

NATIONWIDE PERMIT 13, SHORELINE ARMORING, AND THE IMPORTANT ROLE OF THE U.S. ARMY CORPS OF ENGINEERS IN COASTAL CLIMATE CHANGE ADAPTATION

BY

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The ongoing armoring of the nation’s coastlines with seawalls and bulkheads causes the inevitable destruction of miles of coastal wetlands. Armoring increases the rate of shoreline erosion and blocks the long term migration of wetlands inland, a process that will be necessary for coastal wetlands to survive sea level rise. Coastal armoring also reduces the habitat available to coastal species, and blocks access to the upper reaches of the beach for sea turtles and other species that depend on the beach for nesting. And yet, despite these well established and significant environmental harms, the United States Army Corps of Engineers currently authorizes the construction of bulkheads and seawalls up to five-hundred feet in length through a general permit—Nationwide Permit 13—that does not even require property owners to notify the United States Army Corps of Engineers before beginning construction. Under the Clean Water Act, such general permits are only authorized for activities that have “minimal adverse environmental effects.” This Article explains why Nationwide Permit 13 is unlawful under the Clean Water Act, and how Nationwide Permit 13 acts to encourage coastal development and undermine the adoption of less environmentally damaging erosion control measures, such as living shorelines. In addition, this Article argues that the upcoming reissuance of Nationwide Permit 13 in 2017 presents a crucial opportunity for the United States Army Corps of Engineers to change its approach to coastal armoring permits and assume an important role in administering a federal program of coastal climate change adaptation.

I. INTRODUCTION.....538
II. CLEAN WATER ACT SECTION 404 PERMITS: THE STATUTORY AND REGULATORY FRAMEWORK.....543
A. Individual Permits.....546
B. General Permits.....547
III. THE ENVIRONMENTAL IMPACT OF SHORELINE ARMORING550

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	A.	<i>The Physical Effects of Coastal Armoring</i>	551
	B.	<i>The Ecological Effects of Coastal Armoring</i>	552
	C.	<i>The Economic Effects of Coastal Armoring</i>	553
	D.	<i>The Impact of Climate Change on Coastal Armoring</i>	554
IV.		THE 2012 REISSUE OF NATIONWIDE PERMIT 13 AND RECENT LITIGATION.....	555
	A.	<i>The Corps' Findings Regarding Minimal Cumulative Environmental Impact of Nationwide Permit 13</i>	555
	B.	<i>The Legal Challenge to Nationwide Permit 13</i>	560
V.		THE REGULATORY IMPACT OF NATIONWIDE PERMIT 13 ON COASTAL ARMORING	562
	A.	<i>Nationwide Permit 13 Enables Coastal Armoring and Encourages Coastal Development</i>	563
	B.	<i>Neither Nationwide Permit 13 nor the Proposed Nationwide Permit B Sufficiently Encourage Soft Armoring Approaches to Shoreline Armoring</i>	566
VI.		REFORMING NATIONWIDE PERMIT 13 TO ENCOURAGE POSITIVE SEA LEVEL RISE ADAPTATION	569
	A.	<i>The Corps Should No Longer Provide a General Permit for Hard Coastal Armoring Structures</i>	571
	B.	<i>The Corps Should Modify Nationwide Permit 13 to Better Evaluate and Protect Against Cumulative Environmental Harms</i>	573
VII.		CONCLUSION	575

I. INTRODUCTION

The sea is rising at a rate unprecedented in modern history, reshaping the coastline of the United States.¹ With rapid sea level rise comes persistent coastal flooding, devastating storm surges, and increased erosion.² In the face of these threats, landowners along the nation's oceans, bays, and estuaries have increasingly begun to install hard coastal armoring, such as seawalls and bulkheads, to protect against erosion.³ And as the population

¹ U.S. GLOB. CHANGE RESEARCH PROGRAM., CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE CHANGE ASSESSMENT 44 (Jerry M. Melillo, Terese (T.C.) Richmond, & Gary W. Yohe eds., 2014) [hereinafter USGCRP], available at http://nca2014.globalchange.gov/system/files_force/downloads/low/NCA3_Climate_Change_Impacts_in_the_United%20State_s_LowRes.pdf?download=1; see also Justin Gillis, *Greenhouse Gas Linked to Floods Along U.S. Coasts*, N.Y. TIMES, Feb. 23, 2016, at A1 (reporting that tidal floods along the coast will worsen in the following decades).

² See USGCRP, *supra* note 1, at 9.

³ See Niki L. Pace, *Wetlands or Seawalls? Adapting Shoreline Regulation to Address Sea Level Rise and Wetland Preservation in the Gulf of Mexico*, 26 J. LAND USE & ENVTL. L. 327, 328 (2011) (describing increasing pressures on regulators to allow coastal armoring); see also Serena L. Liss, *Shoreline Armoring and the Public Trust Doctrine: Balancing Public and Private*

along the coast continues to grow at an accelerating rate, the pressure to armor the coasts only intensifies.⁴

However, while coastal armoring provides property owners with temporary protection from erosion, it comes at great environmental cost. Numerous studies have shown that the widespread installation of coastal armoring has a significant cumulative effect on coastal environments.⁵ Armoring accelerates the rate of erosion seaward of the armoring, resulting in the ultimate destruction of the beach.⁶ Moreover, armoring redirects the deflected wave energy to the sides of the sea wall, resulting in exaggerated erosion at the periphery of the armoring, damaging neighboring properties.⁷ Finally, seawalls and bulkheads prevent the long term migration of coastal wetlands inwards, leading to the permanent destruction of wetlands that would otherwise adapt to the changing shoreline.⁸ Each of these effects will only be exacerbated by the accelerating sea level rise caused by climate change.

Despite these well-documented environmental harms, the United States Army Corps of Engineers (the Corps), has long facilitated the rapid armoring of coastal wetlands by providing expedited permitting for the construction of “bank stabilization” structures through Nationwide Permit 13 (NWP 13),⁹ a general permit under section 404(e) of the Clean Water Act (CWA).¹⁰ NWP 13 allows a coastal property owner to construct a bulkhead or seawall up to five-hundred feet in length—nearly the length of two football fields—without having to provide any notification to the Corps, let alone undergo the time consuming and costly process of obtaining an individual permit under

Interests as Seas Rise, 46 ENVTL. L. REP. NEWS & ANALYSIS 10033, 10034 (2016) (discussing the effect of population growth on rates of coastal armoring). This Article uses the terms “shoreline” or “coastal armoring” to describe hard structures such as bulkheads and seawalls used to control erosion of the shore.

⁴ See USGCRP, *supra* note 1, at 581 (“Each year, more than 1.2 million people move to the coast.”).

⁵ See, e.g., Megan N. Dethier et al., *Multiscale Impacts of Armoring on Salish Sea Shorelines: Evidence for Cumulative and Threshold Effects*, 175 ESTUARINE, COASTAL & SHELF SCI. 106, 115 (2016) (finding based on a quantitative study of beaches in Puget Sound that the local effects of shoreline armoring scale up to have cumulative effects on the entire coastal ecosystem).

⁶ See Pace, *supra* note 3, at 338–39 (explaining that this process is known as the “bathtub effect” because after the destruction of the beach in front of the armoring, waves “lap against the bulkhead rather than a sloping shoreline” like water in a bathtub).

⁷ MOLLY L. MELIUS & MARGARET R. CALDWELL, 2015 CALIFORNIA COASTAL ARMORING REPORT: MANAGING COASTAL ARMORING AND CLIMATE CHANGE IN THE 21ST CENTURY 9 (2015), available at <http://law.stanford.edu/wp-content/uploads/2015/07/CalCoastArmor-FULL-REPORT-6.17.15.pdf>.

⁸ J.G. Titus et al., *State and Local Governments Plan for Development of Most Land Vulnerable to Rising Sea Level Along the U.S. Atlantic Coast*, 4 ENVTL. RES. LETTERS, Oct.–Dec. 2009, no. 044008, at 2, 5.

⁹ See Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, 10,272–73 (Feb. 21, 2012) (allowing construction of a bulkhead or seawall without having to obtain an individual permit if the activity meets the requirements of Nationwide Permit 13).

¹⁰ Federal Water Pollution Control Act, 33 U.S.C. §§ 1251–1387 (2012). Section 404(e) is codified at *id.* § 1344(3).

section 404.¹¹ Because many states also provide expedited permitting for armoring, property owners can often build bulkheads and seawalls in the sensitive coastal wetlands of the waters of the United States with little or no environmental review.¹²

This expedited permitting by the Corps is contrary to section 404 of the CWA, which only authorizes the Corps to issue a general permit when the permitted activities result in “minimal adverse environmental effects” either individually or cumulatively.¹³ Recently, a number of environmental groups challenged the Corps’ finding that NWP 13 has minimal cumulative environmental effects in a lawsuit filed in the United States District Court for the District of Columbia.¹⁴ As this Article discusses further in Part III.A–B, the environmental groups convincingly demonstrated that the Corps failed to consider the extensive scientific data showing the negative environmental impact of armoring, and also failed to examine the impact of sea level rise on coastal armoring. However, despite the strong evidence that the issuance of NWP 13 was arbitrary and capricious under the Administrative Procedure Act,¹⁵ the environmental groups’ case failed for lack of standing.¹⁶

Regardless of the outcome of that litigation, the environmental groups’ challenge to NWP 13 highlights the importance of the upcoming reissuance of the Corps’ general permits in 2017.¹⁷ Under the general permit program the Corps is required to reissue and update its general permits every five years.¹⁸ The upcoming reissuance of the permits is a crucial opportunity for the Corps to change course, and to avoid the permanent destruction of coastal wetlands that will occur if property owners along the coasts continue to respond to climate change by armoring the coast. As United States Environmental Protection Agency (EPA) sea level rise expert, James Titus, has explained, “[t]he most important step that EPA and Corps of Engineers

¹¹ See U.S. ARMY CORPS OF ENG’RS, DECISION DOCUMENT NATIONWIDE PERMIT 13, at 9, 20, 26 (2012) [hereinafter NWP 13 DECISION DOCUMENT], available at http://www.usace.army.mil/Portals/2/docs/civilworks/nwp/2012/NWP_13_2012.pdf. For discussion of the cost and difficulty of applying for an individual permit under section 404 of the CWA, see *infra* notes 58–61 and accompanying discussion.

¹² See, e.g., U.S. ARMY CORPS OF ENG’RS, GENERAL PERMITS FOR MINOR STRUCTURES AND ACTIVITIES IN THE STATE OF MISSISSIPPI AND OUTER CONTINENTAL SHELF WATERS OFF THE COAST OF MISSISSIPPI WITHIN THE REGULATORY BOUNDARIES OF THE MOBILE DISTRICT, U.S. ARMY CORPS OF ENGINEERS 6 (2013) available at <http://www.dmr.state.ms.us/images/permitting/final-2013-msgp.pdf> (providing general permit for bulkheads up to 1,000 feet in length); Trista Talton, *Living Shorelines: Better Than Bulkheads*, COASTAL REV. ONLINE, Feb. 8, 2016, <http://www.coastalreview.org/2016/02/12896/> (last visited July 16, 2016) (stating that permits to construct bulkheads in North Carolina “are issued within a matter of days.”).

¹³ 33 U.S.C. § 1344(e)(1) (2012).

¹⁴ Complaint ¶¶ 1, 5, *Nat’l Wildlife Fed’n v. U.S. Army Corps of Eng’rs*, No. 14-cv-01701 (JDB), 2016 WL 1048767 (D.D.C. Mar. 14, 2016).

¹⁵ 5 U.S.C. §§ 557–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2012).

¹⁶ *Nat’l Wildlife Fed’n*, 2016 WL 1048767, at *6–7.

¹⁷ The current nationwide permits expire on March 18, 2017. Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, 10,184 (Feb. 21, 2012).

¹⁸ 33 U.S.C. § 1344(e)(2) (2012) (setting the maximum general permit length at five years).

could take [to protect coastal wetlands from erosion caused by sea level rise] would be to revise the nationwide permit for bulkheads.”¹⁹ Unfortunately, however, the Corps’ draft proposal to reissue the nationwide permits in 2017 contains no substantive modifications to NWP 13.²⁰ Unless the Corps changes the permit now, NWP 13 will continue violate the CWA and cause significant environmental harm.

In its present form, NWP 13 produces two major regulatory effects on land use in coastal wetlands. First, NWP 13 encourages the armoring of coastal properties by greatly reducing the overall permitting cost of constructing a seawall or bulkhead.²¹ Even in states that require more extensive review of armoring permits, the fact that applicants do not also have to seek an individual permit from the Corps provides a significant discount on armoring that makes constructing a bulkhead more cost effective than it would be otherwise. Second, by providing a general permit for hard armoring like bulkheads and sea walls, NWP 13 has historically disincentivized the development of soft armoring approaches such as “living shorelines” that help to control coastal erosion while also restoring wetlands and providing coastal habitat.²² Because permits to construct living shorelines have historically required much more extensive review by the Corps, it is often significantly less expensive and time consuming for property owners to construct bulkheads even when they would prefer to build less environmentally destructive erosion control structures.²³ The Corps has recently taken some steps to remove the regulatory bias in favor of hard armoring in NWP 13, including proposing a new nationwide permit for living shorelines projects, but the general permit still fails to provide an incentive for property owners to choose living shorelines over hard armoring.²⁴

Because the Corps has for decades effectively abdicated any substantive review of most coastal armoring permits, it is easy to overlook the powerful role that the Corps is already authorized by the CWA to play in

¹⁹ James G. Titus, *Does the U.S. Government Realize that the Sea is Rising? How to Restructure Federal Programs so that Wetlands and Beaches Survive*, 30 GOLDEN GATE U. L. REV. 717, 762 (2000).

²⁰ See Proposal to Reissue and Modify Nationwide Permits, 81 Fed. Reg. 35,186, 35,199–200 (June 1, 2016). For a discussion of the proposed modifications to NWP 13, see discussion *infra* Parts V.B, VI.

²¹ See discussion *infra* Part V.A.

²² See JAMES G. TITUS ET AL., U.S. CLIMATE CHANGE SCI. PROGRAM, COASTAL SENSITIVITY TO SEA-LEVEL RISE: A FOCUS ON THE MID-ATLANTIC REGION 169 (2009), available at <https://downloads.globalchange.gov/sap/sap4-1/sap4-1-final-report-all.pdf> (“[The Corps] has issued nationwide permits to expedite the ability of property owners to erect bulkheads and revetments, but there are no such permits for soft solutions such as rebuilding an eroded marsh or bay beach.”); see also Trista Talton, *Critics: Shoreline Permits Need Reform*, COASTAL REV. ONLINE, Feb. 10, 2016, <http://www.coastalreview.org/2016/02/12948/> (last visited July 16, 2016) (“[T]he permitting system [in North Carolina] for shoreline stabilization projects gives bulkhead and revetment applicants an unfair advantage because they generally take less time to process than living shoreline applications . . .”).

²³ See discussion *infra* Part V.A–B.

²⁴ See discussion *infra* Part V.B.

the implementation of a federal coastal climate change adaptation policy.²⁵ By strengthening its review of coastal armoring permits, the Corps could preserve valuable coastal wetlands threatened by sea level rise, discourage imprudent development and investment on the coasts, and encourage innovative erosion control measures that protect and enhance the coastal environment. And the Corps has this authority to guide coastal climate change adaptation policy *now*, without any need for further legislative authorization, which would most likely not be forthcoming in the current political environment.²⁶

The federal guidance on coastal land use policies that the Corps could provide is especially urgent now as states and local governments face the legal and political challenges associated with climate change adaptation.²⁷ Several states, including California and North Carolina, that have historically restricted the construction of seawalls have recently shown signs of backing down in the face of local pressure to develop and armor the coast.²⁸

²⁵ For discussion of the federal role in climate change adaptation, *see generally* Mila Buckner, *The Coastal Zone Management Act's Capacity to Spearhead Coastal Adaptation*, 22 HASTINGS W.-NW. J. ENVTL. L. & POL'Y 39 (2016); Chad J. McGuire, *Climate Change and the Coastal Zone Management Act: The Role of Federalism in Adaptation Strategies*, in CLIMATE CHANGE IMPACTS ON OCEAN AND COASTAL LAW: U.S. AND INTERNATIONAL PERSPECTIVES 419 (Randall S. Abate ed., 2015); Alice Kaswan, *Climate Adaptation and Land Use Governance: The Vertical Axis*, 39 COLUM. J. ENVTL. L. 390 (2014) (discussing the roles of local and federal government in using land-use law to counteract the effects of climate change); J.B. Ruhl, *Climate Change Adaptation and the Structural Transformation of Environmental Law*, 40 ENVTL. L. 363 (2010) (explaining how national environmental laws must now incorporate both mitigation of, and adaptation to, climate change); Robert L. Glicksman, *Climate Change Adaptation: A Collective Action Perspective on Federalism Considerations*, 40 ENVTL. L. 1159 (2010) (exploring whether federal agencies should be involved in climate change adaptation policy and to what degree); Daniel A. Farber, *Climate Adaptation and Federalism: Mapping the Issues*, 1 SAN DIEGO J. CLIMATE & ENERGY L. 259 (2009) (focusing on the federal government's role in adapting to, rather than mitigating, climate change).

²⁶ *See* Victor B. Flatt & Jeremy M. Tarr, *Adaptation, Legal Resiliency, and the U.S. Army Corps of Engineers: Managing Water Supply in a Climate-Altered World*, 89 N.C. L. REV. 1499, 1548 (2011) (detailing the broad statutory authority of the Corps to respond to climate change and stating that "[v]ery large changes will require congressional approval or legislative authorization, but many important changes can be made now. The environment will continue to change rapidly, and the Corps must use its existing powers to provide the flexibility needed to remain current.").

²⁷ *See infra* notes 28–29 and accompanying text.

²⁸ In California, the California Coastal Commission recently voted to remove its executive director in a move that is widely considered to be the result of prodevelopment lobbying. *See* Tony Barboza & Dan Weikel, *Coastal Chief's Ouster Prompts Bill to Require Transparency Between Lobbyists and Panel*, L.A. TIMES, Feb. 12, 2016, <http://www.latimes.com/local/politics/la-me-0213-coastal-pushback-20160213-story.html> (last visited July 16, 2016); Editorial, *Only a Complete Coastal Reboot Will Do*, SACRAMENTO BEE, Feb. 11, 2016 <http://www.sacbee.com/opinion/editorials/article59886206.html> (last visited July 16, 2016) ("[M]ost of California now believes that its Coastal Commission is preparing to pollute its coast with resorts and golf courses."). In North Carolina, the Coastal Resources Commission compromised a thirty-year-old ban on seawalls on the coasts by allowing for the expanded use of sandbag seawalls to protect buildings and even vacant lots from erosion. Orrin H. Pilkey, Opinion, *North Carolina Yet Again Shortsighted on Sandbags*, NEWS & OBSERVER, Feb. 19, 2016, <http://www.newsobserver.com/>

Substantive review of coastal armoring permits by the Corps could provide an important and unifying federal backstop to local decisions that degrade the coast and threaten the waters of the United States.²⁹

Part II of this Article examines the Corps' permitting program under section 404 of the CWA. Part III explains the significant physical, ecological, and economic harms caused by coastal armoring. Part IV analyzes the Corps' findings in regard to the 2012 reissuance of NWP 13, and discusses the recent challenge brought by environmental groups to invalidate the general permit because of its cumulative environmental impacts. Part V considers the regulatory effects caused by NWP 13. Finally, Part VI discusses the Corps' recently proposed modifications to NWP 13 and explains how NWP 13 should be modified in order to make the Corps' permitting program a useful tool to encourage positive climate change adaptation on the nation's coastlines.

II. CLEAN WATER ACT SECTION 404 PERMITS: THE STATUTORY AND REGULATORY FRAMEWORK

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”³⁰ In order to achieve that goal, section 301 of the CWA imposes a broad prohibition on “the discharge of any pollutant by any person.”³¹ The pollutants prohibited by the CWA encompass a fairly comprehensive list of things that cannot be dumped in water, ranging from the unusual and obviously undesirable, such as “radioactive materials” and “munitions,” to the commonplace, such as “rock” and “sand.”³² The definition of a “discharge” also reaches broadly, covering “any addition of any pollutant to navigable waters from a point source.”³³

opinion/op-ed/article61357342.html (last visited July 16, 2016) (“This [new rule] could lead to entire islands being lined with sandbags.”).

²⁹ See Kaswan, *supra* note 25, at 436 (emphasizing the important role of federal climate change adaptation guidance and explaining that “local governments are unlikely to adapt sufficiently on their own. Even where climate impacts are primarily local, there are systemic reasons why local governments might fail to engage in the optimal level of adaptation, including insufficient information and financial resources, the race-to-the-bottom, and free rider concerns.”).

³⁰ CWA, 33 U.S.C. § 1251(a) (2012).

³¹ *Id.* § 1311(a).

³² *Id.* § 1362(6).

³³ *Id.* § 1362(12). “Navigable waters” are defined as “the waters of the United States, including the territorial seas.” *Id.* § 1362(7). Under current regulations, “[n]avigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.” 33. C.F.R. § 329.4 (2015). “Point source” is defined as “any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged,” including pipes, ditches, containers and boats. 33 U.S.C. § 1362(14) (2012). For purposes of this Article, it suffices to say that the extent of the Corps' navigable waters jurisdiction has been the subject of fierce, long-standing and ongoing controversy. See, e.g., *Rapanos v. United States*, 547 U.S. 715, 723–29 (2006) (explaining the history and inconsistencies of the application of the term “waters of the United States”); Clean Water Rule: Definition of “Waters of the United States,” 80 Fed. Reg. 37,054, 37,055 (June 29, 2015)

In the face of this otherwise nearly absolute prohibition of the discharge of any pollutants from point sources into navigable waters, the CWA offers a handful of defined exceptions in the form of permits issued by EPA or the Corps.³⁴ The first major permit program is the National Pollutant Discharge Elimination System (NPDES) program administered by EPA under section 402 of the CWA.³⁵ The NPDES program provides permits for discharges not covered by section 404, or the other CWA provisions.³⁶

Concerned that the NPDES program would prohibit work needed to maintain navigation in the waters of the United States, Congress enacted section 404 of the CWA,³⁷ which grants the Corps authority to issue permits “for the discharge of dredged or fill material into the navigable waters at specified disposal sites.”³⁸ “Dredged material” is material excavated from waters of the United States, while “fill material” is material “placed in waters of the United States where the material has the effect of: (i) replacing any portion of a water of the United States with dry land; or (ii) changing the bottom elevation of any portion of a water of the United States.”³⁹ Rocks, sand, soil or any materials used to create structures in United States waters are considered fill.⁴⁰

The section 404 permitting program is the only part of the CWA not directly administered by EPA.⁴¹ Congress granted the Corps administrative authority over permits for dredge and fill materials as an extension of the Corps’ established responsibility under the Rivers and Harbors Appropriation Act of 1899 (RHA).⁴² Under the RHA, any construction, fill or excavation that had the potential to obstruct navigable waters required a permit from the Corps.⁴³ The goal of the RHA was “to protect harbor areas

(recognizing the need to clarify the definition of “waters of the United States”); Mark Squillace, *From “Navigable Waters” to “Constitutional Waters”: The Future of Federal Wetlands Regulations*, 40 U. MICH. J.L. REFORM 799 *passim* (2007) (discussing the state of federal wetlands regulation after *Rapanos*). The tidal waters affected by NWP 13 have long been considered navigable waters of the United States for purposes of section 404. Titus, *supra* note 19, at 758.

³⁴ 33 U.S.C. § 1311(a) (2012) (stating that “the discharge of any pollutant by any person shall be unlawful” except “as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title.”). This Article will discuss section 404 permitting under 33 U.S.C. § 1344 extensively. The other exceptions include provisions for the issuance by EPA of effluent limitations and performance standards for existing, new, and modified point sources, *id.* §§ 1311, 1312, 1316, 1317, exceptions for discharges from aquaculture, *id.* § 1328, and the NPDES program administered by EPA to permit discharges not covered by the other statutory provisions of the CWA, *id.* § 1342.

³⁵ *Id.* § 1342(a).

³⁶ *Id.* § 1342(a)(1).

³⁷ Thomas Addison & Timothy Burns, *The Army Corps of Engineers and Nationwide Permit 26: Wetland Protection for Swamp Reclamation?*, 18 *ECOLOGY L.Q.* 619, 627 (1991).

³⁸ 33 U.S.C. § 1344(a) (2012).

³⁹ 33 C.F.R. § 323.2(c), (e)(1) (2015).

⁴⁰ *Id.* § 323.2(e)(2).

⁴¹ See 33 U.S.C. § 1344(a) (2012) (granting the Secretary of the Army, acting through the Chief of Engineers, power over the permitting process with no mention of the EPA).

⁴² *Id.* §§ 401-467n.

⁴³ *Id.* § 403; see also Julia Fuschino, Note, *Mountaintop Coal Mining and the Clean Water Act: The Fight Over Nationwide Permit 21*, 34 *B.C. ENVTL. AFF. L. REV.* 179, 186 (2007).

from the congestion caused by random unplanned construction of wharves and piers,⁴⁴ and for the first half of the twentieth century, the Corps and the courts read the RHA solely to regulate effects on navigation.⁴⁵ However, beginning in the second half of the century, courts began to find that the Corps not only *could* consider factors apart from navigation and commerce—including ecological factors—but was required to do so.⁴⁶

Thus, when Congress passed the CWA in 1972, it decided to maintain the Corps' authority over dredge and fill materials rather than to hand that authority over to EPA.⁴⁷ However, EPA and conservationist members of Congress strongly objected to committing the permitting program to an agency that did not have environmental conservation as its primary mission.⁴⁸ As a compromise, Congress granted EPA supervisory authority over the Corps' administration of the section 404 permitting program.⁴⁹

EPA has two significant checks that it can place on the Corps' authority. First, EPA is authorized under section 404(b)(1) to issue regulations that govern the Corps' issuance of permits.⁵⁰ These regulations are binding on the Corps, and prohibit the issuance of a dredge or fill permit “unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.”⁵¹ Under EPA's regulations, the Corps is required to consider ways to avoid harm through “practicable alternatives,” to minimize necessary harm through “appropriate and practicable steps,” and to provide

⁴⁴ Garrett Power, *The Fox in the Chicken Coop: The Regulatory Program of the U.S. Army Corps of Engineers*, 63 VA. L. REV. 503, 506 (1977).

⁴⁵ *E.g.*, *Miami Beach Jockey Club, Inc. v. Dern*, 86 F.2d 135, 135–36 (D.C. Cir. 1936) (stating an RHA permit may only be denied on the basis of effect on commerce or navigability); *see also* Michael C. Blumm & Elisabeth Mering, *Vetoing Wetland Permits Under Section 404(c) of the Clean Water Act: A History of Inter-Federal Agency Controversy and Reform*, 33 UCLA J. ENVTL. L. & POL'Y 215, 227 (2015) (stating that the RHA was originally interpreted to only regulate effects on navigation).

⁴⁶ Blumm & Mering, *supra* note 45, at 227–28; *Citizens Comm. for the Hudson Valley v. Volpe*, 302 F. Supp. 1083, 1088–89 (S.D.N.Y. 1969) (by using the term “any dike,” Congress intended the Corps to regulate the placement of fill materials even when those materials would not affect navigation), *aff'd*, 425 F.2d 97 (2d Cir. 1970); *Zabel v. Tabb*, 430 F. 2d 199, 214 (5th Cir. 1970) (“[T]here is no doubt that the Secretary can refuse on conservation grounds to grant a permit under the Rivers and Harbors Act.”).

⁴⁷ Congress did so in part because it “did not wish to create a burdensome bureaucracy” by establishing a new regulatory program for dredge and fill material on top of that provided by the RHA. *See* Blumm & Mering, *supra* note 45, at 228 (quoting 118 Cong. Rec. 33,699 (1972) (statement of Sen. Muskie (D-Me.))), *as reprinted in* CONG. RESEARCH SERV., 93D CONG., 1 A LEGISLATIVE HISTORY OF THE WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, at 177 (Comm. Print 1973)). However, Congress was also influenced by representatives of the dredging industry, who did not wish to see the regulation of dredging passed over to EPA. *See* Addison & Burns, *supra* note 37, at 627.

⁴⁸ *See* Blumm & Mering, *supra* note 45, at 229 (“[T]he chief sponsor of the CWA, [Senator Muskie] spoke out against the Corps' permit authority . . . arguing that the Corps' mission was not to protect the environment but instead to promote navigation.”).

⁴⁹ *Id.*

⁵⁰ CWA, 33 U.S.C. § 1344(b) (2012).

⁵¹ 40 C.F.R. § 230.1 (2015).

for compensatory mitigation for adverse effects that are unavoidable.⁵² These regulations provide the framework for the Corps' decision making regarding both individual and general permits. Second, section 404(c) grants EPA an oversight authority that allows it to veto a permit issued by the Corps when EPA determines that the authorized activity would have "unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas . . . , wildlife, or recreational areas."⁵³ However, while section 404(c) gives EPA a substantial and unusual discretionary power to intervene in the Corps' permitting decisions, EPA has rarely exercised that power; it only vetoed 13 permits between 1980 and 2009.⁵⁴

Under section 404, the Corps has authority, subject to EPA's supervision, to issue two types of dredge and fill permits: individual permits authorizing a particular project submitted to the Corps for review on a case-by-case basis, and general permits authorizing categories of activities that the Corps determines do not require intensive individualized review because they pose a minimal risk of individual or cumulative harm to the environment.⁵⁵

A. Individual Permits

When a dredge and fill activity will have "potentially significant impacts" on waters of the United States, the CWA requires an individual section 404 permit from the Corps.⁵⁶ An individual permit application is evaluated under two separate criteria: EPA's section 404(b)(1) guidelines, discussed above, and the Corps' "public interest review," a "general balancing process" established by the Corps' regulations that "reflect[s] the national concern for both protection and utilization of important resources."⁵⁷

⁵² *Id.* § 230.10.

⁵³ 33 U.S.C. § 1344(c) (2012).

⁵⁴ U.S. ENVTL. PROT. AGENCY, CLEAN WATER ACT SECTION 404(C) "VETO AUTHORITY," (2016), available at <https://www.epa.gov/sites/production/files/2016-03/documents/404c.pdf> (2016). For a detailed discussion of the history of EPA's section 404(c) determinations, see generally Blumm & Mering, *supra* note 45, at 227–35. EPA "issued eleven vetoes between 1981 and 1990, then did not issue another veto until 2008." *Id.* at 243–44. EPA's section 404(c) veto power may extend to both individual and general permits, but EPA has never challenged a general permit under section 404(c). See Steven G. Davison, *General Permits Under Section 404 of the Clean Water Act*, 26 PACE ENVTL. L. REV. 35, 62–63 (2009) (stating that the EPA may veto general permits under section 404(c)). It is unclear whether the statutory language of section 404(c) would permit EPA to challenge a general permit, because the statute refers to permits for "defined area[s]" and individual "sites." 33 U.S.C. § 1344(c) (2012).

⁵⁵ See U.S. Env'tl. Prot. Agency, *Section 404 Permit Program*, <http://water.epa.gov/lawsregs/guidance/cwa/dredgdiss/> (last visited July 16, 2016).

⁵⁶ *Id.*

⁵⁷ 33 C.F.R. § 320.4 (2015). Under the regulations, the Corps considers the individual and cumulative effects of factors including:

Conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality,

The individual permit process is arduous, expensive, and time consuming for applicants. Both EPA guidelines and the Corps' public interest review require detailed factual findings.⁵⁸ For example, under EPA's regulations, the Corps is required to consider whether there is a "practicable alternative to the proposed discharge" that would have "less adverse impact on the aquatic ecosystem," a daunting factual determination that requires consideration of other alternatives, including a "no discharge" alternative or consideration of discharges at a different location.⁵⁹ On top of these requirements, section 404 also requires the Corps to provide public notice and the opportunity for public hearings before the permit is issued.⁶⁰ Not only does this process allow for comment from environmental groups and neighbors who might learn about the project through public notice and oppose the project, but also from agencies such as EPA and the Department of the Interior that might have concerns with the project.⁶¹

B. General Permits

Because the individual permit process is so work intensive, both for permittees and the Corps, section 404 of the CWA also authorizes the Corps to issue general permits for broad categories of actions where the Corps determines that those actions will have "minimal adverse environmental effects," both individually and cumulatively.⁶² The general permit program was introduced as a response to the significant expansion of the Corps' jurisdiction in the 1975 case *Natural Resources Defense Council v. Callaway*,⁶³ which held that—contrary to the Corp's previous narrow interpretation of section 404—all "waters of the United States" were "navigable waters" regardless of "the traditional tests of navigability" employed by the Corps.⁶⁴ Dragged unwillingly into a broader regulatory

energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

Id. While the Corps' review considers economic and social factors not relevant to the EPA guidelines, the regulations state that the "permit will be denied if the discharge . . . would not comply with the Environmental Protection Agency's 404(b)(1) guidelines." *Id.*

⁵⁸ 40 C.F.R. § 230.11 (2015); 33 C.F.R. § 320.4(a) (2015).

⁵⁹ 40 C.F.R. § 230.10(a) (2015); see Blumm & Mering, *supra* note 45, at 237–41 (describing the detailed analysis required for individual section 404 permits); see generally Jon Schutz, *The Steepest Hurdle in Obtaining a Clean Water Act Section 404 Permit: Complying with EPA's 404(b)(1) Guidelines' Least Environmentally Damaging Practicable Alternative Requirement*, 24 UCLA J. ENVTL. L. & POL'Y. 235 *passim* (2006) (discussing the extensive application review process).

⁶⁰ CWA, 33 U.S.C. § 1344(a) (2012).

⁶¹ See Blumm & Mering, *supra* note 45, at 241 ("EPA and federal fish and wildlife agencies participate in the section 404(b)(1) evaluative process and may raise concerns . . .").

⁶² 33 U.S.C. § 1344(e)(1) (2012).

⁶³ 392 F. Supp. 685 (D.D.C. 1975).

⁶⁴ *Id.* at 686.

role,⁶⁵ the Corps developed its first general permit on the basis that general permits were “essential in order to make this program manageable from a manpower and resources point of view, and still protect the aquatic environment.”⁶⁶ The first general permit issued under the program was the predecessor of the modern NWP 13, allowing for the construction “without further processing under [section 404]” of “bulkhead and fill activities . . . constructed for property protection,” so long as the bulkhead was five-hundred feet or less—a requirement that has not changed to the present day.⁶⁷

In 1977, Congress approved of the Corps’ regulatory development of the general permit program by amending section 404 of the CWA to authorize the issuance of general permits.⁶⁸ This statutory amendment adopted the Corps’ regulatory requirement that general permits could be issued only for activities that were “similar in nature” and would have “minimal cumulative adverse effect on the environment.”⁶⁹

In order to issue a general permit, the Corps must follow a procedure similar to that employed when issuing an individual permit: the Corps must evaluate the individual and cumulative effects of the proposed general permit under EPA’s section 404(b)(1) guidelines, and the Corps’ own public interest review.⁷⁰ The Corps must provide an opportunity for public comment regarding the proposed general permits,⁷¹ and must publish a written evaluation of the proposal including “documented information supporting each factual determination.”⁷² A general permit is valid for five years after the date of its issuance, at which point the Corps can either allow the permit to lapse, reissue, or modify the permit after providing another opportunity for public comment.⁷³

In most cases, the general permit places some limit on the scope of the permitted activity by specifying, for example, the acreage or bank footage

⁶⁵ The Corps protested the *Callaway* court’s decision by taking the unusual step of issuing a press release stating that following the *Callaway* decision permits would be required for “the rancher who wants to enlarge his stock pond, or the farmer who wants to deepen an irrigation ditch or plow a field, or the mountaineer who wants to protect his land against stream erosion.” Press Release, Office of the Chief of Eng’rs, Dep’t of the Army, Federal Authority for Disposal of Dredged or Fill Material Expands (May 6, 1976), reprinted in *Section 404 of the Federal Water Pollution Control Act Amendments of 1972: Hearing Before the S. Comm. on Pub. Works*, 94th Cong. 517 (1976).

⁶⁶ Permits for Activities in Navigable Waters or Ocean Waters, 40 Fed. Reg. 31,320, 31,322 (Jan. 2, 1975).

⁶⁷ *Id.* at 31,326; Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, 10,272 (Feb. 21, 2012).

⁶⁸ See Federal Water Pollution Control Act Amendments of 1977, Pub. L. No. 95-217, § 67(b), 91 Stat. 1566, 1600 (codified as amended at 33 U.S.C. § 1344 (2012)).

⁶⁹ 33 U.S.C. § 1344(e)(1) (2012).

⁷⁰ See 40 C.F.R. § 230.7 (2015) (EPA regulations); 33 C.F.R. § 320.4 (2015) (Corps regulations).

⁷¹ 33 U.S.C. § 1344(e)(1) (2012).

⁷² 40 C.F.R. § 230.7(b)(1) (2015).

⁷³ 33 U.S.C. § 1344(e)(2) (2012).

that may be affected by the project before an individual permit is required.⁷⁴ Moreover, some permits require the permittee to submit a preconstruction notification (PCN) to the Corps' district office so that the district engineer can review the notification for compliance with minimal impacts requirement of the general permit.⁷⁵ When a PCN is submitted, the district engineer has forty-five days to review the PCN, and if no decision is issued during that period "the permittee may presume that his project qualifies for the NWP."⁷⁶ Unlike individual permit applications, which require publication and an opportunity for public comment, the Corps does not have to post PCNs for public comment, "so members of the public may not be aware in advance of the construction," even though a PCN has been submitted to the Corps.⁷⁷

However, even this minimal level of notification is not required for many general permits. Unless a PCN is required by the general permit, the permittee may self determine whether the project meets the terms of the general permit and "proceed with activities authorized by NWPs without notifying the [district engineer.]"⁷⁸ Thus,

[I]n many cases a person can fill in a federally protected wetland under the authorization of a section 404 general permit without the person having to give prior notice to the Corps . . . , without a public hearing, without any limit on the total amount of protected wetlands that are filled under a particular general permit, and without any requirement that compensatory mitigation be provided for wetlands authorized to be filled or otherwise harmed under a general permit.⁷⁹

As a result, the Corps is often only able to speculate on the true environmental impact of a general permit.⁸⁰

Because of its highly streamlined nature, the general permit process is significantly less time consuming and expensive for both the permittee and the Corps than the individual permit process. One study found that the cost to the applicant of preparing a general permit application is half as much per acre compared to the cost of an individual permit (\$28,915 instead of \$59,719), and requires approximately half as much time to process (313 days

⁷⁴ U.S. ARMY CORPS OF ENG'RS, SUMMARY OF THE 2012 NATIONWIDE PERMITS (2012) [hereinafter U.S. ARMY CORPS OF ENG'RS, SUMMARY OF 2012 NWPs], available at http://www.usace.army.mil/Portals/2/docs/civilworks/nwp/2012/NWP2012_sutable_15feb2012.pdf (describing acreage limits for NWPs 6, 12, 14, 34 and bank footage limits for NWP 13).

⁷⁵ *Id.* (indicating that a PCN is required after specified thresholds for NWPs 7, 13–14, 31–34); 33 C.F.R. § 330.1(e)(1)–(2) (2015) (describing procedure for notification).

⁷⁶ 33 C.F.R. § 330.1(e)(1) (2015).

⁷⁷ Davison, *supra* note 54, at 68–69.

⁷⁸ 33 C.F.R. § 330.1(e) (2015).

⁷⁹ Davison, *supra* note 54, at 39.

⁸⁰ *See* Addison & Burns, *supra* note 37, at 637–38 (noting the lack of data available regarding the impact of general permits and quoting a Corps official stating, "[w]e don't really know what the impacts of the NWP's are.").

instead of 788 days).⁸¹ The administrative costs for the Corps are also presumably significantly lower because the Corps does not have to review as much information or produce detailed decision documents in regard to applications under a general permit.

Given these cost savings, it is not surprising that the Corps has increasingly come to rely on the general permit process. In recent years, “[t]he number of Individual permit applications has declined significantly . . . (from 17,864 in 1988 to 11,180 in 2005), while the number of general permit applications has expanded dramatically (from 39,583 to 78,336).”⁸² And by the Corps’ estimate, over 40% of the approximately 70,000 activities taken under the general permit program require no reporting to the Corps.⁸³ Thus, the growth of the general permit program represents a movement within the administration of section 404 away from intensive individual review of permits and toward more cursory or even non-existent environmental review.⁸⁴

Environmental groups have criticized the general permit program for permitting types of projects that have more than minimal adverse effects on the environment and for allowing the unsupervised loss of cumulatively significant amounts of wetlands.⁸⁵ However, the Corps argues that such a streamlined program is necessary to allow it to function given the extensive regulatory demands placed on it by the CWA.⁸⁶

III. THE ENVIRONMENTAL IMPACT OF SHORELINE ARMORING

NWP 13, one of the Corps’ fifty nationwide permits, authorizes a general permit for the construction of “bank stabilization” projects, such as seawalls and other types of hard coastal armoring, so long as the project is no more

⁸¹ David Sunding & David Zilberman, *The Economics of Environmental Regulation by Licensing: An Assessment of Recent Changes to the Wetland Permitting Process*, 42 NAT. RESOURCES J. 59, 75–76 (2002).

⁸² Palmer Hough & Morgan Robertson, *Mitigation Under Section 404 of the Clean Water Act: Where it Comes From, What it Means*, 17 WETLANDS ECOLOGY & MGMT. 15, 18 (2009).

⁸³ See U.S. ARMY CORPS OF ENG’RS, NATIONWIDE PERMIT REISSUANCE 1 (2012), available at http://www.usace.army.mil/Portals/2/docs/civilworks/nwp/NWP2012_factsheet_15feb2012.pdf (“The nationwide permits authorize approximately 40,000 reported activities per year, as well as approximately 30,000 activities that do not require reporting.”).

⁸⁴ See J.B. Ruhl & James Salzman, *Regulatory Exit*, 68 VAND. L. REV. 1295, 1331 (2015) (footnote omitted) (“With over ninety percent of the demand on the section 404 permit program handled under general permits requiring a small amount of paperwork, or in some cases no paperwork, and in a matter of weeks, [the general permit program] truly accomplishes regulatory exit.”).

⁸⁵ See, e.g., Lucy Allen, Note, *Making Molehills Out of Mountaintop Removal: Mitigated “Minimal” Adverse Effects in Nationwide Permits*, 41 ECOLOGY L. Q. 181, 186 (2014) (“Environmental protection groups argue that general permits have failed to protect the environment, characterizing the program as a ‘rubber stamping’ of projects that has led to significant wetlands losses.”).

⁸⁶ See CLAUDIA COPELAND, CONG. RESEARCH SERV., 97-223, THE ARMY CORPS OF ENGINEERS’ NATIONWIDE PERMITS PROGRAM: ISSUES AND REGULATORY DEVELOPMENTS 2 (2012) (“General permits, including nationwide permits, are a key means by which the Corps seeks to minimize the burden and delay of its regulatory program . . .”).

than five-hundred feet in length.⁸⁷ In its findings regarding the reissuance of NWP 13, the Corps concluded that the shoreline armoring projects authorized under the general permit will have “minimal adverse environmental effects” at the individual or cumulative level, as required by the CWA.⁸⁸

The Corps’ findings regarding the minimal environmental effects of shoreline armoring run counter to the significant scientific evidence that armoring destroys the beaches and wetlands where it is installed, harms species dependent on the intertidal zone, and increases flooding and erosion in areas adjacent to the armoring.⁸⁹ In addition, the Corps’ findings in regard to the reissuance of NWP 13 fail to take into account the effect of sea level rise due to climate change, which scientists agree will substantially exacerbate the negative effects of shoreline armoring on coastal ecosystems.⁹⁰ This Part will briefly discuss the environmental impacts of shoreline armoring, and how sea level rise will magnify those already well established negative effects.

A. *The Physical Effects of Coastal Armoring*

While coastal armoring is intended to protect beach property, the installation of a seawall or bulkhead inevitably destroys the beach where it is installed through a variety of demonstrated physical mechanisms. First, and most obviously, the installation of coastal armoring destroys the area of the beach underneath the armoring structure itself, an effect known as placement loss.⁹¹ NWP 13 allows landowners to construct armoring installations up to five-hundred feet in length without a requirement to give notice to the Corps,⁹² so the coastal effects from placement loss alone have the potential to be immense.⁹³

Second, coastal armoring leads to passive erosion, a process that occurs when the seawall prevents the migration of the beach inland in response to changing sea levels.⁹⁴ Under normal circumstances, an unarmored beach will move gradually inland in response to natural

⁸⁷ NWP 13 DECISION DOCUMENT, *supra* note 11, at 1.

⁸⁸ *See* Reissuance of Nationwide Permits, 72 Fed. Reg. 11,092, 11,092–93 (Mar. 12, 2007) (concluding that activities authorized under NWPs would have a minimal cumulative adverse environmental effect); CWA, 33 U.S.C. § 1344(e)(1) (2012).

⁸⁹ MELIUS & CALDWELL, *supra* note 7, at 8, 10 (discussing destruction of beaches and wetlands, and harm to coastal flora and fauna); *see* U.S. ARMY CORPS OF ENG’RS, COASTAL RISK REDUCTION AND RESILIENCE: USING THE FULL ARRAY OF MEASURES 6 (2013) [hereinafter U.S. ARMY CORPS OF ENG’RS, COASTAL RISK REDUCTION], *available at* http://www.corpsclimate.us/docs/USACE_Coastal_Risk_Reduction_final_CWTS_2013-3.pdf.

⁹⁰ *See* MELIUS & CALDWELL, *supra* note 7, at 8–9.

⁹¹ *Id.* at 8.

⁹² NWP 13 DECISION DOCUMENT, *supra* note 11, at 1–2.

⁹³ The Corps estimated that as many as 17,500 projects would be permitted by NWP 13 over the five-year period between 2012 and 2017, resulting in impacts to approximately 275 acres of wetlands. *Id.* at 35–36.

⁹⁴ *See* Jennifer E. Dugan et al., *Ecological Effects of Coastal Armoring on Sandy Beaches*, 29 MARINE ECOLOGY (SPECIAL ISSUE) 160, 161 (2008).

processes of erosion or sea level rise.⁹⁵ As the erosion caused by wave energy eats away at the front of the beach, the back of beach migrates vertically or laterally over time, maintaining the existence of the beach despite the changing level of the sea.⁹⁶ Armoring prevents this process by fixing the back of the beach so that no inland migration is possible.⁹⁷ The result is that over time the beach is lost, leaving only the hard armoring in place.

This process is accelerated by the fact that the seawall holds back the inland sand that would otherwise act to nourish the beach, a process called impoundment loss.⁹⁸ The supply of sand to unarmored beaches is continually replenished through a process of sediment transport from the upper beaches, dunes, or the erosion of coastal bluffs.⁹⁹ Seawalls act as a dam that holds back the natural flow of sediment, greatly accelerating the rate of erosion on the seaward side of the armoring.

The physical effect of coastal armoring is not limited to the beach where it is installed. While seawalls are intended to block wave energy in order to prevent beach erosion, the reality is that they merely redirect the energy away from the seawall. Some of the wave energy is reflected back towards the ocean, a process that may cause a gradual steepening in the submerged portion of the beach near the shore.¹⁰⁰ However, a significant portion of the energy is diffracted to the side of the seawall, which increases the erosion on neighboring beaches.¹⁰¹ As a result of this lateral erosion, neighboring landowners may feel compelled to install their own armoring in order to protect themselves from the increased risk of erosion and inundation caused the seawall already in place.¹⁰²

B. The Ecological Effects of Coastal Armoring

Unsurprisingly, the physical effects of coastal armoring described in the preceding Part have dramatic effects on the ecology of the beach. The accelerated erosion of the beach diminishes the available habitat for essential biological activities, such as nesting and feeding.¹⁰³ The cumulative impact of this habitat destruction can significantly reduce the amount of habitat available to species dependent on coastal ecosystems.¹⁰⁴

Coastal armoring also has a direct and immediate effect on coastal ecosystems. The placement loss caused by the installation of shoreline armoring directly reduces the amount of habitat available in the intertidal

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ MELIUS & CALDWELL, *supra* note 7, at 8–9.

⁹⁹ *Id.* at 9.

¹⁰⁰ While the scientific evidence is inconclusive, such wave scouring may interfere with the long-shore transport of sand, which is another source of beach nourishment. *See id.* at 9, n.32.

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ Pace, *supra* note 3, at 339.

¹⁰⁴ MELIUS & CALDWELL, *supra* note 7, at 10.

and supratidal zones.¹⁰⁵ In addition, the armoring imposes a physical barrier that frustrates the movement of numerous species that are dependent on crossing from the intertidal to the supratidal zones for purposes of reproduction or feeding.¹⁰⁶

For example, coastal armoring has demonstrated effects on the availability of nesting habitat for endangered sea turtles. The United States Fish & Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) have found that “[a]rming structures can effectively eliminate a turtle’s access to upper regions of the beach/dune system” where the turtle can lay its eggs more securely.¹⁰⁷ Thus, “[a]s the extent of armoring on beaches increases, the probability of a nesting turtle encountering a seawall or depositing a nest in sub-optimal habitat increases.”¹⁰⁸ For this reason, an important part of the federal recovery plan for the endangered sea turtles is to “guide regulations to minimize the effects of coastal armoring on loggerheads.”¹⁰⁹

The ecological disruptions caused by coastal armoring translate to a direct reduction in biological diversity on beaches with armoring. A 2008 study found that beaches with armoring had less diverse ecosystems than unarmored beaches, with “significantly fewer and smaller intertidal macro-invertebrates, three times fewer shorebirds, and four to seven times fewer gulls and other birds than armored beaches.”¹¹⁰ The cumulative effect of these localized disruptions caused by armoring is an overall reduction of biodiversity in the region.¹¹¹

C. The Economic Effects of Coastal Armoring

In addition to its environmental impacts, armoring has significant economic effects on the surrounding community. Research has shown that because seawalls reduce the amount of available beach for tourists to use, they correspondingly reduce the number of visitors to the beach and the

¹⁰⁵ *Id.* The intertidal zone is the area between the low and high tide lines, while the supratidal zone is the area above high tide line. *Id.*

¹⁰⁶ *Id.*

¹⁰⁷ See NAT’L MARINE FISHERIES SERV. & U.S. FISH & WILDLIFE SERV., RECOVERY PLAN FOR THE NORTHWEST ATLANTIC POPULATION OF THE LOGGERHEAD SEA TURTLE (*CARETTA CARETTA*), at I-38 (2008), available at http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_loggerhead_atlantic.pdf.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at II-25.

¹¹⁰ MELIUS & CALDWELL, *supra* note 7, at 10 (citing Dugan et al., *supra* note 94); see also Jenifer E. Dugan & David M. Hubbard, *Ecological Effects of Coastal Armoring: A Summary of Recent Results for Exposed Sandy Beaches in Southern California*, in PUGET SOUND SHORELINES AND THE IMPACTS OF ARMORING: PROCEEDINGS OF A STATE OF THE SCIENCE WORKSHOP 187, 190–91 (Hugh Shipman et al., eds., 2009) (explaining that the effect of armoring on seabird population is disproportionate to the loss of habitat alone, suggesting that the armoring may be having larger ecosystem effects on seabirds).

¹¹¹ *Id.*

local expenditures those beachgoers would have provided to the economy.¹¹² Moreover, a study conducted in the Southeast found that while construction of a seawall provided an economic benefit to the individual property, it resulted in a net reduction in property value in local nonwaterfront properties.¹¹³ In addition, the initial benefit to the property value of the individual landowner of the construction of a seawall is only temporary: as more seawalls are constructed along the beach, waterfront property values gradually decline until they return to where they were before the initial armoring.¹¹⁴ Accordingly, “seawalls confer a small private and temporary economic benefit to some waterfront property owners but impose larger economic costs on the community.”¹¹⁵

Moreover, the destruction of coastal wetlands through armoring cuts off the valuable resources and ecosystem services wetlands provide to the community. These resources include “absorbing energy from coastal storms, preserving shorelines, protecting human populations and infrastructure, supporting commercial seafood harvests, absorbing pollutants and serving as critical habitat for migratory bird populations.”¹¹⁶

D. The Impact of Climate Change on Coastal Armoring

All of the environmental problems caused by coastal armoring will be exacerbated by the effects of climate change and the associated sea level rise on the coastal zones of the United States. According to recent studies, the average annual temperature in the United States has increased between 1.3°F and 1.9°F since 1895.¹¹⁷ The rate of temperature rise is expected to accelerate over the next century, with global temperature increases reaching a point between 2.5°F to 8°F over preindustrial levels by the year 2100 depending on the degree to which emissions are reduced over that period.¹¹⁸

The increase in global temperatures will result in sea level rise as glaciers and ice sheets melt, releasing a massive volume of water into the oceans, and the warming waters of the ocean expand “[l]ike mercury in a thermometer.”¹¹⁹ Tidal gauges around the world indicate that the global sea level has already risen approximately eight inches since the late 1800s, and

¹¹² See Linwood Pendleton et al., *Estimating the Potential Economic Impacts of Climate Change on Southern California Beaches*, 109 CLIMATIC CHANGE (SPECIAL ISSUE) 277, 285 (2011).

¹¹³ See Warren Kriesel & Robert Friedman, *Coping with Coastal Erosion: Evidence for Community-Wide Impacts*, 71 SHORE & BEACH, July 2003, at 19, 21–22; MELIUS & CALDWELL, *supra* note 7, at 11.

¹¹⁴ Kriesel & Friedman, *supra* note 113, at 19.

¹¹⁵ MELIUS & CALDWELL, *supra* note 7, at 11.

¹¹⁶ Press Release, U.S. Geological Survey, *Many Coastal Wetlands Likely to Disappear This Century*, (Dec. 1, 2010), <http://archive.usgs.gov/archive/sites/www.usgs.gov/newsroom/article.asp-ID=2649.html> (last visited July 16, 2016).

¹¹⁷ USGCRP, *supra* note 1, at 8.

¹¹⁸ *Id.* at 26.

¹¹⁹ *Id.* at 44.

scientists expect further sea level rise of one foot to four feet by 2100, depending on the emissions scenario.¹²⁰

Even under moderate sea level rise scenarios, the effects of climate change on coastal lands will be significant. At present, nearly 5 million people in the United States live within four feet of the local high tide level, and are thus susceptible to increased flooding and inundation due to the combination of storm surges, high tides, and sea level rise.¹²¹ And yet the population in coastal areas of the United States continues to increase rapidly, resulting in continued development of and investment in coastal lands.¹²² A study of land development on the Atlantic Coast found that landowners have already developed 42% of the dry land within one meter above tidal wetlands, and are likely to develop 15% more.¹²³ Meanwhile, less than 10% of the land in the region has been set aside for wetland preservation “that would allow coastal ecosystems to migrate inland.”¹²⁴ Protecting this property in the face of sea level rise “would require increasingly ambitious shore protection” in the form of coastal armoring.¹²⁵

Such armoring, which is well under way, will continue to accelerate the ongoing destruction of coastal wetlands that are already threatened by sea level rise. According to a study conducted by scientists for the United States Geological Survey in 2010, a “rapid” sea level rise scenario will eliminate many coastal wetlands in the next century.¹²⁶ Even under more moderate scenarios, a significant number of coastal wetlands will be lost.¹²⁷ In order to survive, coastal wetlands will need to be able to migrate inwards where possible; however, current coastal land use regulations—such as the Corps’ general permit for coastal armoring—favor hard armoring that blocks the needed migration.¹²⁸

IV. THE 2012 REISSUE OF NATIONWIDE PERMIT 13 AND RECENT LITIGATION

A. The Corps’ Findings Regarding Minimal Cumulative Environmental Impact of Nationwide Permit 13

Despite the scientifically demonstrated significant environmental harm caused by coastal armoring, the Corps reissued NWP 13 in 2012, finding that “[t]he terms and conditions for this NWP are appropriate for limiting bank stabilization activities so that they have minimal individual and cumulative

¹²⁰ *Id.* at 44–45.

¹²¹ *Id.* at 45.

¹²² Liss, *supra* note 3, at 10,034.

¹²³ Titus et al., *supra* note 8, at 3.

¹²⁴ *Id.* at 4.

¹²⁵ *Id.*

¹²⁶ Matthew L. Kirwan et al., *Limits on the Adaptability of Coastal Marshes to Rising Sea Level*, 37 GEOPHYSICAL RES. LETTERS, at L23401, 1 (2010).

¹²⁷ *Id.* at 4.

¹²⁸ Titus et al., *supra* note 8, at 5.

effects on the aquatic environment.”¹²⁹ Under NWP 13, “bank stabilization activities necessary for erosion prevention” are generally permitted so long as the activity is no more than five-hundred feet in length along the bank, does not affect a specially protected aquatic site, and the discharge of the fill material used in the bank stabilization does not exceed one cubic yard per foot of length.¹³⁰

Several of the structural features of NWP 13 make it especially problematic for a permit authorizing such an environmentally destructive activity. First, NWP 13 only requires the applicant to submit a PCN to the district office engineer when the activity fails to meet any of the criteria of the general permit, such as when the activity exceeds five-hundred feet in length, or affects a specially protected aquatic site.¹³¹ The PCN provides a written notice to the district engineer regarding the proposed scope of the activity, and offers an opportunity for the district engineer to determine whether the individual project meets the “minimal adverse effects” standard required under the general permit.¹³² However, without a PCN requirement, NWP 13 allows landowners in most cases to self-determine whether the project meets the terms of the general permit and “proceed with activities authorized by the NWPs without notifying the [district engineer].”¹³³ As a result, the Corps has no record of how many landowners are making use of the general permit, and whether those projects do, in fact, produce only minimal environmental effects.¹³⁴

Second, several of NWP 13’s requirements can be modified at the discretion of the district engineer. Where a proposed project will exceed the maximum requirements for length or for size, or will impact special aquatic sites, the applicant is not required to submit an individual section 404 permit, but instead may still submit a PCN under the general permit, which the district engineer may then review at her discretion.¹³⁵ The district engineer is authorized to waive the length or size limits in NWP 13, so long as the district engineer determines that such a waiver will result “in minimal adverse effects” to the environment.¹³⁶

Thus, NWP 13 acts as a type of general permit not only for the activities that the Corps has predetermined to have minimal adverse effects, but also potentially for much larger projects that might greatly exceed the limits in the text of the general permit. This broad grant of discretion to the district engineer allows applicants to evade the more extensive disclosure requirements and public scrutiny that comes through the individual section 404 permit process. Not only is the information required in a PCN minimal

¹²⁹ NWP 13 DECISION DOCUMENT, *supra* note 11, at 5.

¹³⁰ *Id.* at 1.

¹³¹ *Id.* at 2.

¹³² *Id.* at 9.

¹³³ 33 C.F.R. § 330.1(e)(1) (2015).

¹³⁴ See Addison & Burns, *supra* note 37, at 637–38 (noting the lack of data available regarding the impact of general permits and quoting an official in the Corps saying, “[w]e don’t really know what the impacts of the NWP’s are.”).

¹³⁵ NWP 13 DECISION DOCUMENT, *supra* note 11, at 1–2.

¹³⁶ *Id.* at 1.

compared to the full disclosure required in an individual permit application, but it is solely prepared by the applicant, without any opportunity for comment by federal and state agencies, or the public to comment on its accuracy or reasonableness.¹³⁷ As a result, the discretion granted by NWP 13 allows the district engineer to grant the type permit that would normally be subject to the individual permit requirements, but to do so based on minimal information from the applicant and in relative secrecy, “so members of the public may not be aware in advance of the construction.”¹³⁸

Equally troubling were the Corps’ factual findings supporting the 2012 reissue of NWP 13 in regard to the environmental impacts of the general permit. According to estimates in the Corps’ decision document, between 2012 and 2017, NWP 13 would authorize approximately 17,500 projects, and those projects would impact 275 acres of waters of the United States.¹³⁹ However, in making this determination the Corps focused solely on the shoreline areas where the armoring is constructed, effectively ignoring the established scientific evidence discussed in Part II.B above that coastal armoring accelerates the erosion of wetlands in front of the armoring, and prevents the migration of the wetlands inward.¹⁴⁰ As James Titus explains, “[t]he important impact of armoring a mile of shoreline is not the acre of beach or wetlands filled in building the bulkhead, but rather, the eventual conversion of a wetland shore to an area with open water splashing against a wall.”¹⁴¹ A proper measurement of the cumulative environmental impacts of coastal armoring would include the habitat lost as a result of the eventual erosion of the underlying beach, as well as the potential habitat lost because of the prevention of inland migration.¹⁴² Employing a more comprehensive measure of NWP 13’s environmental effect would likely increase the cumulative habitat loss caused as a result of NWP 13 projects by tenfold, making it impossible to conclude that the general permit has minimal cumulative environmental effects.¹⁴³

In response to comments from numerous parties, including EPA, that the erosion driven effects of coastal armoring on the surrounding wetland are significant and “well documented,”¹⁴⁴ the Corps stated without further explanation that “[t]he limits in this NWP are sufficient to ensure that the

¹³⁷ See Blumm & Mering, *supra* note 45, at 237–41 (describing the process for analyzing an individual permit including public comment).

¹³⁸ Davison, *supra* note 54, at 68–69. In its recently proposal to reissue the Nationwide Permits the Corps has requested comments regarding “whether to impose a linear foot cap on waivers to the 500 linear foot limit for NWPs 13 and proposed NWP B (e.g., a total waiver amount of 1,000 linear feet).” Proposal to Reissue and Modify Nationwide Permits, 81 Fed. Reg. 35,186, 35,192 (June 1, 2016).

¹³⁹ NWP 13 DECISION DOCUMENT, *supra* note 11, at 35–36.

¹⁴⁰ See Titus et al., *supra* note 8, at 5.

¹⁴¹ Titus, *supra* note 19, at 761.

¹⁴² See Titus et al., *supra* note 8, at 5.

¹⁴³ *Id.*

¹⁴⁴ See 1 Administrative Record, *Nat’l Wildlife Fed’n*, No. 14-cv-01701 (JDB), 2016 WL 1048767 (D.D.C. Mar. 14, 2016), ECF No. 31, at 394 (“It is well documented the use of [hard coastal armoring] can affect wave energy and direction, affect sediment and other materials transport, and cause accelerated erosion and/or scouring.”).

NWP authorizes only those activities that have minimal adverse effects on the aquatic environment.”¹⁴⁵

The Corps also based a significant portion of its cumulative impact finding on the availability of compensatory mitigation for the environmental effects of permitted projects, stating that “[c]ompensatory mitigation . . . for specific activities authorized by the NWP will help reduce the contribution of those activities to the cumulative effects on the Nation’s wetlands.”¹⁴⁶ The Corps explained that mitigation requirements would be imposed by the district engineers, who “will establish compensatory mitigation requirements on a case-by-case basis, after evaluating pre-construction notifications.”¹⁴⁷

Unfortunately, in practice, such mitigation is rarely required because NWP 13 does not require the submission of a PCN so long as the project fits within the parameters of the general permit.¹⁴⁸ As a result, many projects authorized under the project will never be evaluated for compensatory mitigation. Indeed, in a survey of activities authorized by NWP 13 in 2010, the Corps’ data shows that twenty-one of the district offices did not require compensatory mitigation for *any* projects authorized under NWP 13, even those reviewed through a PCN.¹⁴⁹

However, probably the most significant problem with the Corps’ cumulative impacts analysis was that it failed to incorporate any of the available scientific data and analysis regarding the impact of sea level rise on coastal armoring discussed in Part II.D above. In response to comments that NWP 13 should not be reissued because it authorized activities that would prevent adaptive retreat in the face of climate change, hinder the inland migration of wetlands, and would exacerbate erosion in areas subject to sea level rise, the Corps stated that “[a]t the present time, there is a considerable amount of uncertainty surrounding climate change, and any associated sea level rise that may occur as a result of climate change” and suggested that the Corps did not have to consider that data in regard to specific projects because climate change effects on property were not “reasonably foreseeable.”¹⁵⁰

Even in 2012 at the time of the reissuance of NWP 13, this approach ran counter to the direction of science and of federal environmental policy, which was moving towards a more unified program of climate change adaptation and resilience. In 2007, the National Research Council published a report emphasizing the impact of sea level rise on coastal armoring¹⁵¹ and directly criticized the Corps for maintaining NWP 13, which the NRC argued enables further armoring, and discourages the use of more ecologically

¹⁴⁵ NWP 13 DECISION DOCUMENT, *supra* note 11, at 6.

¹⁴⁶ *Id.* at 25.

¹⁴⁷ *Id.*

¹⁴⁸ *See id.* at 1–2 (requiring PCN only if one of three parameters of the NWP is not met).

¹⁴⁹ 1 Administrative Record, *supra* note 144, at 174–210.

¹⁵⁰ NWP 13 Decision Document, *supra* note 11, at 5.

¹⁵¹ NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., MITIGATING SHORE EROSION ALONG SHELTERED COASTS 35 (2007) (“[F]or the hold-the-line approach, longer periods of stability are traded for greater eventual catastrophe.”).

sustainable erosion protection.¹⁵² In 2009, President Obama issued Executive Order 13,514, which created the Interagency Climate Change Adaptation Task Force, composed of twenty federal agencies including the Corps.¹⁵³ Among other climate adaptation projects, the Task Force was charged with “develop[ing] approaches through which the policies and practices of the agencies can be made compatible” with a national strategy for adaptation to climate change.¹⁵⁴

And indeed, in 2011, the Corps published its own “Climate Change Adaptation Plan and Report,” which stated that “[i]t is the policy of the Corps to integrate climate change adaptation planning and actions into our Agency’s missions, operations, programs, and projects.”¹⁵⁵ Later that same year, the Corps published a national engineering guidance document for the purpose of “incorporating the direct and indirect physical effects of projected future sea-level change in [the Corps’ engineering projects],” which emphasized that “[i]mpacts to coastal and estuarine zones caused by sea-level change must be considered in all phases of Civil Works programs.”¹⁵⁶

In its comments to the Corps’ 2012 reissuance of its nationwide permits, the National Oceanic and Atmospheric Administration (NOAA) drily noted that, based on the Corps’ published sea level rise engineering guidance, it appeared that the Corps was “in fact not waiting for more scientific certainty” to incorporate sea level rise into its own engineering projects, and argued that the Corps should incorporate that same guidance into its general permits:

Many of the Corps’ permit decisions involve infrastructure that will be in place for decades, and failure to consider its actions in terms of future conditions could jeopardize life and property as well as ecosystem resilience. Scientific uncertainty actually increases the need to assess potential impacts and make decisions based on risk.¹⁵⁷

However, the Corps did not respond to NOAA’s comments or explain why its own sea level rise modeling was not sufficiently reliable to inform the reissuance of NWP 13.¹⁵⁸

¹⁵² *Id.* at 114–15.

¹⁵³ Federal Leadership in Environmental, Energy, and Economic Performance, Exec. Order No. 13,514, § 16, 3 C.F.R. 248, 258 (2010); COUNCIL ON ENVTL. QUALITY, PROGRESS REPORT OF THE INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE: RECOMMENDED ACTIONS IN SUPPORT OF A NATIONAL CLIMATE CHANGE ADAPTATION STRATEGY 9, A-1 to -2 (2010).

¹⁵⁴ Exec. Order No. 13,514, § 16, 3 C.F.R. 248, 258 (2010).

¹⁵⁵ U.S. ARMY CORPS OF ENG’RS, USACE CLIMATE CHANGE ADAPTATION PLAN AND REPORT 2011, at v (2011), *available at* http://www.corpsclimate.us/docs/Sept_2011_USACE_Climate_Change_Adaptation_Plan_and_Report.pdf.

¹⁵⁶ U. S. ARMY CORPS OF ENG’RS, EC 1165-2-212, SEA-LEVEL CHANGE CONSIDERATIONS FOR CIVIL WORKS PROGRAMS 1 (2011), *available at* <http://planning.usace.army.mil/toolbox/library/ECs/EC11652212Nov2011.pdf>.

¹⁵⁷ 1 Administrative Record, *supra* note 144, at 169.

¹⁵⁸ *See* NWP 13 DECISION DOCUMENT, *supra* note 11, at 5.

The Corps' position, which was highly questionable in 2012, is no longer tenable now. As this Article will discuss further in Part IV below, given the significant developments both in climate science and in federal policy directed towards climate change adaptation since 2012, NWP 13 must either be eliminated or revised to address the severe strain that sea level rise will place on the coastal ecosystems where coastal armoring is now routinely installed. However, even in 2012, the Corps' refusal to incorporate the existing science on climate change in its general permits was in clear violation of the CWA's requirement to consider the cumulative environmental effects before issuing a general permit.¹⁵⁹

B. The Legal Challenge to Nationwide Permit 13

On October 10, 2014, a number of environmental groups including the Southern Environmental Law Center and the National Wildlife Federation filed a lawsuit in D.C. district court to challenge, among other things, the issuance of NWP 13 under the CWA due to the Corps' failure to consider the cumulative environmental impacts of the permit.¹⁶⁰ The environmental groups also brought an as-applied challenge to the Corps' issuance of a permit for an armoring project on the Bull River, a coastal river in Savannah, Georgia.¹⁶¹

In their summary judgment motion, the environmental groups made a strong argument that in issuing NWP 13 the Corps failed to respond to the compelling scientific evidence in the record that the armoring structures permitted under NWP 13 have a significant cumulative impact on the environment, and that the Corp's action was therefore arbitrary and capricious under the CWA.¹⁶² Thoroughly reviewing the massed weight of scientific articles presented to the Corps during the comment period, the environmental groups showed that the Corps' decision document did not explain the Corps' decision to disregard that evidence, but rather relied on conclusory statements that the Corps disagreed with the evidence and believed that "[t]he limits in this NWP [were] sufficient to ensure that the NWP authorizes only those activities that have minimal adverse effects on the aquatic environment."¹⁶³

Unfortunately, the challenge to NWP 13 did not receive a full hearing in court. In a ruling on summary judgment, the district court found that the plaintiffs had failed to establish standing because they could not prove an imminent threat of injury to any of the environmental groups' members from a future project authorized by NWP 13.¹⁶⁴ As the district court explained,

¹⁵⁹ CWA, 33 U.S.C. § 1344(e)(1) (2012).

¹⁶⁰ Complaint, *supra* note 14, ¶¶ 1–2.

¹⁶¹ *Id.* ¶ 6.

¹⁶² Plaintiff's Motion for Summary Judgment at 19–24, *Nat'l Wildlife Fed'n v. U.S. Army Corps of Eng'rs*, No. 14-cv-01701 (JDB), 2016 WL 1048767 (D.D.C. Mar. 14, 2016).

¹⁶³ Complaint, *supra* note 14, ¶¶ 2, 4–7; NWP 13 DECISION DOCUMENT, *supra* note 11, at 6.

¹⁶⁴ *Nat'l Wildlife Fed'n*, 2016 WL 1048767, at *4 (“[Plaintiffs] do not even identify a pending NWP 13 project in the area—or anywhere.”).

standing would be available if the plaintiffs could identify one NWP 13 project that had not already been completed: “[i]t is not hard to imagine a nearly identical case where the plaintiffs have standing based on an identified and imminent general permit activity that, if constructed, threatens to cause a concrete and particularized injury.”¹⁶⁵ However, because the environmental groups could only point to injury from NWP 13 projects that already been authorized and constructed there was, according to the district court, no imminent injury or redressability to give rise to standing.¹⁶⁶

Such a ruling on standing highlights the difficulty faced by environmental groups challenging CWA general permits. Unlike individual permits under Section 404 of the CWA, which require public notice and an opportunity for public comment, general permit applications provide no notice to the public that construction is imminent.¹⁶⁷ Moreover, NWP 13 does not even require the submission of a PCN to the Corps before construction. Thus, environmental groups and other members of the public are rarely aware that a bulkhead has been authorized under NWP 13 until it has already been constructed. Indeed, such stringent standing requirements may provide an incentive for developers to complete construction as quickly as possible so as to foreclose any potential remedy.¹⁶⁸

Even if an environmental group surmounted the standing hurdle, they would face a steep uphill battle in a challenge to NWP 13 given the deference that courts grant to agency decisions. For example, a decade of litigation over another controversial nationwide permit for surface mining activities (NWP 21), which includes the disposal of fill from mountaintop removal mining, has produced only inconclusive results.¹⁶⁹ Like NWP 13, the activities permitted by NWP 21 have obvious and well-documented environmental impacts on the aquatic environment,¹⁷⁰ and yet courts have upheld the Corps’

¹⁶⁵ *Id.* at *7.

¹⁶⁶ *Id.* The district court’s ruling on standing is questionable. Even though the bulkhead in question has been completed, it arguably still presents an ongoing harm to the plaintiffs that could be redressed by requiring the Corps to complete the Section 404 individual permit process for the bulkhead retrospectively. Completion of the individual permit could result in aesthetic mitigation that would address the ongoing harm to the plaintiffs. *See, e.g.,* *Mobile Baykeeper, Inc. v. U.S. Army Corps of Eng’rs*, No. CIV.A. 14-0032-WS-M, 2014 WL 5307850, at *6 (S.D. Ala. Oct. 16, 2014) (finding in regard to a challenge to a project authorized under a general permit that “the [court] is not persuaded that the injuries claimed by Baykeeper’s members cannot be redressed following completion of construction of the pipeline; to the contrary, it appears that some form of effective relief could be fashioned (whether by this Court or by the Corps on remand) to reduce aesthetic injuries to Baykeeper members. . . .”).

¹⁶⁷ *See* Davison, *supra* note 54, at 39.

¹⁶⁸ *See, e.g.,* *Sierra Club v. U.S. Army Corps of Eng’rs*, 277 Fed App’x. 170, 174 (3rd Cir. 2008) (Rendell, J., concurring) (footnote omitted) (“[T]he developer moved with lightning speed to accomplish the fill. We need to recognize the danger inherent in this fact pattern where, following the issuance of an Army Corps of Engineers permit, the developer will rush to fill the wetlands and commence construction, disrupting the wetlands, mooting the controversy, and rendering any judicial relief impractical if not impossible.”).

¹⁶⁹ *See* Allen, *supra* note 85, at 192–93; Fuschino, *supra* note 43, at 194–200.

¹⁷⁰ *See* Allen, *supra* note 85, at 187–89 (discussing environmental impacts of mountaintop removal mining).

authority to determine when an environmental impact is and is not “significant.”¹⁷¹

For example, in *Ohio Valley Environmental Coalition v. Bulen*,¹⁷² a district court in West Virginia found that the Corps violated the CWA by issuing NWP 21 because it permits activities that may have greater than minimal environmental impacts.¹⁷³ In that case, the administrative record was similarly filled with evidence of environmental impacts that the Corps failed to address.¹⁷⁴ However, the case was vacated in part on appeal by the United States Court of Appeals for the Fourth Circuit, which found that “neither [section 404] nor any other provision of the CWA specifies how the Corps must make the minimal-impact determinations, [or] the degree of certainty that must undergird them.”¹⁷⁵ Similarly, in another case challenging NWP 21, the Fourth Circuit found that review of the Corps’ analysis must be “highly deferential, with a presumption in favor of finding the agency action valid.”¹⁷⁶

V. THE REGULATORY IMPACT OF NATIONWIDE PERMIT 13 ON COASTAL ARMORING

The continued availability of the Corps’ broad general permit for coastal armoring has two major regulatory effects on the development of coastal wetlands. First, NWP 13 directly or indirectly enables the armoring of miles of vulnerable coastline by lowering substantially the overall permitting cost of building bulkheads and other armoring structures. The armoring permitted routinely by NWP 13 in turn encourages further development of sensitive coastal areas; as landowners become accustomed to the ability to install armoring at a relatively low cost, they are willing to purchase properties that are subject to flooding and erosion knowing that they will eventually be able to armor them affordably. Second, despite some positive changes to NWP 13 in the 2012 reissuance, as well as the newly proposed nationwide permit for living shorelines projects, the permit continues to favor traditional hard armoring approaches over more ecologically friendly bioengineering approaches to reducing erosion. This Part will explore each of these regulatory effects in turn.

¹⁷¹ See *id.* at 192–93 (summarizing lawsuits challenging findings of minimal adverse effects on the environment).

¹⁷² 410 F. Supp. 2d 450 (S.D. W. Va. 2004), *aff’d in part, vacated in part*, 429 F.3d 493 (4th Cir. 2005), *reh’ing en banc denied*, 437 F.3d 421(4th. Cir. 2006).

¹⁷³ *Id.* at 466, 471.

¹⁷⁴ *Id.* at 456–57, 463.

¹⁷⁵ *Ohio Valley Env’tl. Coal. v. Bulen*, 429 F.3d at 500, 505 (4th Cir. 2005).

¹⁷⁶ *Ohio Valley Env’tl. Coal. v. Aracoma Coal Co.*, 556 F.3d 177, 192 (4th Cir. 2009) (citing *Nat. Res. Def. Council, Inc. v. U.S. Env’tl. Prot. Agency*, 16 F.3d 1395, 1400 (4th Cir. 1993)); see also *Balt. Gas & Elec. Co. v. Nat. Res. Def. Council*, 462 U.S. 87, 103 (1983) (asserting that a reviewing court must generally be at its most deferential when examining scientific determinations made by an agency within its area of special expertise).

A. NWP 13 Enables Coastal Armoring and Encourages Coastal Development

Because the Corps has abdicated from the very beginning of the general permit program its responsibility under the CWA to review the majority of the fill of coastal wetlands for armoring purposes, it is easy to overlook the broad authority that the Corps possesses to oversee armoring projects through the section 404 individual permit program.¹⁷⁷ Every coastal state has its own permitting program for coastal development, and in many cases state governments restrict coastal armoring much more than the requirements of NWP 13.¹⁷⁸ Thus, as a practical matter, currently most coastal armoring permits are either granted or denied at the state level.¹⁷⁹ However, the Corps retains jurisdiction to approve or deny armoring projects that are conducted in the waters of the United States. Accordingly, many armoring projects approved by the states are *also* permitted by the Corps through the operation of the general permit for coastal armoring. However, because NWP 13 does not even require the applicant to submit a PCN to the district engineer, it is as if the federal permitting process did not exist for most applicants.¹⁸⁰

The fact that the Corps provides a general permit for most coastal armoring activities has a significant impact on the overall cost of construction for many armoring projects in coastal states. For example, a landowner interested in installing a small bulkhead in jurisdictional waters to protect a bayfront property from erosion might expect to pay \$15,000 for the construction of the bulkhead alone.¹⁸¹ The landowner would add to those construction costs the additional cost of preparing materials for the state permit application, which might or might not be a difficult process depending on land-use policies in the state. However, if the Corps did *not* offer a general permit for armoring, then the landowner would *also* have to apply for an individual permit from the Corps in order to construct the

¹⁷⁷ The general permit for bank stabilization that is now NWP 13 was the first general permit issued under the CWA. *See supra* notes 66–67 and accompanying text. *See also* Liss, *supra* note 3, at 10048 (explaining that the Corps “essentially acts as a rubber stamp” and that “the Corps’ policy is to routinely issue permits to armor shorelines without assessing the cumulative environmental effects of the particular project standing alone, or in light of other armoring projects that have been implemented.”).

¹⁷⁸ NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 106 (“[Nationwide general permits] do not have universal application because states can impose conditions that are more restrictive than those of the [the Corps].”); *see, e.g.*, MD. CODE ANN., ENVIR. §16-201 (West 2016) (imposing more restrictive conditions on a property owner’s right to armor); S.C. CODE ANN. § 48-39-30 (2016) (same).

¹⁷⁹ NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 106, 108 (explaining that the State permitting process is stricter than the federal, authorized by its expansive police power and public trust responsibilities).

¹⁸⁰ *See* Eric Biber & J.B. Ruhl, *The Permit Power Revisited: The Theory and Practice of Regulatory Permits in the Administrative State*, 64 DUKE L.J. 133, 197 (2014) (“[S]ome permits that do not even require notice to the agency might impose essentially no costs on the regulated party—and from that party’s perspective, the permits might equal a full-blown exemption from regulation.”).

¹⁸¹ *See* Titus, *supra* note 19, at 742 n.93 (explaining that bulkheads cost about \$125–\$200 per foot, making them affordable to most homeowners).

bulkhead in the waters of the United States. The requirement to seek an individual permit under section 404 would make most armoring projects substantially more time consuming and expensive, quite possibly doubling the overall cost of the project.¹⁸² That cost difference would be sufficient to convince many smaller landowners to consider other less expensive alternatives to coastal armoring.¹⁸³

That extra layer of regulation and cost would not, of course, be inherently desirable in every situation, which is why the general permit program of the CWA exists to enable landowners to avoid unnecessary regulatory costs for actions that pose little risk of environmental harm and do not require tailored permits to avoid that harm.¹⁸⁴ However, under the CWA, general permits are only legal where the permitted activity has “minimal adverse environmental effects,” both individually and cumulatively,¹⁸⁵ and shoreline armoring does, in fact, have a significant cumulative environmental impact. Coastal armoring has a concentrated economic benefit for the landowner, while the environmental costs of armoring are externalized to the public.¹⁸⁶ By providing a general permit for coastal armoring, the Corps not only provides a steep discount to landowners seeking to take advantage of this externality, but also deprives the public of its ability to submit comments and oppose the project through the public notice requirement of individual section 404 permits.¹⁸⁷ The American public has an interest in preventing environmentally damaging development in waters of the United States that is not necessarily represented by state coastal land use regulations, and the CWA provides the public with an opportunity to comment on activities in those waters through the section 404 individual permit program.

The Corps’ failure to regulate coastal armoring can have serious consequences in states struggling with extensive development in ecologically sensitive coastal areas. For example, Washington State has

¹⁸² See, e.g., *Rapanos*, 547 U.S. 715, 721 (2006) (“[T]he average applicant for an individual permit spends 788 days and \$271,596 in completing the process.”). The cost of permitting a small structure such as a bulkhead would presumably be much smaller, but would still come at a significant cost of both money and time.

¹⁸³ See Biber & Ruhl, *supra* note 180, at 182 (“[S]omeone who is filling a wetland to construct a structure . . . will be encouraged by a costly permit to construct that structure elsewhere, without the harm to the wetland.”).

¹⁸⁴ See *id.* at 191–92 (“[G]eneral permits make a lot more sense when . . . the risks of harm or the potential benefit from an activity are relatively small” because in these cases “tailoring will generally not be beneficial.”).

¹⁸⁵ 33 U.S.C. § 1344(e)(1) (2012).

¹⁸⁶ See NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 4 (“[T]here are indirect costs associated with mitigation options that armor the shoreline, including the loss of ecosystem services at the site and in surrounding waters and shorelines. Many of these costs are borne by the public rather than the landowner.”).

¹⁸⁷ See *Ohio Valley Envtl. Coal. v. Bulen*, 410 F. Supp. 2d 450, 461 (S.D. W. Va. 2004) (“Prior to the issuance of [a general permit] the plaintiffs could expect to be apprised, through the notice and comment requirements of the individual permitting process, of potential discharges The issuance of [the general permit] has abolished the plaintiffs’ opportunity to object to proposals to discharge before they are authorized.”).

experienced decades of conflict over residential development around Puget Sound.¹⁸⁸ Puget Sound is already substantially armored—one study found that 36.6% of the shoreline in Thurston County had been armored by 2001—and that armoring has adverse environmental effects on the local ecosystem, including effects on salmon spawning.¹⁸⁹ However, attempts at regulation of bulkheads by the Washington Department of Fish and Wildlife (WDFW) have been unpopular at the state level: in 1991, the state passed a law “at the request of a lobbyist hired by a local bulkhead contractor” that severely restricted the ability of the WDFW to deny bulkhead permits to residential landowners.¹⁹⁰

Commenting on the proposed 2012 reissuance of NWP 13, the Washington State Department of Natural Resources (WA DNR) strongly disagreed with the Corps that coastal armoring projects have minimal environmental impact: “500 feet of stabilization is not a small project but rather very large[,] especially for shoreline’s [sic] which are already incredibly impacted, with little understanding of cumulative impacts.”¹⁹¹ As WA DNR explained, “[b]y authorizing very large projects (up to 500 feet) programmatically through this permit, this activity’s authorization becomes streamlined[,] and . . . *it further encourages the activity.*”¹⁹² In addition, WA DNR asserted that the Corps’ engineering expertise would be useful for review of the environmental impact of the bulkheads because in Washington, “[c]urrently the Regulatory branch habitat biologists are solely providing review [of permit applications] and “a habitat biologist is not trained in marine engineering to adequately address the technicalities of the project.”¹⁹³

As the Washington example illustrates, NWP 13 encourages coastal development by “streamlining” the application process for projects in the Corps’ jurisdiction and thereby lowering the overall cost of armoring.¹⁹⁴ Moreover, the significant environmental impacts of coastal armoring on the waters of the United States are left to state regulation that is often biased in favor of developers and inadequately funded or equipped to evaluate the

¹⁸⁸ See Randy Carman et al., *Regulating Shoreline Armoring in Puget Sound*, in PUGET SOUND SHORELINES AND THE IMPACTS OF ARMORING: PROCEEDINGS OF A STATE OF THE SCIENCE WORKSHOP, *supra* note 110, at 49, 49–50.

¹⁸⁹ *Id.*

¹⁹⁰ *Id.* at 50; see also WASH. REV. CODE § 77.55.141(1)–(2) (2012) (stating that it is “necessary to facilitate issuance of permits for bulkheads” and that “the [WDFW] *shall* issue a permit” for a bulkhead) (emphasis added).

¹⁹¹ 3 Administrative Record, *Nat’l Wildlife Fed’n*, No. 14-cv-01701 (JDB), 2016 WL 1048767 (D.D.C. Mar. 14, 2016), ECF No. 31-2, at 41.

¹⁹² *Id.* (emphasis added).

¹⁹³ *Id.*

¹⁹⁴ See NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 106 (stating that in states with more restrictive limits on armoring permits, the Corps’ nationwide permits “ease the permitting process and shorten the approval time for activities like installing bulkheads . . . directly adjacent to eroding upland shorelines.”).

impacts of armoring projects.¹⁹⁵ The result is significant harm to coastal wetlands along the nation's shores.

B. Neither Nationwide Permit 13 nor the Proposed Nationwide Permit B Sufficiently Encourage Soft Armoring Approaches to Shoreline Armoring

In the past decade, there has been a movement away from traditional hard coastal armoring approaches, such as bulkheads and seawalls, towards “softer” approaches using bioengineering to reduce erosion while restoring the ecosystem services of coastal wetlands.¹⁹⁶ These soft armoring approaches, often known as “living shorelines,” make use of “living plant material, oyster shells, earthen material, or a combination of natural structures with riprap or offshore breakwaters to protect property from erosion.”¹⁹⁷ The use of living shoreline approaches not only protects property from erosion, but also creates habitat for wildlife, preserves access to the upper shoreline for wildlife, and, in some cases, actually promotes the accretion of sediment to reverse the effects of erosion.¹⁹⁸ For this reason, a number of states, including Maryland and Florida, have adopted shoreline preservation approaches favoring living shorelines, and EPA has encouraged states to replace hard armoring with living shorelines where feasible.¹⁹⁹

Soft armoring approaches are most viable in “lower energy wave areas such as bays and estuaries” where the shore is not subject to the full force of waves from the open ocean.²⁰⁰ These areas are among the most densely armored sections of the American coast because armoring along bays is often less expensive and less highly regulated than armoring on the ocean coast.²⁰¹

¹⁹⁵ See Kaswan, *supra* note 25, at 436 (emphasizing the important role of federal climate change adaptation guidance and explaining that “local governments are unlikely to adapt sufficiently on their own. Even where climate impacts are primarily local, there are systemic reasons why local governments might fail to engage in the optimal level of adaptation, including insufficient information and financial resources, the race-to-the-bottom, and free rider concerns.”).

¹⁹⁶ Pace, *supra* note 3, at 340; see also JESSICA GRANNIS, GEORGETOWN CLIMATE CTR., ADAPTATION TOOL KIT: SEA-LEVEL RISE AND COASTAL LAND USE: HOW GOVERNMENTS CAN USE LAND-USE PRACTICES TO ADAPT TO SEA LEVEL RISE 39 (2011), available at http://www.georgetownclimate.org/sites/www.georgetownclimate.org/files/Adaptation_Tool_Kit_SLR.pdf.

¹⁹⁷ Miss.-Ala. Sea Grant Consortium, *Living Shorelines*, <http://masgc.org/living-shorelines/what%20are%20living%20shorelines> (last visited July 16, 2016).

¹⁹⁸ *Id.*

¹⁹⁹ See GRANNIS, *supra* note 196 at, 39–40 (listing state approaches to soft armoring and living shorelines); see also U.S. ENVTL. PROT. AGENCY, SYNTHESIS OF ADAPTATION OPTIONS FOR COASTAL AREAS 12, available at http://www.epa.gov/sites/production/files/2014-04/documents/cre_synthesis_1-09.pdf (setting as a “management goal” to “Maintain Shorelines Utilizing ‘Soft Measures’”).

²⁰⁰ Pace, *supra* note 3, at 340.

²⁰¹ See Titus, *supra* note 19, at 742 (Explaining that “a seawall strong enough to hold back the ocean can cost ten times as much as the bulkhead necessary to stop a bayshore from eroding” and that coastal policies in several states including North Carolina and South Carolina “prohibit shoreline armoring along the ocean, but not the bay.”); see also NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 151, at 115 (noting that South Carolina, North Carolina

For years, NWP 13 has been an obstacle to the development of living shorelines on sheltered coasts. As the United States Climate Change Science Program explained, by providing a general permit for traditional hard armoring, but no general permit for soft armoring approaches, the Corps created a “bias in favor of shoreline armoring.”²⁰² The absence of a general permit for soft armoring created a particularly acute problem because soft armoring approaches by their nature usually require the placement of fill in navigable waters, requiring a permit from the Corps, while hard armoring structures, such as bulkheads, can often be built above the tideline, avoiding the Corps’ jurisdiction entirely.²⁰³ Faced with the cost of obtaining an individual section 404 permit from the Corps even landowners inclined to soft armoring approaches would often opt for hard armoring structures.

The Corps remedied this problem to a certain extent in the 2012 reissuance of NWP 13 by specifically incorporating “bioengineering” and “vegetative bank stabilization” into the activities permitted by NWP 13 and by stating in its decision document that “bioengineered techniques can slow erosion rates and can have beneficial effects on habitat for macroinvertebrates and fish.”²⁰⁴ However, while NWP 13 no longer actively disincentivizes the use of soft armoring, it still does little to *incentivize* the use of soft armoring approaches. In its first draft of the 2012 reissuance, the Corps proposed incentivizing bioengineering approaches by allowing the district engineer to waive the one cubic yard per foot rule only for a permittee utilizing bioengineering approaches.²⁰⁵ However, pressured by groups arguing that bioengineering approaches are not viable in all areas, the Corps ultimately allowed waiver of fill limit for *all* projects, including hard armoring projects.²⁰⁶ The Corps also declined to provide a definition or guidance regarding bioengineering approaches in the permit, despite offers from EPA and others to assist with the language.²⁰⁷

Because bioengineered living shoreline approaches are still relatively new and unfamiliar to many contractors, it is likely that many landowners will continue to default to bulkheads and other hard armoring without further incentive to explore soft armoring techniques.²⁰⁸ The Corps’ failure to

and Georgia have prohibited hard structures on the oceanfront, but “attention to the erosion issue on sheltered shorelines in the same states has yet to occur in any significant way, and hard structures are routinely permitted.”)

²⁰² See TITUS ET AL., *supra* note 22, at 169 (footnote omitted) (“[The Corps] has issued nationwide permits to expedite the ability of property owners to erect bulkheads and revetments, but there are no such permits for soft solutions such as rebuilding an eroded marsh or bay beach.”).

²⁰³ See NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 115 (“Constructing a bulkhead above the [mean high water] line may be quicker and easier than obtaining a permit for a vegetative solution developed in the nearshore waters because it potentially avoids the multiple layers of federal review.”).

²⁰⁴ NWP 13 DECISION DOCUMENT, *supra* note 11, at 6–7.

²⁰⁵ *Id.* at 7.

²⁰⁶ *Id.* at 1, 8.

²⁰⁷ *Id.* at 6.

²⁰⁸ See NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 4 (“Contractors are more likely to recommend structures such as bulkheads [rather than soft armoring] because

include such an incentive in the 2012 reissuance of NWP 13 was a missed opportunity to encourage wider adoption of soft armoring approaches.²⁰⁹

The Corps' proposed modifications to NWP 13 for its 2017 reissuance are a step in the right direction; however, they continue to provide no real incentive for landowners to choose living shoreline approaches over hard armoring. Most significantly, the proposed 2017 modifications to the nationwide permit program include the addition of a new nationwide permit specifically designed to authorize living shorelines projects, tentatively called "Nationwide Permit B" (NWP B).²¹⁰ On its own, NWP B will be useful for landowners considering the use of living shorelines to reduce erosion. As the Corps explains, "[w]hile some activities associated with living shorelines can be authorized by NWPs 13 and 27, the construction of living shorelines often requires individual permits because the structures, work, and fills may not fall within the terms and conditions of those NWPs."²¹¹ Thus, for landowners who have already decided to employ a living shoreline approach to control erosion, NWP B will provide greater regulatory ease and flexibility compared to the current regulations.

However, the proposed NWP B still does little to encourage landowners to choose living shorelines over hard armoring. First of all, as currently drafted, NWP B only authorizes projects up to five-hundred feet in length, the same size authorized by NWP 13.²¹² Because the two permits authorize projects of exactly the same size, the Corps provides no regulatory incentive to choose living shorelines over hard armoring.²¹³

Indeed, NWP B arguably provides several disincentives that will discourage many landowners from choosing living shorelines over the more traditional hard armoring authorized by NWP 13. First, unlike NWP 13, NWP B requires a PCN for all living shoreline projects.²¹⁴ While preparing a PCN is not as burdensome as the documentation required for an individual section 404 permit, it still requires the applicant to provide, among other things, a description of the proposed project, and any direct or indirect environmental effects the project would cause, a delineation of any affected wetlands or special aquatic sites, and a discussion of the potential effects of the project on endangered species and their habitats.²¹⁵ Faced with the preparation of

they have experience with the technology and know the design specifications and expected performance.").

²⁰⁹ See Talton, *supra* note 22 (explaining that the modifications in NWP 13 were "a step in the right direction" but that the permitting system still "gives bulkhead and revetment applicants an unfair advantage because they generally take less time to process than living shoreline applications.").

²¹⁰ See Proposal to Reissue and Modify Nationwide Permits, 81 Fed. Reg. 35,186, 35,205–07 (June 1, 2016).

²¹¹ *Id.* at 35,205.

²¹² *Id.* at 35,220 (NWP 13); *Id.* at 35,231 (NWP B).

²¹³ As the Corps explains, the Corps is seeking to provide "equitability" between the permits "so that landowners can consider a variety of options." *Id.* at 35,199.

²¹⁴ Compare *id.* at 35,221 (requiring a PCN for activities under NWP 13 only if certain conditions are met), with *id.* at 35,231 (requiring a PCN for all activities under NWP B).

²¹⁵ See *id.* at 35,235–37 (setting forth the documentation requirements of a PCN).

such a detailed document, an applicant might reasonably choose to construct a bulkhead under NWP 13, which may not require the production of a PCN. Second, the ecological requirements of the proposed NWP B are more stringent than those required under NWP 13. For example, projects proposed under NWP B must be designed to have “no more than minimal adverse effects on water movement between the waterbody and the shore and the movement of aquatic organisms between the waterbody and the shore.”²¹⁶ However, the bulkheads permitted under NWP 13 routinely prevent water movement to the shore and inhibit the movement of aquatic organisms such as sea turtles, but NWP 13 does not require applicants to minimize either of these effects.²¹⁷ Requiring landowners utilizing NWP B to submit a PCN and to minimize the ecological effect of the project is a reasonable restriction to incorporate in the general permit, but those requirements should also be mandated for all projects submitted under NWP 13.

Ultimately, even though the proposed NWP B will be useful for landowners already committed to developing living shorelines, it will not provide an incentive for undecided landowners. As the Corps explains, “landowners and contractors may have preferences for specific approaches [to bank stabilization]”²¹⁸ and there are fewer “consultants and contractors qualified to design and build living shorelines,” which will mean that many landowners will continue to find building a bulkhead to be the quickest and easiest option.²¹⁹ Moreover, “[m]any landowners prefer bulkheads and revetments because well-constructed bulkheads last approximately 20 years and revetments can last up to 50 years.”²²⁰ Thus, without an incentive to choose living shorelines over hard armoring, landowners will likely continue to take the path of least resistance even though it is more environmentally destructive.²²¹

VI. REFORMING NATIONWIDE PERMIT 13 TO ENCOURAGE POSITIVE SEA LEVEL RISE ADAPTATION

On March 18, 2017, the current slate of section 404 nationwide permits, including NWP 13, will expire.²²² The time has come for the Corps either to eliminate or set strict limits on its general permit for shoreline armoring given the overwhelming evidence that hard armoring has a significant cumulative adverse impact on coastal wetlands, and that this adverse effect

²¹⁶ *Id.* at 35,231.

²¹⁷ *See supra* Part III.B.

²¹⁸ 81 Fed. Reg. at 35,199.

²¹⁹ *Id.* at 35,200.

²²⁰ *Id.*

²²¹ In its proposed reissuance, the Corps also states that it plans to question landowners submitting a PCN for bank stabilization projects regarding whether “the applicant has considered the use of living shorelines” and whether there are qualified living shoreline contractors in the applicant’s area. *Id.* However, since most bank stabilization projects under NWP 13 require no PCN, the results of this survey are unlikely to provide meaningful data to the Corps.

²²² *See* Reissuance of Nationwide Permits, 77 Fed. Reg. 10,184, 10,184 (Feb. 21, 2012).

is greatly exacerbated by the ongoing process of sea level rise caused by climate change. Unfortunately, as discussed below, the Corps' draft reissuance of NWP 13 contains no significant modifications to the terms of the general permit, and thus currently fails to address the significant adverse environmental effects of shoreline armoring.

In the years since the 2012 reissuance of NWP 13, the Corps has repeatedly emphasized in public documents its awareness of the cumulative environmental impact of shoreline armoring, as well as the importance of incorporating sea level rise modeling into project planning. For example, in 2013, the Corps acknowledged that hard armoring may enhance "erosion of the seabed immediately in front of the structure" and may cause "isolation of the beach from the inland sediment source" as well as "enhanced erosion on the adjacent shoreline."²²³ For this reason, "the placement of [armoring] . . . must be considered in a systems context, and the wider implications for the adjacent natural and built environment must be evaluated with respect to both current and future sea levels and storm conditions."²²⁴ Similarly, the Corps recently issued revised technical guidelines for evaluating the effect of sea level rise on projects, placing emphasis "both on how the project operates within a larger system as well as how project decisions now can influence future impacts."²²⁵ Finally, the federal Climate Resilience Toolkit webpage on Coastal Erosion, which was developed with assistance from members of the Corps, explains that "as understanding of natural shoreline function improves, there is a growing acceptance that structural solutions may cause more problems than they solve" because they "affect natural water currents and prevent sand from shifting along coastlines to replenish beaches."²²⁶

Given these public statements, and the general advances in climate science over the past five years, the Corps can no longer plausibly find that coastal armoring up to five hundred-feet in length has "minimal adverse environmental effects" on the environment as required by the CWA in order to issue a general permit.²²⁷ In this Part, I will suggest two approaches that the Corps could take to address the environmental consequences of coastal armoring.

²²³ See U.S. ARMY CORPS OF ENG'RS, COASTAL RISK REDUCTION, *supra* note 89, at 6.

²²⁴ *Id.* at 7.

²²⁵ See U.S. ARMY CORPS OF ENG'RS, CLIMATE CHANGE ADAPTATION PLAN: UPDATE TO 2014 PLAN 8-9 (2015), *available at* http://www.corpsclimate.us/docs/USACE_Adaptation_Plan_12-NOV-2015_lores.pdf (citing Technical Letter No. 1100-2-1 from James C. Dalton, Chief, Eng'g & Constr. Div., Directorate of Civil Works, U.S. Army Corps of Eng'rs (June 30, 2014), *available at* http://www.publications.usace.army.mil/Portals/76/Publications/EngineerTechnicalLetters/ETL_1100-2-1.pdf).

²²⁶ See U.S. Climate Resilience Toolkit, *Coastal Erosion*, <https://toolkit.climate.gov/topics/coastal-flood-risk/coastal-erosion> (last visited July 16, 2016).

²²⁷ CWA, 33 U.S.C. § 1344(e)(1) (2012).

A. The Corps Should No Longer Provide a General Permit for Hard Coastal Armoring Structures

Because of the well-established detrimental effects of coastal armoring on shorelines, the Corps should no longer offer a general permit for hard coastal armoring such as bulkheads and seawalls through NWP 13. Acknowledging that the significant environmental impacts caused by armoring projects require individual review would have several beneficial effects for the Corps' policy response to climate change.

First, removing hard coastal armoring from NWP 13 would bring the Corps into compliance with section 404 of the CWA. The dredge and fill provisions of the CWA are designed to provide searching review of projects that have the potential to cause environmental harm to navigable waters.²²⁸ In order to protect against environmental harm, individual permit review under section 404 requires extensive documentation from the applicant, allows the Corps to address structural and environmental problems with the project, and provides an opportunity for interested members of the public to comment and critique the data and analysis presented by the applicant and the Corps.²²⁹ This approach, while time consuming and expensive, has helped significantly to slow the destruction of the nation's wetlands.²³⁰ By providing for such probing review, a move to individual review of coastal armoring permits will similarly slow the rate of armoring in coastal wetlands.

Second, moving to individual permits for coastal armoring will allow the Corps, which has long abdicated its role in managing coastal development along navigable waters, to serve an important role in the national project of climate change adaptation along the coast. Several scholars have called for a more unified approach to federal and state coastal management through statutes such as the Coastal Zone Management Act (CZMA).²³¹ Section 404 does not have the broad applicability of the CZMA to all coastal land use, but it does provide a ready vehicle to provide a federal perspective on at least some important coastal land use decisions.

The Corps has done an admirable job of developing engineering best practices regarding coastal development in the face of climate change, and could help guide applicants to erosion solutions that would have a smaller footprint and be less environmentally destructive.²³² Such a role would be especially important in states that routinely permit hard armoring with minimal state review and which have been slow to acknowledge the threat of sea level rise, such as several of the states on the Southeast Atlantic Coast

²²⁸ See 33 C.F.R. § 320.4 (2015).

²²⁹ See Blumm & Mering, *supra* note 45, at 237–42 (describing the detailed analysis required for individual section 404 permits).

²³⁰ Michael C. Blumm, *Wetlands Preservation, Fish and Wildlife Protection, and 404 Regulation: A Response*, 18 LAND & WATER L. REV. 469, 485 (1983).

²³¹ Coastal Zone Management Act of 1972, 16 U.S.C. §§ 1451–1466 (2012). See sources cited *supra* note 25.

²³² See *supra* notes 196–99 and accompanying text.

or along the Gulf Coast.²³³ For example, Mobile Bay in Alabama has become so thoroughly armored that its shores are often described as a “bathtub” where even at low tide there is no sandy beach at all.²³⁴ Individual permitting through the Corps would provide a regional or nationwide environmental perspective that could help to prevent or mitigate such excessive armoring in the face of sea level rise, a problem that local governments are often poorly equipped to confront.²³⁵

Third, compelling landowners to go through the individual permitting program before constructing a bulkhead would force those landowners to internalize more of the environmental costs of their actions, and would send a strong signal to the market regarding the desirability of building on the shoreline of sensitive bays and estuaries. One of the most effective aspects of the section 404 program has been that the requirement for individual permitting makes the destruction of wetlands costly and time consuming in a way that cannot be taken lightly by landowners.²³⁶ By covering an action as environmentally destructive as hard armoring through a general permit, the Corps has effectively discounted or subsidized the cost of coastal development. Here, as with other federal programs such as the federal flood insurance program, providing such a subsidy for coastal development no longer makes sense in the context of sea level rise.²³⁷ By removing the general permit, the Corps would immediately double the time and expense involved in many armoring projects and would send a signal to land purchasers that the Corps will no longer automatically permit hard armoring to protect coastal structures as the sea rises.

To further encourage more ecologically sensitive approaches to erosion control, the Corps should continue to provide a general permit for bioengineered living shoreline approaches by replacing NWP 13 with the proposed NWP B. Faced with a choice between a hard armoring project that will require individual review by the Corps and a living shoreline project that may be approved through a general permit, many more property owners will

²³³ Liss, *supra* note 3, at 10035 (citing to state prohibitions on considering climate change or sea level rise in policy decisions in North Carolina and Florida, and explaining that some coastal states have “buried their heads in the sand, preferring to deny either the existence of global climate change or their ability to address the effects of global climate change.”).

²³⁴ Pace, *supra* note 3 at 338–39.

²³⁵ See NAT’L RESEARCH COUNCIL OF THE NAT’L ACADS., *supra* note 151, at 110 (“Local governments possess some clear advantages in addressing shoreline erosion . . . [but] face limitations in managing land use. Their staffs may be small or lack adequate skills; local budgets may be insufficient for regulating development pressures in highly desired areas; and planning boards may be forced to grant variances to avoid [takings claims].”); see also Buckner, *supra* note 25, at 73–74 (noting that state governments are susceptible to a “race-to-the-bottom” in coastal regulation and may “free ride” on neighboring states’ efforts to adapt to climate change).

²³⁶ See Biber & Ruhl, *supra* note 180, at 182 (“[S]omeone who is filling a wetland to construct a structure . . . will be encouraged by a costly permit to construct that structure elsewhere, without the harm to the wetland.”).

²³⁷ See, e.g., Sarah Fox, *This is Adaptation: The Elimination of Subsidies Under the National Flood Insurance Program*, 39 COLUM. J. ENVTL. L. 205, 209–10 (2014) (“[A]s climate change alters the availability of land and water and shifts baseline expectations for sea levels and weather patterns, policymakers will have to consider ending subsidies that ignore these changes.”).

choose the latter.²³⁸ It is true that some coastal properties are not suitable for soft armoring due to higher wave energy, but those properties can still request hard armoring as needed through the individual permit process.

B. The Corps Should Modify Nationwide Permit 13 to Better Evaluate and Protect Against Cumulative Environmental Harms

Unfortunately, in its draft reissuance of the NWP, the Corps has neither chosen to eliminate NWP 13 nor made any substantive modifications to the currently existing NWP 13.²³⁹ Continuing with the status quo and reissuing NWP 13 without significant changes will leave the Corps open to legal challenge under the CWA; given the Corps' public acknowledgment of the significant cumulative environmental impacts of shoreline armoring,²⁴⁰ it cannot retain NWP 13 in 2017 without modifying the permit to better avoid the likelihood of environmental harm. The Corps should consider implementing the following changes to the existing permit to bring the permit into compliance with the CWA and to make the permit a more useful tool for climate change adaptation.

First, NWP 13 should require all applicants to submit a PCN, not just those who exceed the terms of the general permit. Such a requirement would not be unusual: approximately half of all of the Corps' general permits already require PCNs from all applicants.²⁴¹ As Professors Biber and Ruhl explain, general permits serve two important purposes in an era of climate change adaptation: first, they provide notice to users of the permit that the government regulates the behavior and may regulate it more strictly in the future;²⁴² and second, they allow the government to assess the scope of the activity before imposing further regulation.²⁴³

NWP 13 currently performs neither of these functions. Because permittees do not have to submit a PCN to the Corps, they may in fact be unaware that they are making use of the general permit in the Corps' jurisdiction.²⁴⁴ Instead, they may believe that the state government is the only relevant regulator. Thus, the current general permit fails to send a signal to

²³⁸ See NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 151, at 130–31 (discussing how Virginia provides incentives to the development of living shorelines by easing the associated mitigation requirements).

²³⁹ See Proposal to Reissue and Modify Nationwide Permits, 81 Fed. Reg. 35,186, 35,220–21 (June 1, 2016).

²⁴⁰ See *supra* notes 207–10 and accompanying discussion.

²⁴¹ Of the 50 nationwide permits, 22 require a PCN for all activities. U.S. ARMY CORPS OF ENG'RS, SUMMARY OF 2012 NWPS, *supra* note 74.

²⁴² See Biber & Ruhl, *supra* note 180, at 199–200 (Arguing that general permits “more easily allow the phase-in of regulations in situations in which there is substantial resistance” because “[a]ctors who understand that they are subject to minimal regulation might be less resistant to seeing that regulation gradually increased.”).

²⁴³ *Id.* at 189.

²⁴⁴ Because of this problem, it is the Corps' regular practice to retroactively permit projects that have been built without a permit, even where the landowner was obligated to seek a permit. Addison & Burns, *supra* note 37, at 662.

the market that the Corps will likely restrict coastal armoring further in the future in response to climate change. Second, requiring a PCN would give the Corps valuable data regarding the extent to which the permit is currently being utilized.²⁴⁵ Detailed data on patterns of coastal armoring could prove invaluable to state and federal agencies undertaking coastal adaptation and resilience planning. Moreover, gathering that data would allow the Corps to better assess the cumulative impact of the armoring, leading to more effective permitting in the future. Knowing where armoring already exists might lead the Corps to deny permits in bays that are already heavily armored or to coordinate soft armoring permits where several landowners are seeking to armor in the same area. The benefits of requiring a PCN come at a relatively low cost to the agency, since the Corps is not required to respond to every PCN, and the permittee is allowed to proceed where she has not received word from the Corps within forty-five days.²⁴⁶

The Corps' continuing failure to require a PCN for projects authorized under NWP 13 is particularly glaring because of the fact that the Corps plans to require a PCN for every living shoreline project authorized under the proposed NWP B.²⁴⁷ Thus, a landowner could develop a bulkhead for bank stabilization under NWP 13 without submitting a PCN, even though that same bank stabilization project *would* require a PCN if submitted under NWP B, and would also likely *fail to be approved* under NWP B because it would likely have "more than minimal adverse effects on water movement between the waterbody and the shore and the movement of aquatic organisms between the waterbody and the shore."²⁴⁸ Given the proposed PCN requirement for NWP B, the failure to require a PCN for NWP 13 is arbitrary.

As a second corrective measure, the Corps should greatly reduce the length of bulkhead permitted by NWP 13. As several commenters to the 2012 reissue noted, the currently permitted length is excessive: "500 feet of stabilization is not a small project but rather very large."²⁴⁹ It is difficult to determine what length of bulkhead would truly have minimal cumulative environmental impact, but the Corps could consider reducing the permitted length by least 200 feet, as suggested by a number of commenters on the 2012 permit.²⁵⁰ As discussed in Part IV.B above, the Corps could maintain the five-hundred-foot length for bioengineering projects or other soft armoring approaches under the proposed NWP B in order to provide an incentive for landowners to consider less damaging erosion control methods.

²⁴⁵ Biber & Ruhl, *supra* note 180, at 189 ("A notice of intent can at least give the agency a sense of how many actors are taking advantage of a general permit provision, and a rough idea of the relative impacts of those actions."). Indeed, the Corps maintains a database of information gleaned from PCNs, which "is used to record requested amounts of impacts to jurisdictional waters and wetlands, as well as proposed compensatory mitigation." Proposal to Reissue and Modify Nationwide Permits, 81 Fed. Reg. 35,186, 35,191 (June 1, 2016).

²⁴⁶ 33 C.F.R. § 330.1(e) (2015).

²⁴⁷ 81 Fed. Reg. at 35,231.

²⁴⁸ *Id.* (listing the requirements for a project under the proposed NWP B).

²⁴⁹ 3 Administrative Record, *supra* note 191, at 41 (comments of WA DNR).

²⁵⁰ NWP 13 DECISION DOCUMENT, *supra* note 11, at 6.

Finally, the Corps should consider adding provisions that would act to offset the immediate environmental harm caused by the armoring. For example, the permit could require mitigation for all hard armoring projects.²⁵¹ Mitigation could take the form of wetland restoration where possible, or could fund programs to support coastal adaptation.²⁵² The Corps should also consider conditioning the general permit on the landowner's agreement not to seek further armoring when sea level rise ultimately exceeds the bulkhead.²⁵³

VII. CONCLUSION

By offering a streamlined general permit for coastal armoring, the Corps has failed to fulfill the CWA's goal of protecting the nation's wetlands from destruction. General permits are only appropriate where the activity has minimal environmental impact, but this is not the case with the coastal armoring permitted by NWP 13. Numerous scientific studies have shown that the installation of hard coastal armoring increases erosion both in front of the bulkhead and at its periphery, reduces biodiversity, threatens endangered species that depend on the intertidal zone, and prevents the migration of coastal wetlands inward as sea level rises. Each of these grave harms will only be exacerbated by climate change.

Because the Corps failed to address the environmental damage caused by coastal armoring in its 2012 reissuance of NWP 13, and particularly because it ignored the effects of sea level rise on armoring, NWP 13 is invalid under the CWA. The existence of the general permit facilitates and encourages development in sensitive ecological areas that are already subject to sea level rise. Moreover, ready access to permits for hard armoring have discouraged and disincentivized the development of softer forms of erosion control, such as, living shorelines that preserve wetlands and provide habitat for coastal species.

With the 2017 reissuance of the Corps' nationwide permits, the time has come to fix NWP 13 in order to protect the country's coastal wetlands from climate change. Unfortunately, based on its proposed 2017 nationwide permits, the Corps shows little willingness to modify NWP 13 to bring it into compliance with the CWA. However, it is not too late for the Corps to change course. In order to fulfill the requirements of the CWA, the Corps should consider removing coastal armoring from NWP 13 altogether. By requiring individual permits for coastal armoring, the Corps would properly recognize the significant negative environmental effects caused by shoreline armoring. Moreover, the Corps would discourage imprudent coastal development and encourage greater use of living shoreline approaches. If

²⁵¹ See Titus, *supra* note 19, at 762–63 (recommending that the EPA and the Corps to “apply a mitigation requirement along with all bulk-head permits”); see also NAT'L RESEARCH COUNCIL OF THE NAT'L ACADS., *supra* note 151, at 130–31 (discussing Virginia's armoring permit which requires mitigation for all armoring projects).

²⁵² See Titus, *supra* note 19, at 762–63.

²⁵³ *Id.* at 763.

576

ENVIRONMENTAL LAW

[Vol. 46:537]

the Corps chooses to maintain NWP 13, it must strictly limit its application by requiring a PCN for all armoring permits and by reducing the allowable length of armoring before an individual permit is required. By undertaking closer review of coastal armoring permits, the Corps has an opportunity to play an important role in implementing a national plan of climate change adaptation along the coasts and protecting the nation's coastal wetlands from destruction and fulfilling the goals of the CWA.