Springs and Aquifer Protection Act).

188. *See, e.g.,* S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-26.

189. *See* FLA. ADMIN. CODE ANN. r. 40E-1.603(1) (2014) ("(a) Within 30 days of receipt of an application or notice of intent, the District shall review the application to determine whether all information needed to evaluate the application has been submitted. The District shall notify the applicant of the date on which the application is declared complete. (b) If the District determines that the application is incomplete, the District shall request the information needed to complete the application within 30 days of its receipt. The applicant shall have 90 days from receipt of a timely request for additional information to submit that information to the District."); FLA. STAT. § 373.223(1) (2019) (outlining permit conditions, including governing board water reservation regulation); *see also* FLA. STAT. § 373.229(1) (2019) (requiring permit application to supply "other information" as the governing board may deem necessary).

190. S. FLA. WATER MGMT. DIST., *supra* note 144, VI-25, VI-26.

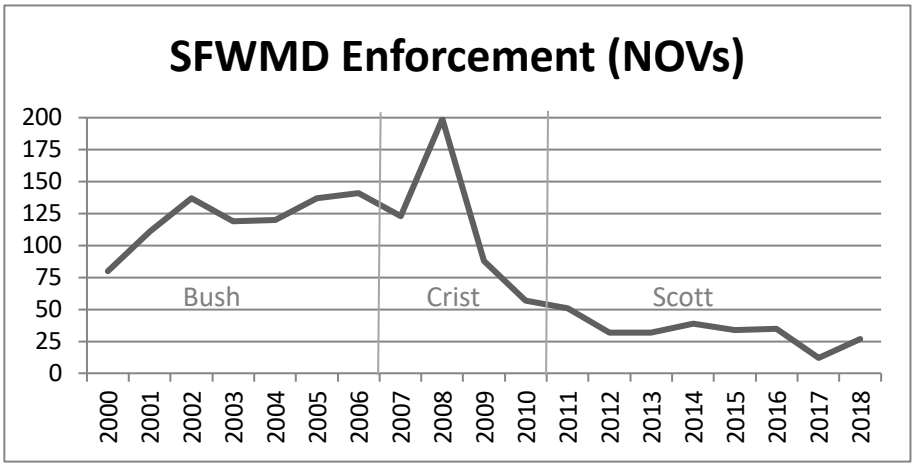


2. Less Enforcement

The permitting process does not end when a permit is issued. A permitting scheme must be enforced to be effective. Some people might act without obtaining required permits. Projects must be constructed, operated, and maintained pursuant to the permit conditions. SFWMD staff ensures that permittees comply with their duties.[191] If staff uncover violations of permit laws or conditions, then the enforcement process begins with a Notice of Violation (NOV).[192] While NOVs are not the only way enforcement activity is tracked, they are insightful because they represent an early stage of the process when a person or organization is first notified of a potential problem.

191. FLA. ADMIN. CODE ANN. r 40E-1.702(5) (2016) ("The District shall ensure that violators do not gain an economic advantage over competitors by circumventing District permitting requirements. Enforcement action shall be designed to remove any economic advantage resulting from the failure to comply with District permits and rules."); *Consumptive Water Use Permits*, S. FLA. WATER MGMT. DIST., https://www.sfwmd.gov/doing-business-with-us/permits/water-use-permits (last visited Sept. 25, 2019).

192. FLA. ADMIN. CODE ANN. r 40E-1.721(5) (1995), ("Upon receipt of a field inspection or investigation report and upon a finding of probable cause, District staff are authorized to issue a Notice of Violation providing instructions for compliance with Chapter 373, F.S., and all applicable District rules.").



This data came from the SFWMD's enforcement-tracking spreadsheet and includes the annual sum of all NOVs of any kind: environmental resource permits that regulate water quality, consumptive use permits that regulate water supplies, wetland impacts, or other.[193] Enforcement activity abruptly fell in the Crist and Scott Administrations.

C. Spending the Savings Account

In recent years, the SFWMD has embraced a strategy of "spending down" reserve funds. In other words, the agency intentionally spends previously saved money as a way to reduce taxes while still paying for project expenditures, as it explained in its financial documents:

> The District has reduced taxes and directed its fiscal resources towards its core mission of flood control, water supply, water quality and natural systems. The District has established a five-year spend-down plan to dedicate accumulated reserves and cash balances toward further improvements in water storage and water quality in the northern and southern Everglades, Lake Okeechobee and the St. Lucie and Caloosahatchee watersheds, while ensuring sufficient reserves remain available to address hurricane or unanticipated flood control infrastructure emergencies.[194]

193. S. FLA. WATER MGMT. DIST., *supra* note 161.
194. S. FLA. WATER MGMT. DIST., *supra* note 144, at I-6.

This was an intentional policy decision. Florida law authorizes the SFWMD to maintain reserves as part of its budget process, stating that the SFWMD "must set forth the proposed expenditures of the district, to which may be added an amount to be held as reserve."[195] The Governing Board decides how much money to have left at the end of the year but finding detailed information about how the reserves are implemented is difficult.[196] A search of the agency website for the term "spend down" of reserves yields no result. In fact, the basic terminology used to describe reserve funds underwent a substantial change in 2011,[197] as follows:

CHANGE IN "GENERAL FUND" TERMINOLOGY	
Categories prior to 2011	Categories after 2011
Reserved	Nonspendable
Unreserved	Restricted
	Committed
	Assigned
	Unassigned

CHANGE IN "OTHER GOVERNMENTAL FUND" TERMINOLOGY	
Categories prior to 2011	Categories after 2011
Reserved	Nonspendable
Unreserved, reported in:	Restricted
Special Revenue Funds	Committed
Capital Project Funds	Assigned
Permanent Fund	Unassigned

Changing terminology inhibits a full understanding of how reserve funds are used, but the Comprehensive Annual Financial Reports (CAFR) reveal some details. Balances held in reserves declined, as did revenues.[198] The "unreserved" and "unassigned" general fund balances are of particular note,

195. FLA. STAT. § 373.536(5)(e) (2019).

196. *See* Miller, *supra* note 9 (quoting Board member Jim Moran "When I first came on the board we had $400 to $500 million in what I call unrestricted reserves, but we've spent that down for restoration projects and other projects to what is now below $60 million and we are still only collecting the same amount we were eight to nine years ago.").

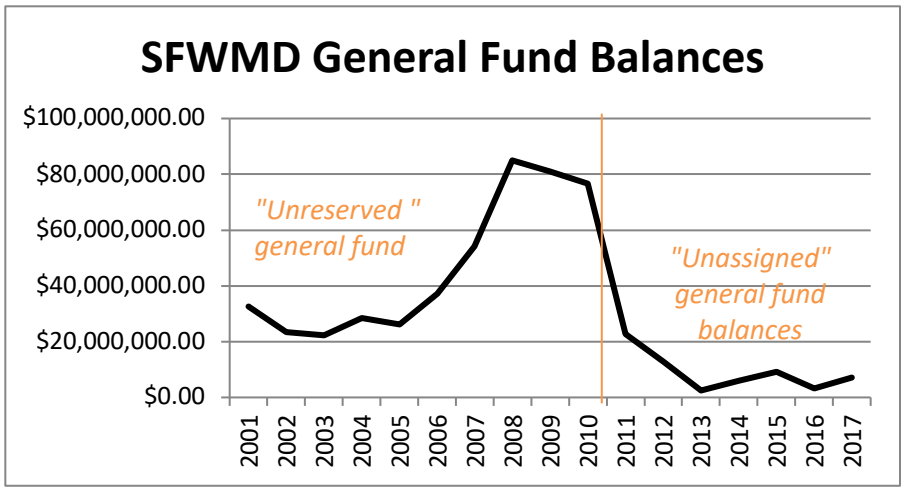
197. *Compare* S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at III-18 to III-23 (governmental and general funds) *with* S. FLA. WATER MGMT. DIST., COMPREHENSIVE ANNUAL FINANCIAL REPORT III-24 (general fund), III-3 (governmental fund) (2010).

198 S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-5.

because they measure the extra funds available to spend on the unexpected, as the SFWMD explained in the 2010 CAFR:

> The focus of the District's governmental funds is to provide information on near-term inflows, outflows, and balances of spendable resources. Such information is useful in assessing the District's financing requirements. In particular, unreserved fund balance may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year.[199]

In 2017, the SFWMD used nearly identical language to explain the term "unassigned fund balance."[200] A chart showing the "unreserved fund balance" (the term used before 2011 term) and "unassigned fund balance" (the term used in 2011 and thereafter) reveals how the agency fundamentally modified its finances.[201]



During the period from 2012 to 2017, an agency with total revenues averaging $412 million was left with an average year-end balance of just $5.6 million.[202] According to the SFWMD's own financial disclosures to the Legislature, it was "ensuring sufficient reserves remain available to address

199 *Id.* at II-10.

200 *Id.* ("In particular, unassigned fund balance may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year.").

201 *Id.* at VI-5.

202. *Id.* at VI-6.

hurricane or unanticipated flood control infrastructure emergencies."[203] The literature on financial management suggests otherwise, because an unrestricted reserve fund of three-to-six-months of expenses is common in non-profit management.[204] A similar window is expected for business planners, who are attentive to the availability of cash for lending.[205] The Government Finance Officers Association (GFOA), however, argues that Government agencies facing disaster risks need even more money in reserve:

> *Appropriate Level.* The adequacy of unrestricted fund balance in the general fund should take into account each government's own unique circumstances. For example, governments that may be vulnerable to natural disasters, more dependent on a volatile revenue source, or potentially subject to cuts in state aid and/or federal grants may need to maintain a higher level in the unrestricted fund balance. Articulating these risks in a fund balance policy makes it easier to explain to stakeholders the rationale for a seemingly higher than normal level of fund balance that protects taxpayers and employees from unexpected changes in financial condition. Nevertheless, GFOA recommends, at a minimum, that general-purpose governments, regardless of size, maintain unrestricted budgetary fund balance in their general fund of no less than two months of regular general fund operating revenues or regular general fund operating expenditures.[206]

An evaluation of the SFWMD's reserve funding reveals that its unassigned fund balances routinely fall far below the minimum GFOA recommendations. In other words, based on the unassigned general fund

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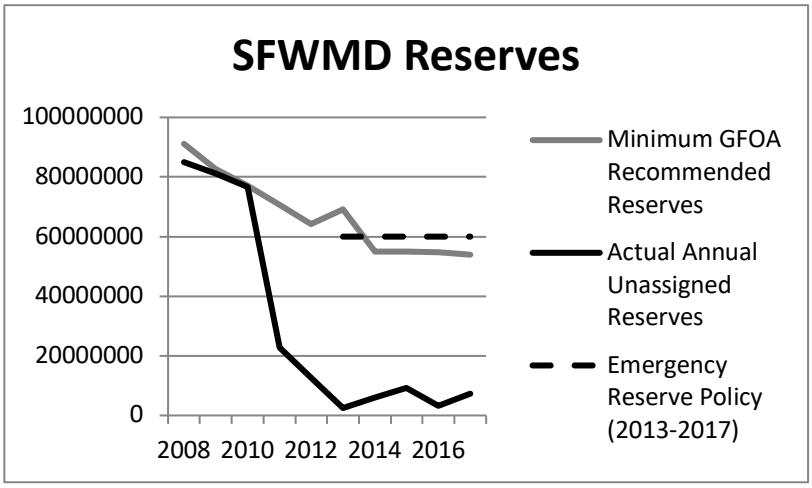
203. *Id.* at I-6.

204. NONPROFITS ASSISTANCE FUND, NONPROFIT OPERATING RESERVES AND POLICY EXAMPLES (2010), https://cgs.niu.edu/Growing-Communities/Toolbox/October/operating_reserves.pdf ("A commonly used reserve goal is three to six months' expenses. At the high end, reserves should not exceed the amount of two years' budget. At the low end, reserves should be enough to cover at least one full payroll including taxes."); *see* FISCAL MGMT. ASSOCS., DEVELOPING YOUR RESERVE FUND POLICY: A TEMPLATE AND GUIDE FOR NONPROFITS 6–7 (2018) (recommending nonprofits build a reserve fund for 3–6 months of operating expenses).

205. *See* Dave Ramsey, *Ask Dave*, https://www.daveramsey.com/askdave/small-business/6089 (last visited Sept. 25, 2019) (recommending a buiness's capital reserve emergency fund to have three to six month's worth of expenses). *But see* Hal Shelton, *How Much Cash Should a Small Business Keep in Reserve?*, SCORE.ORG (Oct. 2, 2018), https://www.score.org/blog/how-much-cash-should-small-business-keep-reserve (countering the traditional three to six month emergency fund recommendation with a more personalized estimate based on cash flow).

206. *Fund Balance Guidelines for the General Fund*, GOV'T FIN. OFFICERS ASS'N, https://www.gfoa.org/print/5024 (last visited Sept. 25, 2019).

balances, SFWMD does not maintain two-months of operating expenses.[207]



While the SFWMD's funding of the unassigned reserves appears low,[208] the district does have other categories of reserves that are "assigned," "committed," or "restricted" for specified purposes.[209] None of these line items in the SFWMD's CAFR explicitly reflect an emergency or hurricane reserve; nevertheless, the preliminary budget documents submitted to the Florida Legislature declare that the Governing Board currently has a policy of keeping approximately $60 million in reserves for hurricanes and emergency relief. [210] Assuming these funds exist through cash and investments,[211] then the SFWMD may be budgeting in a manner just slightly

207. S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-5.

208. *Id.*

209. S. FLA. WATER MGMT. DIST., *supra* note 144, at III-23 (explaining that restricted reserves can be spent only for specific purposes, such as those stipulated by creditors imposed by law; committed reserves can be used only for the specific purposes determined by a formal resolution of the District's Governing Board; assigned reserves represent amounts that are constrained by the District's intent to be used for specific purposes, but are neither restricted nor committed, and are made by the District's Executive Director or his or her designee).

210. *See* Letter from Ernie Marks, Exec. Dir., S. Fla. Water Mgmt. Dist., to Joe Negron, President of the Senate, State of Fla. & Richard Corcoran, Speaker of the House of Representatives, State of Fla. (Jan. 12, 2019) (preceding the S. FLA. WATER MGMT. DIST., FISCAL YEAR 2018–19 PRELIMINARY BUDGET SUBMISSION (2018)).

211. *See* S. FLA. WATER MGMT. DIST., *supra* note 144, at V-13 (showing available cash and investments as of September 30, 2017 as $61,343,995).

above GFOA's *minimum* recommendations.[212] Meeting the minimum level of reserve funding does not account for the world of billion-dollar risks, and will not be nearly enough.

D. Underfunding Infrastructure Maintenance

While questions exist as to the adequacy of the SFWMD's reserve fund budgeting, the reserves are not needed unless unexpected and unbudgeted expenses occur. But, according to the agency's own Inspector General, the budget for even routine maintenance of existing infrastructure is already inadequate.[213] South Florida must expect the unexpected.

In a 2018 audit of the SFWMD's operations and maintenance (O&M) of its capital assets, the Inspector General assessed the agency's process for inspection and replacement of structures.[214] The audit acknowledged that the agency is engaged in an exercise of triage, with funding below the levels needed:

> Our analysis of the O&M capital program priority project list and our review of the District's assessments of its water control structures, canals, and levees disclosed that increased funding should be considered for replacing / restoring / rehabilitating the District's water control structures, canals, and levees to ensure that integrity and reliability of south Florida's water management system. Specifically, the annual adopted budget for the O&M capital program, from Fiscal Year 2013 to Fiscal Year 2017, averaged about $53 million per year and is allocated to high risk projects. Our review of the O&M capital program priority project list disclosed that, at the current funding levels, no action has been taken on 117 of the 209 (56%) projects. Further, based on District assessments, about $88.5 million is needed annually needed to maintain, replace / refurbish the District's aging water control structures ($60 million), restore canals ($18.5 million), and rehabilitate levees ($10 million), which are considered high risk / high priority.[215]

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212. *Id.*; *see* Letter from Ernie Barnett, Interim Exec. Dir., S. Fla. Water Mgmt. Dist., to Rick Scott, Governor, State of Fla., at 33 (Aug. 1, 2014) (preceding the S. FLA. WATER MGMT. DIST., BUDGET SUBMISSION FY 2014 (2013)).

213. *See* TIMOTHY BEIRNES & JANKIE BHAGUDAS, OFFICE OF THE INSPECTOR GEN., S. FLA. WATER MGMT. DIST., AUDIT OF OPERATIONS AND MAINTENANCE CAPITAL PROGRAM 8 (Apr. 12, 2018).

214. *Id.* at 7.

215. *Id.* at 14.

In other words, the Inspector General concluded that the SFWMD's investment in its own flood-control mission fell short by $35.5 million annually. To its credit, the SFWMD has tried to minimize the risk by prioritizing the structure maintenance based on the levels of risk associated with them.[216] The risk may be underestimated because it does not fully account for the challenges of climate change and rising seas. As the Inspector General report notes, SFWMD staff evaluated canal conveyance between 2006 and 2008 and determined that a more careful evaluation of the system design was (and still is) needed[217] because drought and flooding will increase:

> The intensity of rainfall events is also changing. The District's data indicates that there has been an increase in heavy downpours in many parts of the region, while the percentage of the region experiencing moderate to severe drought increased over the past three decades. In the future, more frequent intense rainfall events are projected to occur, with longer dry periods in between. While periodic heavy downpours may increase overall precipitation totals, much of the water may be runoff that is eventually lost to tide.[218]

The increased storm intensity and the associated increase in use of drainage pumps may already be underway. According to the SFWMD data in the CAFR, volumes of water moved in 2016 and 2017 were very high, surpassing five million acre-feet of water annually.[219] Over time, as pumps and other systems work harder, age, and break down, maintenance needs will increase. While staffing of the O&M unit seems roughly on pace with the increase in water moved, whether O&M staffing is adequate in the first place, or able to deal with the changing climate or the next crisis, is yet to be learned.

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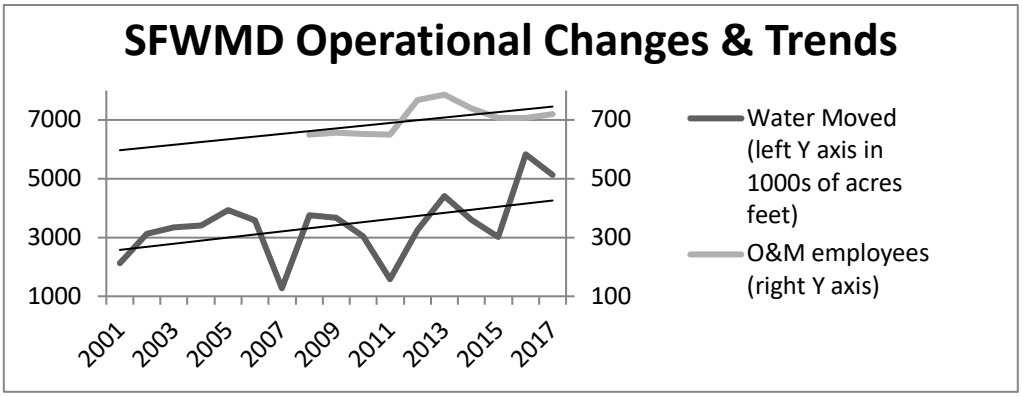
216. *Id.* at 8.

217. *Id.* at 36.

218. S. FLA. WATER MGMT. DIST., CLIMATE CHANGE & WATER MANAGEMENT IN SOUTH FLORIDA 15 (2009).

219 S. FLA. WATER MGMT. DIST., *supra* note 144, at VI-27; *see also* Mary Ellen Klas, *Sugar Growers to State: No Sale On Our Farmland South of Lake Okeechobee*, MIAMI HERALD (Feb. 6, 2017), https://www.miamiherald.com/news/local/environment/article131112014.html.



V. ENCOURAGING CHANGE: PROACTIVE POSSIBILITIES

By Florida statute, water management involves local decisions. While the governor and Department of Environmental Protection have a role, state law is clear. Local leaders—the Governing Board of each water management district—should exercise their authority to the greatest extent practicable:

> The Legislature recognizes that the water resource problems of the state vary from region to region, both in magnitude and complexity. It is therefore the intent of the Legislature to vest in the Department of Environmental Protection or its successor agency the power and responsibility to accomplish the conservation, protection, management, and control of the waters of the state and with sufficient flexibility and discretion to accomplish these ends through delegation of appropriate powers to the various water management districts. The department may exercise any power herein authorized to be exercised by a water management district; however, to the greatest extent practicable, such power should be delegated to the governing board of a water management district.[220]

220. FLA. STAT. § 373.016(5) (2019).

A. Recognize the Magnitude of the Mandates

In theory, SFWMD Governing Board members are sworn to faithfully execute Florida's water resources law.[221] Those laws are codified in Chapter 373, Florida Statutes, the printed form of which exceeds 170,000 words and 250 printed pages.[222] The law keeps growing. From 1997 to 2018, more than 7,350 legislative acts were codified in the Florida Statutes.[223] At least 17 enactments directly and substantially increased the SFWMD's responsibilities, in three categories:

(1) ***Oversight, reporting and planning.*** Some laws mandated annual reports and otherwise effected legislative scrutiny, budget and finance reporting, comprehensive planning, and permitting requirements for agency projects.

(2) ***Implementing regulatory programs.*** Other laws altered the requirements related to water supply and consumptive use permitting, conservation, reclaimed water, water quality credit trading, long term water quality compliance, and nonpoint source pollution.

(3) ***Public works project implementation.*** A few laws required construction and operation of new projects, especially regional water quality treatment and reservoir projects that benefit the Everglades, Lake Okeechobee, Caloosahatchee River, and St. Lucie River watersheds.

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221. *See* FLA. STAT. § 373.079(1) (2019) (requiring oath of office for governing board members); FLA. STAT. § 373.083(2) (authorizing the governing board to enforce any provisions of Chapter 373 on water resources).

222. FLA. STAT. §§ 373.012–373.813 (2019).

223. *See generally,* FLA. DEPT. OF STATE, State Library and Archives of Florida (2019), http://llaws.flrules.org (allowing searches of all Laws of Florida from 1997 to 2018).

NOTEWORTHY LEGISLATION AFFECTING THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT SINCE 1997

Year	Subject	Category
1997	Joint Legislative Committee on Everglades Oversight created, with reporting requirements.[224]	1
1998	Consumptive use permitting criteria expanded, with exceptions, encouraging use of water from local sources.[225]	2
1999	Authorized implementation of Comprehensive Review Study of the Central and Southern Florida Project.[226]	3
2000	Lake Okeechobee Protection Program created with additional authority for the Kissimmee River Headwaters Revitalization Project; AND Everglades Restoration Investment Act created affecting funding mechanisms and requirements.[227]	1,3
2001	Comprehensive Everglades Restoration Plan Regulation Act, with permit procedures for Lake Okeechobee and Everglades projects.[228]	1
2003	Everglades Forever Act modified and additional requirements for long term plan compliance created.[229]	3
2005	Authorized each water management district to establish a small business program; AND required cooperative development of water supplies, including saltwater, groundwater, sources made available through the addition of new storage capacity, and reclaimed water.[230]	1
2006	Required submission of an annual strategic plan and a consolidated annual report.[231]	1
2007	Amended or created new project requirements for Lake Okeechobee, Caloosahatchee River, and St. Lucie River watersheds.[232]	3
2008	Authorized water quality protection programs to include the trading of water quality credits.[233]	2

224. 1997 Fla. Laws 97-258.
225. 1998 Fla. Laws 98-88.
226. 1999 Fla. Laws 99-143.
227. 2000 Fla. Laws 2000-129; 2000 Fla. Laws 2000-130.
228. 2001 Fla. Laws 2001-172.
229. 2003 Fla. Laws 2003-12.
230. 2005 Fla. Laws 2005-215; 2005 Fla. Laws 2005-291.
231. 2005 Fla. Laws at 2005-36.
232. 2007 Fla. Laws 2007-253.
233. 2008 Fla. Laws 2008-189.

Year	Subject	Category
2009	Created new requirements related to water conservation, including irrigation and fertilizer use AND created the Central Florida Water Resource Development Initiative.[234]	1, 2
2012	Created new regulations for water supplies and reclaimed water AND encouraged public-private partnerships for water quality improvements but requiring study of baseline conditions.[235]	1, 2
2016	Omnibus Water Act: Florida Springs and Aquifer Protection Act, codifying the Central Florida Water Initiative, mandating BMPs, expanding conservation, reevaluating nonagricultural source rules.[236]	1, 2
2017	Required water storage reservoirs and other projects for regional watershed improvement.[237]	1, 3

Of course, all of these legislative requirements come with costs. Without personnel and funding, the effectiveness of these laws—no matter how well-intended—is limited.[238] The SFWMD budget today roughly mirrors that of

234. 2009 Fla. Laws 2009-199; 2009 Fla. Laws 2009-243.

235. 2012 Fla. Laws 2012-150; 2012 Fla. Laws 2012-187.

236. 2016 Fla. Laws 2016-1.

237. 2017 Fla. Laws 2017-10.

238. This table discussing the Laws of Florida is representative, but not all-inclusive. There were dozens or even hundreds of other laws, codified in the Florida Statutes, that further modified SFWD's responsibilities. For example, this list of relevant Acts from the Laws of Florida, as produced for this research project, does not include "glitch bills," nor other bills related to portions of the Florida Statutes other than Chapter 373. Laws altering the Administrative procedure requirements in Chapter 120 or laws altering water regulation in Chapter 403 could have direct effects on the agency and its decision-making process. Other bills affecting Chapter 373 in a less economically significant way that were not included in the table include: 2000 Fla. Laws 2000-319 (amending rulemaking authority of water management districts and authorizing water management district governing boards to delegate powers and duties pertaining to general permits to their executive directors); 2001 Fla. Laws 2001-193 (relating to the Lake Okeechobee Protection Program and sewer rates to cover wastewater residual treatment and disposal); 2001 Fla. Laws 2001-256 (relating to water resources and modifying agency authorities related to donations, leases, intellectual property, contracts, mineral interests, easements, and appraisals); 2003 Fla. Laws 2003-64 (relating to the inter-district transfer and use of water); 2003 Fla. Laws 2003-124 (relating to water use and impoundment construction permits and requiring that permits contain certain specified language); 2003 Fla. Laws 2003-265 (modifying various provisions of Chapters 373 and 403 related to state water policy); 2004 Fla. Laws 2004-53 (piloting a project to consolidate plans and reports); 2005 Fla. Laws 2005-29 (modifying requirements of Lake Okeechobee Protection Program); 2005 Fla. Laws 2005-121 (requiring water management districts with structures or facilities identified as critical infrastructure to conduct criminal history checks of certain persons); 2006 Fla. Laws 2006-13 (relating to the planned east coast buffer water resources management plan and mitigation fees under the Miami-Dade County Lake Belt Mitigation Plan); 2007 Fla. Laws 2007-191 (relating to surface water protection programs and the regulation of peat mines); 2008 Fla. Laws 2008-49 (relating to bonds for Everglades); 2009 Fla. Laws 2009-201 (relating to the limitation of liability of water management districts); 2011 Fla. Laws 2011-165 (creating agricultural-related exemptions to water management requirements); 2012 Fla. Laws 2012-107 (relating to the Miami-Dade County Lake Belt Mitigation Plan); 2013 Fla. Laws 2013-59 (revising long term planning requirements in the

1998.[239] Staffing is below 1995 levels.[240] In other words, as a practical matter, every law codified thereafter is simply an unfunded mandate.

B. Beware the Budget Constraints

Exemplifying the SFWMD's budgetary woes, property tax revenues were capped at $284,901,967 in 2011.[241] Therefore, the budget could not increase unless the Legislature said otherwise, and inflation functioned as a yearly pay cut for the SFWMD. Recognizing the economic challenge that such a law created, the Legislature later repealed the statutory budgetary limit.[242] Nevertheless, Florida law continues to contain a vigorous process for legislative oversight, requiring annual review of a preliminary budget and authorized millage rates for each water management district.[243] The SFWMD must explain why any increases in taxes might be required, especially any taxes resulting from new construction within the district.[244] In practice, this language suggests that only new construction can justify revenue increases.[245]

Yet absent money and people, even the most conscientious leaders cannot accomplish much. As mentioned earlier, the Everglades Forever Act of 1994 included dedicated sources of funding.[246] Staffing increased slightly in the years thereafter, but then precipitously declined.[247] Completing new projects, while continuing to maintain existing ones, requires more funding

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Everglades Forever Act); 2013 Fla. Laws 2013-146 (amending regulation of water quality credit trading); 2013 Fla. Laws 2013-176 (amending rules for environmental resource permitting); 2013 Fla. Laws 2013-229 (relating to water management districts and water supply agreements); 2015 Fla. Laws 2015-229 (relating to the implementation of the water and land conservation constitutional amendment); 2018 Fla. Laws 2018-155 (relating to water management district surplus lands).

239. S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at V-41; S. FLA. WATER MGMT. DIST. (2004), *supra* note 184, at IV-2.

240. *Id.*

241. *See* FLA. STAT. § 373.503(1) (2019). ("It is the finding of the Legislature that the general regulatory and administrative functions of the districts herein authorized are of general benefit to the people of the state and should fully or in part be financed by general appropriations. Further, it is the finding of the Legislature that water resources programs of particular benefit to limited segments of the population should be financed by those most directly benefited. To those ends, this chapter provides for the establishment of permit application fees and a method of ad valorem taxation to finance the activities of the district.").

242. 2012 Fla. Laws 2012-126.

243. *See* S. FLA. WATER MGMT. DIST., SFWMD FISCAL YEAR 2019-2020: JULY PROPOSED TENTATIVE BUDGET UPDATE & PROPOSED MILLAGE RATES 3 (2019) (following the statutory oversight mandated by FLA. STAT. § 373.535).

244. FLA. STAT. § 373.536 (2019).

245. *Id.*

246. FLA. STAT. § 373.4592(3)(a) (2019).

247. S. FLA. WATER MGMT. DIST. (2004), *supra* note 184, at IV-14; S. FLA. WATER MGMT. DIST. (2008), *supra* note 185, at VI-23; S. FLA. WATER MGMT. DIST. (2017), *supra* note 144, at VI-23.

and staff, not less. So, to withstand the inevitable legislative scrutiny of the agency budget, a careful and realistic accounting of the economic and staffing problems is sorely needed.

C. Continue the Conversation with the Corps

For decades, the State of Florida and the United States of America have engaged in an ongoing policy dialogue—sometimes necessitating litigation—about the management of the South Florida watershed. [248] In the 1990s, the SFWMD, the U.S. Army Corps of Engineers, and other state and federal partners and stakeholders engaged in a massive "Restudy" of the Central & South Florida Flood Control Project and its ecological effects upon the Everglades. [249] The Restudy ultimately led to the Comprehensive Everglades Restoration Plan (CERP); approved by Congress in the Water Resources Development Act of 2000.[250]

As part of this process, the state and federal governments completed a massive feasibility study and environmental impact statement known as the Yellow Book.[251] The CERP process embraced more than four-dozen projects to improve water quantity, water quality, and hydropatterns.[252] Admittedly, the federal government can be a frustrating partner. The SFWMD has been highly critical of the rate and amounts of federal funding for completing these projects.[253] Given the current state of affairs in South Florida, the risks ahead, and the enormous costs, a new conversation with the federal government

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248. U.S. ARMY CORPS OF ENG'RS, SOUTH FLORIDA ECOSYSTEM RESTORATION (SFER) OVERVIEW, (MAR. 2019) https://www.saj.usace.army.mil/About/Congressional-Fact-Sheets-2019/South-Florida-Ecosystem-Restoration-SFER-Overview-C-/ (noting that the Central and Southern Florida (C&SF) project was authorized under the Flood Control Acts of 1948, 1954, 1960, 1962, 1965, 1968, and the Water Resources Development Acts (WRDA) of 1986, 1988, 1990, 1992,1996, 1999, 2000, and 2007). Noted earlier, the federal government sued the state for allegedly violating water quality standards, and the parties entered into the Consent Decree that has long governed over the Everglades restoration. United States v. South Florida Water Management Dist., 847 F. Supp. 1567 (S.D. Fla. 1992).

249. GODFREY, *supra* note 75, at 201–212.

250. Water Resources Development Act, Pub. L. No. 106-541, § 601, 114 Stat. 2572, 2680–2693 (2000); Michael Voss, *The Central and Southern Florida Project Comprehensive Review Study: Restoring the Everglades*, 27 ECOLOGY L. Q. 751, 757 (2000).

251. DEP'T OF ARMY & U.S. ARMY CORPS OF ENG'RS, CENTRAL EVERGLADES PLANNING PROJECT: FINAL INTEGRATED PROJECT IMPLEMENTATION REPORT AND ENVIRONMENTAL IMPACT STATEMENT § 1.1 (2014).

252. *See* U.S. ARMY CORPS OF ENG'RS, INTEGRATED DELIVERY SCHEDULE (IDS) SFER PROGRAM SNAPSHOT THROUGH 2030 (2018) (listing more than four-dozen projects).

253. *Federal Support Needed to Fully Implement CERP,* S. FLA. WATER MGMT. DIST., https://www.sfwmd.gov/our-work/cerp-project-planning/cerp-implementation (last visited Feb. 19, 2019); U.S. ARMY CORPS OF ENG'RS, *supra* note 252 (acknowledging Estimated Total Authorized Cost of $16,052,201,000, Estimated Federal Cost (USACE) $8,132,361,000, and Allocation through FY18 of $2,791,493,000).

should begin. The Corps and the SFWMD should reopen the Yellow Book to rediscover options and consider whether current plans should adapt to new information. The National Academy of Sciences reached a similar conclusion in 2016 when its careful assessment of progress in the Everglades declared – in bold-face font – that CERP has made little progress and was not in synch with existing science:

> **The CERP has made limited progress in articulating restoration objectives that are sufficiently quantitative to support effective planning, implementation, and assessment. An effort is now needed to develop quantitative restoration goals that capture new science and address potential conflicts in restoration.**[254]

Calling for a change in the status quo, the National Academy of Sciences also reminded everyone that CERP was intended to be an adaptive process with a five-year review that integrated new information:

> **A systemwide analysis of the potential future state of the Everglades ecosystem, with and without CERP and other restoration projects, should be conducted in conjunction with a CERP Update, which is long overdue.** The regular 5-year CERP updates called for in the Programmatic Regulations to evaluate the restoration plan considering new scientific, technical, and planning information have not been routinely conducted. A holistic, forward-looking analysis of the possible future state of the ecosystem is needed in the light of new knowledge gained over the past 16 years. This analysis should consider various scenarios for climate change and sea level rise, and explore the ecosystem implications of various options for future CERP implementation. By exploring alternative future scenarios, considering uncertainties in climate or funding to support implementation, decision makers and stakeholders will be better informed of the implications of near- and long-term decisions.[255]

The conversation between the SFWMD and the U.S. Army Corps of Engineers—along with other state, federal and non-governmental stakeholders—must resume. But, with current staffing and funding levels, the agency will hopelessly struggle to engage in any meaningful dialogue

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254 NAT'L ACADS. OF SCIS., ENG'G, & MED, PROGRESS TOWARD RESTORING THE EVERGLADES: THE SIXTH BIENNIAL REVIEW 200 (2016) (original emphasis).

255. *Id*. at 201 (original emphasis).

about new or revised projects.[256] In other words, CERP has become little more than just another unfunded mandate.

D. Leave Room for Leadership

For years, the public servants and employees at the SFWMD have labored to fulfill their duties. The many accountants, analysts, engineers, lawyers, scientists, and other professionals working for the agency make recommendations and manage dozens of projects, hundreds of laws, thousands of permits, billions of gallons, and countless environmental challenges as best they can. Ultimately, however, it is the Governing Board of the agency, the Florida Legislature, and the governor who must make the difficult decisions and rethink the agency's shrinking budget. As this article has noted, many governments are investing in water resources and infrastructure resilience. Unfortunately, most of those investments are involuntary, necessitated by disaster.

Proactive management is possible. There are countless recommendations that could be made based on the information above, and future scholarship will make additional recommendations. For now, the following four measures should be evaluated:

(1) Budgets should increase to levels capable of meeting statutory mandates, including adequate funds for infrastructure maintenance, repair and upgrading.

(2) Staffing levels should increase to ensure capacity to implement projects, operate and maintain infrastructure, and implement regulatory programs.

(3) Adequate reserve funds for emergency circumstances should be separately maintained with transparent budgeting and accounting.

(4) The SFWMD's Strategic Plan should carefully reconsider priorities, using a process to engage state and federal officials,

256. *See* GARTH REDFIELD ET AL., LAKE O ARCHIPELAGOS: A CONCEPTUAL PROPOSAL TO CREATE NATURAL SYSTEMS WITHIN LAKE OKEECHOBEE TO TREAT NUTRIENTS AND COMBAT HARMFUL ALGAL BLOOMS, TO BENEFIT NATURAL RESOURCES, AND TO ENHANCE HUMAN RECREATION, SUBMITTED IN RESPONSE TO DEP RFI POSTING NUMBER: 2020001 RE: METHODS TO PREVENT, COMBAT OR CLEAN UP HARMFUL ALGAL BLOOMS IN FLORIDA'S FRESHWATER BODIES AND ESTUARIES 4 (2019) (contributing a recent proposal sent to the Florida Department of Environmental Protection, by the author and colleagues, encouraging the use of natural systems to reduce nutrients and harmful algal blooms in Lake Okeechobee).

> local government leaders, and the stakeholder community, with special attention to the risks of emergencies, disaster, and the longer-term challenges of harmful algal blooms, and rising seas.

Fierce opponents of taxes, government regulation, and the water management districts may decry these recommendations and the associated expenses. They will have every opportunity to voice their views during the public budget process described elsewhere in this article. They will attend district budget hearings and oversight hearings before the Florida Legislature. Afterwards, the local governing board members and agency staff must explain and support their decisions.

The decision to increase the SFWMD budget, and to enhance its reserves, cannot and must not be lightly made. But, the very real risks of a water management disaster must not be blithely ignored. The crisis will come. The water managers should prepare for the inevitable.

VI. FACING THE FUTURE

All across the nation and the globe, people have suffered the consequences of water management mistakes. The deconstruction of the South Florida Water Management District foreshadows a similar disaster and more human misery. The rest of the nation should pay careful attention.

The worst case need not happen. The core statutory objectives of the Florida Water Resources Act of 1972 are to achieve beneficial use of water resources and to promote public health and safety.[257] The duty of the Florida Governor, the Florida Legislature, and the SFWMD's Governing Board is to make hard decisions to protect the public and its water resources.[258] The evidence above explains why Florida leaders should pursue an immediate effort to rebuild the agency.

In theory, the legal system can help avoid, mitigate and sometimes even solve problems. In practice, courageous leaders who understand the cruel, yet elementary logic of math must implement the laws. Water managers cannot keep doing more with less. New legal mandates in water management are mere statements of aspiration when agencies lack sufficient funds or personnel to implement them. At present, complying with the law by providing flood control, emergency preparedness, water supplies, adequate water quality, and water resource protection is impossible. Demanding improved results, without increased investment, is simply absurd.

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257. *See* FLA. STAT. § 373.439(1)(a) (2019) (authorizing remedial measures to protect life and property in the event of a stormwater management emergency).

258. FLA. STAT. §§ 373.016(3), 373.171, 373.439 (2019).

Of course, even with extraordinary talent and unlimited funds, implementing solutions to water-resource challenges take time. Litigation with third parties or regulation by and coordination with the federal government creates delays and complications.[259] Even if unanimous policy agreement could be achieved, with new treatment projects built, legacy pollution in the sediments may last for decades.[260] Still, flood control, water supplies, water quality, and the regional ecosystems need to be improved. Board Members and public servants at the SFWMD must engage in a dialogue with stakeholders, lawyers, judges, state legislators and federal regulators to obtain enough funding to benefit the people and meaningfully implement the law. Democracy is neither easy nor free.

Inaction is a choice by default. A relentless Mother Nature makes decisions of her own. Time decays the water infrastructure. Ecosystems decline. Pollution problems accumulate and compound. Accelerating evapotranspiration and harsher droughts threaten water supplies. Salt-water intrusion contaminates aquifers and magnifies the water supply risks. Rising seas reduce drainage capacity. Warming waters increase the intensity of hurricanes.

Insufficiently attuned to these risks, humans keep moving to South Florida, perhaps lured by lower taxes. But to the extent that the budget cuts at the SFWMD generated modest tax savings to property owners or any stimulus for the economy, the modest benefits came with incalculable costs. The SFWMD is akin to an emergency room engaged in high-stakes triage with too few doctors, insufficient resources, and more sick patients on their way. Underfunded and understaffed, the agency cannot perform miracles. It can barely send out a Notice of Violation.

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259. *See, e.g.*, Friends of the Everglades v. Envtl. Prot. Agency, 699 F.3d 1280, 1283 (11th Cir. 2012) (noting ongoing disagreements between the Friends of the Everglades and U.S. Environmental Protection Agency with SFWMD related to whether the District's structures required federal permits or regulation pursuant to the Clean Water Act); *see also* Friends of the Everglades v. S. Fla. Water Mgmt. Dist., 570 F.3d 1210, 1213 (11th Cir. 2009) (explaining that the appeal turns on whether the transfer of a pollutant from one navigable body of water to another is a "discharge of a pollutant" within the meaning of the Clean Water Act); Miccosukee Tribe of Indians of Fla. v. United States., No. 04-21448-CIV, 2011 WL 1624977, at *1 (S.D. Fla. Apr. 26, 2011); Keith W. Rizzardi, *Regulating Watershed Restoration: Why the Perfect Permit is the Enemy of the Good Project*, 27 NOVA L. REV. 51, 53 (2002) (discussing delays and complications).

260. Katrina Elsken, *Muck on Lake Bottom Complicates Phosphorus Loading Problem*, LAKE OKEECHOBEE NEWS (Jan. 7, 2018), https://lakeokeechobeenews.com/lake-okeechobee/muck-lake-bottom-complicates-phosphorus-loading-problem/; *see generally* UNIV. OF FLA., PHOSPHORUS RETENTION AND STORAGE BY WETLANDS IN THE OKEECHOBEE DRAINAGE BASIN (2012) (describing retention of phosphorus pollutants).

In 2019, Hurricane Dorian struck the Bahamas, directly to the east of the SFWMD headquarters.[261] It was the strongest Atlantic hurricane landfall on record.[262] The storm left behind rubble, missing persons, and death.[263] Although it turned north, missing the Florida shores, it scared the region.[264] Projections warned that more than 660,000 Florida homes were at risk of flooding due to rainfall, tides, and storm surges.[265] Public officials tried to reassure the public as they contemplated the failure of the Lake Okeechobee dike as a plausible scenario.[266] High-profile debates began over whether to drain waters in anticipation of future storms or to store them in anticipation of future droughts.[267] Two weeks later, the SFWMD Governing Board met. As if Hurricane Dorian had never happened, the agency decided not to increase its budget or its reserves.[268] Instead, it lowered the tax rates again.[269]

The catastrophic hurricane, the massive flood, and the unexpected critical infrastructure failure will happen. The harmful algal blooms will continue. The seas will rise. Inadequate water management systems will fail. Maybe, when disaster strikes South Florida, the charitable non-profits and federal government will offer adequate disaster response, relief, and recovery funding. Maybe not. In the years thereafter, as the region tries to rebuild, an angry public will search for accountability, and accuse their state and local

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261. Doyle Rice, *Dorian's Legacy: The Slowest, Strongest Hurricane to Ever Hit the Bahamas,* USA TODAY (Sept. 7, 2019), https://www.usatoday.com/story/news/nation/2019/09/06/hurricane-dorian-becomes-strongest-slowest-hurricane-hit-bahamas-record/2232225001/; Gary Detman & Sabrina Lolo, *Catastrophic Hurricane Dorian Pounds the Bahamas; Hurricane Warnings Issued in Florida* (Sept. 1, 2019), https://cbs12.com/news/local/hurricane-dorian (noting South Florida braced for possible hurricane force and tropical storm force winds).

262. Detman & Lolo, *supra* note 261.

263. Kirk Semple, *Corpses Strewn, People Missing a Week After Dorian Hit the Bahamas,* N.Y. TIMES (Sept. 8, 2019), https://www.nytimes.com/2019/09/08/world/americas/bahamas-dead-dorian.html.

264. Phil Helsel et al., *As Hurricane Dorian Begins Lashing Florida, Southeast Braces for Disaster*, NBC NEWS (Sept. 4, 2019) https://www.nbcnews.com/news/weather/hurricane-dorian-weakens-category-3-it-camps-out-over-devastated-n1049011.

265. Ed Leefeldt, *668,000 Florida Homes at Risk from Hurricane Dorian*, CBS NEWS (Aug. 30, 2019), https://www.cbsnews.com/news/668000-florida-homes-at-risk-from-hurricane-dorian/.

266. Christine Stapleton, *Storm Not Likely to Breach Lake O Dike, Corps Says*, THE PALM BEACH POST, Aug. 31, 2019, at A14; *Corps Prepares for Hurricane Dorian*, U.S. ARMY CORPS OF ENG'RS (Aug. 30, 2019), https://www.saj.usace.army.mil/Media/News-Releases/Article/1948974/corps-prepares-for-hurricane-dorian/.

267. Press Release, Brian Mast, Congress, Mast Urges Army Corps To Avoid Discharges After Hurricane Dorian (Sept. 5, 2019), https://mast.house.gov/2019/9/mast-urges-army-corps-to-avoid-discharges-after-hurricane-dorian.

268. Tyler Treadway, *South Florida Water Management District Board OKs $972.3M Budget, Rolled-back Tax Rate*, TREASURE COAST NEWSPAPERS (Sept. 12, 2019), https://www.tcpalm.com/story/news/local/indian-river-lagoon/health/2019/09/12/sfwmd-board-oks-972-3-million-budget-rolled-back-tax-rate/2286780001/.

269. *Id.*

public officials and water managers of ethical breaches and dereliction of duty.[270] South Florida, and the nation, must brace for turbulent times.

270. *See generally* Keith W. Rizzardi, *Rising Seas, Receding Ethics? Why Real Estate Professionals Should Seek the Moral High Ground*, 6 WASH. & LEE J. ENERGY, CLIMATE & ENV'T. 402 (2015) (emphasizing duties of truthfulness, honesty and disclosure of material facts); Keith W. Rizzardi, *Sea Level Lies: The Duty to Confront the Deniers*, 44 STETSON L. REV. 75 (2014) (arguing when coastal real estate professionals and lawyers ignore the risks of rising seas, they contradict professional ethical duties, which extends to all other water management professionals.)

ALL IS FOR THE BEST IN THE BEST OF ALL POSSIBLE WORLDS: THE UNNECESSARY ENVIRONMENTAL COSTS OF FEDERAL CANNABIS PROHIBITION

Chester Harper

Abstract

Many strong criticisms have been leveled against federal cannabis prohibition, including its lack of scientific basis, its origins in racial animus, the racial disparities in its enforcement, and the negative impact it continues to have across society. Recent scholarship has added a new argument to the list: cannabis prohibition is terrible for the environment. Both legal and illegal production is fraught with negative environmental externalities. Illegal production is damaging because it happens with no oversight. Legal production is damaging because the normal regulatory mechanisms intended to protect the environment and public health are federal and thus precluded from regulating the cannabis industry. Prohibition, consequently, has left regulation to state-level agencies which are ill-equipped for the task. Federal legalization offers the opportunity to mitigate these externalities by removing the market for illegal cannabis and effectively regulating a power- and water-intensive agricultural industry. With no realistic prospect of federal legalization in sight, however, the environmental impact of cannabis production in the U.S. remains an unnecessary cost of a failed policy. Nevertheless, the trend towards legalizing cannabis—both for medicinal and recreational use—continues globally, and states can benefit from the lessons of other countries unencumbered by a dysfunctional federal hierarchy.

INTRODUCTION

The legal cannabis industry is poised to explode worldwide. Within the next decade, the global cannabis market is predicted to grow by over 500% as an increasing number of countries and U.S. states legalize cannabis for medicinal and recreational use.[1] However, even though demand and profitability have increased, the negative environmental externalities of the cannabis industry have become a growing source of concern.[2] The worries about the legal industry follow a long history of pre-legalization ecological damage from a time when most cannabis producers in the United States operated illicitly on public lands.[3]

Both before and after the current legalization movement, a unique issue has exacerbated the problem and impeded efforts to curtail the environmental damage of cannabis production: federal prohibition.[4] Federal criminalization of cannabis pushed the industry underground and removed any incentive for growers to concern themselves with externalities.[5] Furthermore, today, where cannabis production is legal in some form in over half of all states, federal agencies cannot fulfill their normal regulatory roles because cannabis remains a Schedule I controlled substance under the Controlled Substances Act.[6] The result is that states have been left to their own devices for regulating the cannabis industry in a patchwork approach lacking the resources or expertise of federal agencies.[7]

This Note will look at the specific environmental problems that arise in the United States because of federal cannabis prohibition. Section I will look at the extensive environmental impact of both legal and illegal cannabis

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1. *See* Thomas Pellechia, *Legal Cannabis Industry Poised for Big Growth, in North America and Around the World*, FORBES (Mar. 1, 2018), https://www.forbes.com/sites/thomaspellechia/2018/03/01/double-digit-billions-puts-north-america-in-the-worldwide-cannabis-market-lead/#487229a56510 (noting North American cannabis purchases will increase from $9.2 billion to $47.3 billion within the next decade).

2. Gina S. Warren, *Regulating Pot to Save the Polar Bear: Energy and Climate Impacts of the Marijuana Industry*, 40 COLUM. J. ENVTL. L. 385, 401–02 (2015).

3. *See* Warren Eth, *Up in Smoke: Wholesale Marijuana Cultivation Within the National Parks and Forests, and the Accompanying Extensive Environment Damage*, 16 PENN ST. ENVTL. L. REV. 451, 452 (2008) (discussing environmental damage inflicted by illegal growing operations).

4. *See* Tiffany Stecker, *Federal Ban—and Anti-Pot EPA—Has States, Firms Scrambling*, BLOOMBERG LAW NEWS (July 20, 2017), https://news.bloombergenvironment.com/environment-and-energy/federal-banand-anti-pot-epahas-states-firms-scrambling?context=article-related (noting federal ban on marijuana cultivation).

5. *See* Eth, *supra* note 3, at 467–68 (noting that federal ban encouraged seclusion).

6. Controlled Substances Act, 21 U.S.C. § 812(c); *see also* Schedule of Controlled Substances, 21 C.F.R. § 1308.11 (2018) (listing cannabis as a Schedule I substance); *see, e.g.,* COLO. DEP'T OF AGRIC., FACTUAL AND POLICY ISSUES RELATED TO THE USE OF PESTICIDES ON CANNABIS (2016) (noting EPA cannot regulate pesticides on cannabis because cannabis is not an herb, spice, or vegetable).

7. COLO. DEP'T OF AGRIC., *supra* note 6.

production and efforts made by states to ameliorate this impact, including state-level legalization. Section II will look at federal obstruction of cannabis-related state environmental policies. These issues include the inability of the Environmental Protection Agency (EPA) to engage in research or recommend pesticides suitable for cannabis production and limitations on states to create their own regulations because of field preemption. Finally, Section III will present an original piece of proposed legislation named the Cannabis Cultivation Act. Drawing on the issues identified in the first part of this work, the provisions of the Cannabis Cultivation Act offer a comprehensive, state-centered, federal regulatory scheme designed to mitigate or resolve the cannabis industries externalities.[8]

I. THE ENVIRONMENTAL IMPACT OF FEDERAL CANNABIS PROHIBITION

Federal cannabis prohibition in the United States began with the Marihuana Tax Act of 1937 but came into full form with the Controlled Substances Act of 1971 (CSA).[9] The aggregate effect of prohibition has been to drive the use, production, and sale of cannabis underground but not to limit demand.[10] According to the Substance Abuse and Mental Health Services Administration, approximately 24 million Americans over the age of 12 were current cannabis users in 2016, which is more users than all other illicit drugs combined.[11] The impact of prohibition on criminal justice and public policy has been well-documented and has formed a cornerstone for state-level initiatives to legalize cannabis.[12] One topic that is only now gaining traction is the environmental impact of cannabis production, both legal and illegal.[13]

8. The Cannabis Cultivation Act is original to this Note.

9. Marihuana Tax Act of 1937, 50 Stat. 551; 21 U.S.C. §§ 801-889.

10. *See generally* REBECCA AHRNSBRAK ET AL., SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., KEY SUBSTANCE USE INDICATORS IN THE UNITED STATES 1 (2017) (discussing the historic increase of cannabis usage in the United States).

11. *Id.* at 15.

12. *See generally* AM. C. L. UNION, THE WAR ON MARIJUANA IN BLACK AND WHITE (2013) (examining the enormous expense of the war on cannabis and the fundamentally biased effect it has had on minority communities in the United States).

13. *See generally* Madison Park, *Use of Federal Lands for Illegal Pot a Growing Concern, California Officials Say*, CNN (May 30, 2018), https://www.cnn.com/2018/05/30/us/california-illegal-marijuana-federal-lands/index.html (discussing the illegal environmental impact of cannabis production); Vince Palace, *We Must Study Marijuana's Impact on the Environment Before It's Too Late*, GUARDIAN (Dec. 4, 2018), https://www.theguardian.com/commentisfree/2018/dec/04/canada-marijuana-legalization-environment-impact (discussing the legal environmental impact of cannabis production); Clayton Aldern, *Everything You Need to Know About Pot's Environmental Impact*, GRIST (Apr. 19, 2016), https://grist.org/living/everything-you-need-to-know-about-pots-environmental-impact/ (discussing the legal and illegal environmental impacts of cannabis production).

A. The Environmental Legacy of Illegal Cannabis Production

Illegal production in particular has created lingering ecological issues. By prohibiting legal, regulated cannabis production, the federal government has created a thriving black market marked by indifference to the externalities of grow operations.[14] Furthermore, illicit growers—who are increasingly associated with foreign drug trafficking organizations—have been moving into remote areas of U.S. National Forests and other public lands to avoid authorities.[15] This move has left severe and lingering ecological damage in its wake.[16]

1. Toxic Contamination on Public Lands

The federal government has long been aware of the staggering environmental damages caused by illegal grow operations on U.S. public lands.[17] In 2011, a report by the U.S. Senate Caucus on International Narcotics Control reported domestic production in 20 states and 67 National Forests; between 2006 and 2011, 13,843,937 plants were destroyed on public lands during drug enforcement operations.[18] While the authorities' main focus was destroying the illicit product, the operations also uncovered substantial damage and contamination in the surrounding areas.[19] Operation Full Court Press, a focal point of the Caucus report, seized more than $800 million worth of illegally grown cannabis in northern California and resulted in 159 arrests.[20] Moreover, the agents found 5,400 pounds of fertilizer, 260 pounds of pesticides, and 26 tons of trash at the grow sites.[21]

Environmental damage from illegal cannabis production comes in a number of forms. Unregulated use of pesticides can contaminate soil and

14. *See* Eth, *supra* note 3, at 471–72 (noting environmental harms of illegal growing operations).
15. *Id.* at 469.
16. *Id.* at 470.
17. *See, e.g., Marijuana Cultivation on U.S. Public Lands: U.S. Senate Caucus on Int'l Narcotics Control*, 112th Cong. 1 (2011) (statement of Sen. Dianne Feinstein, Chairman and Sen. Charles E. Grassley, Co-Chairman, U.S. Senate Caucus on Int'l Narcotics Control) (noting presence and impacts of grow operations in National Forests).
18. *Id.*
19. *Marijuana Cultivation on U.S. Public Lands: U.S. Senate Caucus on Int'l Narcotics Control*, 112th Cong. 1 (2011) (statement of Dir. R. Gil Kerlikowske, U.S. Senate Caucus on Int'l Narcotics Control).
20. *Marijuana Cultivation on U.S. Public Lands: U.S. Senate Caucus on Int'l Narcotics Control*, 112th Cong. 1 (2011) (statement of Cong. Mike Thompson, U.S. Senate Caucus on Int'l Narcotics Control).
21. *Id.*

waterways, as well as cause secondary exposure to wildlife.[22] One report characterizes the pesticide contamination at these sites as "more akin to leaking chemical weapon stockpiles than typical use or misuse of agricultural products[.]"[23] Forestry officials believe that secondary exposure to wildlife from rodenticide and insecticide toxicants has played a significant role in the population decline of many endangered species in the region.[24] Illegal operations on public lands are often operated by foreign drug-trafficking organizations, who often use highly toxic pesticide compounds that are banned in the United States.[25]

2. Physical Impact on Public Lands

Beyond toxic contamination, illegal grow operations damage the physical land itself. Growers often clear-cut grow sites and terrace land to make it more suitable for production, which can lead to erosion and altered watersheds from increased sedimentation.[26] Research has also shown that diverting water for irrigating cannabis crops has caused a substantial reduction of surface-water levels in the drought-stricken West.[27]

The abundance of dry fuel from clearing land also increases the risk of wildfires. Officials attribute the 2009 La Brea Fire in southern California, which destroyed more than 89,000 acres of chaparral, to a cooking fire at a cartel-operated grow site.[28] The Department of the Interior estimates that the cost to clean up and restore grow sites is between $14,900 and $17,000 per acre.[29]

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22. Craig M. Thompson et al., *Impacts of Rodenticide and Insecticide Toxicants From Marijuana Cultivation Sites on Fisher Survival Rates in the Sierra National Forest, California*, 7 CONSERVATION LETTERS 91, 91 (2013).

23. *Id.* at 97.

24. *Id.* at 92.

25. *Exploring the Problem of Domestic Marijuana Cultivation: Hearing Before Senate Caucus on International Narcotics Control*, 112th Cong. 4 (2011) (statement of R. Gil Kerlikowske, Director, Office of National Drug Control Policy).

26. *Id.* at 4–5.

27. Alastair Bland, *California's Pot Farms Could Leave Salmon Runs Truly Smoked*, NPR (Jan. 13, 2014), https://www.npr.org/sections/thesalt/2014/01/08/260788863/californias-pot-farms-could-leave-salmon-runs-truly-smoked.

28. Steve Gorman, *Mexican Drug Smugglers Tied to California Fire*, REUTERS (Aug. 17, 2009), https://www.reuters.com/article/us-wildfire-marijuana/mexican-drug-smugglers-tied-to-california-fire-idUSTRE57G4SB20090818.

29. Kerlikowske, *supra* note 25, at 5.

3. The Role of Federal Prohibition

In every way, the environmental damage from illegal cannabis production was avoidable from the beginning because none of the externalities are particular to the product. Rather, these consequences are a result of unaccountable growers operating in remote locations with no reason to prioritize anything but secrecy and profit. The ecological benefits of bringing cannabis production out of the shadows have become a common speaking point for environmentally minded legalization advocates.[30] As one supporter succinctly states: "If marijuana were regulated like tobacco, nobody would be growing marijuana in our forests. With legalization, licensed marijuana farms would put cartel operations out of business."[31]

B. Potential Externalities of Legal Cannabis Production

Legalization poses its own environmental issues. Specifically, the legal cannabis industry has three major environmental externalities of concern: (1) lacking EPA oversight, states have struggled to advise and regulate cultivators on appropriate pesticides for their crops;[32] (2) because of the need for high-powered grow lights and air circulations systems, indoor cannabis production is extremely energy-intensive with a correspondingly large carbon footprint;[33] and, (3) cannabis production requires large amounts of water, which has exacerbated droughts in states already experiencing water shortages.[34]

1. Under-regulated Pesticide Use

Like all commercial plant growers, cannabis cultivators rely on pesticides to protect their crops, but regulatory inaction has left these cultivators dangerously ill-informed. Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the EPA has sole authority to

30. Rick Fairbanks, *Decriminalizing Marijuana Would Protect National Forests*, CAP. PRESS (Oct. 28, 2014), http://www.capitalpress.com/Opinion/Columns/20141028/decriminalizing-marijuana-would-protect-national-forests.

31. *Id.*

32. Bart Schaneman, *Mandatory Testing Costly for Colorado Marijuana Growers*, DENV. POST (Aug. 26, 2018), https://www.denverpost.com/2018/08/26/colorado-marijuana-mandatory-pesticide-testing/.

33. Evan Mills, *The Carbon Footprint of Indoor Cannabis Production*, 46 ENERGY POL'Y 58, 59 (2012).

34. Jennifer K. Carah et al., *High Time for Conservation: Adding the Environment to the Debate on Marijuana Liberalization*, 65 BIOSCIENCE 822, 823 (2015).

regulate pesticide use in the United States.[35] However, because THC is a Schedule I controlled substance under the CSA, the EPA cannot opine on appropriate pesticide use for cannabis.[36]

This situation has left states to fill an unfamiliar role in advising cultivators, with mixed results.[37] This compromise itself violates federal law because FIFRA requires that all pesticides be registered and approved by the EPA and prohibits the use of pesticides for any purpose inconsistent with their EPA-approved labeling.[38] It is, therefore, against federal law to use any pest-control product on cannabis.[39]

The logic behind this rule is fundamentally sound because the active ingredients of some pesticide can behave in unexpected ways. Myclobutanil, for example, is an active ingredient in 50 EPA-approved pesticides commonly used on flowering or fruit-producing plants.[40] However, when exposed to extreme heat—such as an open flame—myclobutanil produces cyanide gas, making it potentially deadly to use on a smokable product.[41] With state-legal cannabis production growing exponentially, the EPA's forced abdication of their normal regulatory role has already caused unnecessary public health scares and product recalls.[42]

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35. Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136(b), 136a (2018).

36. Controlled Substances Act, 21 U.S.C. § 812(c) (2018); *see also* Schedule of Controlled Substances, 21 C.F.R. § 1308.11 (2018) (listing cannabis as a Schedule I substance); COLO. DEP'T OF AGRIC., supra note 6 (noting EPA could not identify which pesticides may be applied to cannabis).

37. *See, e.g.,* Dan Adams, *Marijuana Dispensary Slams State for Pesticide Bust*, BOST. GLOBE (Sept. 13, 2018), https://www.bostonglobe.com/metro/2018/09/12/marijuana-dispensary-slams-state-for-pesticide-bust/F6PMOmtj10WEfaTr0sWo3O/story.html (noting Massachusetts Department of Public Health ordered grow operation to close).

38. 7 U.S.C. §§ 136a(a), 136j(a)(2)(G).

39. Jenna Hardisty Bishop, Note, *Weeding the Garden of Pesticide Regulation: When the Marijuana Industry Goes Unchecked*, 65 DRAKE L. REV. 223, 226 (2017).

40. U.S. ENVTL. PROT. AGENCY, *Chemical Name: Myclobutanil*, https://iaspub.epa.gov/apex/pesticides/f?p=113:6:::NO::P6_XCHEMICAL_ID:2934 (last visited Aug. 10, 2019).

41. *See* Joel Warner, *Marijuana Legalization 2015: EPA Issues Guidance on Marijuana Pesticides Amid Industry Uncertainty*, INT'L BUS. TIMES (June 9, 2015), https://www.ibtimes.com/marijuana-legalization-2015-epa-issues-guidance-marijuana-pesticides-amid-industry-1959030 (noting risk of exposure); Conor Ferguson et al., *Tests Show Bootleg Marijuana Vapes Tainted with Hydrogen Cyanide*, NBC NEWS (Sept. 27, 2019), https://www.nbcnews.com/health/vaping/tests-show-bootleg-marijuana-vapes-tainted-hydrogen-cyanide-n1059356 (noting myclobutanil can transform to hydrogen cyanide when burned).

42. *See* David Migoya & Ricardo Baca, *Hickenlooper Issues Executive Order to Declare Tainted Pot a Threat to Public*, DENV. POST (Nov. 12, 2015), https://www.denverpost.com/2015/11/12/hickenlooper-issues-executive-order-to-declare-tainted-pot-a-threat-to-public/ (noting that Governor had to issue order that marijuana grown with unapproved pesticides is a threat); Bob Young*, Pot Products Recalled for Pesticides in Colorado, but Not in Washington*, SEATTLE TIMES (Feb. 12, 2016), https://www.seattletimes.com/seattle-news/marijuana/pot-products-recalled-in-colorado-for-pesticides-but-not-in-washington/ (noting gap in research for safe pesticides due to EPA's absence); Joseph Misulonas, *Cannabis Company Shut Down for Using Dangerous Pesticides on Products*, CIVILIZED (Dec. 17, 2018),

2. Energy Use in Indoor Production

Energy usage is a major source for concern particular to indoor cannabis production. Large-scale indoor production began as a way for illicit growers to hide their operations.[43] Nevertheless, even in legal states, indoor grows appeal to cultivators for their higher yields, year-round cultivation, greater control of the product, as a secondary method of pest control, and, most importantly, because they are easily secured against casual theft.[44] Indoor production is highly energy intensive, however.[45] One study estimated that the total amount of electricity used by the United States in indoor cannabis production in 2012 was approximately 20 TW/h.[46] "This is equivalent to that of 2 million average U.S. homes, corresponding to approximately 1% of national electricity consumption . . . with associated emissions of 15 million metric tons of CO_2—equivalent to that of 3 million average American cars."[47] With such intense energy demands, the proliferation of indoor production in the legal cannabis industry poses a substantial risk of worsening the effects of climate change if left unregulated.

3. Water Use in Western States

On a more local level, water usage is another issue with the cannabis industry because cannabis, whether grown indoors or outdoors, is a prodigiously thirsty plant.[48] One study estimates that a single cannabis plant consumes an average of 22.7 liters (approximately 6 U.S. gallons) of water per day.[49] Another study estimated that cannabis grown outdoors consumes upwards of 430 million liters of water, per cultivated square kilometer, per growing season.[50] By comparison, grapes utilize just 271 million liters of water, per cultivated square kilometer, per growing season.[51] A shortage of

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https://www.civilized.life/articles/cannabis-company-shut-down-dangerous-pesticides/ (noting state shut down cannabis company due to improper pesticide use).

43. *Exploring the Problem of Domestic Marijuana Cultivation: Hearing Before Senate Caucus on International Narcotics Control*, 112th Cong. 4 (2011) (statement of R. Gil Kerlikowske, Director, Office of National Drug Control Policy).

44. Mills, *supra* note 33, at 58; Patrick Cain, *As Harvest Nears, Thieves Plague Cannabis Home Growers*, GLOB. NEWS (Sept. 27, 2019), https://globalnews.ca/news/5943686/cannabis-home-grow-theft-plant/.

45. Mills, *supra* note 33, at 58.

46. *Id.* at 59.

47. *Id.*

48. Carah, *supra* note 34, at 823.

49. Scott Bauer et al., *Impacts of Surface Water Diversions for Marijuana Cultivation on Aquatic Habitat in Four Northwestern California Watersheds*, PLOS ONE, Mar. 18, 2015, at 8.

50. Carah, *supra* note 34, at 823.

51. *Id.*

water for agricultural use is already a major issue in many water-poor western states which has drawn the attention of state and national lawmakers.[52] Any expansion of the water-intensive cannabis industry would only exacerbate these localized problems.

II. ADDRESSING THE ISSUES

The preceding section detailed the four main ecological impacts of cannabis production: (1) environmental degradation from illegal grow operations; (2) under-regulation of pesticides because of EPA inaction; (3) excessive water use in states with limited water resources; and (4) excessive energy use from indoor production. As discussed, the first three of these issues exist solely because of federal prohibition, and the fourth is exacerbated and perpetuated because of it. The following section will present a legal argument for removing cannabis from the CSA's list of controlled substances.

A. A Legal Argument for Descheduling Cannabis

Since the passage of the Marihuana Tax Act, the federal government has deemed the costs of prohibition to be an acceptable exchange for eradicating the scourge of cannabis.[53] The 81-year history of prohibition, however, has made continued belief in that value judgment increasingly indefensible.[54] With states and foreign countries joining the global trend towards legalization, the United States federal government risks becoming increasingly isolated it its attempts to justify the human, economic, and environmental impacts of the policy.[55]

The core document sustaining federal cannabis prohibition in the United States is the Controlled Substances Act of 1971.[56] Under the CSA, Cannabis

52. Ryan Sabalow & Dale Kasler, *The Drought is Over. Why are Republicans in Congress Fighting for More Water for Farmers?*, SACRAMENTO BEE (July 20, 2017), https://www.sacbee.com/news/state/california/water-and-drought/article162696018.html.

53. *See* German Lopez, *Jeff Sessions: Marijuana Helped Cause the Opioid Epidemic. The Research: No.*, VOX (Feb. 8, 2018), https://www.vox.com/policy-and-politics/2018/2/8/16987126/jeff-sessions-opioid-epidemic-marijuana (noting belief that heroin addictions start with marijuana).

54. Matthew Routh, *Re-Thinking Liberty: Cannabis Production and Substantive Due Process*, 26 KAN. L.J. & PUB. POL'Y, 143, 167 (2017) (noting the disproportion in cannabis arrests compared with racial demographics).

55. *See* Nick Kavacevich, *Cannabis Goes Global While U.S. Falls Behind*, FORBES (Nov. 16, 2018), https://www.forbes.com/sites/nickkovacevich/2018/11/16/cannabis-goes-global-while-the-u-s-falls-behind/#3fe688641783 (noting that U.S. companies unable to join first wave of global cannabis market).

56. Gonzales v. Raich, 545 U.S. 1, 13–14 (2005) (explaining that the CSA is the ultimate source of federal cannabis control).

is classified as a Schedule I narcotic, which means that the government has determined that the substance has high potential for abuse and no legitimate uses.[57] Other substances listed in Schedule I include Heroin, Quaaludes, and LSD.[58]

1. The Legal Framework of the CSA

For legalization advocates, one of the most frustrating elements of cannabis prohibition is that cannabis should not be a Schedule I substance by the letter of the CSA.[59] Section 812 of the CSA details the criteria by which the Attorney General (AG) is required to assess substances for inclusion on the list of scheduled substances.[60] Factors include potential for abuse and addiction, accepted medical uses, the current state of scientific and medical knowledge about the substance, and current abuse patterns.[61] The specific factors for inclusion in Schedule I are: (1) the substance has high potential for abuse; (2) the U.S. medical community has no currently accepted use for the substance; and (3) the substance cannot be used safely even under medical supervision.[62] Schedules I and II are differentiated only in that Schedule II substances have recognized medical uses and may be prescribed, but still require close supervision by a medical professional.[63] Examples of Schedule II substances are cocaine, amphetamine, methamphetamine, fentanyl, oxycodone, and phencyclidine (PCP).[64] The thresholds for Schedules III-V are moving targets, defined as relatively less addictive or dangerous than the substances in the preceding Schedule.[65]

Fortunately, the CSA includes provisions for scheduling, rescheduling, or descheduling a substance.[66] Section 811(a) and (b) authorize the U.S. AG to add substances if they have a potential for abuse or remove substances if "he finds that the drug or other substance does not meet the requirements for inclusion in any schedule."[67] The process follows the normal rulemaking

57. Controlled Substances Act, 21 U.S.C. § 812 (2018); *see also* Schedule of Controlled Substances, 21 C.F.R. § 1308.11 (2018) (listing cannabis as a Schedule I substance).

58. 21 U.S.C § 812(c).

59. Tom Angell, *Senate Committee Slams Marijuana's Federal Classification, Saying Schedule I Blocks Research*, FORBES (July 3, 2018), https://www.forbes.com/sites/tomangell/2018/07/03/senate-committee-slams-marijuanas-federal-classification-saying-schedule-i-blocks-research/.

60. 21 U.S.C. § 812(b).

61. *Id*. § 811(b).

62. *Id.* § 812(b)(1).

63. *Id.* § 812(b)(2).

64. *Id*. § 812(c).

65. *Id*. § 812(b)(3)–(5).

66. *Id*. § 811.

67. *Id*. § 811(a)–(b).

procedure of the Administrative Procedure Act.[68] The AG, the Secretary of Health and Human Services (HHS Secretary), or any interested member of the public may initiate proceedings.[69] The CSA puts the burden onto the HHS Secretary to produce a scientific and medical evaluation and make a binding recommendation which the AG must implement.[70]

2. Accepted Medical Use

Despite the federal government's decades-long effort to stifle scientific studies of cannabis, today there is ample empirical evidence that cannabis fits none of the Schedule I criteria.[71] Indeed, U.S. officials have long acknowledged this fact.[72] As early as 1988, Administrative Law Judge Francis Young reviewed a petition by the National Organization for the Reform of Marijuana Laws (NORML) to reschedule cannabis to Schedule II.[73] This petition had been working its way through the courts since 1972.[74] Judge Young held that the provisions of the CSA both permit and require removing cannabis from Schedule I.[75] Judge Young cited the testimony of dozens of physicians—mostly oncologists—who used cannabis medically to show that the medical community had accepted medical uses for cannabis, and that cannabis could be used safely under medical supervision.[76] The DEA Administrator rejected the opinion, flippantly arguing that Judge Young's findings lacked scientific credibility.[77] This response ignores the fact that an accepted medical use is determined by the medical community, not by a federal agency:[78]

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68. *Id.* § 811(a) ("Rules of the Attorney General under this subsection shall be made on the record after opportunity for a hearing pursuant to the rulemaking procedures prescribed by subchapter II of chapter 5 of title 5."); Administrative Procedure Act, 5 U.S.C. §§ 551–59 (2018); *see generally* TODD GARVEY, CONG. RESEARCH SERV., R41546, A BRIEF OVERVIEW OF RULEMAKING AND JUDICIAL REVIEW 2 (2017) (summarizing the APA informal rulemaking procedure of publication of proposed rules, accepting public comment, and promulgating final rules).

69. 21 U.S.C. § 811(a).

70. *Id.* § 811(b).

71. *See* Dirk W. Lachenmeier & Jürgen Rehm, *Comparative Risk Assessment of Alcohol, Tobacco, Cannabis and Other Illicit Drugs Using the Margin of Exposure Approach*, SCI. REP., Jan. 30, 2015, at 4 (comparing the relative toxicity risk of commonly-used recreational substances and concluding that cannabis poses almost no risk of acute toxicity); *see* Guillermo Velasco, et al., *Towards the Use of Cannabinoids as Antitumour Agents*, 12 NAT. REV. CANCER 436–44 (2012) (concluding that cannabinoids reduce tumor growth and progression in animal models).

72. *See* Marijuana Rescheduling Petition, DEA Docket No. 86-22 at 25-26, 29 (Sept. 6, 1988) (discussing whether marijuana fits into schedule II with regards to its medical use).

73. *Id.* at 1.

74. *Id.*

75. *Id.* at 67.

76. *Id.*

77. Seeley v. State, 940 P.2d 604, 614 (Wash. 1997).

78. Marijuana Rescheduling Petition, *supra* note 72, at 27.

> It is not for this Agency to tell doctors whether they should or should not accept a drug or substance for medical use. The statute directs the Administrator merely to ascertain whether, in fact, doctors have done so . . . . The DEA . . . is charged by 21 U.S.C. § 812(b)(1)(B) and (2)(B) with ascertaining what it is that the other people have done with respect to a drug or substance: "Have they accepted it? not "Should they accept it?"[79]

Judge Young notes, with support, that requiring universal or majority acceptance amongst the medical community to find an "accepted medical use" would be unrealistic and inconsistent with how the medical community operates.[80] Rather, acceptance "by a 'respectable minority' of physicians is all that can reasonably be required."[81]

Though not without controversy, today, the United States medical community has fully acknowledged some of the medical uses of cannabis.[82] In 2016, the American Medical Association (AMA) acknowledged cannabis has therapeutic benefits for neuropathic and chronic pain management, multiple sclerosis associated spasticity, antiemesis, and loss of appetite.[83] While not going so far as to endorse legalization, the AMA also revoked their official stance that cannabis should not be legalized and the language that cannabis "has no scientifically proven, currently accepted medical use for preventing or treating any disease process in the United States."[84] Although statistics are hard to come by, the Marijuana Policy Institute currently estimates that there are 3,099,934 state-sanctioned medical cannabis users in the United States.[85] The FDA has also approved the use of dronabinol, a THC-based cannabis extract for antiemetic treatments.[86] Perhaps most damningly, the United States itself has owned a patent on the use of cannabinoids as antioxidants and neuroprotectants since 2001, all while

79. *Id.* at 32 (emphasis in original).
80. *Id.* at 29.
81. *Id.*
82. *See* AM. MED. ASS'N HOUSE OF DELEGATES, CLINICAL IMPLICATION AND POLICY CONSIDERATIONS OF CANNABIS USE 1 (Sept. 12, 2016) (acknowledging potential positive clinical uses of cannabis).
83. *Id.* at 1–2.
84. *Id.* at 2–3.
85. *Medical Marijuana Patient Numbers*, MARIJUANA POL'Y PROJECT, https://www.mpp.org/issues/medical-marijuana/state-by-state-medical-marijuana-laws/medical-marijuana-patient-numbers/ (last visited Sept. 25, 2019) (noting that the largest concentrations of users are in California (1,238,136), Michigan (284,088), and Florida (240,070); Oklahoma has the highest per-capita rate (3.71%)).
86. U.S. FOOD & DRUG ADMIN., HIGHLIGHTS OF PRESCRIBING INFORMATION (2017).

maintaining an enforcement policy explicitly predicated on the determination that cannabis has no medicinal value.[87]

3. Potential for Abuse

Despite how central it is to the CSA, "potential for abuse" is surprisingly ill-defined.[88] The CSA's only effort to explain the term is a provision which creates a rebuttable presumption that any substance with "a stimulant, depressant, or hallucinogenic effect on the central nervous system" has a potential for abuse.[89] On its own, this definition is unworkably broad because it would encompass many commonly consumed substances such as caffeine and chocolate.[90] Federal courts have generally deferred to agency rulemaking regarding potential for abuse without addressing the underlying definition.[91]

Legislative debate during the passage of the CSA discussed potential for abuse as "a substantial potential for the occurrence of significant diversions from legitimate channels, significant use by individuals contrary to professional advice, or substantial capability of creating hazards to the health of the user or the safety of the community."[92] Proponents admitted that they did not have good means to measure the current scope of drug abuse, but cited arrests for drug charges and any use of an illicit substance as significate indicators.[93] These criteria are circular, however, because the scale of "abuse" is determined by the state of the law, rather than the substance in question. By this definition of abuse, if the government were to schedule coffee as a controlled substance it would instantaneously become the most dangerous drug in the world, simply because it is widely used and illegal. Other than these meta indicators, the only empirical factor considered in the legislative history was potential for physical and psychological dependency.[94] Therefore, the only reasonable standard to judge "potential for

87. U.S. Patent No. 6,630,507 (filed Apr. 21, 1999).

88. *See* Controlled Substances Act, 21 U.S.C. § 812(b)(1)–(5) (2018) (using, but not defining "potential for abuse"); *see also id.* § 802 (failing to define "potential for abuse").

89. *Id.* § 811(f).

90. *See* Christina Jayson, *Caffeine vs. Chocolate: A Mighty Methyl Group*, SCI. & FOOD (Sept. 29, 2015) https://scienceandfooducla.wordpress.com/2015/09/29/caffeine-vs-chocolate-a-mighty-methyl-group/ (describing effects of chocolate and caffeine on nervous system).

91. *See* Grinspoon v. Drug Enf't Admin., 828 F.2d 881, 893 (1st Cir. 1987) (holding that the DEA's finding of any potential for abuse was sufficient for the court to uphold the agency's inclusion of the substance on the CSA's Schedules); Nat'l Org. for Reform of Marijuana Laws v. Bell, 488 F Supp. 123, 140–41 (D.C. Cir. 1980) (holding that cannabis has a potential for abuse because Congress determined that it did, regardless of evidence to the contrary).

92. H.R. REP. NO. 91-1444, at 9 (1970), *reprinted in* 1970 U.S.C.C.A.N. 4566, 4602.

93. *Id.* at 4572.

94. *Id.* at 4573.

abuse" is the potential to produce dependence and related behaviors in users.[95]

Current consensus in the literature on the subject places the lifetime risk of dependence for cannabis users at around 9%, compared to 23% for heroin users and 17% for Cocaine users.[96] By comparison, alcohol and nicotine—legal recreational substances which are expressly excluded from CSA control—have a lifetime dependency risk of 15% and 32% respectively.[97] Given this rate and the medical community's acknowledgment of valid medical uses, cannabis should be moved to Schedule III, if not lower, because it has accepted, safe medical uses (thereby excluding it from Schedule I), and it has approximately half the potential for abuse of cocaine (a Schedule II narcotic).[98]

B. Comparing Cannabis to Alcohol or Tobacco

A significant issue with rescheduling cannabis is that the CSA only considers medical use.[99] Even Schedule V substances—the lowest tier of control which includes products such as codeine cough syrup—may only be dispensed for medical purposes.[100] For this reason, the CSA explicitly excludes tobacco and alcohol as generally accepted recreational substances.[101] The preponderance of evidence suggests that cannabis should be in the same category as these substances rather than in any CSA Schedule.

1. Addictiveness and Impairment

As discussed above, alcohol and tobacco use are respectively 166% and 355% more likely to result in dependence than cannabis.[102] Researchers have also found that cannabis is, in general, far less impairing than alcohol.[103] One study testing driving under the influence of cannabis found that "most marijuana-intoxicated drivers show only modest impairments on actual road

95. *Id.* at 4601.

96. J. Michael Bostwick, *Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana*, 87 MAYO CLINIC PROCEEDINGS 172, 179 (2012).

97. *Id.*

98. Routh, *supra* note 54, at 171–72 (discussing the medical benefits of cannabis).

99. *See* Controlled Substances Act, 21 U.S.C. § 829 (2018) (describing medical use as means of scheduling); *id.* § 812 (listing medical use as consideration).

100. *Id.* § 829(c); *see id.* § 812(c) (listing low doses of codeine as Schedule V substance).

101. *Id.* § 802(6).

102. Bostwick, *supra* note 96, at 175.

103. R. Andrew Sewell et al., *The Effect of Cannabis Compared with Alcohol on Driving*, 18 AM. J. ADDICTION 185, 186, 189-90 (2009).

tests."[104] The study also found that "[e]xperienced smokers who drive on a set course show almost no functional impairment under the influence of marijuana, except when it is combined with alcohol."[105] The study theorized that the reason for this discrepancy is that cannabis intoxication does not produce the same errors of judgment common to alcohol intoxication, although cannabis does impair cognitive functions generally.[106]

> [G]iven a dose of 7 mg THC (about a third of a joint), drivers rated themselves as impaired even though their driving performance was not; in contrast, at a BAC 0.04% (slightly less than two "standard drinks" of a can of beer or small 5 oz. glass of wine; half the legal limit in most US states), driving performance was impaired even though drivers rated themselves as unimpaired.[107]

2. Health Effects

In addition to being less addictive than either tobacco or alcohol and less impairing than alcohol alone, cannabis also does less damage to users' health.[108] The Center for Disease Control and Prevention rates tobacco use as the leading preventable cause of death in the United States today with approximately 480,000 related deaths per year.[109] Alcohol causes approximately 90,000 deaths per year in the United States.[110] Aggregate studies have not found any increase in all-cause mortality amongst cannabis users but admit the need for further long-term studies.[111] Of the 90,000 deaths per year related to alcohol, approximately 2,200 deaths result from acute

104. *Id.* at 186.

105. *Id.* (emphasis omitted) (citations omitted).

106. *Id.* at 186, 189.

107. *Id.*

108. *See* Erin Browdin, *Which is Worse for Your Health, Marijuana or Alcohol? Here's the Science*, SCI. ALERT (June 21, 2018), https://www.sciencealert.com/marijuana-weed-or-alcohol-health-impact-science-evidence-2018 (noting marijuana has no documented deaths and is less addictive than alcohol); Leland Kim, *Marijuana Shown to be Less Damaging to Lungs than Tobacco*, UNIV. CAL. S. F. (Jan. 10, 2012), https://www.ucsf.edu/news/2012/01/98519/marijuana-shown-be-less-damaging-lungs-tobacco (noting marijuana less damaging than tobacco); CTR. FOR DISEASE CONTROL & PREVENTION, NATIONAL HEALTH REPORT HIGHLIGHTS 8 (2017) (showing smoking tobacco as the leading cause of disease and death in the U.S.); CTR. FOR DISEASE CONTROL & PREVENTION, ALCOHOL USE AND YOUR HEALTH (2018) (showing health effects of alcohol).

109. CTR. FOR DISEASE CONTROL & PREVENTION, NATIONAL HEALTH REPORT HIGHLIGHTS 8 (2017).

110. CTR. FOR DISEASE CONTROL & PREVENTION, ALCOHOL USE AND YOUR HEALTH (2018).

111. *See generally* Bianca Calabaria et al., *Does Cannabis Use Increase the Risk of Death? Systematic Review of Epidemiological Evidence on Adverse Effects of Cannabis Use*, 29 DRUG & ALCOHOL REV. 318, 323 (2010) (summarizing the available research and concluding that there is insufficient evidence that cannabis use alone increases the risk of premature death).

alcohol poisoning.[112] Not only is there no recorded instance of a cannabis-induced death, Judge Young cited studies that theorized an adult would need to consume the equivalent of 20,000–40,000 cannabis cigarettes within 15 minutes to produce a fatal level of THC toxicity.[113]

Considering the addictiveness, impairment, and health effects of cannabis compared to those of alcohol and tobacco, there is no justification to wholly ban cannabis as a dangerous narcotic while alcohol and tobacco remain freely available and widely used. For this reason, cannabis should receive the same exemption from CSA control.

III. THE CANNABIS CULTIVATION ACT

In the following pages, this Note will present an annotated piece of proposed legislation called the "Cannabis Cultivation Act." The primary aim of the legislation is to utilize the evidenced presented above to craft a comprehensive regulatory scheme to address the major externalities of a legal cannabis industry. Furthermore, building on the above analysis of the federal classification of cannabis, this legislation amends the CSA to end the legal force of federal cannabis prohibition. The legislation will also address several other regulatory concerns tangential to cannabis legalization. Each section will be accompanied by commentary which explains the analysis, standards, and precedent for the bill's provisions.[114]

Proposed: An ACT to amend the Chapters 9 and 13 of Title 21 of the United States Code to end federal cannabis prohibition in the United States, to provide the Department of Agriculture with the authority to effectively regulate the cultivation of cannabis in the interest of the public and environmental health of the country, and for other purposes.

A. Amending the CSA

Section A. 21 U.S.C. § 802 (6) is amended to read:
21 U.S.C. § 802 – Definitions

(6) The term "controlled substance" means a drug or other substance, or immediate precursor, included in schedule I, II, III, IV, or V of part B of this subchapter. The term does not include distilled spirits, wine, malt

112. *Alcohol Poisoning Deaths*, CTR. FOR DISEASE CONTROL, https://www.cdc.gov/vitalsigns/alcohol-poisoning-deaths/index.html (last updated Jan. 6, 2015).

113. Marijuana Rescheduling Petition, *supra* note 72, at 57.

114. In this section, light grey text is the language of the proposed bill. ~~Strikethrough~~ text is language that would be eliminated from existing statues, and underline text is a proposed addition.

beverages, ~~or~~ tobacco, or cannabis or cannabis-derived products, as those terms are defined or used in subtitle E of the Internal Revenue Code of 1986.

1. Effect

Amending § 802 of the CSA would effectively end federal cannabis prohibition. On its own, this section would reduce or resolve two of the identified environmental issues related to cannabis production: illegal production and federal regulatory inaction. Much like bootleggers during alcohol prohibition, the potential for profit for illegal growers exists solely because it is impossible to obtain cannabis legally in most of the country. [115] Replacing the illicit market with a legal market would rob criminal enterprises of revenue and eliminate the incentive for environmentally damaging illegal production. Likewise, by exempting cannabis from the CSA, the EPA would be fully capable of regulating the cannabis industry in their normal capacities to protect the environment and public health.

2. International Considerations

Unfortunately, the CSA binds the decisions of the AG and HHS Secretary in other ways. Section 811(d)(1) requires that the AG control any substances that are subject to international treaties, conventions, or protocols to which the United States is party.[116] Any such substance must be scheduled with a comparable level of control in the Unites States, irrespective of evidence-based determinations required elsewhere in the CSA.[117] In particular, this section is a reference to the United Nations Single Convention on Narcotic Drugs of 1961 and the Convention on Psychotropic Substances of 1971 (together "Conventions").[118] The Conventions are broadly similar to the CSA, dividing psychotropic substances into schedules of control based on similar criteria as assessed by the World Health Organization (WHO).[119] THC is a Schedule I substance under the Conventions, as it is under the

115. *See generally* NAT'L COMM'N ON LAW OBSERVATION & ENF'T, REPORT ON THE PROHIBITION LAWS OF THE U.S. (1931) (discussing the rise in crime associated with alcohol smuggling).

116. Controlled Substances Act, 21 U.S.C. § 811(d)(1) (2018).

117. *Id.*

118. *See* Single Convention on Narcotic Drugs, Mar. 30, 1961, 18 U.S.T 1407 (laying out mechanisms for an international drug control policy); Convention on Psychotropic Substances, Feb. 21, 1971, 32 U.S.T. 534 (scheduling substances based on WHO assessment of its risks and medical value).

119. Convention on Psychotropic Substances, *supra* note 118, at art. 2.

CSA.[120] Therefore, in administering the CSA, the AG is ultimately bound by the determinations of the WHO rather than the dictates of Congress.[121]

Citing the Conventions has historically been the last defense of administration officials faced with overwhelming evidence that cannabis has been misclassified as a dangerous drug.[122] Still, the Conventions have not kept other signatories from national legalization. Canada has recently joined Uruguay—both original signatories—in flaunting the Conventions by nationally legalizing recreational cannabis.[123] The International Drug Control Board, the UN entity responsible for monitoring compliance with drug control treaties, has rebuked Canada's legislation and called for return to compliance with the Conventions.[124] When pressed, Viroj Sumyai, head of the Control Board, could only offer that cannabis use was "not a healthy lifestyle choice" as justification of continued prohibition.[125] Even so, neither Canada nor Uruguay appear to be reversing course, nor have any other signatories moved to expel them for noncompliance, as the treaty allows.[126]

This near-silence from the UN may be a tacit sign that the days of international cannabis prohibition are numbered.[127] Under the leadership of Secretary General António Guterres—who himself led the way to decriminalizing all drugs in Portugal while Prime Minister—the UN has taken a more liberal view about cannabis.[128] The WHO is currently reviewing the appropriateness of the current status of cannabis-related substances under

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120. *Id.* at sched. I.

121. 21 U.S.C. § 811(d).

122. *See* NORML v. Ingersoll, 497 F.2d 654, 660–61 (D.C. Cir. 1974) (holding that the AG's discretion as to which Schedule of control is appropriate for cannabis is ultimately circumscribed by the Single Convention); NORML v. Bell, 488 F. Supp. 123, 125 n.3 (D.D.C. 1980) (noting that NORML's previous petitions for cannabis rescheduling had been denied because doing so would be inconsistent with U.S. treaty obligations under the Single Convention); United States v. Rodriquez-Camacho, 468 F.2d 1220, 1222 (9th Cir. 1972) (noting that the CSA's control of cannabis was constitutional, in part because it was necessary to meet U.S. treaty obligations under the Single Convention).

123. Ashifa Kassam, *Canada Becomes Second Country to Legalize Cannabis Use*, GUARDIAN (June 19, 2018), https://www.theguardian.com/world/2018/jun/20/canada-legalises-cannabis-senate-vote.

124. Paulina Greer, *Canada's Legalization of Cannabis 'Contravenes' International Convention: UN Drugs Control Board*, UN NEWS (Oct. 15, 2018), https://news.un.org/en/audio/2018/10/1023212 (audio recording of interview with Viroj Sumyai).

125. *Id.*

126. *Id.*

127. *See id.* (providing that cannabis use was "not a healthy lifestyle choice" as the only justification of continued prohibition).

128. Sara Brittany Somerset, *Is the United Nations Finally Coming Around About Cannabis?*, FORBES (Dec. 17, 2018), https://www.forbes.com/sites/sarabrittanysomerset/2018/12/17/is-the-united-nations-finally-coming-around-about-cannabis/#15d5fce05807; *see* Susana Ferreira, *Portugal's Radical Drugs Policy is Working. Why Hasn't the World Copied It?*, GUARDIAN (Dec. 5, 2017), https://www.theguardian.com/news/2017/dec/05/portugals-radical-drugs-policy-is-working-why-hasnt-the-world-copied-it (detailing the stunning success of Portugal's policy, instituted under Prime Minister Guterres, to decriminalize all illicit substances and focus efforts on treatment and recovery).

the Conventions.[129] In a press release, the Expert Committee on Drug Dependence stated that "there was enough new robust scientific information about [cannabis-related substances'] public health harms and therapeutic value to re-evaluate their current level of international control."[130] The results of this review are currently pending, but any motion to loosen the Conventions' restriction on cannabis would weaken the last legal measure propping up cannabis prohibition in the United States.[131] Furthermore, the examples of Canada and Uruguay demonstrate that the Conventions are not an immutable barrier to stopping a policy with such profound consequences for American citizens.

B. Creating FDA Authority

Section B.
Title 21 – Food and Drugs
Chapter 9 – Federal Food, Drug, and Cosmetic Act
Subchapter XI – Cannabis Products
Part A – Introductory Provisions
§ 401 Note Short Title
This title may be cited as the 'Cannabis Cultivation Act'.

The basic principle behind this act is that cannabis is rationally more akin to alcohol and tobacco than narcotics, and the law should treat it as such. Therefore, moving cannabis regulation out from under the umbrella of the CSA to the Federal Food, Drug, and Cosmetic Act ("FDCA") is a logical choice. The FDCA already grants the FDA regulatory authority over the tobacco industry in addition to food and drug safety.[132]

Tobacco products are a recent addition to FDA authority, a result of the Family Smoking Prevention and Tobacco Control Act ("Tobacco Control Act").[133] This legislation came after the Supreme Court held that the FDCA did not grant the FDA authority over tobacco products, invalidating several Clinton-era anti-smoking initiatives as overstepping FDA authority.[134] In response, Congress passed the Tobacco Control Act in 2009, which amended

129. Press Release, WORLD HEALTH ORG., 40th WHO Expert Committee on Drug Dependence (Sept. 13, 2018), https://www.who.int/medicines/news/2018/news_briefing_ecdd/en/.
130. *Id.*
131. *Id.*
132. Federal Food, Drug, and Cosmetic Act, 21 U.S.C. §§ 351, 387 (2018).
133. Family Smoking Prevention and Tobacco Control Act, 123 Stat. 1776 (2009) (codified in scattered sections of 15 and 21 U.S.C.).
134. Food & Drug Admin. v. Brown & Williamson Tobacco Corp., 529 U.S. 120, 169 (2000).

the FDCA to make the FDA the primary federal regulatory authority over the manufacture, marketing, and distribution of tobacco products.[135]

Although the Tobacco Control Act focused mainly on public health, its purpose and intent are largely the same as the Cannabis Cultivation Act; i.e. addressing pervasive problems caused by an underregulated activity through a comprehensive federal regulatory scheme.[136] Consider this from Congress's statement of findings: "Federal and State governments have lacked the legal and regulatory authority and resources they need to address comprehensively the public health and societal problems caused by the use of tobacco products."[137] Working from the conclusion that tobacco and cannabis are rationally comparable, the above statement would apply to the cannabis industry with the same force as the tobacco industry.

C. Findings, Purpose, and State/Federal Cooperation

§ 401. The Congress makes the following finding and declarations.
The Congress makes the following findings and declarations:

(1) The national policy of cannabis prohibition in the United States has resulted in unconscionable human, economic, and environmental costs while failing to achieve any of its stated policy or public health outcomes.

(2) The scientific evidence of the human and social damage of cannabis use is entirely insufficient to support inclusion of cannabis on the Schedules of controlled substances.

(3) THC is less impairing than alcohol, as well as less addictive and less damaging to human health than either alcohol or tobacco, and as such, should be treated in the same way as those substances rather than as a dangerous narcotic.

(4) The policy of making the cultivation of cannabis an illegal act within the territory of the United States has resulted in extensive damage to the country's public lands.

(5) The concentration of cannabis production within certain states with limited water resources has dramatically strained the resources of those states.

(6) The proliferation of unregulated indoor cannabis production has the potential to substantively worsen climate change through increased energy consumption.

(7) The Environmental Protection Agency and the Department of Agriculture, having hitherto precluded from opining on cannabis production, have been unable to fulfil their normal and important role in

135. 123 Stat. 1776, 1781.
136. *Id.* at 1776–81.
137. *Id.* at 1777.

protecting the public health and environmental integrity of the United States.

(8) The economic potential of the cannabis industry in the United States has the potential to add substantial revenue and vitality to the national economy and to revitalize the local economies of many rural areas.

These findings restate the conclusions discussed in the preceding sections of this Note. They outline the four major areas of environmental concern related to cannabis production: (1) unregulated illicit production on public lands; (2) excessive water use in drought-prone states; (3) excessive energy use in indoor production; and (4) inaction from federal regulatory agencies. The government interest served by this legislation is limiting these collective concerns. These findings also acknowledge the human and economic cost of prohibition and the legal argument for removing cannabis from the CSA's control.

§ 402 Purpose

The purposes of this division are—

(1) to amend the language of the Controlled Substances Act, 18 U.S.C. § 801 et seq., to remove cannabis and cannabis products from the authority of the U.S. Drug Enforcement Administration and federally legalize cannabis as an agricultural product,

(2) to provide for the public and environmental health of the United States by recognizing cannabis as an agricultural product and to effectively regulate its cultivation,

(3) to grant the U.S. Food and Drug Administration regulatory authority over cannabis products by amending the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 301 et seq.,

(4) to create a model which states may follow in regulating legal cannabis production within their jurisdictions,

(5) to amend the definition of "agricultural commodity" found in 7 U.S.C. § 1518 to include cannabis to allow cannabis producers access to Federal Crop Insurance protection, and

(6) to amend 28 U.S.C. § 599A(b)(1) to include cannabis and grant the Bureau of Alcohol, Tobacco, Firearms, and Explosives authority to pursue criminal and regulatory violations of federal cannabis laws.

§ 403 Definitions

(a) "Cannabis" means all parts of the plant Cannabis sativa L., whether growing or harvested and includes:

(1) The mature flowers of the cannabis plant intended for consumption

(2) The seeds of the plant

(3) Resin extracted from any part of the plant
(4) Any compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or resin.

(b) "Mature plant" means a cannabis plant that has flowered and has visible buds.
(c) "Immature plant" means a plant that has not flowered and does not have visible buds.
(d) "Commissioner" means the United States Commissioner of Food and Drugs, head of the Food and Drug Administration.
(e) "Marijuana" or "marihuana" shall be read as interchangeable with "cannabis."
(f) "Cannabis" does not include:
(1) The mature stalks of the plant and fiber made from the stalks
(2) Oil or cake made from the seeds of the plant
(3) Hemp or hemp products
(g) "Grow operation" means licensed cultivation undertaken at one location.

§ 404 Authority

Because the cannabis industry has the potential to affect interstate and international commerce, Congress has the authority to regulate its production in the several states.

1. Federalism

As with any federal regulatory scheme, a major question with the Cannabis Cultivation Act is whether there is federal authority to regulate what is, essentially, a state activity.[138] Fortunately, Supreme Court precedent firmly supports the proposed system of cannabis regulation.[139] As a threshold matter, the Commerce Clause grants Congress the authority to regulate intrastate activities that substantially affect interstate commerce.[140] The Supreme Court held that cannabis production does substantially affect interstate commerce in *Gonzales v. Raich*.[141] The Court held "Congress can regulate purely intrastate activity . . . if it concludes that failure to regulate

138. Gonzales v. Raich, 545 U.S. 1, 5 (2005).
139. *Id.* at 26.
140. Nat'l Labor Relations Bd. v. Jones & Laughlin Steel Corp., 301 U.S. 1, 37 (1937) ("Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions, Congress cannot be denied the power to exercise that control.").
141. *Raich*, 545 U.S. at 18.

that class of activity would undercut the regulation of the interstate market in that commodity."[142] Importantly, the Court in *Raich* defined prohibition as a form of regulation, holding: "Prohibiting the intrastate possession or manufacture of an article of commerce is a rational (and commonly utilized) means of regulating commerce in that product."[143] If Congress choses to change the form of federal cannabis regulation from prohibition to licensure—as this bill proposes—the precedential authority remains the same.

Section C. Regulatory Provisions
§ 405 State regulatory systems

(a) The production or distribution of cannabis in any state or territory, in violation of the laws thereof, shall be prohibited.
(b) Any state whose legislature choses to legalize the cultivation of cannabis must form, as part of its department of agriculture or equivalent agency, an office of cannabis regulation.
(c) This office's duties shall include, but are not limited to:
    (1) issuing and enforcing permits for commercial cannabis production, in accordance with §§ 405 and 406 of this subchapter, and
    (2) determining the gross number of permits to be issued.
(d) Any state choosing to legalize cannabis production but not to regulate its industry within the dictates of this section shall forfeit eligibility for grants administered by the Food and Drug Administration.

This bill does not preempt state cannabis prohibition or mandate state adoption. Rather, the Cannabis Control Act accomplishes its goals through a mandatory framework states must adopt if they chose to create a legal cannabis industry. As will be explored below, this framework directly addresses energy and water use to limit the industry's externalities. Section 405(a) mirrors the provision of the Twenty First Amendment, which ensured that federal authorities will respect state prohibition laws.[144] Section 405(d) is the enforcement mechanism of this bill, conditioning the continued receipt of FDA grants on compliance with the regulatory scheme in the event of state legalization. This bill only regulates state activity if or when a state legislature legalizes cannabis production within their jurisdiction. Therefore, any state legislature that wishes to continue cannabis prohibition will be able to do so without penalty.

142. *Id.* at 18.
143. *Id.* at 26.
144. U.S. CONST. amend. XXI, § 2.

Regulating the actual market and deciding how and where cannabis could be bought and sold would be left to the individual states to determine. Cooperative regulatory schemes of this kind are standard practice with alcohol and tobacco markets.[145] The states would also determine how to tax cannabis products. Reasonable regulations from existing state laws should be considered, including limiting the sale of cannabis to persons over the age of 21, prohibiting consumption on publicly owned land or other property, and a comprehensive permitting scheme to control the location and operation of cannabis dispensaries.[146]

2. Incentivization

To achieve its goal, Section 405(d) of the Cannabis Cultivation Act incentivizes states with a loss of eligibility for FDA grant programs. This penalty would only come into effect if a state legislature chooses to create a legal cannabis industry but not to adopt the Act's regulatory standards. These programs, such as the Manufactured Food Regulatory Program and the Animal Feed Regulatory Program, primarily subsidize state regulatory programs.[147] Some, such as the National Produce Safety Cooperative Agreement Program, fund nonprofit organizations, such as the National Association of State Departments of Agriculture, which would be unaffected by this penalty.[148] The 17 such programs operated by the FDA accounted for $78,208,711.37 in total awards dispersed nationally for 2017.[149] In national

145. *See*, *e.g.*, Alcoholic Beverages, VT. STAT. ANN. tit. 7, §§ 1–1012 (2018) (including the State of Vermont's laws taxing and regulating the intrastate use, sale, and distribution of alcohol and tobacco products, both federally regulated substances).

146. CAL. BUS. & PROF. CODE §§ 26000–26500 (2019).

147. *Animal Feed Regulatory Program Standards (AFRPS)*, U.S. FOOD & DRUG ADMIN., https://www.fda.gov/ForFederalStateandLocalOfficials/ProgramsInitiatives/RegulatoryPrgmStnds/ucm475063.htm (last visited Oct. 28, 2019); *Manufactured Food Regulatory Program Standards (MFRPS)*, U.S. FOOD & DRUG ADMIN., https://www.fda.gov/federal-state-local-tribal-and-territorial-officials/regulatory-program-standards/manufactured-food-regulatory-program-standards-mfrps (last visited Oct. 28, 2019).

148. *National Produce Safety Cooperative Agreement Program*, U.S. FOOD & DRUG ADMIN., https://www.fda.gov/federal-state-local-tribal-and-territorial-officials/grants-and-cooperative-agreements/national-produce-safety-cooperative-agreement-program#What_is (last visited Oct. 31, 2019).

149. *Grants and Cooperative Agreements*, U.S. FOOD & DRUG ADMIN., https://www.fda.gov/ForFederalStateandLocalOfficials/FundingOpportunities/GrantsCoopAgrmts/default.htm (last visited Oct. 28, 2019) (Food Protection Rapid Response Teams Program = $5,900,000; Manufactured Food Regulatory Program Standards = $11,600,000; Manufactured Food Regulatory Program Alliance = $600,000; Scientific Conference Grant Program = $235,000; Voluntary National Retail Food Regulatory Program Standards Cooperative Agreement Program = $4,100,000; Retail Association Cooperative Agreement to Advance Conformance with the VNRFPS = $1,525,908; Animal Feed Regulatory Program Standards = $11,100,000; National Produce Safety Cooperative Agreement Program = $1,100,000; Food Protection Task Force Grant Program = $123,093; Tissue Residue

terms, this amount is small. The Virginia Office of Agriculture and Forestry, for example, has an operating budget of $110,700,000 for fiscal year 2019.[150] The Texas Department of Agriculture's operating budget for 2018 was $121,965,228.[151]

The main legal challenge posed by this sort of regulation is whether such coercive measures are constitutional under congressional spending power.[152] According to the Anti-Commandeering Doctrine, the federal government cannot compel states to enforce federal statutes.[153] Still, the Court has held that Congress can incentivize states via its spending powers by conditioning the receipt of federal funds on state adoption of a federal scheme, as in *South Dakota v. Dole*.[154] In that case, the Court allowed a 10% withholding of federal highway funding from states which did not adopt the new federal minimum drink age of 21.[155] The Court stated that the 10% penalty was a reasonable incentive under the circumstances but noted that "in some circumstances the financial inducement offered by Congress might be so coercive as to pass the point at which 'pressure turns into compulsion.'"[156] The Court elaborated on the limits of this principle in *National Federation of Independent Business v. Sibelius*, ruling that a state losing all federal Medicaid funding for failing to adopt the Affordable Care Act was, in fact, unduly coercive.[157] Therefore, Congress may withhold federal funds to incentivize state program adoption, so long as the penalty is not so severe as to deprive the state of a genuine choice.

In total, the loss of eligibility for FDA grants would be minor compared to overall state agriculture budgets.[158] Based on the precedent of *Dole* and

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Cooperative Agreement Program = $731,020; State Produce Implementation Cooperative Agreement Program = $30,900,000; Grant awards for the Integrated Laboratory System to Advance the Safety of Human and Animal Food program and the ISO/IEC 17025:2005 Cooperative Agreement Program are not reported).

150. COMMONWEALTH OF VA., 2018-2020 BIENNIAL BUDGET B-64 (2017).

151. TEXAS DEP'T OF AGRIC., FY 2018 OPERATING BUDGET 1 (2017) (total cited does not include $597,915,413 in federal and state nutrition assistance programs).

152. *See* U.S. CONST. art. 1, § 8, cl. 1 (granting Congress the authority tax and spend to promote the general welfare of the United States).

153. *See generally* New York v. United States, 505 U.S. 142, 175–77 (1992) (holding that it was unconstitutional for the federal government to compel state participation in a hazardous waste disposal program); Printz v. United States, 521 U.S. 898, 933 (1997) (holding that it was unconstitutional for the federal government to compel state police to participate in a gun control program).

154. *See generally* South Dakota v. Dole, 483 U.S. 203, 211–212 (1987) (discussing the constitutionality of withholding federal funds to incentivize state participation in a federal statutory scheme).

155. *Id.*; *see* 23 U.S.C. § 158(a)(1)(A) (2018) (authorizing withholding 10 percent of apportioned highway aid to states which allowed the purchase of alcohol by persons under 21 years old).

156. *Dole*, 483 U.S. at 211.

157. Nat'l Fed'n of Indep. Bus. v. Sibelius, 567 U.S. 519, 585 (2012); *see* 42 U.S.C. § 1396c (2018) (authorizing the Secretary of Health and Human Serves to stop payments to states that fail to comply with ACA insurance requirements).

158. *Grants and Cooperative Agreements*, *supra* note 149.

Sibelius, this penalty would not deprive states of a meaningful choice of whether to join the Cannabis Cultivation Act's regulatory scheme. Therefore, this provision would be constitutional as a valid exercise of congressional spending power. Gently incentivized state adoption would be the most important step to achieving the Act's primary goal of creating a national regulatory scheme to protect the environment.

D. Limiting Energy Use

§ 406 Agricultural Cultivation

(a) In permitting cannabis cultivators, state offices of cannabis regulation, as established under § 405(b) of this Title, shall:
  (1) issue permits for cannabis to be grown outdoors by the cultivated acre, and
  (2) issue permits for cannabis to be grown indoors by the mature plant.

(b) In issuing permits for outdoor production, the state office of cannabis regulation shall set a maximum number of permitted acres within the state in keeping with the provisions of § 407 of this Title.

(c) In issuing permits for cannabis to be grown indoors, the state office of cannabis regulation shall limit the total number of mature plants which may be grown indoors within the state to no more than 250 mature plants per permitted acre of outdoor cannabis within the state.

(d) As used in this section,
  (1) "cannabis to be grown outdoors" means any production for which natural sunlight is the main source of light for the mature plants, and
  (2) "cannabis to be grown indoors" means any production for which artificial light is the main source of light for the mature plants.

This section achieves the Act's aim of limiting the carbon footprint of indoor production. The copious energy use of indoor production is, arguably, the greatest long-term environmental concern related to the cannabis industry.[159] Nevertheless, there are several competing interests at play. One

159. Martin Vezér, *ESG Risks of Cannabis Cultivation: Energy, Emissions and Pesticides*, SUSTAINALYTICS (July 16, 2018),https://www.sustainalytics.com/esg-blog/esg-risks-of-cannabis-cultivation-energy-emissions-and-pesticides/ https://www.sustainalytics.com/esg-blog/esg-risks-of-cannabis-cultivation-energy-emissions-and-pesticides/.

of the main appeals of indoor cannabis from a market perspective is that the greater control of the grow environment can produce a higher quality product.[160] In states with recreational cannabis, product grown indoors is generally considered top-shelf.[161] Therefore, prohibiting indoor production entirely is unrealistic. This provision seeks to limit the proportion of cannabis produced indoors by capping indoor permits at a percentage of outdoor permits.

Other countries have considered similar measures for their cannabis industries.[162] The final report of Canada's Task Force on Cannabis Legalization and Regulation offered six specific recommendations, including to "[p]romote environmental stewardship by implementing measures such as permitting outdoor production."[163] The Task Force found that "[e]ncouraging responsible environmental practices through less reliance on indoor lighting, irrigation networks and environmental controls (i.e., heating and cooling, humidity controls) can contribute to substantially reducing the environmental footprint of cannabis production facilities."[164]

The limit in § 406(c) is based on an estimate that cannabis planted at a high density outdoors occupies approximately 18 ft^2 per plant, equaling 2,420 plants per cultivated acre.[165] The limit of no more than 250 indoor plants per acre of outdoor cultivation would mean—in theory—that only 10% of production within a state could be indoor. While this provision does not set a hard cap on indoor production, it would nevertheless dramatically limit the total energy usage of the industry.

Functionally, this scheme is most similar to past cap-and-trade legislation, such as that of the proposed American Clean Energy and Security Act of 2009.[166] Although this bill never became law, there are equivalent U.S. statutes that cap and trade emissions other than carbon. For example, in 1990, Congress amended the Clean Air Act to include an emissions trading scheme

160. Trevor Hennings, *Growing Cannabis Indoors vs. Outdoors: 3 Key Differences*, LEAFLY (May 29, 2016), https://www.leafly.com/news/growing/indoor-vs-outdoor-cannabis-growing-3-key-differences.

161. *Id.*

162. HEALTH CAN., A FRAMEWORK FOR THE LEGALIZATION AND REGULATION OF CANNABIS IN CANADA, THE FINAL REPORT OF THE TASK FORCE ON CANNABIS LEGALIZATION AND REGULATION 32 (Dec. 2016), https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/laws-regulations/task-force-cannabis-legalization-regulation/framework-legalization-regulation-cannabis-in-canada.html.

163. *Id.* at 4.

164. *Id.* at 32.

165. Jonathan P. Caulkins, *Estimated Cost of Production for Legalized Cannabis* 14 (RAND, Working Paper WR-764-RC, 2010).

166. American Clean Energy and Security Act, H.R. 2454, 111th Cong. (2009).

for sulfur dioxide, the primary cause of acid rain.[167] This system has been in place for nearly thirty years, but the basic premise of cap-and-trade has never been successfully challenged.[168] Importantly, § 406 of the Cannabis Cultivation Act is less restrictive than traditional cap-and-trade because the same party may own both the indoor and outdoor permits. Thus, a cultivator can essentially trade offsets and allowances with themselves. Given that cap-and-trade has survived the courts, this provision of the Cannabis Cultivation Act most likely will as well.

E. Limiting Excessive Water Use

§ 407 Water Use

(a) The state office of cannabis regulation shall establish a maximum number of cultivated acres that may be permitted for cannabis cultivation within their state.
(b) In determining the maximum number of permitted acres, the office or other appropriate state entity must produce a scientific report detailing the current gross and net amount of water available within the state, considering all state and federal water use laws and regulations.
(c) In producing its report on available water, the state must make use of the best scientific information available.
(d) The final determination of maximum permitted acres may be no higher than the burden on the water supply may bear as determined in the scientific report, estimated at a rate of 271,040 U.S. gallons per acre, per year.

The overall effect of this section is to provide a hard cap on the total amount of cannabis produced within a state based on its available water resources. The determination of 271,040 gallons per acre, per year estimates 1 gallon per plant, per day, multiplied by 2,420 plants per acre and a maximum growth period of 16 weeks.[169] Forcing states to tie their permits to an assessment of available water resources will prevent near-term water shortages.

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167. Clean Air Act, Pub. L. No. 101–549, 104 Stat. 2399 (1990) (codified as amended at 42 U.S.C. § 7651b(a) (2018)).

168. *Id.*

169. Casey O'Neill, *How Much Water Does It Take to Grow Cannabis?* GANJIER (July 2, 2015), https://web.archive.org/web/20180317115627/http://www.theganjier.com/2015/07/02/how-much-water-does-one-marijuana-plant-need-to-grow/.

Although this scheme is original to this bill, it mirrors that of other federal resource-management acts. For example, the Magnuson–Stevens Fishery Conservation and Management Act established Regional Fishery Management Councils empowered to "develop annual catch limits for each of its managed fisheries that may not exceed the fishing level recommendations of its scientific and statistical committee[.]"[170] The Councils enforce these catch limits through individual permits granting access to a portion of the fishery's allowable catch.[171]

Although many plaintiffs have challenged the annual catch limits, these challenges have been limited to the methods used by the Councils to establish their annual quotas.[172] Therefore, parties may conceivably challenge the annual limits on cannabis production permits created under the Cannabis Cultivation Act. Courts, however, are unlikely to entertain challenges to the overall scheme because managing and conserving natural resources is a legitimate government interest.[173]

The Act in its entirety serves the goal of preventing water shortages in western states more than this specific provision. However, a principle injustice of life on earth is that water resources are unevenly distributed around the world. Political will rather than the availability of natural resources, however, has determined current patterns of cannabis production in the United States. Amending the CSA to end federal prohibition would allow for production of the water-intensive plant to naturally migrate to areas with more abundant water resources.

F. Personal Production

§ 408 Home production for personal use

(a) Home cultivation of cannabis for personal use shall be unregulated by this chapter, as provided in subsections (b) and (c).

(b) Home cultivation for personal use shall not exceed 16 mature plants at one time, per domicile.

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170. Magnuson–Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1852(h)(6) (2018).

171. *Id.* § 1802(23).

172. *See* Massachusetts v. Pritzker, 10 F.Supp.3d 208, 211 (D. Mass. 2014) (holding that the annual catch limit promulgated by the New England Fisheries Management Council was reasonable and in keeping with the Magnuson-Stevens Act's intent "to prevent overfishing, to rebuild overfished stocks, to insure conservation, to facilitate long-term protection of essential fish habitats, and to realize the full potential of the Nation's fishery resources").

173. *See, e.g.,* Alaska Const. Legal Def. Conservation Fund, Inc. v. Kempthorne, 198 F. App'x 601, 602–03 (9th Cir. 2006) (holding that laws intended to conserve finite natural resources are subject to rational review and managing natural resources is a legitimate government interest).

> (c) The provisions of this section do not preempt state statutes limiting home cannabis cultivation.
> (d) As used in this section, "domicile" means any property or part of a property which is maintained as a residence.

Many state cannabis laws allow for growing a small number of plants at home for personal use.[174] Vermont allows two mature plants per household.[175] California and Colorado allow six.[176] However, most states require that personal grows are conducted indoors for safety reasons.[177] Limits on numbers of personal-use plants and requirements to keep those plants behind locked doors were both intended to limit the risk of theft or diversion.[178] Colorado, for example, originally allowed up to 99 personal-use plants for registered medical users but lowered the limit to 16 after it became apparent that this limit was being exploited to produce cannabis for the illegal market.[179] However, as discussed above, regulators can reasonably expect that a national legal market would greatly reduce or eliminate the demand for illicit cannabis.

A further consideration is incentivizing home growers to grow outdoors to limit energy use. However, limiting personal, recreational production to 2–6 plants at one time may prevent home growers from meeting their personal needs within the available growing season. One study done in Colorado estimated that the typical cannabis user will consume around 3.53 ounces of cannabis annually, although the actual numbers would vary considerably from person to person.[180] Per plant yields are similarly inconsistent, but the Rand Corporation offered 1.2 ounces per plant as an aggregated average for commercially grown plants.[181] Therefore, a theoretical average consumer would need to successfully harvest at least three average plants per year to meet their needs. This would tacitly require many home growers to grow indoors year-round in parts of the country with growing seasons that would not allow multiple harvests. The higher 16-plant

174. *See generally* VT. STAT. ANN. tit. 18 § 4230(a)(1)(A) (2019); CAL. HEALTH & SAFETY CODE § 11362.2(a)(3) (2019).

175. VT. STAT. ANN. tit. 18 § 4230(a)(1)(A).

176. CAL. HEALTH & SAFETY CODE § 11362.2(a)(3) (2019); COLO. CONST. art. XVIII, § 16(3)(b).

177. COLO. CONST. art. XVIII § 16(3)(b) (reading "provided that the growing takes place in an enclosed, locked space, is not conducted openly or publicly").

178. Colleen Sikora, *How the Original 99-Plant Law Grew Colorado's Marijuana Black Market*, KRDO (May 7, 2018), https://www.krdo.com/news/how-the-original-99-plant-count-law-grew-the-marijuana-black-market-in-colorado/739255174.

179. *Id.*

180. CHARLES BROWN & PHYLLIS RESNICK, COLO. FUTURES CTR., THE FISCAL IMPACT OF AMENDMENT 64 ON STATE REVENUES 4 (2014).

181. Caulkins, *supra* note 165, at 24.

allowance would make it easier for a household with multiple regular cannabis users to meet their yearly needs with cannabis grown outdoors.

G. Medicinal Cannabis

§ 409 Medicinal-use Cannabis exempted

This chapter does not regulate or in any way control cannabis produced for medicinal use.

This legislation is written to only regulate a part of the cannabis industry; i.e. cannabis produced as an agricultural commodity. Cannabis as a pharmaceutical product should be addressed with its own legislation. Medical cannabis, especially for patients with compromised immune systems such as cancer patients, would benefit from more tightly controlled production and a more refined product. Removing cannabis from the Schedules of controlled substances would, however, require states to allow access to medicinal cannabis, regardless of state restrictions on recreational use.[182]

H. The ATF and Crop Insurance

Section D. 28 U.S.C. § 599A(b)(1) amended to read:
28 U.S.C. § 599A(b)(1) – Bureau of Alcohol, Tobacco, Firearms, and Explosives

(b)Responsibilities.—Subject to the direction of the Attorney General, the Bureau shall be responsible for investigating—

(1) criminal and regulatory violations of the federal firearms, explosives, arson, alcohol, ~~and~~ tobacco, and cannabis smuggling laws;

This section simply expands the authority of the Bureau of Alcohol, Tobacco, Firearms, and Explosives to encompass crimes related to cannabis. This is a necessary and logical step to legitimizing the cannabis industry and enforcing reasonable controls on its operation.

Section E. 7 U.S.C. § 1518 is amended to read:
7 U.S.C. § 1518 – "Agricultural commodity" defined

"Agricultural commodity", as used in this subchapter, means wheat, cotton, flax, corn, dry beans, oats, barley, rye, tobacco, cannabis, rice, peanuts, soybeans, sugar beets, sugar cane, tomatoes, grain sorghum,

182. *See* Gonzales v. Raich, 545 U.S. 1, 42 (2005) (holding that congressional intent as expressed in the CSA is the preemptive factor invalidating California's medicinal cannabis law).

> sunflowers, raisins, oranges, sweet corn, dry peas, freezing and canning peas, forage, apples, grapes, potatoes, timber and forests, nursery crops, citrus, and other fruits and vegetables, nuts, tame hay, native grass, aquacultural species (including, but not limited to, any species of finfish, mollusk, crustacean, or other aquatic invertebrate, amphibian, reptile, or aquatic plant propagated or reared in a controlled or selected environment), or any other agricultural commodity, excluding stored grain, determined by the Board, or any one or more of such commodities, as the context may indicate.

By limiting outdoor production, § 406 would also increase the chance of crop damage from weather and pests. This provision would lessen that concern by opening access to insurance from the Federal Crop Insurance Corporation ("FCIC") to cannabis cultivators. The FCIC is authorized to "insure, or provide reinsurance for insurers of, producers of agricultural commodities grown in the United States. . . ."[183] By changing "agricultural commodity" as defined by § 1518, cannabis cultivators would be able to benefit from the FCIC's subsidized crop insurance plans. Because "agricultural commodity" already encompasses most crops, including tobacco, it is unlikely that this will face legal challenges once the CSA is amended.[184]

CONCLUSION

At every turn, the environmental damage of cannabis production has been a manufactured issue, the result of an ill-informed policy guided more by propaganda and animus than fact. Had the federal government not outlawed cannabis in the first place, there never would have been a thriving black market. If Congress's stance on cannabis was not lagging behind the rest of the country, the EPA and USDA could offer nation-wide guidance and regulations to minimize the industry's negative externalities. Reducing or eliminating these externalities is fully within the regulatory authority of the federal government. The issue is inaction.

If adopted, the Cannabis Cultivation Act would dramatically reduce or eliminate the four identified environmental concerns related to cannabis production. By removing cannabis from the Schedules of Controlled Substances, illegal cannabis production and its attendant consequences would diminish as it is replaced by a legal market. Furthermore, by removing the barrier of prohibition, the EPA would be fully capable of effectively

183. 7 U.S.C. § 1508(a)(1) (2018).
184. *Id.* § 1518 (defining "agricultural commodity").

regulating the cannabis industry and protecting the environment and consumers from unintentional harm. Limiting the proportion of indoor to outdoor production to a ratio of 1 to 10 leverages supply and demand to minimize net energy consumption and its corresponding carbon footprint. Finally, the Act ensures that states will not over-strain their water supply for the sake of a profitable industry by requiring that states cap their total cultivation to correspond with available water resources.

The negative side effects of federal cannabis prohibition are well documented. As a matter of criminal justice, prohibition has contributed to mass incarceration and the legal disenfranchisement of millions of Americans.[185] Currently, the United States incarcerates 2.5 million people, the highest per capita rate in the world.[186] Of those, approximately half are for drug-related offenses, and 9 out of 10 are for simple possession.[187] In 2017, there were 659,700 arrests for cannabis law violations, 91% of which were for simple possession.[188]

As a matter of public policy and deterrence, cannabis prohibition has been a categorical failure. The United States spends approximately $3.6 billion per year on enforcing cannabis prohibition, with no corresponding reduction on use or availability.[189] In the words of the American Civil Liberties Union: "[The War on Drugs] has needlessly ensnared hundreds of thousands of people in the criminal justice system, had a staggeringly disproportionate impact on African-Americans, and comes at a tremendous human and financial cost."[190]

The human and financial cost of prohibition sits in dark contrast to possibilities of a legal market which we already see playing out in legal states. California, Colorado, Washington State, and Oregon collectively have seen $6,087,600,000 in revenues from recreational sales.[191] In 2015 alone, the cannabis industry created 18,000 new, full-time jobs in the state of Colorado.[192] A recent paper published in the Journal of the American Medical Association found a 14.4% reduction in prescription opioid use in states

185. *Drug War Statistics*, DRUG POL'Y INST., http://www.drugpolicy.org/issues/drug-war-statistics (last visited Oct. 28, 2019).

186. *Id.*

187. *Id.*

188. *Id.*

189. AM. C. L. UNION, *supra* note 12, at 4.

190. *Id.*

191. Andrew DePietro, *Here's How Much Money States are Raking in From Legal Marijuana Sales*, FORBES (May 4, 2018), https://www.forbes.com/sites/andrewdepietro/2018/05/04/how-much-money-states-make-cannabis-sales/#29153034f181.

192. Christopher Ingraham, *The Marijuana Industry Created More Than 18,000 New Jobs in Colorado Last Year*, WASH. POST (Oct. 27, 2016), https://www.washingtonpost.com/news/wonk/wp/2016/10/27/the-marijuana-industry-created-over-18000-new-jobs-in-colorado-last-year/?noredirect=on&utm_term=.2a181ecbad51.

which allowed home cultivation of medicinal cannabis.[193] Today, an abundance of data shows that we should add the unnecessary environmental impact to the already stunning human and economic costs of cannabis prohibition.

193. Ashley C. Bradford et al., *Association Between US State Medical Cannabis Laws and Opioid Prescribing in the Medicare Part D Population*, 178 JAMA INTERNAL MED. 667, 667–72 (2018).

TAMING AMERICA'S ROGUE ROADS: UNSOLVED R.S. 2477 CLAIMS IN UTAH AND BEYOND

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INTRODUCTION

The United States boasts some of the world's most stunning vistas, picturesque landscapes, and diverse sceneries. From the Green Mountains in Vermont to the mesas of Utah, the federal government carefully manages and protects many of the most pristine examples of America's beauty.[1] However, these lands are under attack. In the West, local governments are forging roads across federal public lands.[2] In Utah, well-over 12,000 roads traverse the public's land.[3] Utilizing rights-of-way created under a statute enacted over 150 years ago and repealed over 40 years ago, these rogue roads are causing serious problems as they wind through protected federal lands.[4] Congress, land management agencies, and the judicial system have failed to resolve the growing issue.[5] Now, as the Utah Federal District Court moves forward in yet another suit to resolve such claims, the court has a chance to put into motion a real solution.[6] A solution could not be timelier as President Trump's administration aims to open public lands to private development.[7]

This Note will provide a brief history of Revised Statute 2477 (R.S. 2477), explore the relevant case law surrounding the issue in Utah, and survey solutions to resolve the numerous R.S. 2477 claims across the American West. Part I will explore the origin of R.S. 2477, its eventual repeal, and explain why it is the root of so much trouble today.[8] Part II will

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1. *See* Quoctrung Bui & Margot Sanger-Katz, *Why the Government Owns So Much Land in the West*, N.Y. TIMES (Jan. 5, 2016), https://www.nytimes.com/2016/01/06/upshot/why-the-government-owns-so-much-land-in-the-west.html?_r=0 (noting the federal government owns and manages 47% of all land in the West).

2. Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *3–5 (D. Utah Apr. 17, 2015), certified question answered sub nom. Garfield Cty. v. United States, 2017 UT 41, 424 P.3d 46 ("The litigation encompasses more than 20 different cases ('R.S. 2477 Road Cases') now pending in federal court, involves approximately 12,000 roads, and impacts most areas of the State.").

3. *See id.*

4. R.S. 2477, 43 U.S.C. § 932 (1938) *repealed by* Federal Lands Policy and Management Act of 1976, 43 U.S.C. §§ 1701-1782 (2018).

5. *See, e.g.,* Omnibus Consolidated Appropriations Act, Pub L. No. 104-208, 110 Stat. 3009-200, § 108 (1996) ("No final rule or regulation of any agency of the Federal Government pertaining to the . . . validity of a right-of-way pursuant to Revised Statute 2477 . . . shall take effect unless expressly authorized by an Act of Congress subsequent to the date of enactment of this Act.").

6. *See Garfield Cty.*, 2015 WL 1757194, at *5, *10.

7. Juliet Eilperin, *Shrink at Least 4 National Monuments and Modify a Half-Dozen Others, Zinke Tells Trump*, WASH. POST (Sept. 17, 2017), https://www.washingtonpost.com/national/health-science/shrink-at-least-4-national-monuments-and-modify-a-half-dozen-others-zinke-tells-trump/2017/09/17/a0df45cc-9b48-11e7-82e4-f1076f6d6152_story.html?utm_term=.012d060a77fd; Julie Turkewitz, *Trump Slashes Size of Bears Ears and Grand Staircase Monuments*, N.Y. TIMES (Dec. 4, 2017), https://www.nytimes.com/2017/12/04/us/trump-bears-ears.html.

8. *See* 43 U.S.C. § 1769(a) (2018) (reporting that the repeal of R.S. 2477 did not terminate existing rights-of-way issued prior to the act); U.S. Dep't of the Interior Gen. Land Office, *Regulations Governing Rights-of-Way for Canals, Ditches, Reservoirs, Water Pipe Lines, Telephone and Telegraph*

recount the relevant Tenth Circuit case law, which is representative of the broader, national issue. Specifically, this section will examine how the case law has created a legal framework for resolving claims, and scrutinize the validity of that method. Further, Part II will examine the most recent case law to provide a view of where R.S. 2477 claims stand today.[9] The Utah Supreme Court's answer to the Tenth Circuit's certified question places the ball back in District Court.[10] Part III will explore how the Federal District Court should continue to pursue a clear legal framework to effectively and efficiently deal with unresolved claims.[11] Lastly, this Note will briefly survey various proposed solutions—direct or indirect—beyond the courts and advocate for Congressional action through reauthorization of federal agencies to address the claims.[12] After years of uncertainty, the time has come to resolve the R.S. 2477 claims crisscrossing the American West and protect our public lands.

I. BACKGROUND: R.S. 2477 ORIGINS

R.S. 2477 is contextualized by a suite of government actions facilitating the disposal of federal public lands in the western United States.[13] As the United States spread to span the width of the continent, the federal government enacted numerous pieces of legislation to divvy up the new territory.[14] Pieces of the disposal era's legislative legacy, like the 1862

Lines, Tramroads, Roads and Highways, Oil and Gas Pipe Lines, Etc., 56 Interior Dec. 533, 533-35, 551 (1938) [hereinafter Regulations Governing Rights-of-Way] (showing that, without any sort of recordation of claims, it is incredibly difficult to determine what rights were established prior to the 1976 repeal); *see infra* Part I (discussing the creation and repeal of R.S. 2477).

9. *See generally* Wilderness Soc'y v. Kane Cty. (*Kane I*), 560 F. Supp. 2d 1147 (D. Utah 2008) (determining whether county had R.S. 2477 rights); Wilderness Soc'y v. Kane Cty. (*Kane II*), 581 F.3d 1198 (10th Cir. 2009) (determining whether county could manage an R.S. 2477 claim without alerting federal government); Wilderness Soc'y. v. Kane Cty. (*Kane III*), 632 F.3d 1162 (10th Cir. 2011) (determining whether county could manage an R.S. 2477 claim without alerting federal government); Kane Cty. v. United States (*Kane IV*), 772 F.3d 1205 (10th Cir. 2014) (determining whether county had existing R.S. 2477 claim and if it could manage it without alerting federal government); *see infra* Part II (discussing how federal courts have failed to create a legal framework for resolving Utah's R.S. 2477 claims).

10. *See Garfield Cty.*, 2015 WL 1757194, at *5 (certifying question to Utah Supreme Court); *see also* Garfield Cty. v. United States, 2017 UT 41, ¶ 38, 424 P.3d 46, 63 (answering district court's certified question and leaving district court to analyze).

11. *See infra* Part III (discussing how the District Court should proceed, and alternative solutions to remedy the R.S. 2477 quagmire).

12. *Id.* (discussing remedies outside of court and focusing on Congressional action as most promising solution).

13. *See generally* GEORGE C. COGGINS ET AL., FEDERAL PUBLIC LAND AND RESOURCES LAW, 58–61 (Robert C. Clark et al. eds., 7th ed. 2014) (reviewing various disposal statutes encouraging the settlement of the West).

14. *Id.*; S. Utah Wilderness All. v. Bureau of Land Mgmt., 425 F.3d 735, 740 (10th Cir. 2005), *as amended* (Oct. 12, 2005) ("During that time congressional policy promoted the development of the unreserved public lands and their passage into private productive hands . . . .").

Homestead Act, aimed to settle the West.[15] Still others encouraged the development of the West's wealth of natural resources, including the necessary infrastructure for resource extraction.[16] Maintaining the broad policy of disposition, the Mining Act of 1866 legalized prospecting on federal land.[17] The law opened federal lands to miner exploration and occupancy.[18] And the statute included a simple, one-line statement giving the right-of-way to construct roads across public lands.[19]

This is R.S. 2477. One judge characterized the statute as "a standing offer of a free right of way over the public domain."[20] These rights-of-way became effective upon construction of a road.[21] Claims required no additional formalities: "no entry, no application, no license, no patent, and no deed on the federal side; no formal act of public acceptance on the part of the states or localities in whom the right was vested."[22] For decades after its passage, R.S. 2477 garnered praise for successfully furthering United States policy.[23] The roads facilitated settlement and increased the value of public lands.[24]

In the 1970s, the United States shifted to a policy of public land preservation and conservation. Legislation such as the National Environmental Policy Act (NEPA), the National Forest Management Act (NFMA), and the Federal Land Management and Policy Act of 1976 (FLPMA), marked the end of the disposal era and its statutes.[25] In particular, FLPMA officially repealed R.S. 2477.[26] Thus, Congress would no longer recognize new R.S. 2477 claims.[27] However, FLPMA did not terminate existing rights-of-way issued prior to the Act.[28] The statute froze R.S. 2477

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15. *See* COGGINS, *supra* note 13, at 95–96 (discussing various homestead legislation); Homestead Act, 43 U.S.C. § 161, *repealed by* 43 U.S.C. § 1701–1782 (2018) (allowing citizens to purchase up to 160 acres of land if they met residency and cultivation requirements).

16. *See* COGGINS, *supra* note 13, at 97–100 (discussing federal land policy toward timber, mining, and railroads).

17. Mining Act of 1866, ch. 262, 14 Stat. 251, *repealed by* 43 U.S.C. §§ 1701-1782.

18. *Id.*

19. *Id.*; R.S. 2477, *supra* note 4.

20. Streeter v. Stalnaker, 85 N.W. 47, 48 (Neb. 1901).

21. Regulations Governing Rights-of-Way, *supra* note 8, at 551.

22. S. Utah Wilderness All. v. Bureau of Land Mgmt., 425 F.3d 735, 741 (10th Cir. 2005), *as amended* (Oct. 12, 2005)

23. *See, e.g.,* Flint & P.M. Ry. Co. v. Gordon, 2 N.W. 648, 653 (Mich. 1879) (discussing policy of R.S. 2477 and other disposal statutes).

24. *Id.*

25. National Environmental Policy Act, 42 U.S.C. §§ 4321–4370a (2018); National Forest Management Act, 16 U.S.C. §§ 1600–1614 (2018); 43 U.S.C. §§ 1701–1782.

26. 43 U.S.C. § 1761.

27. *Id.*

28. *Id*. at § 1769(a).

claims as they were in 1976.[29] Rights established prior to the 1976 repeal are incredibly difficult to determine without prior recording.[30]

Combining the questionable validity of R.S. 2477 claims with the resentful—even hostile—attitude of the arid West creates the problems we see today. There are many instances where citizens of western states have clashed with the federal government over federal land ownership and management.[31] In the 1970s, the "Sagebrush Rebellion" embodied the Western preoccupation by promoting traditional and local economic interests over federal controls.[32] In the 1990s, the "County Supremacy" movement echoed this hostility toward federal agencies managing large swaths of western lands.[33] These attitudes live on. In 2016, militant ranchers made headlines for taking control of the Malheur National Wildlife Refuge in Oregon.[34] The armed ranchers and militiamen illegally held the refuge in protest of federal regulation of grazing permits.[35]

This resentment runs through western populations and is felt in their representative bodies.[36] A good example of this attitude is the action of the Utah Legislature.[37] Utah's rural communities are continually "dissatisfied with federal land management decisions, blaming environmental regulation, litigious advocacy groups, and recreational users of public lands for stifling local economies long dependent on ranching, logging, and mining."[38] As a result, the Utah Legislature passed the Utah Transfer of Public Lands Act of 2012.[39] The Act unsuccessfully demanded that the federal government cede federally owned lands to the State of Utah by 2014, despite consistent studies

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29. Sierra Club v. Hodel, 848 F.2d 1068, 1078 (10th Cir. 1988), *overruled on other grounds en banc by* Vill. of Los Ranchos De Albuquerque v. Marsh, 956 F.2d 970 (10th Cir. 1992).

30. *See* S. Utah Wilderness All. v. Bureau of Land Mgmt., 425 F.3d 735, 741 (10th Cir. 2005), *as amended* (Oct. 12, 2005) ("[N]o entry, no application, no license, no patent, and no deed on the federal side; no formal act of public acceptance on the part of the states or localities in whom the right was vested.").

31. *See* Robert L. Fischman & Jeremiah I. Williamson, *The Story of* Kleppe v. New Mexico: *The Sagebrush Rebellion as Un-Cooperative Federalism*, 83 U. COLO. L. REV. 123, 125–26 (2011) (discussing Westerners' resistance to and frustration with federal land ownership and management, as exemplified through the Sagebrush Rebellion); Michael C. Blumm & James A. Fraser, *"Coordinating" with the Federal Government: Assessing County Efforts to Control Decisionmaking on Public Lands*, *in* 2017 PUB. LAND & RESOURCES L. REV. 1 (outlining the various expressions western hostility toward federal land management has taken over the years).

32. Fischman & Williamson, *supra* note 31, at 160, 162.

33. Blumm & Fraser, *supra* note 31, at 2.

34. *Id.* at 3.

35. *Id.*

36. *Id.*; *see, e.g.,* H.B. 148, 59th Leg., Reg. Sess. (Utah 2012) (demanding that federal lands within Utah be ceded to the State).

37. H.B. 148.

38. Blumm & Fraser, *supra* note 31, at 4–5.

39. H.B. 148.

proving Utah administratively and financially incapable of managing those lands.[40]

A long-held resentment fuels continued action by citizens of these states and local governments against federal control of Western lands.[41] As shown, citizens and governments are willing to act at the fringe of legality, if not through means entirely illegal, to protest federal land ownership and management.[42] In the context of this Note, the rebellious spirit of Utah's counties and citizens certainly animate the continued assertion and defense of R.S. 2477 claims across federal lands.[43] Each R.S. 2477 claim is a step toward reclaiming lands from the federal government. However, the courts are now left to determine whether this latest incarnation of Western rebelliousness is within the bounds of the law.

II. THE PROBLEM: R.S. 2477 AND POST-FLPMA CASE LAW

A. R.S. 2477 Claims Before and After FLPMA

Prior to 1976, when Congress enacted FLPMA, state courts largely decided R.S. 2477 claims based on state law.[44] Further, most pre-FLPMA litigation focused on disputes between private landowners.[45] The passage of FLPMA marked a change to more contentious litigation, more narrow interpretations of R.S. 2477, and ultimately, more claims.[46] In light of this, the Department of the Interior (DOI) made an effort to consolidate records of claims through regulation of local and state governments.[47] However, by the 1980s, the effort fizzled.[48] With it, the opportunity for efficient resolution of claims faded.[49] Without an efficient, nationally applicable framework for resolution, states have struggled to resolve these claims.

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40. Blumm & Fraser, *supra* note 31, at 4–5.

41. *Id.*

42. *See* Fischman & Williamson, *supra* note 31, at 162 (discussing hostility toward federal land management and "uncooperative federalism" movement); Blumm & Fraser, *supra* note 31, at 2–3 (discussing manifestations of western hostility).

43. Blumm & Fraser, *supra* note 31, at 2–3.

44. James R. Rasband, *Questioning the Rule of Capture Metaphor for Nineteenth Century Public Land Law: A Look at R.S. 2477*, 35 ENVTL. L. 1005, 1026 (2005).

45. *Id.* at 1028.

46. *Id.*; Tova Wolking, *From Blazing Trails to Building Highways:* SUWA v. BLM *& Ancient Easements Over Federal Public Lands*, 34 ECOLOGY L. Q. 1067, 1075–76 (2007).

47. Management of Rights-of-Way and Related Facilities on Public Lands and Reimbursement of Costs, 44 Fed. Reg. 58,106, 58,106 (proposed Oct. 9, 1979) (proposed rulemaking).

48. Rights-of-Way, Principles and Procedures; Amendment, 47 Fed. Reg. 12,568, 12,568–70 (proposed Mar. 23, 1982) (codified at 43 C.F.R. pt. 2800, subsequently repealed); Wolking, *supra* note 46, at 1076.

49. Wolking, *supra* note 46, at 1076.

Now, over 150 years after Congress enacted the Mining Law of 1866, local governments are claiming and fighting to validate R.S. 2477 rights-of-way.[50] In Utah alone, county governments claim over 12,000 roads.[51] This vast web of claims traverses thousands of miles of Utah's federally owned landscapes.[52] These are not ordinary roads and highways. The majority of R.S. 2477 roads do not lead to schools, businesses, or even neighboring communities.[53] Instead, many R.S. 2477 roads are simply ruts in the dirt—even cow paths—rather than paved roads or highways.[54] Thus, the practical value of such roads may be unclear. But R.S. 2477 claims still pose a certain threat.

B. The Impact of R.S. 2477 Roads

Many R.S. 2477 roads bisect some of the country's most precious and sensitive environments, like the Grand Staircase-Escalante National Monument (Monument).[55] President Clinton established the Monument via Proclamation in 1996.[56] The 1.9 million-acre monument encompasses a large portion of southern Utah's landscape.[57] The water-scarce region hosts life zones ranging from "low-lying desert to coniferous forests."[58] President Clinton aimed to preserve the area's remote, primitive, and unspoiled character by designating the lands as a monument.[59] In doing so, President Clinton noted the area was the last portion of the continental United States to be mapped.[60] Nearly half of the Monument consists of 16 Wilderness Study

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50. Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *3 (D. Utah Apr. 17, 2015), certified question answered sub nom. Garfield Cty. v. United States, 2017 UT 41, 424 P.3d 46

51. *Id.* ("The litigation encompasses more than 20 different cases ('R.S. 2477 Road Cases') now pending in federal court, involves approximately 12,000 roads, and impacts most areas of the State.").

52. *Id.*

53. Hoax Highways (RS 2477), S. UTAH WILDERNESS ALL., https://suwa.org/issues/phantom-roads-r-s-2477/ (last visited Oct. 29, 2019) ("[T]he overwhelming majority of these routes are not 'roads' that lead to schools, stores, or towns. Rather, they are wash bottoms, cowpaths [sic], and two-tracks in the desert . . . .").

54. *Id.*

55. U.S. DEP'T OF INTERIOR, BUREAU OF LAND MGMT, GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT APPROVED MANAGEMENT PLAN ix, 46–47 (2000) (discussing the presence of R.S. 2477 claims within the monument's boundaries) [hereinafter GSENM MANAGEMENT PLAN].

56. Proclamation No. 6290, 61 Fed. Reg. 50,223, 50,223 (Sept. 8, 1996) [hereinafter Proclamation 6920]. President Trump's Proclamation on December 4, 2017 effectively destroys the Monument as established by President Clinton. However, roughly half of the area of the original monument will retain its designation as monument land, including much of the Wilderness Study Areas. Proclamation No. 9682, 82 Fed. Reg. 58,089, 58,089 (Dec. 4, 2017) [hereinafter Proclamation 9682].

57. GSENM MANAGEMENT PLAN, *supra* note 55, at iii.

58. Proclamation 6920, *supra* note 56, at 50,224.

59. *Id.* at 50,223.

60. *Id.*

Areas (WSAs), which speaks to the remote, primitive, and unspoiled character of the Monument.[61]

While historical, archeological, and cultural aspects of the land are cited as reasons for monument status, the land is also an "outstanding biological resource."[62] The designation aimed to protect many endemic species near the Monument. [63] The Proclamation notes that "[m]ost of the ecological communities contained in the Monument have low resistance to, and slow recovery from, disturbance," which makes the ecosystem particularly vulnerable.[64] Additionally, the Monument is home to a number of species listed as threatened or endangered under the Endangered Species Act.[65] Thus, any threat to the remote ecosystem must not be considered lightly.

While the R.S. 2477 claims remain unresolved, the Monument is damaged by the roads' existence and use in several ways. First, the R.S. 2477 claims threaten the overall undisturbed and primitive character of the land, as Clinton intended to protect and Trump intends to protect, in part.[66] Second, motorized access via R.S. 2477 roads threatens unique ecological communities, which are unlikely to recover from damaging disturbance even if claims are later invalidated.[67] Third, the existence of roads in WSAs will likely preclude their eventual designation as Wilderness Areas.[68]

The Grand Staircase-Escalante National Monument provides an apt example of the threats created by R.S. 2477 claims. Yet, the Monument is only one of numerous public resources in Utah facing such threats.[69] The need for resolution is clear. With a flood of claims, no true legislative

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61. GSENM MANAGEMENT PLAN, *supra* note 55, at 62.

62. Proclamation 6920, *supra* note 56, at 50, 224.

63. *Id.*

64. *Id.*

65. *Fauna of the Grand Staircase-Escalante National Monument, Utah*, http://www.zionnational-park.com/gsfauna.htm (last visited Oct. 29, 2018).

66. *See* Proclamation 6920, *supra* note 5656, at 50,244 (describing historical importance); Proclamation 9682, *supra* note 56, at 58,089-90 (modifying the monument to the smallest area possible needed to protect the historic and ecological importance).

67. *See* Proclamation 6920, *supra* note 56, at 50,244 (describing the ecological importance of the monument).

68. *See* GSENM MANAGEMENT PLAN, supra note 55, at 62 (noting land must have certain characteristics to qualify for WSA status). According to the monument management plan, no action may be taken to impair a wilderness study areas future designation as wilderness. *Id*. Thus, the plan bans any surface-disturbance or placement of permanent structures within study areas, in accordance with the Wilderness Act of 1964, 16 U.S.C. § 1131(a). *Id.*

69. *See Utah – List View*, NAT'L PARK SERV., https://www.nps.gov/state/ut/list.htm?program=parks (last visited Oct. 29, 2019) (listing the thirteen national parks within Utah); *see also National Monuments & Landmarks*, UTAH.COM, https://utah.com/national-monuments-landmarks (last visited Oct. 29, 2019) (listing nine national monuments and other protected landmarks of the Utah landscape).

guidance, and no federal agency authority, courts are left only with a confusing body of case law to determine the validity of these claims.[70]

C. Confusing Kane County Cases

While R.S. 2477 claims significantly impact several states, this Note focuses on recently developed case law in Utah.[71] The federal government owns the majority of Utah's land—approximately 65%— thus explaining the large volume of claims made there.[72] Because of the prior and developing case law and the number of claims, Utah exemplifies the issues surrounding R.S. 2477—in particular Kane and Garfield Counties. Over the past decades, R.S. 2477 issues have plagued the Tenth Circuit Court of Appeals, federal district courts, and Utah's state courts.[73] Despite their frequent interactions, even the most recent case law remains confusing. This is largely because these cases have failed to adequately or substantially address R.S. 2477 claims. In 1988, environmental groups sought to enjoin the widening of an R.S. 2477 highway traversing Garfield County, Utah.[74] Avoiding the broader issues surrounding R.S. 2477, the court focused on the text of the Statute.[75] It concluded the widening of the highway fell within the existing right-of-way and failed to address how future courts could assess the validity of such claims.[76] This case is exemplary of courts' continued reluctance to tackle claims head on.

The first of the confusing Kane County cases began when the Kane County Commissioner asserted ownership of numerous R.S. 2477 claims.[77] A letter by the Commissioner proclaimed the Kane County claims valid.[78]

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70. Omnibus Consolidated Appropriations Act, *supra* note 5 ("No final rule or regulation of any agency of the Federal Government pertaining to the . . . validity of a right-of-way pursuant to Revised Statute 2477 . . . shall take effect unless expressly authorized by an Act of Congress subsequent to the date of enactment of this Act.")

71. *See, e.g.,* Mark Udall, *There's a Way to End the RS 2477 Road Mess*, HIGH COUNTRY NEWS (June 9, 2003), https://www.hcn.org/wotr/14049 (describing potential RS 2477 conflicts in various states).

72. David Johnson & Pratheek Rebala, *Here's Where the Federal Government Owns the Most Land*, TIME (Jan. 5, 2016), http://time.com/4167983/federal-government-land-oregon/ (noting that the federal government owns 64.9% of Utah's land).

73. *See, e.g.,* Sierra Club v. Hodel, 848 F.2d 1068, 1073 (10th Cir. 1988), *overruled on other grounds en banc by* Vill. of Los Ranchos De Albuquerque v. Marsh, 956 F.2d 970 (10th Cir. 1992). (determining whether R.S. 2477 right allowed county road developments through federal land); S. Utah Wilderness All. v. Bureau of Land Mgmt., 425 F.3d 735, 740-42 (10th Cir. 2005), *as amended* (Oct. 12, 2005) (discussing the vexing problem of R.S. 2477); Utah v. United States, No. 2:05-CV-714-TC, 2008 WL 4170017, at *1 (D. Utah Sept. 3, 2008) (allowing intervention in an R.S. 2477 quiet-title action).

74. *Hodel*, 848 F.2d at 1073.

75. *Id.* at 1084.

76. *Id.*

77. *Kane I*, 560 F. Supp. 2d 1147, 1154-55 (D. Utah 2008).

78. *Id.* at 1155-56.

The County passed an ordinance to remove signs from federal lands and put up their own—indicating the roads were open to off-road vehicles.[79] The Wilderness Society, a conservation organization, sued the County.[80] The organization claimed that federal law preempted the County's actions—in other words, the County violated the Supremacy Clause.[81]

First, the court noted a presumption of ownership and management of federal land lies with the federal government and that Kane County "is not entitled to win title or exercise unilateral management authority until it successfully has carried its burden of proof in a court of law."[82] The court ruled the ordinance violated the Supremacy Clause and enjoined the County from encouraging use of federal lands without first validating its R.S. 2477 claims.[83] However, the court did not determine the validity of those claims and instead avoided the issue of property rights altogether.[84] By doing so, the court avoided the heart of the R.S. 2477 issue.

On appeal, the County argued that the Wilderness Society lacked standing to bring the Supremacy Clause claim.[85] However, the court disagreed.[86] The Tenth Circuit affirmed the lower court and determined the County had not successfully validated its claims.[87] The County could defend the preemption claim, but only if the court validated the R.S. 2477 claims.[88] Until that happened, the County had no right to take actions on those claims.[89] Again, the court avoided an actual assessment of the R.S. 2477 claims' validity.

Finally, the court granted the County's petition for a rehearing en banc.[90] The panel vacated the District Court's decision and remanded the case with instructions to dismiss.[91] In doing so, the decision reversed the burden of proof that the County must validate its claim before taking any action.[92] The dissent criticized the majority's opinion, explaining the negative impact it

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79. *Id.*

80. *Id.*; *see also About Us*, THE WILDERNESS SOC'Y, http://wilderness.org/about-us (last visited Oct. 29, 2019) ("The Wilderness Society has led the effort to permanently protect 109 million acres of wilderness in 44 states. We have been at the forefront of nearly every major public lands victory.").

81. *Kane I*, 560 F. Supp. 2d at 1149.

82. *Id.* at 1151 (quoting Wilderness Soc'y v. Kane Cty., 470 F. Supp. 2d 1300, 1306 (D. Utah 2006)).

83. *Id*. at 1165.

84. *Id.* at 1165-66; *Kane III*, 632 F.3d 1162, 1183 (10th Cir. 2011) (Lucero, J., dissenting) (noting lower court did not decide the County's property rights).

85. *Kane II*, 581 F.3d 1198, 1209 (10th Cir. 2009).

86. *Id.* at 1212.

87. *Id.* at 1226.

88. *Id.* at 1221.

89. *Id.*

90. *Kane III*, 632 F.3d 1162, 1164-65 (10th Cir. 2011).

91. *Id.* at 1174.

92. *Id.* at 1171.

would have upon future R.S. 2477 litigation.[93] As one commenter aptly noted, the majority missed an opportunity to create a legal framework for resolving these complex issues, and instead only added to the confusion.[94] After three passes at the County's claims, the courts missed the opportunity.

In a new action, brought several years later, Kane County sought to quiet title on several R.S. 2477 claims using the Quiet Title Act (QTA), resulting in two district court decisions.[95] Kane County appealed those district court decisions to the Tenth Circuit.[96] In order to have a disputed title, as the QTA requires, the County must show that the United States explicitly or implicitly disputed the claims.[97] Ultimately, the court concluded the United States did not dispute the title.[98] The Supreme Court of the United States denied the petition for writ of certiorari, passing on an opportunity to set a standard for lower courts to resolve R.S. 2477 claims.[99] For a final time, the Tenth Circuit avoided addressing the numerous R.S. 2477 claims and failed to resolve any claims.[100] While Kane County did set a legal standard for resolution under the QTA, there remains little progress in resolving the growing R.S. 2477 issues.[101] Further, despite years of litigation and a legal standard, no clear, overarching policy concerning R.S. 2477 roads has been developed. Now, the District Court, with the help of the Utah Supreme Court, attempts once more to apply the legal standard to resolve only a fraction of the total number of claims.[102]

Currently, most of the R.S. 2477 cases have been stayed due to a comprehensive case management order.[103] However some remain active.[104] Among them is the consolidated action by Garfield County, including claims

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93. *See id*. at 1180 (Lucero, J., dissenting) ("This is a pivotal case which, unless reversed or modified, will have long-term deleterious effects on the use and management of federal public lands.").

94. *See* Hillary M. Hoffmann, *Signs, Signs, Everywhere Signs:* The Wilderness Society v. Kane County *Leaves Everyone Confused About Navigating A Right-of-Way Claim Under Revised Statute 2477*, 18 HASTINGS W.-N.W. J. ENVTL. L. & POL'Y 3, 31 (2012) (noting the Tenth Circuit's failure to clarify RS 2477 claims "muddied an already very murky body of law").

95. Kane Cty. v. United States, 934 F. Supp. 2d 1344, 1346 (D. Utah 2013); Kane Cty. v. United States, No. 2:08–cv–00315, 2013 WL 1180764, at *3-4 (D. Utah Mar. 20, 2013).

96. *Kane IV*, 772 F.3d 1205, 1209 (10th Cir. 2014).

97. *Id.*

98. *Id.* at 1212–15.

99. Kane Cty. v. United States, 136 S. Ct. 318 (2015) (mem.).

100. *Kane IV*, 772 F.3d at 1225 (remanding to determine the scope of the R.S. 2477 rights).

101. *See, e.g.,* Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *3, *10 (D. Utah Apr. 17, 2015), certified question answered sub nom. Garfield Cty. v. United States, 2017 UT 41, 424 P.3d 46 (concerning additional quiet title actions resulting in a certified question to the Utah Supreme Court).

102. *See id.* at *10 (certifying question to the Utah Supreme Court due to uncertainty in law).

103. *Id.*

104. *Id.* at *6.

on over 700 R.S. 2477 roads.[105] As a permissive intervener, the Southern Utah Wilderness Alliance (SUWA) asserted, through a memorandum in support of the United States, that a Utah statute bars the pending cases.[106] Thus, the District Court certified a question to the Utah Supreme Court to interpret the state statute before proceeding.[107]

III. MAINTAINING A CLEAR LEGAL FRAMEWORK AND UTILIZING ALTERNATIVE SOLUTIONS

In the summer of 2017, the Supreme Court of Utah offered its opinion on the question certified by the District Court.[108] The court determined that the Utah statute at issue was not a statute of repose, but a statute of limitation.[109] The Utah Supreme Court's decision allows the District Court to proceed in addressing Garfield County's R.S. 2477 claims. Next this Note will walk through the court's analysis and application of the absurdity doctrine on which it bases this conclusion.[110] This Note will then address the lengthy dissent, which characterizes the majority's application of the absurdity doctrine as unprecedented and over-expansive.[111] Finally, this Note will discuss why the majority got it right and helped defend the use of the QTA as the legal method for R.S. 2477 resolution.

A. Utah Supreme Court Answers

In order to determine if state statutes barred the current action to quiet title on R.S. 2477 claims, the Utah Federal District Court certified the following question to the Utah Supreme Court: whether Utah Code § 78B-2-201(1) and its predecessor are statutes of limitations or statutes of repose.[112] If statutes of repose, the current action in the Court of Appeals would be time-barred.[113] However, if statutes of limitations, the action could proceed.[114] The court concluded "section 201 and its predecessor are, by their plain language,

105. *Id.* at *1.
106. *Id*. at *8.
107. *Id*. at *10.
108. Garfield Cty v. United States., 2017 UT 41, ¶ 1, 424 P.3d 46, 49.
109. *Id.* ¶ 1, 424 P.3d at 49; UTAH CODE ANN. § 78B-2-201 (West 2019).
110. *Garfield Cty.*, 2017 UT 41, ¶ 1, 424 P.3d 46, 49.
111. *Id.* ¶ 40, 424 P.3d at 64 (Voros, J., dissenting).
112. *Id.* ¶ 1, 424 P.3d at 49. The court notes that its interpretation is limited only to Utah Code § 78B-2-201(1) as it existed in 2008—not as amended in 2015. *Id.* ¶ 1, n. 1. The amended statute refers to itself explicitly as a "statute of limitations." UTAH CODE ANN. § 78B-2-201 (West 2019). Thus, further litigation challenging this court's characterization of the statute may likely be mooted by the amendment.
113. *Garfield Cty.*, 2017 UT 41, ¶ 1, 424 P.3d at 49; Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *8 (D. Utah Apr. 17, 2015).
114. *Garfield Cty.*, 2017 UT 41, ¶ 1, 424 P.3d at 49.

statutes of repose. But applying these statutes to the State's R.S. 2477 claims leads to an overwhelmingly absurd result not intended by the legislature."[115] Thus, the majority found the statutes must be interpreted as statues of limitations.[116]

The absurdity doctrine, a tool of statutory interpretation, allows a court to depart from the literal meaning of a statute.[117] However, this tool is limited for use only when a literal reading would yield an absurd result.[118] The tool is premised on the idea that a court should recognize legislative intent and assumes that legislators would not intend an absurd result.[119] Thus, when an absurd result is apparent, the court may avoid it by departing from a literal reading of the text.[120]

The court determined the plain language created statutes of repose, not limitations.[121] As a statute of limitation, the Utah statute bars the State from bringing a suit, except within seven years after the accrual of the cause of action.[122] However, as a statute of repose, "the State cannot assert a cause of action related to real property except within the first seven years after the accrual of its right or title to the property."[123] The court concluded the language of the statutes clearly created the latter.[124] Despite unambiguous statutory language, the court rightly decided such a characterization of the statutes yielded absurd results.[125] Thus, the court held the Utah statute to be a statute of repose according to the plain language.[126] However, the court avoided this absurd result by characterizing the law as a statute of limitations.[127]

For R.S. 2477 claims, a statute of limitations would have created only "ephemeral property rights."[128] The court stated that "[p]rior to the enactment of the [QTA] in 1972, the State had no legal mechanism to protect its vested rights of way."[129] Thus, any road claim under the Mining Law would have lapsed, unless claimed after 1965—seven years prior to the introduction of

115. *Id.* ¶¶ 1, 38, 424 P.3d at 49, 63.
116. *Id*.
117. *Id.* ¶ 22, 424 P.3d at 58.
118. *Id.*
119. *Id.*
120. *Id.*
121. *Id.* ¶ 15, 424 P.3d at 56.
122. *Id.* ¶ 14, 424 P.3d at 55–56.
123. *Id.* ¶ 15, 424 P.3d at 56.
124. *Id.* ¶ 14, 424 P.3d at 55–56.
125. *Id.* ¶¶ 23–24, 424 P.3d at 58–59.
126. *Id.* ¶ 37, 424 P.3d at 63.
127. *Id.* ¶¶ 1, 38, 424 P.3d at 49, 63.
128. *Id.* ¶ 27, 424 P.3d at 60.
129. *Id.* ¶ 25, 424 P.3d at 59.

the QTA.[130] The court concluded the lack of a legal mechanism to protect R.S. 2477 claims to be an absurd result and determined the intent of the legislature must have been to create a statute of limitation.[131]

In his dissent, Justice Voros refuted the majority's conclusion.[132] Justice Voros found the majority's conclusion of absurdity flawed for two reasons: (1) the Utah statute stood for over one hundred years; and (2) an alternative administrative remedy exists for R.S. 2477 claims.[133] The majority effectively dismissed Justice Voros's first criticism, stating that the longevity of a law is not an issue on a case of first impression.[134] Second, Justice Voros claimed that FLPMA provides an alternative avenue for settling R.S. 2477 claims.[135] However, Title V of FLPMA does not settle existing claims; rather it simply allows or denies new property rights.[136] Ultimately, both the majority and dissent failed to consider the absurdity of interpreting the law as a statute of repose in light of Congress's broader intent for R.S. 2477.

The court could have—and likely should have—characterized that result within the broader context of R.S. 2477. Interpreting the Utah law as a statute of repose undermines the very purpose Congress intended R.S. 2477 to serve.[137] As mentioned, Congress established the Mining Law and R.S. 2477 with a specific goal: to establish roadways across the western United States.[138] By encouraging the construction of basic infrastructure, Congress intended to promote the settlement and development of the region.[139] If R.S. 2477 was a statute of repose, the claims and the roads themselves would prove "ephemeral."[140] Yet Congress intended the network of highways across the West to be permanent fixtures of the landscape.[141] Only as permanent fixtures could the roads facilitate the development and population of the region.[142] There is no indication that the Utah legislature desired to undermine the federal government's objective to connect the West.[143] In fact,

130. *Id.*

131. *Id.* ¶ 26, 424 P.3d at 59–60.

132. *Id.* ¶ 39, 424 P.3d at 64 (Voros, J., dissenting).

133. *Id.* ¶¶ 54, 60, 424 P.3d at 67, 68 (Voros, J., dissenting).

134. *Id.* ¶ 30, 424 P.3d at 61.

135. *Id.* ¶ 61, 424 P.3d at 68 (Voros, J., dissenting).

136. 43 U.S.C. § 1761(a) (2018); *see infra* Part III (exploring the use of Title V of FLPMA in resolving R.S. 2477 claims).

137. Mining Act of 1866, *supra* note 17.

138. *Id.*

139. Flint v. Gordon, 2 N.W. 648, 653 (Mich. 1879) (noting the success of R.S. 2477 in facilitating western settlement).

140. *Garfield Cty*, 2017 UT 41, ¶ 27, 424 P.3d at 60.

141. *Flint*, 2 N.W. at 653 (discussing the success of R.S. 2477 in establishing a network of road to facilitate development of the western United States).

142. *Id.*

143. *Id.*

if the current battle over the claims is an indication, surely the Utah legislature does not wish to destroy those claims.[144] Thus, interpreting the Utah law as a statute of repose undermines the congressional intent for enacting R.S. 2477 and generates an absurd result. This broader perspective only bolsters the majority's opinion and reasoning.

Further, Justice Voros's opinion would undermine the resolution of Utah's R.S. 2477 claims. If the court read the statute according to Voros's interpretation, the unresolved R.S. 2477 claims would be time-barred from resolution under the QTA.[145] Given that the QTA is the standard for resolution, the Act would effectively halt all progress towards resolution.[146] This would only perpetuate the problem, as claimants would likely continue to insist R.S. 2477 roads valid and seek resolution through different channels—like FLPMA's Title V, as Voros suggested.[147] Ultimately, such a decision would only protract the R.S. 2477 issue. In the meantime, these roads would continue to complicate land management and threaten protected environments.[148]

The majority correctly interpreted the law as a statute of repose.[149] This interpretation means that "[Utah] has seven years to bring its QTA cause of action from the date the federal government begins to dispute an R.S. 2477 right of way—the date the State's cause of action under the QTA accrues."[150] Thus, the court answered the question certified in a manner that would allow the pending case in Utah's Federal District Court to proceed.[151] Essentially, the Utah Supreme Court successfully defended the QTA as the legal method for resolving R.S. 2477 claims. This decision gives the federal court an opportunity to resolve the R.S. 2477 claims under the QTA.[152]

The Utah Supreme Court's certified answer successfully maintains the life of this case. The District Court should keep this momentum going by resolving the claims before it in a way that will inform other courts and be the first step in creating a policy for resolution.

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144. *See supra* Part I (discussing western resentment of federal land management in Utah).

145. *Garfield Cty.*, 2017 UT 41, ¶ 25, 424 P.3d at 59.

146. *Id.* ¶ 26, 424 P.3d at 59–60 (discussing the use of the QTA as tool for protecting and validating claims).

147. *Id.* ¶ 61, 424 P.3d at 68 (Voros, J., dissenting).

148. *See* Proclamation 6920, *supra* note 56 (discussing the fragile ecosystems of Grand Staircase-Escalante National Monument, negatively impacted by any disturbance).

149. *Garfield Cty.*, 2017 UT 41, ¶¶ 1, 38, 424 P.3d at 49, 63.

150. *Id.* ¶ 37, 424 P.3d at 63.

151. *Id.* ¶ 26, 424 P.3d at 59–60 (answering avoids creating ephemeral property rights).

152. *Kane I*, 560 F. Supp. 2d 1147, 1154-55 (D. Utah 2008); *Kane II*, 581 F.3d 1198, 1210 (10th Cir. 2009); *Kane III*, 632 F.3d 1162, 1183 (10th Cir. 2011) (Lucero, J., dissenting); *Kane IV*, 772 F.3d 1205, 1209 (10th Cir. 2014); Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *1 (D. Utah Apr. 17, 2015) (noting 12,000+ claims in Utah).

B. The District Court Should Take the Opportunity to Maintain and Dictate a Clear Legal Framework

The District Court, now bound by the Utah Supreme Court's answer, must apply it to the facts and issues at hand.[153] As a statute of repose, the claims before the court stand and the litigation must continue.[154] The District Court must utilize this opportunity to offer a clear legal framework under the QTA for the resolution of all outstanding claims and determine the role of third parties in R.S. 2477 litigation.[155]

First, the District Court must maintain a clear path for counties to settle unresolved claims. The most obvious route is through the QTA, which is already an established legal standard.[156] The court should endorse the approach taken in this litigation to quiet the title for the claims against the federal government's interest.[157] Bringing an action under the QTA forces the claimant to prove the validity of the R.S. 2477 claim.[158] Thus, this gives the court an opportunity to assess and establish a clear burden of proof for validating R.S. 2477 claims.

Second, the court must evaluate the burden of proof to validate R.S. 2477 claims. In doing so, the court must answer the question of whether a presumption of federal ownership over the disputed land exists.[159] And if so, whether claimants may rebut that presumption.[160] Given the past avoidance of resolving the property issue at the core of R.S. 2477 claims, which burden of proof the court may require is unclear.[161] A stricter burden of proof may please environmentalists and federal land management agencies[162] while a

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153. *Garfield Cty.*, 2017 UT 41, ¶ 6, 424 P.3d at 50–51.

154. *Id.* ¶ 1, 424 P.3d at 49.

155. Hoffmann, *supra* note 94, at 33 ("When the next R.S. 2477 case reaches the Tenth Circuit, the court should address the issues raised above - the burdens of proof, the nature of an R.S. 2477 claim or defense, and how R.S. 2477 factors into agency management decisions under statutes like FLPMA - and address challenges on the merits of the parties' pleadings."); Andrew Stone, *The Road Ahead: R.S. 2477 Right-of-Way Claims After* Wilderness Society v. Kane County*,* Utah, 12 VT. J. ENVTL. L. 193, 209 (2010) ("If there is a flood of legal actions to quiet title in R.S. 2477 rights-of-way, the courts will also be faced with the additional dilemma of determining how much public or third-party participation should be allowed.").

156. 28 U.S.C. § 2409a (2018).

157. *Garfield Cty*., 2015 WL 1757194, at *1 (Garfield County "seek[s] to quiet title rights in certain roads crossing federal land.").

158. *Id*.

159. Hoffmann, *supra* note 94, at 32.

160. *Id.*

161. *Kane I*, 560 F. Supp. 2d 1147, 1154-55 (D. Utah 2008); *Kane II*, 581 F.3d 1198, 1210 (10th Cir. 2009); *Kane III*, 632 F.3d 1162, 1183 (10th Cir. 2011) (Lucero, J., dissenting); *Kane IV*, 772 F.3d 1205, 1209 (10th Cir. 2014).

162. Denying claims would preserve lands, like those of Grand Staircase, from degradation from road use. *See* GSENM MANAGEMENT PLAN, *supra* note 55, at 62 (discussing R.S. 2477 roads in Wilderness Study Areas).

lesser burden of proof will quickly resolve claims and may please Utahans.[163] The court must carefully balance an interest in timely resolution of claims with the risk of placing too low a burden. As R.S. 2477 roads were established without any sort of documentation, a high burden may limit the number of successful claims.[164]

Third, the court should dictate how valid R.S. 2477 roads will coexist with agency land management plans.[165] In Utah, for example, R.S. 2477 roads traverse Bureau of Land Management (BLM) lands (like the Grand Staircase-Escalante National Monument), National Forests, and National Parks.[166] If claims are validated, they may potentially and significantly impact how each of these agencies manages their portion of federal public land.[167] The court should signal just how much control these land managers may have over valid claims through federal lands. According to the case law, land managing agencies have some authority to regulate private property within or adjacent to public lands.[168] However, the court could delineate the extent of this authority which may also clarify the role of management over unresolved claims. If land managing agencies have clear bounds on their authority to regulate valid, and even unresolved claims, clearly delineated authority may reduce the number of disputed claims. Further, clearly delineated authority may encourage Utah counties to bargain with agencies—perhaps giving up pursuit of some claims for the validation (maybe under FLPMA, Title V) of others with more limited regulation.[169]

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163. Given the resentment Utahans hold against the federal government, reclaiming some of Utah's land would likely be seen as a victory. *See* Fischman & Williamson, *supra* note 31, at 162 (discussing hostility toward federal land management); *see also* Blumm & Fraser, *supra* note 31, at 2 (discussing manifestations of western hostility).

164. S. Utah Wilderness All. v. Bureau of Land Mgmt., 425 F.3d 735, 741 (10th Cir. 2005), *as amended* (Oct. 12, 2005) ("[N]o entry, no application, no license, no patent, and no deed on the federal side; no formal act of public acceptance on the part of the states or localities in whom the right was vested.").

165. Hoffmann, *supra* note 94, at 34.

166. Jodi Peterson, *First Settlement Reached in Utah's Contentious Road Claims*, HIGH COUNTRY NEWS (Aug. 21, 2013), http://www.hcn.org/blogs/goat/first-settlement-reached-in-utahs-contentious-road-claims.

167. GSENM MANAGEMENT PLAN, *supra* note 55, at ix, 46–47.

168. The Supreme Court of the United States stated that "the power over the public lands thus entrusted to Congress is without limitations." Kleppe v. New Mexico, 426 U.S. 529, 539 (1976). Further, the Court stated that "it is clear that regulations under the Property Clause may have some effect on private lands not otherwise under federal control." *Id.* at 546; *see* State of Minn. by Alexander v. Block, 660 F.2d 1240, 1244 (8th Cir. 1981) ("Congress' power must extend to regulation of conduct on or off the public land that would threaten the designated purpose of federal lands."); United States v. Vogler, 859 F.2d 638, 639 (9th Cir. 1988) (concluding the government maintains authority regulate use of an R.S. 2477 right-of-way—regardless of its validity); Wilkenson v. Dep't of Interior of U.S., 634 F. Supp. 1265, 1268 (D. Colo. 1986) (concluding that an established R.S. 2477 could still be regulated).

169. 43 U.S.C. § 1761(a) (2018).

Finally, the court must determine and limit the role of the public and third parties in R.S. 2477 litigation. In the present case before the District Court, the SUWA intervened and prompted the District Court to certify a question of Utah's statutory interpretation to the Utah Supreme Court.[170] While the role of public interest groups—in this case conservation groups—and individuals may be helpful, they may also harm a court's ability to efficiently resolve the flood of claims still pending.[171] Intervention by and participation of third parties may only complicate and protract already complex legal disputes.[172] Thus, the court should balance the benefits and disadvantages of allowing a greater or lesser role for such non-parties in future litigation. In order to efficiently resolve the claims and minimize the impact of prolonged uncertainty on land management and the environment, the court may find it best to lessen non-parties' role.

Ideally, the District Court will finally bring order to the chaos of R.S. 2477 litigation. However, it remains a likely possibility that the District Court will fail to maintain and dictate a clear framework for federal courts. Perhaps this is not just because the task is daunting. Instead, the attitudes of western Americans toward federal ownership of local lands may permeate, influence, and undermine the effectiveness of the federal courts.[173] In the matter of R.S. 2477, the complex legal disputes reflect a broader issue of local governance and federal lands in the West.[174] Given the track record of federal courts dealing with R.S. 2477 in Utah, the stalemate may continue.[175] However, additional remedies to the R.S. 2477 issue exist beyond the courtroom and are worth exploring.

C. Surveying Alternative Solutions Beyond the Federal Courts

Should the federal courts fail to pursue a clear framework for claim resolution, scholars offer many additional solutions that are worth careful consideration in crafting a broader policy for effective R.S. 2477

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170. Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *1 (D. Utah Apr. 17, 2015), certified question answered sub nom. Garfield Cty. v. United States, 2017 UT 41, 424 P.3d 46.

171. Stone, *supra* note 155, at 209 (discussing potential issues created by third parties and public participation in litigation of R.S. 2477 cases).

172. *Id.*

173. *See supra* Part I(discussing resentment toward federal government control of western lands).

174. *Id.*

175. *Kane I*, 560 F. Supp. 2d 1147, 1154-55 (D. Utah 2008); *Kane II*, 581 F.3d 1198, 1210 (10th Cir. 2009); *Kane III*, 632 F.3d 1162, 1183 (10th Cir. 2011) (Lucero, J., dissenting); *Kane IV*, 772 F.3d 1205, 1209 (10th Cir. 2014); *see also Garfield Cty.*, 2015 WL 1757194 at *1 (noting 12,000+ claims in Utah).

resolutions.[176] Of the many solutions offered by scholars, those suggesting congressional action to reauthorize the DOI to make rules concerning R.S. 2477 claims hold the most promise.[177] However, any combination of solutions—whether they require Congressional action or not—could help form a cohesive policy for the efficient resolution of R.S. 2477 claims.[178]

To begin, there are a number of largely inadequate solutions that only partially resolve the R.S. 2477 quagmire. First, road maintenance agreements between the BLM and claimants fail to resolve the problem.[179] Instead, these informal agreements merely "maintain the status quo of the road."[180] Thus, the agreements are severely limited to use only for roads the federal government does not wish to contest.[181] All other R.S. 2477 claims would remain contested, as they are now.[182] Further, the agreements are informal and thus not a permanent solution.[183] The agreements offer only an indefinite delay of ultimate resolution. For these reasons, the agreements alone offer little in the way of progress towards resolution.

Second, nonbinding administrative agency decisions do not impact or establish any enforceable property rights.[184] Again, their use would be limited to situations where the federal government only desired a small degree of control over roads, but not title.[185] Similar to road maintenance agreements, the application of these nonbinding decisions would be limited only to lesser-contested claims and offer a temporary solution. Third, a tiered agency arbitration only addresses the least contentious road claims.[186] While

176. *See* Wolking, *supra* note 46, at 1101–03, 1097–98 (discussing the use of road maintenance agreements, the Quite Title Act, and FLPMA, Title V to resolve claims); Lucas Satterlee, *Pristine Solitude or Equal Footing?* San Juan County v. United States *and Utah's Larger Bid to Assert Control Over Public Lands in the Western United States*, 92 DENV. U. L. REV. 641, 667 (2015) (discussing tiered agency arbitration); Stone, *supra* note 155, at 214 (discussing the potential role of the Supreme Court of the United States in resolving claims).

177. Lindsay Houseal, Wilderness Society v. Kane County, Utah*: A Welcome Change for the Tenth Circuit and Environmental Groups*, 87 DENV. U. L. REV. 725, 743 (2010) (discussing the use of national, unified standards for resolving claims); Jacob Macfarlane, *How Many Cooks Does It Take to Spoil a Soup?:* San Juan County v. U.S. *and Interventions in R.S. 2477 Land Disputes*, 29 J. LAND RESOURCES & ENVTL. L. 227, 252 (2009) (suggesting Congress remove moratorium on agency rulemaking in regard to R.S. 2477); Wolking, *supra* note 46, at 1104 (discussing uniform Congressional standards and allowing agency rulemaking).

178. *See* Houseal, *supra* note 177, at 743 (discussing the use of national, unified standards for resolving claims); Macfarlane, *supra* note 177, at 252 (suggesting Congress remove moratorium on agency rulemaking in regard to R.S. 2477); Wolking, *supra* note 46, at 1104 (discussing uniform Congressional standards and allowing agency rulemaking).

179. Wolking, *supra* note 46, at 1097-98.

180. *Id.*

181. *Id.*

182. *Id.*

183. *Id.*

184. *Id.* at 1098.

185. *Id.*

186. Satterlee, *supra* note 176, at 667.

practical for lesser-disputed claims the solution on its own would have too little impact overall.[187] More hotly contested claims would still require the case-by-case review of a court.[188]

Finally, working within the existing legal framework, the coordination of federal government agencies and local governments is unlikely to succeed.[189] As discussed above and exemplified by the numerous contentious claims, tension between agencies and local governments will likely remain too high to allow for productive discourse.[190] Only if the circumstances change, motivating one party or the other to seek a better outcome through cooperation, will coordination be a viable option.

Several other approaches address the resolution of more claims, but each have their own significant drawbacks. As Utah Supreme Court Justice Voros mentioned, FLPMA's Title V offers a solution.[191] Under FLPMA, the BLM may grant rights-of-way for R.S. 2477 roads.[192] FLPMA guides the BLM as its organic act.[193] According to FLPMA, the BLM has the authority to create rights-of-way over the land it manages.[194] However, like any management decision, it must not violate the legal mandates for management, nor an individual management plan for a specific piece of BLM land—like the Grand Staircase-Escalante National Monument Management Plan.[195] The bottom line is that the BLM can authorize a right-of-way, and that right-of-way could be an unresolved R.S. 2477 claim. A decision like this would still be open for public comment.[196] Thus, the R.S. 2477 debate simply finds a new forum within BLM management decisions, rather than the courts.[197] Further opportunity for public comment will likely slow the resolution process.[198]

There are also opportunities for resolving claims under the QTA.[199] While binding, the process is more time consuming and costly than any other

187. *Id.*

188. *Id.*

189. Blumm & Fraser, *supra* note 32, at 49.

190. *See supra* Part I (discussing resentment toward federal government control of western lands).

191. Garfield Cty. v. United States, 2017 UT 41, ¶ 60, 424 P.3d 46, 68 (Voros, J., dissenting); 43 U.S.C. § 1761(a) (2018).

192. 43 U.S.C. § 1761(a).

193. *Id.* § 1732 (FLMPA requires the BLM "manage the public lands under principles of multiple use and sustained yield" and "take any action necessary to prevent unnecessary or undue degradation of the lands.").

194. *Id.*

195. GSENM MANAGEMENT PLAN, *supra* note 55, at x.

196. 43 U.S.C. § 1761(a).

197. Wolking, *supra* note 46, at 1101.

198. 43 U.S.C. § 1761(a).

199. Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *1 (D. Utah Apr. 17, 2015), certified question answered sub nom. Garfield Cty. v. United States, 2017 UT 41, 424 P.3d 46.

option.[200] The previously discussed case concerns approximately 700 roads in Garfield County.[201] Even if the lengthy litigation successfully resolves each of the Garfield County roads, over 11,000 unresolved claims would persist throughout Utah, which is proof of the slow pace of resolution under this method.[202]

Alternatively, a United States Supreme Court opinion could offer some sort of resolution to the controversy.[203] However, no R.S. 2477 claim has reached the Supreme Court since the 1976 passage of FLMPA.[204] Should the Supreme Court find itself a R.S. 2477 case, as one scholar said, "any purely judicial resolution of this situation will be incomplete and imperfect."[205]

Finally, many scholars agree that an ultimate resolution lies with the source of the problem: Congress. Yet those same scholars disagree on what form of congressional actions best deals with R.S. 2477 claims.[206] Some scholars have urged for Congress to establish national unified standards for resolving claims.[207] The standards must include some sort of time limitation and a clear evidentiary burden for claimants.[208] As with any comprehensive piece of legislation, no matter the subject, it is unlikely to find success. Further, such comprehensive legislation is unlikely to overcome a Republican Congress and White House, nor the vocal opposition of states like Utah, which stand to lose more land and control to the federal government.[209] In light of unlikely comprehensive legislation, proposed congressional action must come in the form of a smaller stroke of the pen.

One congressional solution stands out from the crowd: reauthorizing the Department of Interior to promulgate rules on R.S. 2477.[210] Reauthorization is a simple solution with a profound effect. Far less complex than comprehensive legislation, reauthorization has a much better chance of becoming a reality. Agencies may make rules to eliminate frivolous and less-contested claims.[211] For more contentious claims, the agency could expedite resolution, ensure agency public accountability, and maintain an option for

200. Wolking, *supra* note 46, at 1103.
201. *Garfield Cty.*, 2015 WL 1757194, at *1.
202. *Id.*
203. Stone, *supra* note 155, at 214.
204. *Id.*
205. *Id.*
206. *Compare* Stone, *supra* note 155, at 214 (discussing legislation establishing clear standards for resolved R.S. 2477 claims), *with* Wolking, supra note 46, at 1104 (discussing the solution of removing the moratorium on agency rulemaking), *and* Macfarlane, *supra* note 177, at 252 (discussing the reauthorization of the DOI as a solution to resolve the R.S. 2477 issue).
207. Stone, *supra* note 155, at 212.
208. Wolking, *supra* note 46, at 1104; Houseal, *supra* note 177, at 743.
209. Houseal, *supra* note 177, at 743.
210. Wolking, *supra* note 46, at 1104; Macfarlane, *supra* note 177, at 252.
211. Macfarlane, *supra* note 177, at 252.

judicial review.[212] Removing the moratorium on agency rulemaking will alleviate judicial pressure and lead to a swift resolution of R.S. 2477 claims.

Further, reauthorization could be combined with a number of non-congressional actions. Cumulatively, these solutions could swiftly resolve a large number of claims in Utah and beyond. The judicial system would be left with the most contentious claims, rather than the current sea of claims. Together, these solutions would empower federal agencies and courts to effectively resolve claims and protect publicly held lands from degradation resulting from invalid R.S. 2477 claims.

CONCLUSION

As the number of R.S. 2477 claims grows, so does the threat to federally owned public lands in the West.[213] Recent case law in Utah exemplifies the confusing and unresolved state of the R.S. 2477 problem.[214] The scale of R.S. 2477 has only grown in the decades since the repeal of the law.[215] Further, the issue encompasses a broader battle for local governance in Western states dominated by federally held lands like Utah.[216] The absence of resolution undermines land management and threatens the delicate environment found on the public's land.[217]

Following the certified answer of the Utah Supreme Court, the Federal District Court must make the most of the opportunity to maintain a clear legal framework for resolving claims under the QTA. Additionally, Congress must not wait to act to protect public lands from these rogue roads and should reauthorize the DOI to promulgate rules on R.S. 2477.[218] Combined with any number of non-congressional solutions, it may be possible to finally address R.S. 2477 en masse.

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212. *Id.*

213. Garfield Cty. v. United States, No. 2:10-CV-1073, 2015 WL 1757194, at *1 (D. Utah Apr. 17, 2015), certified question answered sub nom. Garfield Cty. v. United States, 2017 UT 41, 424 P.3d 46.

214. *See, e.g., Kane I*, 560 F. Supp. 2d 1147, 1154-55 (D. Utah 2008) (noting changing laws created conflict with local government); *Kane II*, 581 F.3d 1198, 1210 (10th Cir. 2009) (deciding whether local government can manage R.S. 2477 rights without alerting federal government); *Kane III*, 632 F.3d 1162, 1183 (10th Cir. 2011) (Lucero, J., dissenting) (deciding whether local government can manage R.S. 2477 right without alerting federal government); *Kane IV*, 772 F.3d 1205, 1209 (10th Cir. 2014) (determining whether local government has R.S. 2477 right and if it can manage it without alerting federal government).

215. Garfield Cty. v. United States, 2017 UT 41, ¶ 4, 424 P.3d 46, 50 ("There are accordingly now multiple cases pending before multiple judges of the Utah federal district court regarding at least 12,000 claimed R.S. 2477 rights of way, with each right of way claim involving unique facts.").

216. *See supra* Part I (discussing resentment toward federal government control of western lands and offering examples of how that tension manifests itself into actions).

217. *See supra* Part II (discussing how even unresolved R.S. 2477 claims are complicating land management of Grand Staircase-Escalante National Monument.).

218. Wolking, *supra* note 46, at 1104; Macfarlane, *supra* note 177, at 252.

A solution to protect our public lands is more needed than ever. According to leaked documents, previous Secretary of Interior Zinke recommended that President Trump reduce the size of at least 10 national monuments, which cover a significant portion of Utah and contain numerous R.S. 2477 claims.[219] On Dec. 4, 2017, President Trump followed Zinke's advice, dramatically reducing the size of two Utah monuments: Bears Ears and Grand Staircase-Escalante.[220] In light of this Administration's intent to open up federal public lands to business and undermine conservation efforts, Congress must act.[221] Finally resolving R.S. 2477 claims would set a precedent for the continued conservation of public lands in the face of ever-growing threats.

219. Eilperin, *supra* note 7.
220. Turkewitz, *supra* note 7.
221. *Id.*