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An Ounce of Prevention: Liability Under RCRA and the CWA For Industrial Toxic Releases During Hurricanes in Louisiana

Joshua M. Pruett

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An Ounce of Prevention: Liability Under RCRA and the CWA For Industrial Toxic Releases During Hurricanes in Louisiana

*Joshua M. Pruett**

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INTRODUCTION

On August 29, 2021, Hurricane Ida (Ida) hit Louisiana as a Category 4 Hurricane on the Saffir-Simpson Hurricane Wind Scale,¹ slamming Port Fourchon and the surrounding areas with sustained winds up to 150 miles per hour (mph).² With wind gusts up to 172 mph at landfall,³ Ida was the fifth strongest wind event to hit the contiguous United States at the time of its landfall.⁴ Ida's damage was widespread and intense—tearing roofs from buildings, toppling signs and powerlines, and pushing the waters of the Gulf of Mexico and Lake Pontchartrain into low-lying coastal communities.

1. See *Saffir-Simpson Hurricane Wind Scale*, NOAA: NAT'L HURRICANE CTR., <https://www.nhc.noaa.gov/aboutsshws.php> [<https://perma.cc/6UYH-DX9K>] (last visited Jan. 20, 2023).

2. Jeff Masters & Bob Hensen, *Catastrophic Hurricane Ida Hits Louisiana with 150 Mph Winds*, YALE CLIMATE CONNECTIONS (Aug. 29, 2021), <https://yaleclimateconnections.org/2021/08/catastrophic-hurricane-ida-hits-louisiana-with-150-mph-winds/> [<https://perma.cc/WTE4-NQ3R>].

3. Paul Cobler, *How Powerful Was Hurricane Ida? Its Hurricane-Force Winds Didn't Stop Until It Hit Mississippi*, THE ADVOCATE (Aug. 31, 2021, 2:17 PM), https://www.theadvocate.com/baton_rouge/news/article_0cc1dc86-0a90-11ec-827e-6342102b8d5d.html [<https://perma.cc/4QPM-EYWE>].

4. Masters & Hensen, *supra* note 2.

Within ten days of Hurricane Ida's trek through southern Louisiana, more than 2,000 chemical and oil spills had been reported,⁵ ranging in size and severity from a toppled gas can to a broken crude oil pipeline.⁶ Ida left a trail of destruction and disruption in her wake, as she moved through Louisiana and on to other states. However, Louisiana and its neighbors are not strangers to catastrophic weather events. Ida left her mark, but it was just another notch on the belt of climate disruptions for the Gulf Coast.

The hurricane seasons from 2016 to 2021 brought astounding weather events to Louisiana and its neighbors.⁷ Each hurricane delivered devastating impacts to the Gulf Coast's human population and environment. Louisiana's high concentration of industrial facilities, especially energy infrastructure and petrochemical facilities, exacerbates a storm's potential for environmental destruction.⁸ Coastal industrial facilities are vulnerable to damage by high winds and coastal flooding, which dramatically increases the potential for accidental oil and chemical releases at these facilities.

Environmental laws designed to limit pollution and prevent accidents are often waived or lightly enforced during hurricanes and other catastrophes.⁹ The Environmental Protection Agency (EPA) specifically allows unregulated discharges of pollutants to water for "upsets."¹⁰

5. Tristan Baurick, *Reports of Hurricane Ida Oil, Chemical Spills Escalate in Louisiana Waters*, NOLA.COM (Sept. 8, 2021 3:18 PM), https://www.nola.com/news/environment/article_0d4b138c-10dc-11ec-8269-cfc16666a808.html [<https://perma.cc/DM43-CAMD>].

6. *Id.* Infrastructure damage near Port Fourchon included a broken pipeline, which resulted in an 11-mile-long sheen. Nearly 600 energy and petrochemical facilities were in the path of the storm.

7. See *Tropical Cyclone Climatology*, NOAA: NAT'L HURRICANE CTR., <https://www.nhc.noaa.gov/climo/> [<https://perma.cc/M6WY-6HAC>] (last visited Jan. 20, 2023). The Atlantic hurricane season starts June 1 and runs through November 30 every year.

8. See, e.g., Baurick, *supra* note 5 (referring to the number of industrial facilities in harm's way).

9. See Victor B. Flatt, *Holding Polluters Accountable in Times of Climate and Covid Risk: the Problems with "Emergency" Enforcement Waivers*, 12 SAN DIEGO J. CLIMATE & ENERGY L. 3 (2020-2021); see also Victor B. Flatt & Joel A. Mintz, *Hazardous Waste and Disaster Preparation*, in FROM SURVIVING TO THRIVING: EQUITY IN DISASTER PLANNING AND RECOVERY 81 (Victor B. Flatt et al. eds., 2018) (arguing that RCRA suffers from lax enforcement even outside of disasters).

10. JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 3 (2005).

Hurricane winds and flooding can cause upsets at some facilities. Unless the facility has adequate safeguards against upsets, these releases may be washed into surrounding waterways by hurricane-induced deluge. In 2021, the Intergovernmental Panel on Climate Change (IPCC) observed, “[i]n coastal cities, the combination of more frequent extreme sea level events (due to sea level rise and storm surge)¹¹ and extreme rainfall/riverflow events will make flooding more probable.”¹² This will lead to more upset releases over time.

Due to the increasing recurrence of major storms impacting industrial facilities in Gulf Coast communities, toxic upsets are increasingly likely to result in human and environmental health crises unless state and federal laws impose liability on the parties who run the facilities where these toxic releases occur. Toxic releases resulting from lax preparation and vulnerabilities ignored by facilities exacerbate the impact of Gulf Coast hurricanes by compounding the hurricane’s physical danger and destruction with dangerous chemical leaks that contaminate waterways. This potent combination elevates the risk of illnesses and long-term health effects to people, plants, and animals.

Climate change experts, including the IPCC, predict hurricanes will continue to pummel the Gulf of Mexico’s coast with increasing frequency and intensity.¹³ With the impacts of climate change disproportionately affecting southern Louisiana, current regulations inadequately incentivize industries to prevent chemical disasters during hurricanes. The inevitable use of emergency waivers prevents timely enforcement of environmental laws and regulations, which reduces industrial accountability for pollution during and after storms while damage to the environment accumulates. Many oil spills and other chemical releases have been reported during

Upsets are “exception incident[s] in which there is a temporary and unintentional noncompliance with permit effluent limitations because of factors beyond the reasonable control of the permittee.” See 40 C.F.R. 122.41(n) (2022) for the EPA rule on upsets.

11. NOAA defines storm surge as “the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by a storm’s winds pushing water onshore.” See *What Is Storm Surge?*, NOAA, <https://oceanservice.noaa.gov/facts/stormsurge-stormtide.html> [<https://perma.cc/VXL4-25QL>] (last visited Jan. 20, 2023).

12. IPCC, SUMMARY FOR POLICYMAKERS 11 (Valérie Masson-Delmotte et al. eds., 2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf [<https://perma.cc/T3UG-FXKL>].

13. See *id.* at 139.

recent storms.¹⁴ These releases demonstrate that current regulations and government oversight of industry are inadequate to prevent toxic releases during storms.

The hazards posed by inadvertent chemical releases during storms are compounded by the fact that the Clean Water Act (CWA) and Resource Conservation and Recovery Act (RCRA) are unlikely to be rigorously enforced by the EPA or an equivalent state agency after a climate disaster. The government and local communities seem unwilling to pursue punitive measures against facilities that employ residents and provide an economic anchor in the community as people rebuild after a storm. However, soft enforcement is unlikely to bring about the necessary changes to prevent future problems. Given the high likelihood of storm damage to structures on the Gulf Coast during hurricanes and the possibility that more frequent, powerful storms will collide with the Gulf Coast, change is required to keep residents safe from toxic releases during the coming storms.

Adjustments to law, policy, and communication should be made to increase accountability for industrial facilities and impose liability for poor performance during natural disasters. This includes changes to: (1) environmental protection statutes; (2) agency interactions with industry—to encourage and facilitate broader stakeholder engagement; and (3) procedure and access—to facilitate broader citizen enforcement of the CWA and RCRA (together, the “three-pronged approach”). As discussed herein, this three-pronged approach would refocus government, industry, and civilian stakeholders on the original purposes of the CWA and RCRA. First, the guiding statutes and regulations for the CWA and RCRA should be examined and adapted to incorporate the increased upset risks due to climate change, taking special notice of the coastal communities that are exposed to rising sea levels, direct storm impacts, and extensive industrial infrastructure. Second, the EPA and state administrators should foster greater community engagement, leveraging industry to help improve education and technologies for monitoring and compliance with the applicable standards. Third, citizens affected by the threat of environmental hazards in coastal areas should be given easier access to the courts to compel compliance and seek damages for harms to the community. To this end, citizen suit provisions should be updated to acknowledge the increasing imminence of climate change impacts in coastal communities. Alternatively, courts could facilitate more citizen

14. See, e.g., *Oil Spills in the Wake of Hurricane Ida Highlight Need for Better Federal Oversight of Offshore Oil and Gas Pipelines*, U.S. GOV'T ACCOUNTABILITY OFF. (Sept. 14, 2021), <https://www.gao.gov/blog/oil-spills-wake-hurricane-ida-highlight-need-better-federal-oversight-offshore-oil-and-gas-pipelines> [<https://perma.cc/BAR3-7SLK>].

engagement by broadly expanding the imminent harm component of standing for communities near industrial facilities in coastal areas.

Enforcing permits against wayward facilities is an important agency function. However, preventing toxic discharges through better, more consistent preparation and compliance with the CWA and RCRA is the most effective and least expensive way to avoid permanent impacts to the community and the environment. Better, more consistent government enforcement and messaging are needed to promote improved industrial behavior.

The increasing regularity of extreme weather events along the Gulf Coast has led to a repeated reliance on emergency waivers for clean air and clean water regulations and permits.¹⁵ As global climate change unfolds, reliance on emergency waivers is quickly becoming the norm.¹⁶ The only way to keep these natural disasters from becoming chemical disasters is to improve pre-storm planning and preparation practices. Louisiana's industry and communities can minimize storm upsets by making improvements in the three areas mentioned above.

Part I of this Comment gives a brief history of the hurricanes that hit the Gulf Coast. This section also examines state and federal actions during and immediately after storms, as seen through the lens of Louisiana's response to Hurricane Ida. Finally, this section reviews the CWA and RCRA provisions relative to emergency upsets and the enforcement options available under normal circumstances.

Part II examines the CWA's and RCRA's role in the aftermath of these Gulf Coast hurricanes, including the role that emergency waivers play in storm adaptation and recovery, as well as the potential for emergency waiver abuse. Further, this section reviews agency follow-up to emergency waivers after hurricanes, as well as a review of potential improvements to adapt the EPA guiding statutes and regulations to the increasing inconveniences of climate change.

Part III discusses state and federal stakeholder engagement with industry to improve technological and physical protections against emergency upsets. Further, this section argues that all stakeholders share

15. See, e.g., Flatt, *supra* note 9, at 5, discussed *infra* at note 178; Letter from Michael Regan, Adm'r, EPA, to John Bel Edwards, Governor, La., and Tate Reeves, Governor, Miss. (Aug. 30, 2021) <https://www.epa.gov/system/files/documents/2021-08/idalouisiana-mississippifuelwaiver.pdf> [<https://perma.cc/F7BY-LPCG>] (see discussion *infra* at note 196).

16. IPCC, CLIMATE CHANGE 2014: SYNTHESIS REPORT: SUMMARY FOR POLICY MAKERS 15 (R.K. Pachauri & L.A. Meyer eds., 2014), https://archive.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf [<https://perma.cc/H58R-H2JK>].

the same objective: to reduce accidental releases of chemicals and provide stakeholders with benefits from improved collaboration. Part III also examines some of the obstacles to improved stakeholder cooperation and suggests how to overcome them.

Part IV discusses the purpose and use of citizen suits under the CWA and RCRA. Further, this section reviews how climate change arguments have been used in recent citizen suits. Also, this section examines the obstacles to achieving desired results through citizen suit provisions. Part IV further reviews an ongoing CWA and RCRA citizen suit that incorporates climate change as a major theme of the complaint. Finally, this section concludes by suggesting changes to facilitate greater access and use of citizen suits to enforce CWA and RCRA regulations.

Part V harmonizes the points discussed in Parts II through IV to develop a three-pronged solution, followed by an evaluation of each prong to analyze this approach's benefits over current actions and over other, more singularly focused proposals. Part V also examines various weaknesses of the proposed solution.

I. INCLEMENT: A BRIEF HISTORY OF STORMS ON THE GULF COAST NEAR LOUISIANA AND GOVERNMENT ACTION TO PREPARE FOR AND REMEDIATE DAMAGE

A. An Overview of Major Weather Events on the Gulf Coast

Hurricane Ida is only one point in a long line of severe weather events that have impacted the Gulf Coast.

On August 12 and August 13, 2016, Baton Rouge, Louisiana, and the surrounding areas, experienced a deluge of unknown proportions.¹⁷ Up to 31 inches of rain fell in less than 48 hours, overwhelming the local bayous and rivers.¹⁸ Significant flooding ensued, causing extensive property damage and the deaths of 13 people.¹⁹

17. See Tom Di Liberto, *August 2016 Extreme Rain and Floods Along the Gulf Coast*, NOAA: CLIMATE.GOV (Aug. 19, 2016), <https://www.climate.gov/news-features/event-tracker/august-2016-extreme-rain-and-floods-along-gulf-coast> [<https://perma.cc/T27V-RS2N>].

18. *Id.*

19. Steve Harvey et al., *What Caused the Historic August 2016 Flood, and What Are the Odds It Could Happen Again?*, THE ADVOCATE (Aug. 5, 2017, 2:00 PM), https://www.theadvocate.com/louisiana_flood_2016/article_3b7578fc-77b0-11e7-9aab-f7c07d05efcb.html [<https://perma.cc/A63K-388Y>].

Hurricane Harvey hit Texas as a Category 4 storm on August 25, 2017.²⁰ Harvey weakened after making landfall, but hovered over east Texas for four days.²¹ Harvey drew moisture and strength from the Gulf of Mexico and generated record rainfalls of up to 56 inches in some areas.²² The flooding in the Houston area damaged thousands of homes and businesses and inundated industrial sites where toxic waste was stored, which elevated the risk of harm to nearby Houston residents.²³ After retreating from Texas, Harvey limped into southwest Louisiana as a tropical storm, bringing rain and flooding to Louisiana residents.²⁴

Hurricane Michael made landfall near Panama City, Florida, on October 10, 2018.²⁵ It was the first Category 5 storm to hit the contiguous United States since 1992.²⁶ Damage from Michael was primarily generated by fierce wind, but Michael also generated a 14-foot storm surge²⁷ and dropped nearly a foot of rain on the Florida panhandle.²⁸

The 2020 hurricane season dealt a series of blows to Louisiana. Hurricane Laura made landfall near Cameron, Louisiana, around 1:00 a.m. on August 27, 2020, as a Category 4 storm, making it the strongest tropical cyclone to hit southwest Louisiana since records began in 1851.²⁹ Laura came ashore with sustained winds over 150 miles per hour and retained Category 4 status until after she passed Lake Charles, where maximum sustained winds of over 100 miles per hour were measured.³⁰ The storm

20. *Hurricane Harvey & Its Impacts on Southeast Texas (August 25–29, 2017)*, NOAA: NAT'L WEATHER SERV., <https://www.weather.gov/hgx/hurricane-harvey> [<https://perma.cc/ZUA9-FCJC>] (last visited Jan. 20, 2023).

21. *Id.*

22. *Id.*

23. See Andrea Giampetro-Meyer & Nancy Kubasek, *Harvey: Environmental Justice and Law*, 31 *FORDHAM ENVTL. L.J.* 37 (2020). Giampetro-Meyer and Kubasek give a thorough overview of Hurricane Harvey's impact on Houston. Their primary focus is on the impact of the storm in compounding already acute environmental justice issues for poor and minority communities in the Houston area.

24. *Hurricane Harvey & Its Impacts on Southeast Texas (August 25-29, 2017)*, *supra* note 20.

25. JOHN L. BEVEN II ET AL., *HURRICANE MICHAEL* 3 (2019), https://www.nhc.noaa.gov/data/tcr/AL142018_Michael.pdf [<https://perma.cc/82N7-FLHZ>].

26. *Id.* at 6.

27. *Id.* at 8.

28. *Id.* at 10.

29. *Hurricane Laura (August 20-29, 2020)*, NOAA: NAT'L WEATHER SERV., <https://www.weather.gov/lch/2020Laura> [<https://perma.cc/5S72-LVJR>] (last visited Jan. 20, 2023).

30. *Id.*

surge in Cameron Parish, Louisiana, rose up to 18 feet above ground level.³¹

A month and a half after Laura's landfall near Cameron, Louisiana, Hurricane Delta made landfall as a Category 2 storm near Creole, Louisiana, only 13 miles away from where Laura intersected the Louisiana coast.³² Delta generated coastal flooding and high winds, disrupting Laura's recovery efforts.³³

Two weeks later, on October 28, 2020, Hurricane Zeta made landfall near Cocodrie, Louisiana, as a Category 3 storm.³⁴ Zeta quickly downgraded to a Category 2 storm as it left the Gulf of Mexico, and its strength continued to decrease as it crawled northeast toward Mississippi.³⁵ Hurricane Zeta came later in the year than any other hurricane on record to make landfall in the continental United States.³⁶

A severe winter storm exposed southern Louisiana and Texas to extreme cold and winter weather, causing power outages and wreaking havoc on an area unprepared for hard freezes, the week of Valentine's Day 2021.³⁷ The cold devastated southeast Texas with power outages, broken pipes, and closed roads.³⁸ Early assessments indicated that the Valentine's

31. *Id.* The actual height could not be verified because the structures against which the surge could have been measured were destroyed.

32. Jason Samenow & Ian Livingston, *Hurricane Delta by the Numbers: 101 MPH Winds and 9.3-Foot Surge in Coastal Louisiana*, THE WASH. POST (Oct. 12, 2020, 1:06 PM), <https://www.washingtonpost.com/weather/2020/10/12/hurricane-delta-winds-surge-rain/> [https://perma.cc/74JP-GDA3].

33. *See id.* Hurricane Delta struck approximately the same geographic area as Hurricane Laura only six weeks after Laura made landfall. Samenow and Livingston Parish indicated that the hurricane recovery "will take months or longer to complete."

34. *Hurricane Zeta Recap*, THE WEATHER CHANNEL (Oct. 30, 2020), <https://weather.com/storms/hurricane/news/2020-10-29-hurricane-zeta-tropical-storm-forecast-south-east> [https://perma.cc/95PT-2Y4G].

35. Mark Schleifstein, *Hurricane Zeta Was a Cat 3 Storm — Not a Cat 2 — When It Hit New Orleans, New NHC Report Says*, NOLA.COM, https://www.nola.com/news/environment/article_9365f842-b286-11eb-80fa-7b42d1c79ab4.html [https://perma.cc/M5NX-KPCW] (last updated May 12, 2021, 9:20 AM).

36. *Id.*

37. David Montgomery et al., *Icy Storm Barrels Across Central U.S., Leaving Millions Without Power*, THE N.Y. TIMES, <https://www.nytimes.com/2021/02/15/us/winter-storm-today.html> [https://perma.cc/WBD6-RUHQ] (last updated Mar. 12, 2021).

38. *Valentine's Week Winter Outbreak 2021: Snow, Ice, & Record Cold*, NOAA: NAT'L WEATHER SERV., <https://www.weather.gov/hgx/2021ValentineStorm> [https://perma.cc/S8D4-YTSK] (last visited Jan. 20, 2023).

week winter outbreak may surpass Hurricane Harvey as the costliest weather disaster in Texas history.³⁹

At least 94 hurricanes battered the Gulf Coast in and near Louisiana since Europeans began to explore the Americas.⁴⁰ Louisiana also experienced 52 sub-hurricane tropical storms between 1860 and 2010.⁴¹ Only three hurricanes hit Louisiana from 2010 through 2019, all Category 1 storms.⁴² In contrast, four major hurricanes made landfall in Louisiana in 2020 and 2021, as noted above.⁴³ These storms brought catastrophic flooding and wind damage to Louisiana communities as they tore through the state. The IPCC assessed that

[i]n urban areas climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, . . . sea level rise and storm surges. . . . These risks are amplified for those lacking essential infrastructure and services or living in exposed areas.⁴⁴

39. *Id.*

40. See Emma Discher & Amie Just, *What Hurricanes Have Hit Louisiana in Recorded History? How Strong Were They? Here's a List*, NOLA.COM (Aug. 29, 2021, 2:15 PM), https://www.nola.com/news/hurricane/article_4d11980c-08f2-11ec-864d-db7d7884b2dc.html [<https://perma.cc/6XNA-4HMJ>].

41. David Roth, *Louisiana Hurricane History*, NOAA: NAT'L WEATHER SERV. 1, 7, <https://w2.weather.gov/media/lch/events/lahurricanehistory.pdf> [<https://perma.cc/NEG3-XB7K>] (last modified Jan. 13, 2010).

42. See Discher & Just, *supra* note 40. This does not account for less intense tropical storms during this time, such as Tropical Storm Lee in 2011 and post-hurricane Tropical Storm Harvey in 2017. The fact that these hurricanes were relatively mild belittles the amount of damage they caused. For example, in 2012, Hurricane Isaac's storm surge overtopped the levees south of New Orleans, flooding neighborhoods outside the Crescent City, and pushed Lake Pontchartrain outside its banks, which caused significant flooding in LaPlace, Louisiana. See Edecio Martinez, *Hurricane Isaac and Its Aftermath*, CBS NEWS (Sept. 3, 2012, 3:03 PM), <https://www.cbsnews.com/pictures/hurricane-isaac-and-its-aftermath/25/> [<https://perma.cc/4FV8-LHRR>]; Ron Thibodeaux, *Hurricane Isaac Floodwaters Take LaPlace and Slidell by Surprise*, NOLA.com (Aug. 31, 2012, 6:45 AM), https://www.nola.com/news/weather/article_8b68b37e-05c8-515a-bc54-41885c8dd09e.html [<https://perma.cc/H4EW-4UKG>].

43. See Discher & Just, *supra* note 40.

44. IPCC, *supra* note 16.

In 2021, the IPCC reiterated that climate change is likely to increase sea levels and extreme rainfall events, leading to more coastal urban floods.⁴⁵

Each storm brings its own set of environmental complications, making major impacts to energy and chemical infrastructure more common.⁴⁶ For example, Hurricane Ivan made landfall in Alabama on September 16, 2004.⁴⁷ On its way to the Gulf Coast, Ivan triggered “an undersea landslide which toppled an oil platform formerly operated by Taylor Energy.”⁴⁸ In spite of its efforts to stop the resulting leak, oil continues to pour into the Gulf from the Taylor platform site;⁴⁹ in fact, oil could continue to leak from the well until the reservoir is empty.⁵⁰

Hurricane Katrina wreaked havoc on southern Louisiana’s energy infrastructure, resulting in an estimated eight million gallons of oil spilled at various facilities.⁵¹ Three industrial sites account for over 75% of the oil spilled after Katrina: the Bass Enterprises site in Plaquemines Parish, where storage tank failures released approximately 3.8 million gallons of oil into the surrounding environment; the Chevron Empire Terminal in Buras, Plaquemines Parish, where 1.4 million gallons of oil spilled; and the Murphy Oil refinery in St. Bernard Parish, where about one million gallons of oil spilled, affecting thousands of homes around the refinery.⁵² The volume of oil spilled as a result of Hurricane Katrina was the highest amount since the 1989 Exxon Valdez oil tanker spill in Alaska.⁵³ As the source of the spill with the greatest human impact, the Murphy Oil Company (Murphy Oil) worked with state and federal regulators to clean up the oil that coated approximately 1,800 homes and the surrounding

45. IPCC, *supra* note 12.

46. *See, e.g.*, Giampetro-Meyer & Kubasek, *supra* note 23 (reviewing some of the chemical releases and accidents during Hurricane Harvey); *see also* Baurick, *supra* note 5 (reporting that over 2,000 oil and chemical spills were reported within 10 days of Hurricane Ida).

47. *Powerful Hurricane Ivan Slams the Central Gulf Coast as a Category 3 Hurricane*, NOAA: NAT’L WEATHER SERV., <https://www.weather.gov/mob/ivan> [<https://perma.cc/HF4L-6JAK>] (last updated Sept. 2022).

48. Sue Sturgis, *The Katrina Oil Spill Disaster: A Harbinger for the Atlantic Coast?*, FACING S. (Aug. 28, 2015), <https://www.facingsouth.org/2015/08/the-katrina-oil-spill-disaster-a-harbinger-for-the.html> [<https://perma.cc/QG8N-ET4D>].

49. *Id.*

50. *Id.*

51. *Id.*

52. *Id.*

53. *Id.*

environment.⁵⁴ Murphy Oil also settled a class action lawsuit with the affected residents of Meraux, Louisiana,⁵⁵ which cost Murphy Oil over \$330 million, including cleanup efforts, property buy-outs, and other damages.⁵⁶ Murphy Oil expected most of the settlement to be covered by insurance.⁵⁷ In spite of the magnitude of the Katrina oil spills, the severity of the environmental impacts from the storm were largely ignored or underrepresented in subsequent local and national election campaigns.⁵⁸

Hurricane Ida brought additional environmental troubles, including oil and chemical spills. In response to the news that over 2,000 chemical and oil spills were reported to authorities within ten days of Hurricane Ida's landfall, Sierra Club organizer Darryl Malek-Wiley lamented that "two thousand spills is an amazing and sad amount. It shows our oil and gas infrastructure is not prepared for hurricanes."⁵⁹

B. A Time for Action: Emergency Waivers to Facilitate Rapid Recovery.

On August 26, 2021, Louisiana Governor John Bel Edwards declared a state of emergency due to Tropical Storm Ida,⁶⁰ and requested President Biden to declare a state of emergency in Louisiana Parishes that were likely to be significantly impacted by Hurricane Ida the following day.⁶¹

54. MURPHY OIL SPILL FACT SHEET, EPA 1 (Feb. 2006), <http://www.columbia.edu/itc/journalism/cases/katrina/Federal%20Government/Environmental%20Protection%20Agency/Murphy%20Oil%20Spill%20Fact%20Sheet%20Feb%202006.pdf> [<https://perma.cc/R2VJ-9UT6>].

55. See *Turner v. Murphy Oil USA, Inc.*, 472 F. Supp. 2d 830 (E.D. La. 2007).

56. See *id.*; *\$330 Million Settlement Deal in Katrina Oil Spill*, NBC NEWS (Sept. 25, 2006, 6:43 PM), <https://www.nbcnews.com/id/wbna15004868> [<https://perma.cc/SS2F-JVJN>].

57. MURPHY OIL CORPORATION, 2006 ANNUAL REPORT 24 (2007), https://www.annualreports.com/HostedData/AnnualReportArchive/m/NYSE_MUR_2006.pdf [<https://perma.cc/7C6H-UZRR>].

58. Sturgis, *supra* note 48.

59. Baurick, *supra* note 5.

60. *State of Emergency – Tropical Storm Ida*, PROCLAMATION NO. 165 JBE 2021, STATE OF LA. EXEC. DEP'T (Aug. 26, 2021), <https://gov.louisiana.gov/assets/Proclamations/2021/165JBE2021StateofEmergency.pdf> [<https://perma.cc/CL3Q-4B8J>].

61. Request for Presidential Emergency, Letter from John Bel Edwards, Governor, La., to Joseph R. Biden, Jr., President, U.S. (Aug. 27, 2021), <https://gov.louisiana.gov/assets/docs/Letters/GovEdwardsLtrPresBidenIda.pdf> [<https://perma.cc/5VG5-Z5Y3>].

On August 29, 2021, Governor Edwards requested⁶² and received⁶³ a presidential Major Disaster declaration for Hurricane Ida.⁶⁴ Among other effects produced by the Presidential declaration, Governor Edwards's requests for Individual and Public Assistance Category A, Debris Removal and Category B, Emergency Protective Measures, were granted, allowing additional federal financial and regulatory support to bolster cleanup and recovery efforts.⁶⁵

Subsequent to the Governor's August 26, 2021, emergency declaration, the Louisiana Department of Natural Resources (LDNR) issued a Special Public Notice "temporarily modifying its usual emergency authorization procedures for storm related repair/restoration projects located in the Coastal Zone."⁶⁶ The Special Public Notice declared, "[i]n the event that emergency repairs are needed, emergency users are authorized to commence the necessary work at the earliest opportunity," followed by written notification as soon as possible for documentation purposes.⁶⁷

The Federal Emergency Management Agency (FEMA) assigned the United States Army Corps of Engineers (USACE) to remove water in

62. *Governor Edwards Requests Presidential Major Disaster Declaration for Hurricane Ida*, OFF. OF THE GOVERNOR (Aug. 29, 2021), <https://gov.louisiana.gov/index.cfm/newsroom/detail/3370> [<https://perma.cc/6UV5-N6UN>].

63. *Pres. Biden Approves Gov. Edwards' Request for Presidential Major Disaster Declaration for Hurricane Ida*, OFF. OF THE GOVERNOR (Aug. 29, 2021), <https://gov.louisiana.gov/index.cfm/newsroom/detail/3371> [<https://perma.cc/W45Y-UZ4L>].

64. When it is apparent that an emergency or disaster that exceeds the capacity of a state to respond effectively has occurred, or is about to occur, the governor of the state will ask the President of the United States, through the regional Federal Emergency Management Agency (FEMA) administrator, for a declaration and the release of resources to support response and recovery. Federal resources will not be released unless the President issues an emergency or disaster declaration for the affected areas. Once the declaration has been issued, the state coordinates with the regional FEMA office to access federal resources for the disaster's response effort. For a detailed explanation, please visit FEMA's overview at *How a Disaster Gets Declared*, FEMA, <https://www.fema.gov/disaster/how-declared> [<https://perma.cc/652U-V4TT>] (last updated Jan. 4, 2022).

65. *Pres. Biden Approves Gov. Edwards' Request for Presidential Major Disaster Declaration for Hurricane Ida*, *supra* note 63.

66. *Special Public Notice: Hurricane Ida*, LA. DEP'T OF NAT. RES. (Aug. 27, 2021), http://www.dnr.louisiana.gov/assets/OCM/PublicNotices/PN_2021/ida.pdf [<https://perma.cc/VLK2-CM44>].

67. *Id.*

southern Louisiana.⁶⁸ The USACE unwatering project involved strategically cutting holes in the hurricane protection levee system and pumping impounded water from the polder to expedite drainage.⁶⁹ In non-emergencies, earthmoving and pumping activities into navigable waters within the Louisiana Coastal Zone typically require state and federal environmental permits, including: a Coastal Use Permit or Coastal Zone Consistency Determination from the Louisiana Office of Coastal Management (OCM),⁷⁰ a Section 10 permit,⁷¹ and a Section 404 permit.⁷² Emergency waivers to these permits reduce the documentation and notice requirements for entities seeking to remedy hazardous situations.⁷³ As a result, more formal filing and possible mitigation measures may be due after the emergency passes.⁷⁴

Other emergency accommodations and cleanup procedures after Hurricane Ida included allowances for emergency wastewater

68. *Id.*

69. *Hurricane Ida Response*, U.S. ARMY CORPS OF ENG'RS, <https://www.usace.army.mil/hurricane-ida/> [<https://perma.cc/93B6-9YT7>] (last visited Jan. 20, 2023). The polder is the low-lying area of land between the Mississippi River flood-protection levee and the hurricane protection levee.

70. Coastal Use Permits are part of the Louisiana Coastal Resources Program (LCRP). These permits are intended to ensure that coastal development activities are performed in accordance with Louisiana's Coastal Use Guidelines, which were designed to provide the greatest benefit and the least amount of damage. *Applying for a Coastal Use Permit*, LA. DEP'T OF NAT. RES.: OFF. OF COASTAL MGMT., <http://www.dnr.louisiana.gov/index.cfm/page/93> [<https://perma.cc/Q96E-GLZP>] (last visited Jan. 20, 2023); *See* LA. ADMIN CODE tit. 43, § I-723 (2022) for the statutory basis of the permit. In a Coastal Zone Consistency Determination, the state acknowledges that less intense development activities generally comply with OCM purposes and guidelines within the Louisiana Coastal Zone.

71. Section 10 of the Rivers and Harbors Act asserts the Federal Government's authority over activities that impact navigable waterways. *See* 33 C.F.R. § 403 (1947).

72. Section 404 of the Clean Water Act gives the Army Corps of Engineers authority over dredge and fill activities that affect the waters of the United States. *See* 33 C.F.R. § 1344 (2006).

73. *See, e.g., Special Public Notice, Hurricane Ida, supra* note 66.

74. *See, e.g.,* DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, NEW ORLEANS DISTRICT, PROGRAMMATIC GENERAL PERMIT FOR USE IN THE NEW ORLEANS DISTRICT WITHIN THE BOUNDARIES OF THE LOUISIANA COASTAL ZONE 3-4 (May 17, 2017), https://www.mvn.usace.army.mil/Portals/56/docs/regulatory/permits/generalpermits/PGP_exp_06-2027.pdf [<https://perma.cc/U69R-MW85>].

discharges,⁷⁵ and the EPA waived the requirement for low volatility gasoline during the summer months to accommodate fuel shortages brought about by Hurricane Ida.⁷⁶

C. The Clean Water Act and the Resource Conservation and Recovery Act: Two Federal Statutory Schemes Regulated by the EPA.

Among other responsibilities, Congress mandated the EPA to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”⁷⁷ Congress also established the following objective: “[T]o promote the protection of health and the environment and to conserve valuable material and energy resources.”⁷⁸ Congress enacted the CWA and RCRA to carry out these objectives.⁷⁹ These statutory schemes and their attendant regulations are particularly relevant to the issue of environmental hazards created by the intersection of coastal climate change and coastal industrial infrastructure. States that meet certain regulatory requirements can apply to substitute their state programs for the EPA’s under both the CWA and RCRA.⁸⁰ Approved states can implement their State Administered Programs in the place of the EPA Administrator.⁸¹

The CWA was passed in 1972 as an amendment to the Federal Water Pollution Control Act of 1948.⁸² Spurred by ecological disasters, including

75. State of La.: Dep’t of Env’t Quality, In the Matter of Hurricane Ida, First Amended Declaration of Emergency and Administrative Order (Aug. 28, 2021), https://www.deq.louisiana.gov/assets/docs/emergency_declarations/FirstAmendedDEAOHurricaneIda8282021.pdf [<https://perma.cc/ZNK5-MHAG>].

76. Letter from Michael Regan, *supra* note 15.

77. 33 U.S.C. § 1251(a).

78. 42 U.S.C. § 6902(a).

79. The Clean Water Act is codified in Chapter 26 of Title 33 of the U.S. Code (33 U.S.C. §§ 1251–1388), and the Resource Conservation and Recovery Act is codified in Chapter 82 of Title 42 of the U.S. Code (42 U.S.C. §§ 6901–6992).

80. *See, e.g.*, 33 U.S.C. § 1342(b) (2022) (CWA provision for state pollution discharge elimination system permit programs); 42 U.S.C. § 6926 (2022) (RCRA provisions for state authorized hazardous waste programs).

81. *See* 42 U.S.C. § 6926(d).

82. *Summary of the Clean Water Act*, EPA, <https://www.epa.gov/laws-regulations/summary-clean-water-act> [<https://perma.cc/D9W8-RE58>] (last updated July 6, 2022). *See also* Water Infrastructure Improvement Act, Pub. L. No. 115-436, §5(b)(1), 132 Stat. 5561 (2019) (where Congress applied the moniker “the Clean Water Act” to Title 33, Chapter 26 of the U.S. Code in its entirety).

a river catching fire because of concentrated pollution,⁸³ the federal government authorized the EPA to set industry wastewater standards, develop national water quality criteria recommendations, and enforce these standards against point source polluters that exceed the permitted thresholds.⁸⁴

The CWA provides a broad regulatory framework focused on pollution discharges into the waters of the United States. Under the National Pollutant Discharge Elimination System (NPDES),⁸⁵ the CWA regulates all discharges from engineered outlets that release “point source” pollution into U.S. waters.⁸⁶ The CWA is often implicated in storm preparation and recovery efforts because floodwaters from storm surge and inundation can overwhelm municipal sewers and compromise hazardous material storage facilities.⁸⁷

Congress enacted RCRA to further the national policy of reducing or eliminating, where feasible, hazardous waste generation as quickly as possible.⁸⁸ “Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment.”⁸⁹ Storm-induced releases of toxic materials trigger RCRA’s Corrective Action Program (CAP) when there is a nonpoint source release of hazardous waste or its constituents.⁹⁰ Upon identification of such a release, the facility where the release originated

83. *Origins of the EPA*, EPA, <https://www.epa.gov/history/origins-epa> [<https://perma.cc/EZ3R-KQ8Q>] (last updated June 24, 2022).

84. *Summary of the Clean Water Act*, *supra* note 82. “Point source” means “any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.” 33 U.S.C. § 1362(14). However, point sources do not include “agricultural stormwater discharges and return flows from irrigated agriculture.”

85. *See* 33 U.S.C. § 1342.

86. *See generally id.* § 1311.

87. *See Clean Water Act (CWA) Compliance Monitoring*, EPA, <https://www.epa.gov/compliance/clean-water-act-cwa-compliance-monitoring> [<https://perma.cc/HM9M-PFNR>] (last updated June 29, 2022) (describing the role of the EPA in monitoring and inspecting storm water discharges as part of EPA’s enforcement duties).

88. 42 U.S.C. § 6902(b).

89. *Id.*

90. *Learn About Corrective Action*, EPA, <https://www.epa.gov/hw/learn-about-corrective-action> [<https://perma.cc/P66U-S7VW>] (last updated Sept. 28, 2022). RCRA does not apply to point source discharges regulated under the CWA NPDES. 42 U.S.C. § 6903(27).

must investigate and clean contaminated soil, groundwater, and surface water in compliance with a series of EPA guidelines and policy documents.⁹¹ Thus, a chemical facility that accidentally releases hazardous waste into floodwaters during a hurricane must undergo corrective action as mandated by RCRA.⁹² After the Murphy Oil Spill, the EPA oversaw implementation of the Louisiana Risk Evaluation/Corrective Action Program (RECAP) to guide Murphy Oil in its cleanup of the areas where chemical levels exceeded RECAP standards,⁹³ consistent with the EPA's authorization of Louisiana's State Administered Program.⁹⁴ This highlights the EPA's collaboration with and reliance on states for enforcement activities.⁹⁵

Congress intended the CWA and RCRA primarily to regulate functioning businesses.⁹⁶ Flood-induced pollution at abandoned sites or at bankrupt facilities creates another class of problems covered primarily by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund").⁹⁷ Discussion of CERCLA

91. *Id.*

92. See Giampetro-Meyer & Kubasek, *supra* note 23 at 37, 52 for a summary of the Arkema accident during Hurricane Harvey. Giampetro-Meyer and Kubasek focused on regulations other than RCRA; nevertheless, the toxic waste released into the flood waters would be a RCRA-regulated release for a solvent facility. Hence, the EPA oversaw Murphy Oil's cleanup of the surrounding neighborhoods based on guidelines in Louisiana Department of Environmental Quality's (LDEQ's) RECAP. *Response to 2005 Hurricanes: Murphy Oil Spill*, EPA: ARCHIVE, <https://archive.epa.gov/katrina/web/html/index-6.html> [<https://perma.cc/97JN-8SHX>] (last updated Feb. 21, 2016).

93. *Response to 2005 Hurricanes: Murphy Oil Spill*, *supra* note 92; MURPHY OIL SPILL FACT SHEET, *supra* note 54.

94. See 40 C.F.R. § 272.951 (2022).

95. See 42 U.S.C. § 6926. The EPA retains inspection and approval authorities for state authorized programs, but the state maintains control over the investigation and corrective action.

96. See, e.g., *Enforcement, Resource Conservation and Recovery Act (RCRA) and Federal Facilities*, EPA, <https://www.epa.gov/enforcement/resource-conservation-and-recovery-act-rcra-and-federal-facilities> [<https://perma.cc/7HY2-MQV8>] (last updated Jan. 18, 2022). "RCRA mainly applies to active facilities, although, through §7003, it can address the serious problem of abandoned and inactive facilities. These abandoned facilities also may be covered under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)."

97. 42 U.S.C. § 9601–9675. See *Summary of the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)*, EPA, <https://www.epa.gov/laws-regulations/summary-comprehensive-environmental->

liability for storm-induced pollution is outside the scope of this Comment, as is the potential application of RCRA to abandoned facilities.

1. Relevant Provisions of the Clean Water Act.

Under the CWA, any pollutant discharge from a point source into navigable U.S. waters without a permit is unlawful.⁹⁸ The EPA regulates stormwater pollutant discharges from municipal and industrial sources via the CWA's NPDES.⁹⁹ The NPDES's purpose is to reduce and regulate the amount of pollutants entering the nation's waters by regulating stormwater discharge from three primary sources: (1) municipal storm sewers; (2) construction activities; and (3) industrial activities.¹⁰⁰ The NPDES promotes effective stormwater management by requiring operators of the point sources to obtain an NPDES permit before discharging stormwater into local surface waters.¹⁰¹ Permit seekers must plan and implement best management practices (BMPs) to prevent stormwater runoffs from carrying pollution into local waterways.¹⁰² Effective stormwater management includes the following benefits: wetland and aquatic ecosystem protection, improved water quality, water resource conservation, protection of public health, and flood control.¹⁰³

The CWA contains built-in adaptations for emergencies and upsets. The National Contingency Plan¹⁰⁴ authorizes the President to effectuate immediate removal of hazardous substances discharged from onshore facilities that "pose substantial threats to public health or welfare."¹⁰⁵ To

response-compensation-and-liability-act [https://perma.cc/YKQ5-W9A6] (last visited Jan. 20, 2023) for a concise overview of CERCLA.

98. *Summary of the Clean Water Act*, *supra* note 82.

99. *Water Enforcement*, EPA, <https://www.epa.gov/enforcement/water-enforcement#fill> [https://perma.cc/33EE-MNGM] (last updated June 29, 2022).

100. *NPDES Stormwater Program*, EPA, <https://www.epa.gov/npdes/npdes-stormwater-program> [https://perma.cc/J45V-PD5F] (last updated Feb. 15, 2022).

101. *Id.*

102. *Id.*

103. *Id.*

104. 33 U.S.C. § 1321(d).

105. *Id.* § 1321(c)(2). *See also* JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 3 (2005). For example, "[a]n owner or operator . . . may deviate from the applicable response plan if the President or the Federal On-Scene Coordinator determines that deviation from the response plan would provide for a more expeditious or effective response to the spill or mitigation of its environmental effects." 33 U.S.C. § 1391(c)(3)(B).

facilitate this objective, the NPDES makes an exception to the permit requirement for discharges conducted as part of a removal action.¹⁰⁶

The EPA also allows unregulated discharges to water for upsets, and recognizes upsets as an affirmative defense to enforcement actions for violations of technology limits in the permit, subject to timely notification and a showing that the upset extended beyond the permittee's control.¹⁰⁷ In the context of major hurricanes, this means that many potentially preventable discharges of toxic material could occur with little to no enforcement action because the storm impacts fell outside the permittee's "reasonable control."¹⁰⁸

The USACE administers section 404 of the CWA, regulating discharges of dredged and fill material into the nation's waters and wetlands.¹⁰⁹ Emergency provisions baked into the regulations can be deployed as needed to temporarily ease procedural requirements to facilitate response and recovery efforts after hurricanes.¹¹⁰

106. JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 3 (2005).

107. 40 C.F.R. § 122.41(n) (2022); JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 3 (2005).

108. 40 C.F.R. §122.41(n) (2022).

109. 33 U.S.C. § 1344(d); *see also* JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 4 (2005).

110. *See* JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 4 (2005). The USACE invoked the emergency procedures for 90 days after Hurricane Katrina. The USACE indicated that this was to "save lives and property and to restore some infrastructure; [the procedures] apply to local, state, and federal agencies within the affected area, plus utility companies, electrical, phone, and pipelines, including natural gas distribution systems, plus road and railroad transportation projects." The provisions included minimizing the notice required to perform work regulated by Section 404 and requiring the submittal of specified information after the work was completed.

2. Administrative Penalties for CWA Violations in Non-emergency Situations.

Most states have at least some regulatory and enforcement authority under the CWA.¹¹¹ When the EPA learns of a CWA violation under a state-issued permit, the EPA can issue a compliance order or give the offender and the state notice of the infraction.¹¹² If the state fails to commence appropriate enforcement action within 30 days of the EPA's notice, the EPA must either issue a compliance order or bring a civil action against the polluter in the U.S. District Court in which the polluter resides or does business.¹¹³ The CWA grants the court jurisdiction to enjoin the violations and require compliance.¹¹⁴ If a state is deficient in its enforcement, the EPA will give the state 30 days' notice to bring enforcement up to EPA standards.¹¹⁵ If the state does not satisfy the enforcement requirements, the EPA assumes permit enforcement against the polluters until the state shows it can provide effective enforcement measures.¹¹⁶ In addition to the compliance order, the CWA gives the EPA discretion to levy a civil penalty up to \$25,000 per day (indexed for inflation) for each violation, based on the violation's severity and the surrounding circumstances.¹¹⁷ Surrounding circumstances affecting the civil penalty include mitigating actions, such as good faith efforts to comply.¹¹⁸

The EPA may also impose criminal liability on persons who violate the conditions of their permits.¹¹⁹ Those who negligently violate the CWA are subject to fines ranging from \$2,500 to \$25,000 for each day of the

111. For example, EPA has published the Louisiana water quality standards within title 33, Chapter 11 of the Louisiana Administrative Code that it finds acceptable based on federal standards at <https://www.epa.gov/wqs-tech/state-specific-water-quality-standards-effective-under-clean-water-act-cwa> [<https://perma.cc/454Q-E3T8>].

112. 33 U.S.C. § 1319(a)(1).

113. *Id.*

114. *Id.* § 1319(b).

115. *Id.* § 1319(a)(2).

116. *Id.*

117. Penalty amounts discussed in this paper are as enacted in the statutes. For current penalties, including inflation and other adjustments, see § 19.4 *Statutory Civil Monetary Penalties, as Adjusted for Inflation, and Tables.*, CODE OF FED. REGS., <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-A/part-19/section-19.4> [<https://perma.cc/76GH-XMGR>] (last visited Jan. 20, 2023). Current penalties are over twice the value of the as-enacted amounts.

118. 33 U.S.C. § 1319(d).

119. *See id.* § 1319(c).

violation, imprisonment for up to a year, or a combination of the two.¹²⁰ The penalty doubles for previous CWA violators.¹²¹ “Knowing” violations are subject to penalties of \$5,000 to \$50,000 per day of the violation, up to two years in prison, or a combination of both.¹²² A violation prosecuted after the polluter’s conviction of a knowing CWA violation may result in a fine of \$100,000 per day and imprisonment for up to six years.¹²³

A natural person¹²⁴ who commits a “knowing” CWA violation¹²⁵ and knows that they endangered the life or health of another person faces criminal fines up to \$250,000 and up to 15 years in prison.¹²⁶ An organization that knowingly endangers the life or health of any persons through a CWA violation is subject to fines up to \$1,000,000.¹²⁷ Polluters with previous convictions of knowing endangerment face penalties up to \$500,000 and 30 years in prison.¹²⁸

3. CWA Citizen Suit Provision.

If neither the state nor the EPA acts to correct a CWA violation, the CWA provides a path for private citizens to participate in CWA enforcement.¹²⁹ Any citizen can bring an action against any person, including the federal government, for permit violations, breach of effluent standards and/or effluent limitations.¹³⁰ Citizens can also sue for violations of the EPA and/or state compliance orders.¹³¹ Any citizen may also bring

120. *Id.* § 1319(c)(1).

121. *Id.*

122. *Id.* § 1319(c)(2).

123. *Id.*

124. An individual human being.

125. “Knowing” is a scienter requirement for the penal enforcement standard. The CWA provides for criminal liability for two mental states: negligence, *see* 33 U.S.C. § 1319(c)(1), and knowing, *see* 33 U.S.C. § 1319(c)(2). While not completely on point, the Model Penal Code definition of “knowingly” sheds some light on the mental state required for culpability based on the “knowing” standard: “[a] person acts knowingly . . . when: (i) . . . he is aware that his conduct is of [the nature required for the crime] or that [required] circumstances exist; and (ii) . . . he is aware that it is practically certain that his conduct will cause [the criminal result].” MODEL PENAL CODE § 2.02(b) (Am. L. Inst., Proposed Official Draft 1962).

126. 33 U.S.C. § 1319(c)(3)(A).

127. *Id.* § 1319.

128. *Id.* § 1319(c).

129. *See id.* § 1365.

130. *Id.* § 1365(a).

131. *Id.* § 1365(a)(1).

a civil action against the Administrator of the EPA for failure to perform an act or duty required by the CWA.¹³²

Citizen suits are subject to a few conditions: (1) the citizen who wishes to begin a lawsuit must give 60 days' notice to the EPA, the state, and the alleged CWA violator before commencing the suit;¹³³ (2) if the EPA or state already began civil or criminal prosecution of the violator, then the citizen may not commence a separate suit; however, the citizen has a right to intervene in an enforcement action initiated by the government;¹³⁴ (3) suits for violations of national performance standards and toxic and pretreatment effluent standards may begin immediately after the plaintiff gives the required notice;¹³⁵ and (4) if the action starts within 60 days after the required notice period, the citizen may seek civil penalties otherwise foreclosed by the statute.¹³⁶

4. Relevant Provisions of the Resource Conservation and Recovery Act

Passed in 1976 as a comprehensive amendment to the Solid Waste Disposal Act of 1965,¹³⁷ RCRA gave Congress a platform for the national policy of reducing and eliminating hazardous waste generation and treating, storing, or disposing generated waste “to minimize the present and future threat to human health and the environment.”¹³⁸ The EPA proclaimed that the “RCRA . . . protect[s] human health and the environment by reducing risk from waste.”¹³⁹ The agency also touts, “RCRA has responded to environmental challenges on all fronts—air, water, and land—by pursuing and promoting partnerships with states, tribes, industry, and the public.”¹⁴⁰ Among the guiding public policies on

132. *Id.* § 1365(a)(2).

133. *Id.* § 1365(b)(1)(A).

134. *Id.* § 1365(b)(1)(B).

135. *Id.* § 1365(b).

136. *Id.* § 1319(g)(6)(B).

137. Solid Waste Disposal Act, Pub. L. No. 94-580, 90 Stat. 2795 (1976) (codified as amended at 42 U.S.C. §§ 6901-6992k). *See also* 25 YEARS OF RCRA: BUILDING ON OUR PAST TO PROTECT OUR FUTURE, EPA 1 (Apr. 2002), <https://archive.epa.gov/epawaste/inforesources/web/pdf/k02027.pdf> [<https://perma.cc/F4HD-FX2J>].

138. 42 U.S.C. § 6902(b).

139. 25 YEARS OF RCRA: BUILDING ON OUR PAST TO PROTECT OUR FUTURE, *supra* note 137, at 2.

140. *Id.*

which RCRA was founded were an emphasis on industry engagement and partnering with permittees to fix the problem of pollution.¹⁴¹

Because RCRA heavily emphasizes pollution prevention, the Act mandates regulated entities to *plan* to avoid unintended releases.¹⁴² RCRA commissions the EPA to promulgate standards applicable to owners and operators of hazardous waste treatment, storage, and disposal facilities in order to protect human health and the environment.¹⁴³ One way the EPA provides this protection is by establishing standards for contingency plans “for effective action to minimize unanticipated damage from any treatment, storage, or disposal of any such hazardous waste.”¹⁴⁴ Under RCRA, permit holders must certify, at least annually, that they have programs in place to reduce the amount and toxicity of the hazardous waste they generate.¹⁴⁵ They must also certify that the manner in which they store, treat, or dispose of the material will “minimize the present and future threat to human health and the environment.”¹⁴⁶

RCRA does not address accommodations for releases outside the control of the regulated entities.¹⁴⁷ However, Congress designed RCRA around the idea of reducing and eliminating waste to the degree practicable, which are not emergency functions.¹⁴⁸ Unsurprisingly, the statute does not have built-in emergency waiver provisions; instead, contingency plans are required by the statute as part of the permitting process to avoid accidental releases during emergencies.¹⁴⁹ However, when releases occur because of a storm, enforcement actions do not

141. *See, e.g.*, 42 U.S.C. § 6902(a)(11), where Congress sets government collaboration with private industry as an objective of RCRA. *See also* 42 U.S.C. § 6941, where the objectives of the state or regional solid waste plans “are to be accomplished . . . pursuant to Federal guidelines designed to foster cooperation among Federal, State, and local governments and private industry.”

142. *See* 42 U.S.C. § 6924(a)(5).

143. *Id.* § 6924(a).

144. *Id.* § 6924(a)(5).

145. *Id.* § 6925(h).

146. *Id.*

147. *See, e.g., id.* § 6925(g)(2) (providing the only waiver of facility permit application requirements mentioned in RCRA to facilities researching, developing, or demonstrating new methods of storage and disposal “[f]or the purpose of expediting review and issuance of permits.”) No similar expediting provision is available for facilities experiencing a storm-related upset.

148. *See id.* § 6902(b); *see also id.* § 6925(h).

149. The EPA is tasked with setting standards for contingency plans as part of the permitting process as provided in 42 U.S.C. § 6924(a)(5).

automatically ensue.¹⁵⁰ Congress gave the EPA discretion in enforcing the provisions of RCRA.¹⁵¹ Hurricanes and other *forces majeures* will likely lead to softer enforcement that would otherwise occur under typical circumstances.¹⁵²

If the EPA determines a person violated RCRA, the agency can issue an order to assess civil penalties (up to \$25,000 per day of noncompliance for each violation, indexed to inflation) and mandate compliance.¹⁵³ Alternatively, the EPA may bring a civil action for an injunction or other appropriate relief against the violator in the U.S. District Court where the violation occurred.¹⁵⁴ The EPA may also revoke a violator's permit.¹⁵⁵ If the violator does not bring its practices in line with the compliance order, the EPA can levy the civil penalty described above and revoke or suspend the polluter's permit.¹⁵⁶

In addition, the RCRA assigns criminal liability to persons knowingly polluting without a permit, falsifying records, or committing other statutorily enumerated offenses.¹⁵⁷ Criminal penalties include up to \$50,000 per day (indexed to inflation) for each offense, up to two years imprisonment for most offenses (up to five years imprisonment for knowingly transporting, treating, storing, or disposing of hazardous waste without a permit or in "knowing" violation of permit conditions), or both.¹⁵⁸

Failure or refusal to comply with monitoring, analysis, and testing requirements may prompt the EPA to start a civil action in the U.S. District

150. See, e.g., 42 U.S.C. § 6928(a) (providing that "the Administrator may" issue a compliance order or sue a RCRA permit violator, but not requiring the EPA to do so).

151. See, e.g., *id.* § 6921(b)(B)(iv) (the Administrator shall give notice of the violation but may issue a compliance order or commence a civil action).

152. Crises can lead to a narrow focus in recovery efforts. For example, after Hurricane Katrina, Murphy Oil affected thousands of homes and was subject to corrective action by the state, overseen by the EPA. However, the other oil spills caused by the storm were not subject to enforcement investigation or penalties. See Joan Meiners, *Polluter's Paradise: How Oil Companies Avoided Environmental Accountability After 10.8 Million Gallons Spilled*, PRO PUBLICA (Dec. 27, 2019, 6:00 AM), <https://www.propublica.org/article/how-oil-companies-avoided-environmental-accountability-after-10.8-million-gallons-spilled> [<https://perma.cc/7CT5-5L29>].

153. 42 U.S.C. § 6928.

154. *Id.*

155. *Id.* § 6928(c).

156. *Id.*

157. *Id.* § 6928(d).

158. *Id.*

Court where the defendant resides or does business.¹⁵⁹ RCRA grants the court jurisdiction to assess up to \$5,000 for each day of non-compliance.¹⁶⁰ The CWA grants citizens with similar lawsuit options, except when the EPA or a state commences and diligently prosecutes the action.¹⁶¹ The CWA allows any citizen to intervene when the government files the action, but RCRA puts some limitations on the right to citizen intervention.¹⁶²

RCRA requires facilities experiencing waste and hazardous material spills, including storm-induced spills, to take necessary corrective actions within and outside the facility's boundaries.¹⁶³ The RCRA CAP "requires facilities that treat, store, or dispose of hazardous wastes to investigate and clean up contaminated soil, groundwater, and surface water."¹⁶⁴ Regulators monitor cleanup under four CAP metrics: (1) Human Exposures Under Control; (2) Migration of Contaminated Groundwater Under Control; (3) Final Remedy Construction; and (4) Performance Standards Attained.¹⁶⁵ Regulators base corrective action on EPA guidance and policy documents drafted to assist facilities in their cleanups.¹⁶⁶ "Corrective action is principally implemented through RCRA permits and orders."¹⁶⁷ Permits for treatment, storage, and disposal facilities (TSDFs) include corrective action provisions and financial assurance to cover the cleanup costs.¹⁶⁸

States may apply to the EPA Administrator to provide and enforce a state hazardous waste program in lieu of federal enforcement.¹⁶⁹ State-developed programs must meet the EPA's minimum standards, be consistent with federal guidelines and state-run programs in other authorized states, and provide adequate compliance enforcement.¹⁷⁰ Louisiana is an authorized state that can pursue corrective action under

159. *See id.* § 6928(a).

160. *Id.* § 6934(e).

161. *See id.* § 6972. The language of 42 U.S.C. § 6972 (RCRA's citizen-suit provision) and 33 U.S.C. § 1365(b) are very similar.

162. *See* 42 U.S.C. § 6972(b)(2)(E) (placing conditions on who may intervene as a matter of right for actions against parties whose handling of waste "may present an imminent and substantial endangerment to health or the environment." 42 U.S.C. § 6972(a)(1)(B)). Part IV of this Comment discusses how RCRA limits citizen intervention rights for suits based on environmental endangerment.

163. *See* 42 U.S.C. § 6924(u), (v).

164. *Learn About Corrective Action*, *supra* note 90.

165. *Id.*

166. *Id.*

167. *Id.*

168. *Id.*

169. 42 U.S.C. § 6926(b).

170. *Id.*

EPA oversight pursuant to LDEQ's RECAP.¹⁷¹ Because authorized states enforce the state hazardous waste program in lieu of the federal government, much of the discretion RCRA gives to the EPA Administrator transfers to the state.¹⁷² Consequently, the state may choose when and if to enforce a compliance order or penalize a violation of the hazardous waste program.¹⁷³ Louisiana is historically slow in penalizing facilities when hurricanes cause inadvertent releases of hazardous materials.¹⁷⁴

5. Summary of CWA and RCRA Discussion.

Emergency waivers of CAA and CWA requirements are common after hurricanes to expeditiously restore order and power to affected communities. Waivers allow for necessary repairs to infrastructure and facilities to proceed without the burden of long permit review times.¹⁷⁵ Many waivers require after-the-fact documentation and mitigation, which maintains some (albeit less) accountability for the party undertaking the expedited emergency repair.¹⁷⁶ This policy—of not letting the regulations overburden recovery—is very helpful for rebuilding communities.¹⁷⁷

171. *Enforcement and Compliance Assurance in Louisiana*, EPA, <https://www.epa.gov/la/enforcement-and-compliance-assurance-louisiana#4> [<https://perma.cc/9VW2-QJXK>] (last visited Jan. 20, 2023).

172. *See State Authorization Under the Resource Conservation and Recovery Act (RCRA)*, EPA, <https://www.epa.gov/rcra/state-authorization-under-resource-conservation-and-recovery-act-rcra> [<https://perma.cc/6T6G-6VKY>] (last updated Nov. 6, 2022). “State authorization is a rulemaking process that EPA delegates the primary responsibility of implementing the RCRA hazardous waste program to individual states in lieu of EPA.” (emphasis added).

173. *See, e.g.*, Joan Meiners, *How Oil Companies Avoided Environmental Accountability After 10.8 Million Gallons Spilled*, PRO PUBLICA (Dec. 27, 2019 6:00 AM), <https://www.propublica.org/article/how-oil-companies-avoided-environmental-accountability-after-10.8-million-gallons-spilled> [<https://perma.cc/7CT5-5L29>].

174. *See, e.g., id.*

175. *See, e.g.*, 33 C.F.R. § 230.8 (2022) (providing the USACE authority to proceed without typically required documentation and procedure in emergencies, if needed).

176. *See, e.g.*, DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, *supra* note 74.

177. *See, e.g.*, JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 11 (2005) (indicating waivers of environmental laws provided flexibility in dealing with the impacts of Hurricane Katrina).

However, when hurricanes cause extensive damage to heavily populated and industrial areas along the Gulf Coast, emergencies may require protracted recovery times. In some situations, slow recovery resulted in waiver extensions that prolonged unregulated activities and elevated human and environmental health risks.¹⁷⁸

Citizens can engage in the enforcement process by following the citizen-suit provisions in the CWA and RCRA.¹⁷⁹ This may prompt government action, which bars the citizen suit but encourages resolution to the violation prompting the suit.¹⁸⁰ However, both statutory schemes provide a path for citizens to intervene in the prosecution of the suit alongside the government.¹⁸¹ RCRA's intervention criteria are constrained, but allow a well-positioned plaintiff to engage in the process, as described in Part IV.¹⁸² This promotes meaningful resolution of pollution concerns, because citizen intervention gives voice to the stakeholders affected by the pollution, thereby elevating the accountability of the parties to the suit.

II. CWA AND RCRA ENFORCEMENT IN THE AFTERMATH OF A HURRICANE: STATUS QUO AND POSSIBLE IMPROVEMENTS TO THE LAW AND ITS ENFORCEMENT

In southern Louisiana, storm surges and hurricane rains generate significant flooding.¹⁸³ Louisiana historically accommodated the expansion of oil, gas, and petrochemical industries.¹⁸⁴ This extensive oil and gas infrastructure, combined with the robust petrochemical industry, increases the probability of a hazardous material release from such facilities during catastrophic flooding from storm surges and extreme rain events. Under normal circumstances, point source discharges permitted under NPDES are subject to water quality considerations, such as numerical limits for specified pollutants and other conditions to prevent

178. *See, e.g.*, Flatt, *supra* note 9, at 5. Texas extended their emergency declarations and waivers long after Hurricane Harvey's effects abated.

179. *See* 33 U.S.C. § 1365 (CWA citizen suit provisions); 42 U.S.C. 6972 (RCRA citizen suit provisions).

180. *See, e.g.*, 42 U.S.C. § 6972(b)(1)(B).

181. *See* 33 U.S.C. § 1365(b)(1)(B); 42 U.S.C. § 6972(b).

182. *See* 42 U.S.C. § 6972(b)(2)(E).

183. *See, e.g.*, Thibodeaux, *supra* note 42.

184. Tegan Wendland, *Louisiana's Governor Wants the Oil and Gas State to Go Carbon Neutral*, NPR (May 11, 2021, 5:00 AM), <https://www.npr.org/2021/05/11/994802529/louisianas-governor-wants-the-oil-and-gas-state-to-go-carbon-neutral> [<https://perma.cc/W6CA-VHJL>].

degradation to the waters of the United States.¹⁸⁵ A state's Section 401 water quality certification program dictates water quality conditions for each permitted discharge.¹⁸⁶ NPDES permits also impose monitoring and reporting requirements for permittees.¹⁸⁷ Point source discharges without a permit are illegal and subject the polluter to heavy fines and possible imprisonment.¹⁸⁸ Similarly, as the enforcing body for Section 404, the dredge and fill discharge component of the CWA, the USACE generally requires, *inter alia*, advance notice and review of the proposed dredge and fill activities, the quantities of materials subject to removal and placement in the waters of the United States, and considerations for alternative actions.¹⁸⁹ During flood events, municipal and industrial wastewater discharged into flood waters mix with non-point source pollution, such as fuel, oil, grease, and household chemicals from residences, roads, and private vehicles.¹⁹⁰ Because floodwaters pose a significant hazard to human health, the EPA and the USACE generally reduce notice and reporting requirements immediately after a flood to reduce any barriers to the cleanup and recovery efforts.¹⁹¹

RCRA's primary function in the aftermath of a hurricane is to promote compliance and reduce public exposure to hazardous waste through corrective action.¹⁹² While the immediate storm aftermath may lead to

185. See 33 U.S.C. § 1313 (c)(2)(B).

186. For procedures to acquire water quality certification in Louisiana, see LA. ADMIN. CODE tit. 33, § 1507 (2022).

187. See *About NPDES*, EPA, <https://www.epa.gov/npdes/about-npdes> [<https://perma.cc/F58F-REXB>] (last updated July 6, 2022).

188. See 33 U.S.C. § 1319(c).

189. See, e.g., *Joint Permit Application for Work Within the Louisiana Coastal Zone*, LA. DEP'T OF NAT. RES.: OFF. OF COASTAL MGMT., <http://www.dnr.louisiana.gov/assets/OCM/permits/JPA2010Fillable.pdf> [<https://perma.cc/PNQ8-Q4WR>].

190. See *Natural Disasters and Severe Weather, Floodwater After a Disaster or Emergency*, CTR. FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/disasters/floods/floodsafety.html> [<https://perma.cc/5UL8-MUQM>] (last visited Jan. 20, 2023).

191. For a summary of state and federal action to facilitate clean up and recovery immediately after Hurricane Katrina, see JAMES E. MCCARTHY & CLAUDIA COPELAND, CONG. RSCH. SERV., RL33107, EMERGENCY WAIVER OF EPA REGULATIONS: AUTHORITIES AND LEGISLATIVE PROPOSALS IN THE AFTERMATH OF HURRICANE KATRINA 2–5 (2005).

192. See *Enforcement, RCRA Corrective Action Cleanup Enforcement*, EPA, <https://www.epa.gov/enforcement/rcra-corrective-action-cleanup-enforcement> [<https://perma.cc/8HD5-LZJT>] (last updated July 25, 2022); MURPHY OIL SPILL FACT SHEET, *supra* note 54.

initially soft agency response, post-hurricane site surveys and data collection may reveal the magnitude and extent of RCRA permit violations.¹⁹³ At this point, the EPA Administrator has discretion to pursue the violator to compel compliance and collect civil penalties under RCRA.¹⁹⁴ However, in a post-storm environment, the EPA, or its state equivalent, may hesitate to pursue heavy penalties, resulting in little to no liability for the polluter.

A. Emergency Waivers under the CWA, their Benefits and Potential Costs

Emergency waivers play an important role in reducing regulatory pressures on suffering communities by allowing them to take quick action to dewater and remove the waste that accumulates after a flood.¹⁹⁵ The increase in efficiency comes at the cost of the environmental protections offered by the EPA. Waivers under the CWA may result in suspension of investigation activities, reporting requirements, notice requirements, or even waivers of protective provisions.¹⁹⁶ The EPA often grants waivers at the request of state governments who declare a state of emergency.¹⁹⁷ Other times, the agency may respond to industry pressure to relax reporting standards or other requirements in the face of a crisis.¹⁹⁸ For

193. See, e.g., MURPHY OIL SPILL FACT SHEET, *supra* note 54. Over 3,900 properties in the Murphy Oil Spill Area were sampled to guide cleanup efforts for those properties that exceeded LDEQ RECAP levels.

194. 42 U.S.C. § 6991e(a).

195. See, e.g., *Hurricane Ida Response*, *supra* note 69 (addressing post-hurricane flood dewatering).

196. Such as the waiver of the requirement for low volatility fuel to reduce pressures on gasoline supplies following Hurricane Ida. See Letter from Michael Regan, *supra* note 15. Gubernatorial declarations of a state of emergency are a prerequisite to a Presidential declaration of disaster, which is a condition for federal intervention and assistance through the Stafford Act. 42 U.S.C. §§ 5121-5207.

The President can declare a major disaster for any natural event, including any hurricane . . . that the President determines has caused damage of such severity that it is beyond the combined capabilities of state and local governments to respond. A major disaster declaration provides a wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work.

How a Disaster Gets Declared, *supra* note 64.

197. See Letter from Michael Regan, *supra* note 15.

198. See Flatt, *supra* note 9, at 2–3.

example, the EPA relaxed its compliance requirements for pollution reporting in the early months of the COVID-19 pandemic in the United States.¹⁹⁹

These relaxed requirements can lead to unmonitored discharges of pollutants and increased harm to populations where the industry densely concentrates.²⁰⁰ This reality necessitates caution in granting and implementing state and federal waivers. In many ways, state and federal waivers eviscerate the environmental protections that the law provides. Waivers granted in haste—i.e., without adequately weighing health, social, and environmental costs—result in harm to human health and the environment, caused by reduced oversight and enforcement, that outweighs the temporary benefits of relieving administrative burdens.²⁰¹

B. Adapting the CWA and RCRA for Climate Change Risks for Gulf Coast Industries and Communities

Congress should amend the CWA and RCRA to better protect against changing climate conditions. Current provisions and lax enforcement left coastal communities vulnerable to the risk of chemical releases when hurricanes barrel through the coast. Congress should consider restructuring the CWA and RCRA to expressly account for areas exposed to increased risks of damage and environmental impacts due to climate change. Since the EPA delegates much of the administration and enforcement of the CWA and RCRA to authorized state programs, the authorization criteria for the states require updating and should mandate states to consider climate change impacts—such as the impact of rising sea levels or the increase in storm frequency and intensity—as part of their permitting, compliance, and enforcement review.

The EPA has not been completely lethargic on this point. In response to President Biden's call for all federal agencies to integrate climate adaptation planning into their missions, the EPA began formulating a path

199. See Memorandum from Susan Parker Bodine, Assistant Adm'r for Enf't and Compliance Assurance, EPA, to All Governmental and Priv. Sector Partners (March 26, 2020), <https://www.epa.gov/sites/default/files/2020-03/documents/oecamemooncovid19implications.pdf> [<https://perma.cc/A8DV-3QAS>].

200. See Flatt, *supra* note 9 for a discussion of how the EPA's temporary relaxation of reporting requirements at the beginning of the COVID-19 pandemic led to discharges that bore a positive statistical correlation to the rate of COVID deaths in heavily industrialized areas.

201. *Id.* (arguing that emergency waivers are too easy to obtain and are increasingly abused). Flatt argues that agency enforcement discretion is a better tool for emergency situations than temporary waivers of permit requirements.

towards making these adjustments in the October 2021 U.S. EPA Climate Adaptation Plan.²⁰² The plan's first priority was to "integrat[e] climate adaptation into EPA programs, policies, rulemaking processes, and enforcement activities."²⁰³ Beginning in fiscal year (FY) 2021, the EPA aims to: (1) "integrate information about the impacts of climate change into rulemaking processes consistent with its authorities;"²⁰⁴ and (2) "update guidance on rulemaking processes to include more explicit consideration of climate change."²⁰⁵ The EPA pinpoints what considerations warrant analysis and seeks opportunities to discuss those considerations internally and with stakeholders.²⁰⁶ This includes outreach to communities facing "disproportionate vulnerabilities" to develop climate adaptation guidance for rule makers to use in creating inclusive regulations.²⁰⁷

As part of their climate adaptations, the EPA plans to "update and develop policies addressing sea level rise . . . for cleanup sites managed by the EPA under RCRA." Moreover, the EPA "will update its Guidance of RCRA Corrective Action Decision Documents: Statement of Basis to address sea level rise considerations."²⁰⁸ October 2021 marked the start of the EPA's climate change adaptation. Other than implementing regional adaptation plans, no concrete changes have been made to date.²⁰⁹

Climate risk updates to the CWA and RCRA could take various formats. One option involves implementing more rigorous enforcement and stricter permit requirements for industries along the Gulf Coast and for Gulf Coast state-authorized programs to maintain their authorization. Regulators could assess facility risks due to climate change in two different ways: (1) analyzing risks for each facility on a permit-by-permit basis, or (2) issuing blanket requirements for industrial facilities within a certain distance from the coast. Blanket requirements could be organized

202. See generally *Climate Adaptation Action Plan*, EPA (Oct. 2021), <https://www.epa.gov/system/files/documents/2021-09/epa-climate-adaptation-plan-pdf-version.pdf> [<https://perma.cc/F7WV-2UR7>].

203. *Id.* at 7.

204. *Id.* at 8.

205. *Id.*

206. *Id.* See also EPA, Pub. No. 906B22001, EPA REGION 6 CLIMATE ADAPTATION IMPLEMENTATION PLAN (Oct. 2022).

207. *Climate Adaptation Action Plan*, *supra* note 202, at 8–9; see also EPA, Pub. No. 906B22001, EPA REGION 6 CLIMATE ADAPTATION IMPLEMENTATION PLAN (Oct. 2022).

208. *Climate Adaptation Action Plan*, *supra* note 202, at 9.

209. See EPA, Pub. No. 906B22001, EPA REGION 6 CLIMATE ADAPTATION IMPLEMENTATION PLAN (Oct. 2022).

into geographic zones, based on the facility's proximity to the Gulf of Mexico, each zone would be subject to a different risk tier. The closer the facility is to the Gulf, the higher the risk assigned to the facility. Geographic zones should account for factors such as exposure to storm surge flooding, ground elevation, risk of flash and backwater flooding, etc. The rating system would assign minimal climate risk to upland facilities located far from the Gulf, where flood risk is low.

As originally enacted, RCRA required the EPA to submit a report to Congress by October 1, 1986, assessing whether establishing standards and best management practices for waste generators were feasible and desirable to reduce present and future risks.²¹⁰ The 1986 report requirement continues to be part of the code.²¹¹ A 1986 report on mitigating future risks is likely insufficient to handle the level and range of risks encountered by coastal waste generators and storage facilities in 2023. While the EPA may already consider modern risks on a permit-by-permit basis, a system overhaul to incorporate risk-based modeling—including risk of storm exposure, facility damage, and toxic release due to storm exposure—would improve standards and best management practices.

In electing a risk-based assessment, the EPA could draw from FEMA's experience in their recent revamp of the national flood insurance program, titled "Flood Risk Rating 2.0."²¹² FEMA's Flood Risk Rating 2.0 uses technology and best practices to change the way FEMA computes flood insurance premiums.²¹³ According to FEMA, the revised program "will reduce disaster-related suffering and disaster-related costs . . . by leveraging advances in industry best practices, advanced actuarial practices, technology, flood risk modeling and the emphasis on mitigation efforts."²¹⁴ Beginning in the 1970s, FEMA priced flood insurance premiums based on a property's location on the regional Flood Insurance Rate Map.²¹⁵ The flood insurance premiums are tied to the flood zone elevations in a given geographic area.²¹⁶ In 2021, FEMA started

210. 42 U.S.C. § 6982(r).

211. *Id.*

212. *See Risk Rating 2.0: Equity in Action*, FEMA, <https://www.fema.gov/flood-insurance/risk-rating> [<https://perma.cc/9M7M-ANT6>] (last updated Apr. 18, 2022).

213. *Risk Rating 2.0 is Equity in Action*, FEMA 1 (Apr. 2021), https://www.fema.gov/sites/default/files/documents/fema_rr-2.0-equity-action_0.pdf [<https://perma.cc/BP78-DHRJ>].

214. *Id.*

215. *Risk Rating 2.0: Equity in Action*, *supra* note 212.

216. *Id.*

transitioning to Risk Rating 2.0, which accounts for “flood frequency, multiple flood types—river overflow, storm surge, coastal erosion and heavy rainfall—and distance to a water source along with property characteristics such as elevation and the cost to rebuild.”²¹⁷ The new risk rating system incorporates “private sector data sets, catastrophe models and evolving actuarial science” into the traditional government survey information.²¹⁸ New flood risk modeling incorporates climate change effects such as sea level rise on a year-by-year basis.²¹⁹ FEMA estimates that, while the new program will result in an increase in flood insurance premiums for higher risk properties, the majority of properties will benefit from a decrease in premiums.²²⁰

The EPA and authorized state agencies should take a page from FEMA’s playbook to update permitting requirements to include location-based risk analysis by accounting for climate-driven risks like sea-level rise and an increased number and size of storms. A risk-focused approach to rulemaking and regulating could improve permit enforcement and environmental protection in vulnerable geographic areas or encourage at-risk facilities to move their operations to less risky locations.

Consistent enforcement of the CWA and RCRA regulations at the federal and state levels is essential to promoting better environmental outcomes. Enforcement actions are painful and inconvenient for coastal industry, but consistent enforcement of permit conditions sends a message that the government cares about protecting coastal resources from pollution. This helps establish clear guidelines to industry and provides clear messages about the policies, goals, and consequences associated with the regulations. In cases where enforcement has relaxed over time and facilities continue to be exposed to extreme weather conditions, recommitment to tighter standards in the context of storms will be essential to reduce the probability of accidental releases of toxic material onto the ground and into the waterways.

The EPA’s spending power has declined over the last ten years, which has decreased the EPA’s investigation and enforcement resources.²²¹ The EPA delegates enforcement authority and action to authorized states,

217. *Id.*

218. *Id.*

219. See DIANE P. HORN, CONG. RSCH. SERV., IN11777, NATIONAL FLOOD INSURANCE PROGRAM RISK RATING 2.0: FREQUENTLY ASKED QUESTIONS (2002).

220. *Risk Rating 2.0 is Equity in Action*, *supra* note 213.

221. CONG. RSCH. SERV., IF11563, U.S. ENVIRONMENTAL PROTECTION AGENCY FY2021 APPROPRIATIONS, (2020).

which, in theory, allows for more enforcement and corrective action.²²² However, unless a violation is significant enough to garner national attention, non-action or slow action on the part of the authorized state may result in little to no enforcement of the permit. An industry friendly state, like Louisiana, can simply choose to not allocate its resources to investigate a toxic release or pursue corrective action against a permit violator.²²³ The EPA can direct federal resources to the problem when a state fails to act, and can ultimately revoke a state's authorization, if there are regular failures to administer the program consistently with the national program.²²⁴ However, with limited resources, the EPA's enforcement power only extends as far as its allocated budget and personnel capacity to regulate the various EPA programs allows.²²⁵ This likely results in slow agency action for many environmental releases.

Financial assurance mandates (FAMs) encourage private environmental regulation, relieving some of the regulatory burden borne by the agencies.²²⁶ Although, a significant change in the law may not easily effectuate in Washington. However, a more incremental change may be effective, such as amending the CWA, RCRA, and their supporting regulations to generally include FAMs to supplement regulatory enforcement,²²⁷ instead of limiting them to certain types of facilities.²²⁸ FAMs include bonding, self-insurance, public assurance programs, private insurance, and other such devices. FAMs require regulated entities to pay for the potential damage that they cause before any harm occurs.²²⁹ A well-

222. See 42 U.S.C. § 6926(b). See also James Boyd, *Financial Responsibility for Environmental Obligations: Are Bonding and Assurance Rules Fulfilling Their Promise?*, RES. FOR THE FUTURE 18 (Aug. 2001) (discussing how states are often responsible for implementing assurance programs mandated by the federal government).

223. See *State Authorization Under the Resource Conservation and Recovery Act (RCRA)*, supra note 172.

224. 42 U.S.C. § 6926(e).

225. See, e.g., EPA, *U.S. EPA's Administrative Control of Appropriated Funds Release* 3.2 61–65 (Feb. 4, 2008).

226. FAM's are requirements for regulated entities to show proof that they are able to "meet potential liabilities, ensuring that if liability arises, the liable parties ultimately pay, rather than those to whom they are liable." Zachary C. M. Arnold, *Preventing Industrial Disasters in a Time of Climate Change: a Call for Financial Assurance Mandates*, 41 HARV. ENVTL. L. REV. 243, 262–63 (2017).

227. *Id.* at 267.

228. See 42 U.S.C. § 6924(u). TSDF RCRA permits require financial assurance for completing corrective action when the TSDF is out of compliance with its permit.

229. Arnold, supra note 226, at 246.

designed FAM leverages “the expertise and resources of the private sector to drive cost-effective adaptation among coastal industries.”²³⁰ Such instruments function by “outsourcing” the regulation of coastal industries and the risks imposed by climate change along the coast by maintaining existing liability standards and establishing robust FAMs.²³¹

Private insurance mandates and programs combining public assurance requirements with private insurance reduce pollution risks.²³² FAMs could incorporate risk-based assessments like those in FEMA’s Risk Rating 2.0 in order to designate the cost for the insured facility to participate in the FAM.²³³ The EPA already recognized the limitations of “standard analytical processes,”²³⁴ such as historic flood plain mapping, and wants to develop decision-support tools to facilitate climate adaptation for EPA rules based on “scientifically credible expectations of future conditions.”²³⁵

FAMs increase the cost of doing business, and critics may claim that insurance is “especially expensive for climate impacts.”²³⁶ While many unknowns remain, and it is likely that a single storm may impact multiple insured businesses,²³⁷ predictions of exorbitant insurance premiums leading to widespread relocations and bankruptcy remain unfulfilled after the enactment of previous FAMs.²³⁸ James Boyd, Senior Fellow and

230. *Id.*

231. *Id.* at 276–77 (Arnold observes that in those areas of law where FAMs have been implemented, there is a “relatively light enforcement burden . . . [R]egulated industries [have not] found existing FAMs impossibly complex or expensive to satisfy. Rather, . . . it appears that compliance is widespread, and the costs of compliance have generally proven much lower than anticipated.”).

232. *See, e.g., id.* at 243, 249, 269. Underground storage tank (UST) FAMs that require private insurance significantly reduce the risk of accidents.

233. *Id.* at 279 (arguing that combining the Emergency Planning and Community Right-to-Know Act (EPCRA) regulations identifying facilities that pose a risk of dangerous contamination and FEMA flood maps “offers a coherent, reasonably robust, and easily implementable framework for policymakers.” *Id.* at 279–80).

234. *Climate Adaptation Action Plan*, *supra* note 202, at 9.

235. *Id.*

236. Arnold, *supra* note 226, at 282.

237. *Id.*

238. *Id.* Arnold argues that even if FAM insurance premiums or their functional equivalent are expensive, they do not create additional costs for doing business along the coast. Instead, increased costs due to FAM premiums shift the cost of doing business from society, which currently bears an outside share of the cost of accidental releases during hurricanes and other climate disasters, back to the regulated companies that produce hazardous material. *See id.* at 285.

Thomas Klutznick Chair in Environmental Policy and Director of the Land Use, Forestry, and Agriculture Program at Resources for the Future,²³⁹ an independent, nonprofit, research organization in Washington, D.C.,²⁴⁰ observed, “[a]ssurance does not bankrupt whole industries, and it does not mean the end of small business. In every regulatory context to date, private financial markets have developed to provide . . . financial instruments necessary to demonstrate assurance, and they provide these products at reasonable cost.”²⁴¹ Concerns that businesses will relocate and the increase in costs of doing business will reduce industry competition may be resolved by creating parallel liabilities for alternative locations.²⁴² On the other hand, certain areas are so risky that allowing environmental and health concerns to outweigh business concerns may be the better option.

Proximity to existing oil, gas, petrochemical, and natural infrastructure in southern Louisiana provides a natural incentive for petrochemical and energy facilities to locate there. As such, the difficulty imposed by a FAM must be great to incentivize an existing facility to move elsewhere.²⁴³ However, as coastal Louisiana sinks²⁴⁴ and climate change brings rising seas to Louisiana’s shores,²⁴⁵ the coastal erosion plaguing Louisiana and increasing the risk of storm damage to coastal facilities will only continue as the land subsides and the Gulf rises. Keeping facilities that produce or store toxic materials on the coast is unsustainable and risky. Over time, such facilities will likely experience repeated storm damage and attendant environmental upsets. The environmental costs for this scenario are untenable. The financial cost of repeated facility repair and environmental cleanup will be too high for the facility, an insurer, or taxpayers to bear. Insurance premiums and set-aside requirements for

239. James Boyd, RES. FOR THE FUTURE, <https://www.rff.org/people/james-w-boyd/> [<https://perma.cc/42ZN-J7VY>] (last visited Jan. 20, 2023).

240. About Us, RES. FOR THE FUTURE, <https://www.rff.org/about/> [<https://perma.cc/5F94-B5X6>] (last visited Jan. 20, 2023).

241. Boyd, *supra* note 222, at 30.

242. Arnold, *supra* note 226, at 286 (arguing that enacting FAMs in destination locations would resolve concerns that businesses might choose to head to non-FAM locations.)

243. *Id.* at 285.

244. See, e.g., Sara Goudarzi, *The Real Reason Louisiana is Sinking*, LIVE SCI. (July 21, 2006), <https://www.livescience.com/4186-real-reason-louisiana-sinking.html> [<https://perma.cc/T5EX-NXYB>].

245. See *Coastal Louisiana Added to NOAA Sea Level Rise Viewer*, NOAA (Dec. 17, 2015), <https://www.noaa.gov/media-release/coastal-louisiana-added-to-noaa-sea-level-rise-viewer> [<https://perma.cc/W89Z-H62R>] (indicating that parts of coastal Louisiana have the highest recorded relative sea level rise in the United States).

other financial assurance programs should be high enough to pressure such exposed coastal facilities into relocating to safer locations. Insurers should establish lower insurance premiums and other reduced requirements for locations that are far enough inland to avoid storm surges and maximum storm winds or far enough offshore in the Gulf of Mexico, with appropriate flexible design to weather storms at sea, to avoid the worst storm effects.

FAMs would support more consistent enforcement of the CWA and RCRA restrictions, as well as authorized state program restrictions. Insurance policies would cover hurricane damage, so this financial assurance would provide funding to cover the liability of the regulated facility while the facility fixes the problem. This reduces the possibility of cleanup costs driving the facility out of business.²⁴⁶ A baseline FAM requirement for coastal and near-coast facilities gives the EPA and state-authorized programs more latitude for consistency in issuing appropriate enforcement actions and levying civil penalties, regardless of whether the pollution resulted from a storm. More consistent program enforcement incentivizes industries to prevent releases in the first place. In addition, because of the premiums or contributions to an alternative FAM program, polluters would bear more of the violation's cost, than under current conditions.²⁴⁷

A private insurance FAM would be particularly effective in reinforcing RCRA planning requirements. Private insurers are eager to reduce liability, and coastal industries will want lower insurance premiums available for facilities adapting to climate change-induced risks.²⁴⁸ Under a private insurance mandate, statutes and regulations should not specify a carrier or run the insurance program; rather, the facility should choose their insurance from a private provider based on regulatory coverage requirements. While proposing to expand FAMs in the CWA and RCRA provisions will likely draw criticism, other environmental programs prove that FAMs can be effective.²⁴⁹

246. Arnold, *supra* note 226, at 256–57 (bankruptcy has been a historic way for facilities to avoid full liability).

247. *Id.* at 285. Arnold asserts that the costs of doing business are currently born by society and argues that FAMs can shift this cost back to the regulated entities.

248. *See id.* at 264–65.

249. *Id.* at 269–72 (illustrating the effectiveness of FAMs for underground storage tanks and oil production and transport).

III. INCREASED STAKEHOLDER ENGAGEMENT WILL PROVIDE GREATER UNDERSTANDING, HELP GENERATE IMPROVEMENTS TO THE LAW, AND IMPROVE PERMIT COMPLIANCE

Industry and the EPA (or the authorized state program) generally work together to establish workable permits and regulations and foster permit compliance.²⁵⁰ However, relationships turn sour when bad actors ignore permit requirements and cause problems at their facilities. In such cases, the EPA and state authorized programs may initiate civil actions in federal court.²⁵¹ The adversarial process serves an important purpose in program enforcement once it becomes clear a facility is in violation of their permit under the CWA or RCRA. However, the real benefit of the regulations is avoiding such violations in the first place. If the regulators focus too much on using the stick of enforcement without positive incentives, the regulated party's response will likely be lackluster, possibly stifling important developments in the reuse and storage of hazardous materials. Promoting engagement and innovation within the industry incentivizes self-policing, which decreases the resources that the agency needs to pour into a given compliance action or penalty prosecution.

Industry is unlikely to make significant changes without external incentives.²⁵² Community input and pressure from citizen groups can supply information about community ideals and vulnerability, tolerance for negative effects generated by the facility, and the community's expectations of the facility. Making extensive community outreach part of the permitting process requires the permit seeker to address some of these issues. Public participation—already required for permits in the form of public notice and comment—could improve by requiring permit seekers to engage community groups directly through a series of community education and feedback workshops.²⁵³ For example, the permit could require the regulated entity to form a coalition of interested parties,

250. See, e.g., *Enforcement, Waste, Chemical, and Cleanup Enforcement*, EPA, <https://www.epa.gov/enforcement/waste-chemical-and-cleanup-enforcement> [<https://perma.cc/JQ4K-ZFRB>] (last updated Sept. 22, 2022) (“The RCRA compliance assistance program provides businesses, federal facilities, local governments and tribes with tools to help meet environmental regulatory requirements.”).

251. See 42 U.S.C. § 6928 (a)(1).

252. Arnold, *supra* note 226, at 246 (arguing that businesses are not likely to include the cost of increased risks due to climate change on their own).

253. See, e.g., *Public Participation in the NPDES Permit Issuance Process*, EPA (Sept. 2013), <https://www3.epa.gov/npdes/pubs/publicparticipation.pdf> [<https://perma.cc/FFS8-X9LA>].

including government entities, conservation groups, industry groups, insurance providers and local citizens, to foster improved understanding of the risks, costs, and risk-mitigation strategies. Such engagement and outreach would place potential adversaries in a position to work toward the common goal of improved community and environmental safety.

In addition to community engagement, government incentives can motivate facilities to improve discharge monitoring technologies, facility safety, and protection of stored waste materials, thereby reducing the potential for discharges. Such incentives could include positive publicity for cooperation, accolades for improvements in climate risk adaptation, and possible reductions in financial assurance premiums (when broader FAMs are enacted).

Industry-community coalitions may also identify other changes to better protect the community in the event of a discharge. For example, the group may identify better isolation, protection, and monitoring techniques for potential pollution sources within a plant or refinery. It may encourage recycling and repurposing of hazardous material in the industrial process to reduce the amount of waste in a potential upset.²⁵⁴ It may include requiring industry to expand buffer zones around plants, thereby ensuring adequate compensation to the residents displaced by the expanded buffer zone to mitigate social injustices. It may also include fortifying the defensive facilities and techniques that contain hazardous materials to prevent discharges into U.S. waters.

The net effect of well-executed collaborative engagement should be: better compliance with the law and the facility permit, greater public awareness of the risks and benefits of having the facility in the community, reduced likelihood of toxic releases, and greater goodwill for the company and the government. However, collaboration in a vacuum will likely be useless; it must pair with consistent and real enforcement measures for permit violations by the state and federal agencies.

IV. WHEN ALL ELSE FAILS, WE THE PEOPLE MUST PICK UP THE SLACK

Statutory reform, recommended earlier, depends on a divided legislature to collaborate and pass the proposed changes. Due to the political friction such legislation would likely face,²⁵⁵ substantive climate

254. Should a facility be successful in finding a beneficial use to otherwise harmful waste products, the facility and its parent company have the added benefit of capitalizing on the improvement through the development of new products and reserving intellectual property protections.

255. See, e.g., Coral Davenport & Lisa Friedman, 'Build Back Better' Hit a Wall, but Climate Action Could Move Forward, THE N.Y. TIMES (Jan. 20, 2022),

change-focused amendments to the CWA and RCRA are unlikely in the current political climate. The CWA and RCRA entrust state authorized programs with the heavy lifting for permit compliance and corrective action.²⁵⁶ As a result, business-friendly states can use their discretion to decide whether and how much to enforce their permits. Consequently, environmental upsets that occur during storms may not receive much agency attention. United States citizens must have a way to redress health and safety risks without relying solely on federal or state government enforcement actions.

As with other EPA administered laws, the CWA and RCRA contain citizen suit provisions.²⁵⁷ However, these citizen suit provisions have limitations that dampen citizen engagement, including disallowing citizen suits if the government already began to pursue legal action against a polluter.²⁵⁸ In addition, the CWA allows an exception for liability as a result of discharges that occur through an “act of God.”²⁵⁹ RCRA does not exempt liability for such disasters. Consequently, hurricane-induced discharges are more likely enforceable under RCRA than the CWA. Flaws in the citizen suit provisions were especially acute with the relaxation of regulation and enforcement and underfunding during the Trump administration.²⁶⁰ Nevertheless, citizen suits under the CWA and RCRA can be a useful tool to promote citizen engagement, help facilitate improved permit compliance, and enhance the enforcement of permit conditions and limitations. Recent scholarship about EPA enforcement deficiencies focuses on leveraging citizen suits under the CWA to fill the enforcement gaps.²⁶¹

Citizen suits allow interested citizens to stand in the place of the Administrator, meaning, a citizen can sue for injunctive relief to compel compliance and for civil penalties to redress harm or potential harm.²⁶² Where the government does not act, including when the polluter is a state or federal government agency, citizens have the right to seek injunctions

<https://www.nytimes.com/2022/01/20/climate/build-back-better-climate-change.html> [<https://perma.cc/75U9-L762>].

256. See *State Authorization Under the Resource Conservation and Recovery Act (RCRA)*, *supra* note 172.

257. See 42 U.S.C. § 6972; 33 U.S.C. § 1365.

258. 33 U.S.C. § 1365(b).

259. See *id.* § 1321(f)(1).

260. See, e.g., *RCRA as a Tool for Environmental Justice Communities and Others to Compel Climate Change Adaptation*, 131 HARV. L. REV. 2409 (2018).

261. See, e.g., *id.*

262. 33 U.S.C. § 1365(a).

to force permit compliance and pursue monetary damages.²⁶³ As with any lawsuit involving government action and penalties, individual citizens and organizations are subject to constitutional requirements for their suit.²⁶⁴ Accordingly, standing acts as a barrier for some citizens and organizations seeking to enforce permit requirements where there is a future threat of harm, as they may not be able to establish the imminence required by federal standing doctrine.

Standing issues prevent many lawsuits from progressing.²⁶⁵ To have standing, a plaintiff must satisfy certain constitutional and prudential standards.²⁶⁶ The constitutional standards include: 1) injury-in-fact, either incurred or imminent; 2) causation—the ability to trace the injury to the challenged action; and 3) redressability—the likelihood that a favorable decision will redress the injury.²⁶⁷ The prudential standing requirements include: 1) a person not resting his claims on the rights of third parties; 2) a complaint not of a “generalized grievance;” and 3) the complaint must fall within the plaintiff’s “zone of interests.”²⁶⁸ “Political, environmental, aesthetic, and social interests, when impaired, now afford a basis for making constitutional attacks upon governmental action.”²⁶⁹

The Louisiana Coastal Zone contains features that may facilitate standing for citizen suit plaintiffs. These include a flat, low-lying coastal plain, high rates of sedimentary subsidence, accelerated coastal erosion, and a geographic location prone to hurricane impacts. Pre-storm suits based on permit non-compliance against Louisiana coastal facilities may overcome the imminence threshold for future injury, because the question is not whether a storm will come, but *when*. Many coastal facilities already suffered damage in hurricanes and other tide- and storm-related events. In addition, NOAA indicated that Louisiana contains the highest rates of relative sea level rise in the United States, making low-lying facilities

263. See 42 U.S.C. § 6972(a); 33 U.S.C. § 1365(a).

264. See, e.g., *Steel Co. v. Citizens for a Better Env't*, 523 U.S. 83, 102 (1998) (“Standing to sue is part of the common understanding of what it takes to make a justiciable case.”).

265. *RCRA as a Tool for Environmental Justice Communities and Others to Compel Climate Change Adaptation*, *supra* note 260, at 2418.

266. See *ArtIII.S2.C1.6.1 Overview of Standing*, CONGRESS.GOV: CONST. ANNOTATED, https://constitution.congress.gov/browse/essay/artIII-S2-C1-6-1/A_LDE_00012992/ [<https://perma.cc/8FDZ-7J44>] (last visited Jan. 20, 2023) (describing standing requirement in federal court).

267. *Id.*

268. *Valley Forge Christian Coll. v. Ams. United for Separation of Church and State*, 454 U.S. 464, 474-75 (1982).

269. *ArtIII.S2.C1.6.1 Overview of Standing*, *supra* note 266.

especially vulnerable to storm damage.²⁷⁰ This raises the risk of environmental damage when such facilities fail to comply with their permits. In addition, permit-based compliance suits focus on potential injury within a specific geographic area, which means that a party with interest in that area should successfully overcome the “generalized grievance” requirement.

Citizen group standing was one issue in a recent suit reviewed by the United States Court of Appeals for the First Circuit. Judicial review of the issues in *Conservation Law Foundation (CLF) v. ExxonMobil (Exxon) Corp.* indicates that some courts will consider the failure of these facilities to adapt to climate change as part of a cognizable harm.²⁷¹ In 2016, the CLF filed a complaint against Exxon, alleging one RCRA violation and 13 violations of the CWA.²⁷² CLF amended the complaint about a year later to add a second RCRA violation.²⁷³ The U.S. District Court responded to Exxon’s motion to dismiss by summarily dismissing three of the counts alleged by CLF,²⁷⁴ including one RCRA violation for lack of standing,²⁷⁵ and two CWA violations.²⁷⁶ Exxon moved to stay the case until the EPA reviewed their permit, relying on the primary jurisdiction doctrine.²⁷⁷ The district court granted Exxon’s motion to stay after analyzing the request based on the factors established in *Massachusetts v. Blackstone Valley Elec. Co.* (the “Blackstone factors”).²⁷⁸

270. *Coastal Louisiana Added to NOAA Sea Level Rise Viewer*, *supra* note 245 (indicating that parts of coastal Louisiana have the highest recorded relative sea level rise in the United States).

271. *See, e.g., Conserv. L. Found., Inc. v. ExxonMobil Corp.*, 3 F.4th (1st Cir. 2021).

272. Complaint for Declaratory and Injunctive Relief, *Conserv. L. Found., Inc. v. ExxonMobil Corp.*, No. 1:16-CV-11950 (D. Mass. Sep. 29, 2016), 2016 WL 5426194.

273. Amended Complaint for Declaratory and Injunctive Relief, *Conserv. L. Found, Inc. v. ExxonMobil Corp.*, No. 1:16-CV-11950 (D. Mass. Oct. 20, 2017).

274. Memorandum and Order, *Conserv. L. Found., Inc. v. ExxonMobil Corp.* (D. Mass. May 6, 2019), 2019 WL 7598579.

275. *RCRA as a Tool for Environmental Justice Communities and Others to Compel Climate Change Adaptation*, *supra* note 260, at 2418.

276. Memorandum and Order, *Conserv. L. Found., Inc. v. ExxonMobil Corp.* (D. Mass. May 6, 2019), 2019 WL 7598579.

277. *Conserv. L. Found., Inc. v. ExxonMobil Corp.*, 448 F. Supp. 3d 7, 12 (D. Mass 2020).

278. *Id.* at 26. The *Blackstone* factors are considerations identified by the First Circuit Court of Appeals in *Massachusetts v. Blackstone Valley Elec. Co.*, 67 F.3d 981 (1st Cir. 1995) to determine “whether the primary jurisdiction doctrine justifies a stay.” *Conserv. L. Found., Inc.*, 448 F. Supp. 3d at 14. The *Blackstone* factors are “whether: (a) ‘the agency determination [i]es] at the heart of the task

The First Circuit found the district court's rationale "unconvincing,"²⁷⁹ and ruled that "the *Blackstone* factors do not weigh in favor of the stay envisioned by the district court."²⁸⁰ The First Circuit found the third *Blackstone* factor "especially salient in this case. Whether and on what terms EPA issues the permit for the Everett terminal seems to us largely irrelevant to whether ExxonMobil has violated the conditions of the permit currently in effect."²⁸¹ The First Circuit opined that the *Blackstone* factors do not weigh in favor of the stay granted by the district court.²⁸² After observing that the parties had not begun discovery and that "discovery and briefing on summary judgment would take over a year,"²⁸³ the First Circuit vacated the stay and remanded the case to the district court to continue proceedings in the case.²⁸⁴ The First Circuit found that staying the case so the EPA could issue a new permit with a heavier climate change focus would not help the district court resolve the injunctive and declaratory requests put forth by CLF.²⁸⁵

Of the 15 original complaints, 12 survived Exxon's motion to dismiss, including one RCRA violation claim.²⁸⁶ The court did not see standing as an obstacle for the surviving claims. Failure to prepare for climate change is a common thread throughout the complaints.²⁸⁷ With the stay order vacated, the parties now have an opportunity to try the case on the merits. Citizen suits to enforce EPA regulations that survive the standing test tend to last for years, and *CLF v. ExxonMobil* is no exception. The U.S. District Court for the District of Massachusetts issued an order for the parties to confer and propose a schedule for discovery on December 22, 2021, five and a half years after filing of the original complaint.²⁸⁸

assigned the agency by Congress'; (b) 'agency expertise [i]s required to unravel intricate, technical facts'; (c) 'the agency determination would materially aid the court'; and (d) deference to the agency would 'serve the interest of national uniformity in regulation.'" *Id.* (quoting *Blackstone*, 67 F.3d at 992).

279. *Conservation L. Found., Inc.*, 3 F.4th at 74.

280. *Id.* at 74–75.

281. *Id.* at 73.

282. *Id.* at 74–75.

283. *Id.* at 75.

284. *Id.*

285. *Id.* at 74.

286. Memorandum and Order, *Conservation L. Found, Inc. v. ExxonMobil Corp.* (D. Mass. May 6, 2019), 2019 WL 7598579.

287. See Amended Complaint for Declaratory and Injunctive Relief, *Conservation L. Found., Inc. v. ExxonMobil Corp.*, No. 1:16-CV-11950 (D. Mass. Oct. 20, 2017).

288. Memorandum and Order, *Conservation L. Found., Inc. v. ExxonMobil Corp.*, C.A. No. 16-11950-MLW (D. Mass. Dec. 22, 2021). For an overview of

The statutory notice requirement prompts agency action. While some complain it burdens citizen engagement, it directs the enforcement of the regulations to those theoretically most qualified to deal with the issue.²⁸⁹ If the agency takes action, citizens have the right to intervene in a suit commenced by the government, which facilitates citizen engagement in the enforcement process.²⁹⁰ However, when agencies refuse or neglect to act pursuant to notice of a citizen suit, the citizen may continue prosecuting the suit without interference from the agencies.²⁹¹

A. Citizen Intervention in Government-initiated Civil Actions.

To make up for the fact that no citizen suit may be brought after the Administrator or a state commences and diligently prosecutes an action to enforce the CWA or RCRA, the statutes give citizens the right to intervene in civil actions initiated by the Administrator or a state against permit violators.²⁹² The CWA gives this right without restriction.²⁹³ However, Congress was not as generous when it enacted RCRA.²⁹⁴ RCRA allows any citizen to intervene as a matter of right when another citizen initiates an enforcement suit,²⁹⁵ but places the following conditions on intervening in a suit brought in federal court by the Administrator or a State: “any person may intervene as a matter of right when the applicant claims [1] an interest relating to the subject of the action and [2] he is so situated that the disposition of the action may, as a practical matter, impair or impede his ability to protect that interest.”²⁹⁶ This bars even a would-be intervenor who qualifies under the above standard, if “the Administrator or the State shows that the applicant’s interest is adequately represented by existing

case progress, see *Conservation Law Foundation v. ExxonMobil Corp.*, SABIN CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case/conservation-law-foundation-v-exxonmobil-corp/> [<https://perma.cc/YM4L-X7TH>] (last visited Jan. 20, 2023).

289. See Jacob Creuder, *Amazing Grace or Sad Disgrace: Can the Clean Water Act Evolve to Provide Stronger Protection in the Wake of Natural Disasters*, 14 U. BALT. J. ENVTL. L. 101, 118 (2007).

290. 33 U.S.C. § 1365(b)(1)(B).

291. See Flatt, *supra* note 9. Flatt discusses the opinion in *Util. Air Reg. Group v. EPA*, 573 U.S. 302, including their note that the EPA affirmed that citizen suits “cannot be displaced by a permitting authority’s decision not to pursue enforcement.” *Util. Air Reg. Group*, 573 U.S. at 327.

292. See 33 U.S.C. § 1365(b)(1)(B).

293. *Id.*

294. See 42 U.S.C. § 6972(b).

295. *Id.* § 6972(b)(1).

296. *Id.* § 6972(b)(2)(E).

parties.”²⁹⁷ This right may be further complicated when enforcement authority has been delegated to a certified State agency and the action is brought in State court.²⁹⁸

Even though RCRA does not allow for just “any citizen to intervene as a matter of right,”²⁹⁹ seemingly barring intervention in government-initiated actions, citizens affected by a permit violation or non-compliance should not be deterred from filing a motion to intervene. Federal Rules of Civil Procedure Rule 24(a) provides an “intervention of right” on timely motion.³⁰⁰ A U.S. District Court “must permit anyone to intervene” who: (1) is given an unconditional right to intervene by statute; or (2) “claims an interest relating to the property or transaction that is the subject of the action, and is so situated that disposing of the action may as a practical matter impair or impede the movant’s ability to protect its interest, unless existing parties adequately represent that interest.”³⁰¹ As noted above, the CWA gives an unconditional right to any citizen, and RCRA expressly gives the intervention right detailed by Rule 24(a)(2).³⁰² A citizen without a statutory right to intervene may still be able to secure a “permissive intervention” on a timely motion under Rule 24(b). Permissive intervention gives the court discretion to allow anyone to intervene who: (a) has a conditional right to intervene granted by federal statute or (2) “has a claim or defense that shares with the main action a common question of law or fact.”³⁰³

Intervention can play an important role in the enforcement process. Perhaps most critical is an intervenor’s interest in effective enforcement, which can increase the likelihood of a meaningful settlement. In one case, the U.S. District Court for the District of Delaware determined that a proposed consent decree between the State and the defendant could prevent the intervening citizen’s group from obtaining effective remedial measures, finding “that disposition of this action ‘may, as a practical

297. *Id.*

298. *See, e.g.*, 46 SUZANNE MURRAY & CARLOS CARRASCO, TEXAS ENVIRONMENTAL LAW § 34:2 (2d ed. 2021) (Chapter 34, Citizen Suits and Public Participation). Texas has given limited rights in citizen suits to enforce environmental laws, including restricting the right to intervene in government-initiated actions.

299. 33 U.S.C. § 1365(b)(1)(B).

300. FED. R. CIV. P. 24(a).

301. *Id.*

302. Some courts have interpreted the RCRA provision as giving an unconditional right under Rule 24(a)(1); *see* Dep’t of Nat. Res. & Env’t Control v. Mountaire Farms of Del., 375 F. Supp. 3d 522, 530–31 (D. Del. 2019).

303. FED. R. CIV. P. 24(b).

matter, impair or impede' the Intervenor's ability to protect their interest."³⁰⁴ In another case, the U.S. District Court for the District of Massachusetts found that an intervening group filed a timely motion for permissive intervention over three years after the State commenced the action—after the State and the defendant had negotiated a proposed settlement.³⁰⁵ “[U]pon review of that proposed settlement, the [intervenor] apparently believed the settlement to be a betrayal,” and proceeded to intervene, which prompted judicial review of the consent decree.³⁰⁶

Citizens affected by an industrial permittee's violation of its permit should consider intervening in a government enforcement action.³⁰⁷ The CWA provides an unconditional right to do so. RCRA provides some restraints on the right to intervene, and courts have reached varying conclusions on the application of these restraints. Citizens in areas that are most likely to be exposed to environmental upsets due to climate change effects should not be deterred by past court resistance to RCRA intervention. As sea levels and the frequency of strong hurricane impacts continue to rise, such citizens should have a strong case that “disposing of the action may, as a practical matter, impair or impede the movant's ability to protect its interest,” and at least be able to push the existing parties to “adequately represent that interest.”³⁰⁸

304. *Dep't of Nat. Res. & Env't Control*, 375 F.Supp.3d at 531, quoting 42 U.S.C. § 6972(b)(2)(E).

305. *In re Achushnet River & New Bedford Harbor: Proceedings re Alleged PCB Pollution*, 712 F. Supp. 1019 (D. Mass. 1989).

306. *Id.* at 1023. *Aschushnet River* was based on a CERCLA consent decree, but it illustrates the consideration given to permissive intervenors and the subsequent judicial review of a settlement between the State and the defendant company.

307. For the procedural and substantive considerations that competent counsel should consider when given the prospect of intervening in a government RCRA enforcement action, see William B. Johnson, *Right to Intervene in Federal Hazardous Waste Enforcement Action*, 100 A.L.R 35 (2021); Karen A. Gottlieb, *How Does RCRA Empower Citizen Suits* in TOXIC TORTS PRACTICE GUIDE § 8.14 (2021). *The Resource Conservation and Recovery Act* in TOXIC TORTS PRACTICE GUIDE § 8:14 (2021-2022); Caroline N. Broun, Esq. & James T. O'Reilly, *RCRA CITIZEN SUITS—INTRODUCTION, RCRA AND SUPERFUND: A PRACTICE GUIDE* IN § 5:31 (3d ed. 2021). For a call to “further strengthen RCRA . . . and apply only a minimal burden test when assessing citizens' rights to intervene in an EPA-initiated RCRA enforcement action,” see Jonathan York, *The Next Step in Revitalizing RCRA: Maine People's Alliance and the Importance of Citizen Intervention in EPA Actions*, 35 *ECOLOGY L.Q.* 405 (2008).

308. 42 U.S.C. § 6972(b)(2)(E).

B. A Summary of Citizen Enforcement of the CWA and RCRA

While citizen suits provide the potential for broader enforcement of permits and violations of the CWA and RCRA, they are not without their shortcomings. In particular, the time it takes to prosecute citizen suits can be substantial. *CLF v. ExxonMobil* has been underway since September 2016 and was finally allowed to proceed to discovery in July of 2021, with an order to schedule discovery in December of 2021. Ordinary citizens are unlikely to have the patience, funding, or stamina to prosecute a similar case. Conservation groups such as CLF are left to fill the gap, which they attempt to do. For example, CLF recently initiated additional actions against two other industrial players for violations of the CWA and RCRA, with a heavy emphasis on the dangers posed by their respective facilities in light of climate change.³⁰⁹

In Louisiana, citizen suits to enforce environmental permits are uncommon, and none have been filed with a climate change emphasis within the last ten years.³¹⁰ As a result, many climate-related risks have likely gone unaddressed. RCRA allows any person to commence a civil action on his own behalf against any person, including the federal government or any other governmental entity, for violating the applicable regulations,³¹¹ or contributing to the “handling, storage, treatment, transportation, or disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment.”³¹² Citizens can also sue the Administrator when the Administrator allegedly does not perform a non-discretionary act required under RCRA.³¹³ The statute does not indicate whether the administrator of a state-authorized program may also be sued if the state fails to perform a non-discretionary act. Citizens can sue states for state facility violations,

309. See Complaint and Jury Demand, Conservation L. Found. v. Shell Oil Co., No. 3:21-CV-00933 (D. Conn. July 7, 2021) (alleging 14 violations of the CWA or RCRA at Shell’s New Haven, Conn. Terminal); and Complaint and Jury Demand, Conservation L. Found. v. Gulf Oil Ltd. P’ship, No. 3:21-CV-00932 (D. Conn. July 7, 2021) (alleging 18 violations of CWA or RCRA at Gulf Oil’s New Haven, Conn. Terminal).

310. Based on a review of the U.S. Climate Change Litigation cases for both federal and state law claims at *U.S. Climate Change Litigation*, SABINE CTR. FOR CLIMATE CHANGE L., <http://climatecasechart.com/case-category/state-law-claims/> [https://perma.cc/JCH8-EH75] (last visited Jan. 23, 2023).

311. 42 U.S.C. § 6972(a)(1)(A).

312. *Id.* § 6972(a)(1)(B).

313. *Id.* § 6972(a)(2).

and the statutes delegate the enforcement to authorized state agencies.³¹⁴ By extension, an authorized state agency should be a viable defendant where violations are unenforced. However, the statutes specifically name the Administrator of the EPA as a defendant when the suit alleges that the Administrator failed to perform any act or duty in the statutes, without reference to the authorized state program.³¹⁵

One effective change to citizen suit provisions for Gulf Coast residents would be to include express language in the statutes and regulations acknowledging the imminent danger of damage to regulated coastal facilities posed by climate change effects on the Gulf Coast such as sea level rise, reduced storm buffer, and increased storm frequency and intensity. This would provide a statutory grant of standing to citizens who reside within a reasonable distance of the permitted coastal areas in Louisiana or near other Gulf Coast facilities they seek to enjoin or punish. Another effective change would be to limit the procedural remedies available to block suit progress so cases may be tried on the merits more expeditiously and efficiently than the current status quo.

V. A THREE-PRONGED APPROACH TO INCREASE ACCOUNTABILITY OF ENERGY AND INDUSTRIAL FACILITIES AND IMPOSE LIABILITY FOR POOR PERFORMANCE.

To more effectively prevent accidental releases of toxic material, a combination of the options discussed above should be employed to strengthen the law, engage the community, and allow citizens a greater say.

First, the EPA should consistently enforce permit restrictions and other requirements, only providing waivers when it is clear that there is no other reasonable alternative. The combination of providing opportunities to improve goodwill and consistently holding permittees accountable for compliance and permit violations will send the message that the government is serious about environmental protection, while administering the regulations fairly and consistently across the permitted parties. Increased consistency will clarify expectations and reduce violations overall. Federal and state agencies should act to compel facilities to adapt their planning for climate-change-fueled disturbances, improve monitoring, provide better oversight, protect vulnerable communities, and penalize infractions through fines or permit suspensions to provide clearer regulatory guidance and accountability to industry

314. *See, e.g., id.* § 6972(a)(1)(A).

315. 33 U.S.C. § 1365(a)(2); 42 U.S.C. § 6972(a)(2).

players. In other words, more rigorous, consistent public enforcement of existing EPA regulations is in order, as is adjusting regulations that are inadequate for increased climate volatility.

The CWA, RCRA and state equivalent regulations should be reinforced with a renewed emphasis on the original purposes of the Acts, including industry engagement and partnering with permittees to fix the problem of pollution.³¹⁶ Statutory and regulatory changes should include risk-based analyses of climate change and the various particularities of the regulated location. FAMS can alleviate concerns about burdensome impacts to coastal industries from corrective actions and fines to clean up spills after hurricanes.³¹⁷ Private insurance companies with an interest in providing financial assurance to coastal industry will be motivated to understand the risks involved and the potential liability associated with climate change. In order to reduce the insurance company's liability for environmental upsets during storms, private insurance companies are likely to adjust their premiums according to the climate change risks a given facility is exposed to, thereby motivating industry to improve coastal facility safeguards or move to safer locations.

Second, the government should seek to improve stakeholder engagement, including recruiting industrial players to develop and implement better monitoring and compliance technologies, providing better citizen engagement through public outreach, and promoting partnerships between industry, conservation organizations, government, insurance providers, and citizens to find solutions to these persistent problems. The law is only effective if it is understandable and consistently enforced. Partnering with industry, environmental groups, insurers, and community organizations to provide training and education for facilities subject to the updated conditions and communities affected by noncompliance will provide clearer regulatory guidance and accountability to industry players and other stakeholders. The EPA has already begun to commit to community engagement through their Climate Adaptation Plan.³¹⁸ A robust collaborative effort between stakeholders should help strengthen protections provided by the CWA and RCRA by improving planning efforts and providing a clearer view of the impacts to communities around the facility. To accomplish this, the EPA and corresponding state agencies should pursue renewed engagement of

316. See, e.g., *25 Years of RCRA: Building on Our Past to Protect Our Future*, *supra* note 137, at 2. RCRA was enacted to protect human health and the environment by reducing the risk from waste, at least in part by pursuing and promoting partnerships with states, tribes, industry, and the public.

317. See Arnold, *supra* note 226, at 278–79.

318. *Climate Adaptation Action Plan*, *supra* note 202, at 7.

industry and the public about the purposes behind the laws and the need to work toward the common goals of improved health and safety of the people and the environment. This should include seeking new technological solutions to handle, recycle, and store hazardous materials more effectively; incentivize better industrial citizenship and accountability; and seek industry partnership in improving the surrounding community's health and welfare. Industry will likely respond positively when given the chance to garner goodwill with the government, especially where there is clear intent from the government to administer stricter enforcement. The alternative to such industry collaboration is permit revocation or steep fines, neither of which foster goodwill between the permittees and the government, nor between the public and the industrial permit holders. Government agencies should collaborate with regulated facilities to develop and implement better monitoring and compliance technologies. Agencies should also require facilities to engage in more active and inclusive citizen engagement through public outreach, promoting partnerships between industry, conservation organizations, and citizens to find solutions to persistent problems. Such coalitions should result in better public awareness, improved waste management practices, better monitoring and reporting of permit-limited constituents, and better resolution of problems that arise.

Third, leveraging citizen experience and observations through the use of citizen suit provisions in the CWA and RCRA can further reinforce existing permits and penalize permit violations. In order to make citizen suits more effective, standing thresholds for those in harm's way should allow citizens in areas most affected by climate change, including the Gulf Coast, to pursue CWA and RCRA enforcement actions, even if the future harm is not "imminent."³¹⁹ Also, procedural obstacles that draw out the litigation process should be adapted to shorten the amount of time required to prosecute a citizen suit. Even without the suggested changes, and in spite of recent criticisms and calls for expansion of citizen suit provisions in CWA and RCRA, the EPA has given citizens a robust tool to participate in the enforcement process through the courts, subject to the limitations and notice provisions in the statutes.³²⁰ Citizens have a right to engage, and they can join the government in actions that affect them against persons who have violated the regulations. Such citizen joinder may put

319. *Imminent*, BLACK'S LAW DICTIONARY (11th ed. 2019). When referring to danger, imminent means "threatening to occur immediately; dangerously impending;" or "about to take place."

320. See, e.g., *RCRA as a Tool for Environmental Justice Communities and Others to Compel Climate Change Adaptation*, *supra* note 260; Creuder, *supra* note 289, at 119–20.

additional pressure on the permit violator to correct the violation and provide more opportunities for civic involvement for the affected citizen groups.

The three prongs discussed in this section are ambitious, and no single prong is perfect. It is tempting to try to focus on a single prong to either promote its virtues or pick apart its flaws. A more singular approach would produce a clearer focus and provide a deeper understanding of each point, but that is outside the scope of this comment. The primary difficulty with this proposal is that the interplay of the three prongs involves a balancing act and the cooperation of all parties. Because the world outside of this Comment involves many individuals, each of whom seeks his own benefit and sometimes fails to act reasonably, this is a difficult balance to strike. In addition, each of the individual items has potentially fatal flaws, including reliance on the whims of Congress to enact improved CWA and RCRA statutes that are sensitive to increased climate change risks and reliance on separate parties to cooperate to provide consensus, innovation, instruction, and goodwill when some of the involved parties are at odds.³²¹ Citizen suits are costly, time-intensive, and subject to various procedural obstacles that frustrate the enforcement purposes of the citizen-suit provisions.

If executed well, the three-pronged approach will provide a better, safer coast for all. It will take energy, patience and focus for the Administrator to execute the program. If executed poorly, the three-pronged approach is not likely to provide a substantial benefit.

CONCLUSION

Louisiana is on the front lines of increased tropical volatility as climate change progresses. The state and its residents will increasingly rely on emergency waivers to revive industry systems and restore communities after major storms. Louisiana has tolerated elevated pollution levels and the risks of industrial accidents in the name of growth and economic stability through industry.³²² As a common hurricane target and a friend of industry, Louisiana is well-positioned to pilot changes in the application of regulatory adjustments moving forward. State and federal regulations should be examined and amended to provide better guidelines for the

321. In particular, coastal industry and conservation groups that are generally antagonistic to each other would have to bury the hatchet long enough to develop plans to improve safety and health in the community by preventing toxic releases.

322. For a discussion of how recent announcements by Louisiana Governor John Bel Edwards are stepping up the effort to reduce the carbon impact of Louisiana's energy industry, see Wendland, *supra* note 184.

protection of environmental resources as the climate continues to change. The federal government and Louisiana state agencies should engage with industry partners and citizens to focus on common goals and common good, to improve goodwill among the stakeholders, compliance, and implement techniques and procedures for more effective reuse, treatment, or disposal of hazardous materials to avoid any problems during climate catastrophes. Citizen awareness and engagement in citizen suits can also provide an effective tool to compel compliance for reticent industrial facilities and address harms caused by permit violations.

The three-pronged approach advocated in this Comment provides both the carrot of increased engagement and goodwill and the stick of more consistent accountability and enforcement through agency action and citizen suits. In order to prevent accidental releases of toxic material, a combination of these three prongs should be employed to strengthen the law, engage the community, and allow citizens a greater say in the health and safety of their environment. First, reinforce the CWA, RCRA and equivalent state regulations to plan for climate-change-fueled disturbances and risks, improve monitoring requirements and oversight, increase protections for vulnerable communities, and penalize infractions through fines or permit suspensions. This should provide clearer regulatory guidance and accountability to industry players. Second, foster broad stakeholder engagement to improve communication and reporting, community outreach, planning, monitoring technologies, and generation and storage practices. This should improve cooperation, increase agency and industry goodwill, and reduce the risk of inadvertent releases through incremental improvements informed by conservation groups, insurance companies, and community residents. Third, strengthen citizen-suit provisions and actions to provide greater access to Gulf Coast residents and citizen groups to compel compliance or penalize violations when government action is too slow or the agencies have used their discretion to abstain from enforcement. This will add an additional avenue of accountability for facilities that fail to adequately adapt their practices to increased climate risks. Implementing these three changes will provide greater assurances that environmental damage will be reduced or avoided altogether the next time a hurricane collides with the coast.