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April 12, 2019

The Honorable Andrew Wheeler
Administrator
U.S. Environmental Protection
1200 Pennsylvania Avenue
Washington, DC 20460

The Honorable R.D. James
Assistant Sec. of the Army for Civil Works
U.S. Army Corps of Engineers
441 G Street, N.W.
Washington, D.C. 20314

Attn: Docket ID No. EPA-HQ-OW-2018-0149

Dear Administrator Wheeler and Assistant Secretary James:

Ducks Unlimited (DU) is a nonprofit 501(c)(3), founded in 1937 by concerned and farsighted sportsmen conservationists***. Today, DU represents a broad coalition of nearly 670,000 conservation-minded supporters from across the political and economic spectrum.*** As the largest wetlands and waterfowl conservation organization in the world, our mission is to conserve, restore and manage wetlands and associated habitats for North America's waterfowl. DU also recognizes that these wetlands benefit more than 900 species of wildlife and, perhaps most importantly, the people who enjoy and value them.

DU has conserved more than 14.5 million acres of wetland and associated upland habitat in North America through our public-private partnerships model. DU has very limited landholdings, and most of our wetland and waterfowl conservation projects are conducted on lands owned and managed by others. Although some of our projects are conducted on public lands, most of the lands on which we have worked in the U.S. are privately owned. Thus, ***an important perspective that Ducks Unlimited brings to this issue stems from our strong, longstanding, and ongoing partnership with the agricultural and ranching communities***. Even more importantly, we have worked at a personal level with thousands of individual farmers and ranchers who contribute significantly to the conservation of wildlife and other natural resources on their lands, while at the same time earning their living from those lands. Tens of thousands of DU members, volunteers, board members and staff are farmers or ranchers, come from farming or ranching families, or are otherwise associated with the Nation's vital agricultural and livestock-based economy. Thus, while we do not purport to represent the farming and ranching communities' views on the Clean Water Act (hereafter, "the Act" or "CWA"), we are sensitive to their perspectives and concerns and can speak to examples of individual experiences.

The farmers and ranchers with whom we work are primarily concerned about the clarity and predictability of not only the CWA but the entire suite of conservation regulations and incentives and how agencies coordinate to make decisions. Furthermore, there is great concern regarding the timeliness with which permit decisions are made or agency actions are pursued. Despite these concerns, ***we find that many farmers and ranchers value and enjoy wetlands as a direct result of the fish and wildlife that use those habitats and share their lands. In many cases, these landowners derive supplement income in the form of hunting leases or conservation easements and are broadly supportive of incentive-based water conservation programs. We strongly support and continually advocate for incentive-based programs that supplement the regulatory framework of the CWA to achieve the Act's fundamental goal "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."*** Rural and urban communities across the country also increasingly recognize the individual and aggregate benefits of wetlands for flood control, nutrient management, irrigation management, and habitat and are deeply concerned about the actions of their upstream neighbors that may imperil these benefits. ***DU supports Agency rule-making that streamlines regulatory processes and reduces uncertainty, but rule-making must first and foremost protect our nation's water as intended by Congress.***

As day-to-day practitioners of on-the-ground wetland conservation in every state in the Nation, Ducks Unlimited has extensive, hands-on experience in complying with the CWA's regulatory components as well as state and local regulations. Thus, ***DU not only sees the CWA through the lens of its importance to our organization's conservation mission, but we also view it through the lens of being a part of the CWA's "regulated community."*** We also have a comprehensive understanding of the complex patchwork of regulations governing the waters across the U.S. and the process of interpreting regulatory language and data. This puts DU in a somewhat unique position relative to the CWA. We believe any rule promulgated by the Agencies should be consistent in practice and scientific/hydrological terminology with the state of science and understanding applied by other local, federal and state agencies, consultants, extension agencies and other stakeholders to avoid sowing the seeds of confusion. ***We firmly believe that clarity and predictability are wholly compatible with taking a science-based approach to determining the jurisdictional limits of the CWA; indeed, we are convinced that devoid of scientific underpinnings, the definition and application of the proposed Waters of the U.S. rule (hereafter, "proposed Rule" or "Rule") will remain an intractable problem.***

Ducks Unlimited is first and foremost a science-based conservation organization. Every aspect of our habitat conservation work is rooted in the fundamental principles of scientific disciplines such as wetland ecology, waterfowl biology, hydrology, and landscape ecology. Thus, the ***perspectives on the CWA and information that we offer here are based on our extensive grounding in these scientific disciplines and our extensive experience on the ground working with landowners, regulators, and other partners. These comments represent the compilation of***

hundreds of hours of discussion between DU staff, members, and partners and we a grateful for the opportunity to convey these concerns to the Agencies.

SUMMARY

General Comments with respect to the 2019 Rule and Process

- The touchstone for the final WOTUS rule and future administration of jurisdiction must be the primary purpose of the CWA— *"to restore and maintain the chemical, physical, and biological integrity of the Nation's waters"* through federal-state partnerships without impinging on traditional states' rights to manage their own water and land resources. This "cooperative federalism" approach must recognize the financial, institutional, and temporal limitations of state wetland programs and incorporate pragmatic feedback from the states in a meaningful and comprehensive way.
- DU supports the maintenance of the longstanding exemptions for normal farming, ranching, silviculture, and other activities that have been in statutes (Section 404(f)(1)). These exemptions are important for maintaining the economic health of many of the private partners and landowners throughout the Nation whose farming and other activities help provide habitat for waterfowl.
- DU encourages the Agencies to work substantively to align with states and USDA NRCS on policies and procedures to reduce confusion and conflicting interpretations. Proactively providing clarity and alignment should advance the voluntary conservation of all waters.
- Ducks Unlimited's review and comments on the proposed Rule were developed with four primary criteria in mind, and we suggest that explicit consideration and balanced application of these criteria would help guide the Agencies toward an effective final Rule. These key criteria are:
    1. Is the proposed Rule in line with historical Agency interpretation, legislative intent and judicial opinion?
    2. Is the proposed Rule consistent with the preponderance of the existing and emerging science?
    3. Will the proposed Rule promote increased clarity, certainty, and predictability as directed by Executive Order 13778 and stated by the Agencies?
    4. Does the supporting economic analysis follow established federal guidelines and best practices (OMB Circular A-4, 2003) and provide robust support that the Rule will promote economic growth as directed by Executive Order 13778?

Specific Comments on the categories of waters covered under the 2019 Rule

- *Traditionally navigable waters and territorial seas, interstate waters, and impoundments*— Since the waters in paragraph (a)(1) (*traditionally navigable waters including territorial seas*), as well as *interstate waters* (including wetlands), and the waters in paragraph (a)(1)(5) (*impoundments of jurisdictional waters*) have traditionally not been the subject of intensive litigation or judicial oversight, we suggest the Agencies retain the historical inclusion of the definitions of these waters and should not remove interstate waters, nor should they alter the historical definition or interpretation of impoundments as a stand-alone category of WOTUS.

- *Adjacent waters*—We strongly encourage the Agencies to replace the new, more limited, definition of *Adjacency* in paragraph (c)(1) with the historic definition and interpretation that includes not only abutting wetlands, but neighboring wetlands of the waters identified in paragraphs (a)(1) through (5). We suggest that this is more consistent with previous implementation and would retain continuity within the Agencies. Adjacent features would be easily distinguished using existing federal agency methodologies and datasets that can establish continuous hydrologic connections between riparian and floodplain wetlands and navigable waters. A topographic barrier that does not impact the continuous subsurface connection should not extinguish jurisdiction, particularly a man-made barrier.

    - In considering the definition of adjacency, the Agencies should consider the functional aspects of connectivity in the context of the range of pollutants, including particulate and dissolved constituents (not just fill) that could be deposited in a wetland or water and their potential impacts on the integrity of connected waters through continuous connections through surface or groundwater in line with the recommendation of the Connectivity Report and the expert Scientific Advisory Board (SAB).

    - DU's experience in the field and discussion with permitting experts also leads us to believe this will be an equally difficult standard to delineate in the field and will not reduce uncertainty or workload.

- *Tributaries*—We encourage the Agencies to utilize definitions of "tributaries"— as well as "intermittent", "perennial", and "ephemeral"— that are consistent with common understanding of the scientific community and other federal agencies. We recommend the Agencies take the approach recommended by the EPA Science Advisory Board (SAB) to analyze flows based on their contribution to the integrity of navigable waters, which is not captured only by timing of flows. Furthermore, the implementation of this standard will be field intensive.

    - Given the importance of ephemeral flows to contributing flow and conveying contaminants in addition to the practical difficulty and history of significant litigation surrounding delineating the exact geographic point of transitions between flow regimes, the Agency should consider defining minimum flow standards based on

regional precipitation and drainage basin maps. This methodology has been employed by USGS, states and some USACE districts.

- At minimum, DU recommends the Agency employ an ecoregional approach to including ephemeral streams under federal jurisdiction because they are especially important to arid and semi-arid regions where these features contribute disproportionally high flows to navigable waters.

- *Ditches*—DU concurs with provisions in the proposed Rule to include ditches as "waters of the United States" if they (1) satisfy any of the conditions identified in paragraph (a)(1) of the proposed rule; (2) are ditches constructed in a tributary as defined in paragraph (c)(11) of the proposal as long as those ditches also satisfy the conditions of the tributary definition; or (3) are ditches constructed in an adjacent wetland as defined in paragraph (c)(1) of the proposal. We support the Agencies alluding to the exemption of broad categories of ditches "conveying irrigation water to and from fields," and we convey the concerns of our agricultural and wildlife management partners that this can be clarified with greater specificity and would appreciate the opportunity to engage with the Agency on this point.

- *Ponds and Lakes*—We generally support the specification of Ponds and Lakes as a new category of WOTUS encompassing both navigable ponds and lakes, and lakes that contribute intermittent or perennial flow to navigable waters. There is a need for clarification on how ponds and lakes will fit into the adjacency standard, as only wetlands are addressed. We also encourage the Agencies to consider not only the timing of flow exchange (perennial or intermittent) but also the contribution of these exchanges to the integrity of navigable waters under the functional connectivity framework.

- *Wetlands*—Wetlands are an integral feature of many landscapes that play a disproportionate role in the transformation of both physical flows and the chemical integrity of downstream waters. As such, DU advocates for the continued acknowledgement that wetland protection and conservation is vital for restoring and protecting the integrity of navigable waters. Like tributaries, ponds, and lakes, wetlands should be viewed through the lens not only of physical or structural connectivity but also functional connectivity.

  - *Adjacent wetlands*—Riparian and floodplain wetlands should be considered for inclusion as WOTUS based on both the historic interpretation of adjacency by the judiciary and by the strong science that supports that these systems are inexorably linked with navigable waters and are continually exchanging water and dissolved materials.

  - *Isolated wetland*s—The preponderance of existing science illustrates, in many cases, the clear and substantial effects that isolated wetlands exert on navigable waters, as well as the costs downstream states bear to mitigate pollution and flooding associated with upstream drainage. We recommend further consideration of material and economic

impacts relative to the extent of federal jurisdiction for isolated wetlands in the context of functional impacts to navigable waters.

- Given the tremendous importance of isolated wetlands from social, economic and environmental perspectives as confirmed by existing science, DU strongly believes that isolated wetlands must be protected. In our interpretation of the proposed Rule, isolated wetlands, for the most part, would not be subject to federal jurisdiction under CWA and WOTUS. This outcome would place much greater importance and weight on voluntary incentive- and market-based mechanisms for protecting these wetlands.

- DU is committed to working with the EPA, USACE, other federal agencies and state agencies to help develop new programs and strengthen existing programs to incentivize protections for isolated wetlands. Removing federal jurisdiction from these systems could potentially jeopardize vital protections for isolated wetlands currently in place through other federal voluntary programs enacted by Congress with the stated intent of slowing wetland loss and discouraging wetland conversion.

- These programs include wetlands Conservation Compliance (also known as Swampbuster), conservation easements, and other related programs. For these programs to effectively conserve and protect wetlands, they must be adequately funded and implemented to the fullest extent. Therefore, DU is strongly opposed to any efforts to weaken the integrity of these programs that would result in the loss or degradation of wetlands, including through funding cuts, administrative rulemaking, or legislation.

Specific Comments on the proposal to map waters of the U.S. in the proposed 2019 Rule

- We support the Agencies' general proposal to map WOTUS as a tool but note that this will be a lengthy and costly process that cannot be guaranteed to suffice as a stand-alone jurisdictional tool.

- Because traditional navigable waters, interstate waters, and the territorial seas ultimately provide the basis for designating by rule or assessing potential CWA jurisdiction for all other categories of waters, we strongly recommend that existing and readily available technology be used to prioritize the mapping of these waters.

- There are multiple federal and state level consortiums, for instance the Wetland mapping Consortium https://www.aswm.org/wetland-science/wetlands-one-stop-mapping/wetland-mapping-consortium and an enormous body of literature regarding advances in the potential for mapping and modeling hydrologic features. Any proposal to map WOTUS should involve extensive stakeholder outreach with these groups.

Specific Comments on the analysis supporting the proposed 2019 Rule

- We are concerned that the Agencies have not addressed several probable impacts in their supporting economic analysis.
    - This Rule has the potential to destabilize established mitigation markets which employ tens of thousands of Americans and have an estimated value of $4 billion.
    - The Agencies do not adequately address the potential for increased wetland drainage because of the Rule and its substantial downstream costs associated with increased flooding, pollution, and mitigation thereof. This is not a trivial component of the net impact of the Rule as historical patterns of wetland loss have closely tracked with the expansion and contraction of the WOTUS rule.
    - We are also concerned the Rule may have substantial impacts on recreational interstate economies associated with boating, fishing, waterfowl hunting, and other quintessential American pastimes.
- We are also concerned that the modeling of potential rule impacts assessed watershed that, by the Agencies' own admission, are not likely to see the largest changes in land use and therefore have underestimated these impacts.

Structure of Ducks Unlimited's Comments (page #):

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I. Introductory Comments and Context for Review and Analysis of the Proposed Rule

a. The CWA's Purpose & History

Here we provide a brief history of relevant litigation, rulemaking, and policy surrounding the CWA and WOTUS which will inform our later comments.

The CWA, passed by Congress in 1972, was meant to address ongoing concerns over water quality in the U.S. as its stated purpose was **"to restore and maintain the chemical, physical, and biological integrity of the Nation's waters**."[1] Additionally, the CWA specified that it was "the policy of the Congress to recognize, preserve, and protect the primary responsibilities of and rights of States to prevent, reduce and eliminate pollution."[2] Moreover, "except as expressly provided in this Act, noting in this Act shall . . . be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters (including boundary waters) of such States."[3]

In furtherance of this policy, the CWA created a program to prevent the discharge of pollutants into "Navigable Waters."[4] The CWA went on to define "Navigable Waters" as the "waters of

[1] 33 U.S.C. § 1251(a).)
[2] *Id*. at § 1251(b).)
[3] *Id*. at § 1370.
[4] *See 33 U.S.C.* § 1344(a). *Id*. at § 1362(7)

the United States."[5] However, Congress left the Executive Branch to further define the "waters of the United States" through its internal rulemaking process.

The Legislative History of the CWA provides context to the phrase "waters of the United States" and how Congress ultimately decided upon the phrase. The Congressional Record includes a statement by Congressman John D. Dingell, a member of the Conference Committee that chose the relatively vague but potentially expansive "waters of the United States" over "navigable waters of the United States," explaining:

> **"This new definition clearly encompasses all water bodies, including main streams and their tributaries, for water quality purposes. No longer are the old, narrow definitions of navigability, as determined by the Corps of Engineers, going to govern matters covered by this bill[6]."**

Moreover, Congressman Dingell quoted the conference report, stating "the conferees fully intend that the term navigable waters be given the broadest possible constitutional interpretation unencumbered by agency determination which have been made or may be made for administrative purposes."[7]

The U.S. Army Corps of Engineers (Corps) issued a 1974 rule, consistent with the Rivers and Harbors Act standards of Navigability defining "waters of the United States" as those waters that "are subject to the ebb and flow of the tide, and/or are presently, or have been in the past, or may be in the future susceptible for use for purposes of interstate or foreign commerce." [8] Shortly thereafter, ruling on *Natural Resources Defense Council, Inc. v. Callaway* (hereafter "*Callaway*"), the Federal District Court of the District of Columbia issued an order requiring the Corps to rescind and publish a new definition because the initial definition restricting jurisdiction to traditionally navigable waters did not meet the "full regulatory mandate" of the CWA.[9] The Department of the Interior, EPA, and the Attorney General supported the position of the NRDC.[10] **The Supreme Court has since confirmed in multiple decisions the clear intention of Congress to grant federal jurisdiction under the CWA to waters that were not included under the traditional navigability standards covered by the Rivers and Harbors Act.**

In 1975, the Corps, as part of its interim final regulations defined the "waters of the United States" to include navigable-in-fact waters, tributaries, interstate waters, and freshwater wetlands "contiguous or adjacent to" such other covered waters.[11] The Corps defined "Freshwater

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[5] *See* 33 U.S.C. § 1362(7).)
[6] Cong. Rec. 33757 (Oct. 4, 1972).
[7] *Id.*
[8] 39 Fed. Reg. 12119 (Apr. 3, 1974).
[9] 392 F. Supp. 685, 686 (D.D.C. 1975).)
[10] *See* Houck, 81 Miss. L.J. 6, 1490.
[11] 40 Fed. Reg. 31320 (1975).

Wetland" as an area "periodically inundated" and "normally characterized by the prevalence of vegetation that requires saturated soil conditions for growth and reproduction."[12]

The 1977 final Corps definition of WOTUS included those navigable waters, tributaries thereto, interstate waters, adjacent wetlands (acknowledging "'contiguous' is only a subpart of the term 'adjacent'" defined to mean "bordering, contiguous, or neighboring") and "all other waters" which if degraded or destroyed "could affect interstate commerce." Wetlands were defined as

> those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.[13]

In 1977, with updates to the CWA, the House and Senate debated the proper definition of "waters of the United States." While the House preferred and passed out a narrower definition that would limit it to those waters navigable-in-fact, the Senate chose a more expansive version that reflected the Corps' 1977 definition.[14] Ultimately, the Conference Committee adopted the Senate's approach and retained the then-current definition that included navigable waters and their adjacent wetlands. It is generally accepted that the 1977 WOTUS rules were made concurrently with the congressional revision of the CWA and with explicit knowledge by both the House and Senate.

This CWA update was also the first to give states and tribes the ability to assume responsibility for the 404 (dredge and fill) permit program.[15] Records of later Congressional hearings revisiting the lack of 404 assumption by states notes that

> Combining the work of State and Federal agencies into a section 404 partnership eliminates a significant amount of State and Federal duplication, minimizing regulatory burdens, while taking advantage of the strengths of each level of government. State-specific needs and policies are more directly addressed, without sacrificing national standards, interstate concerns, or Federal technical expertise. **At the same time, the section 404 program regulations maintain a "level playing field" among the States, and ensure protection of interstate water resources.** [emphasis ours][16]

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[12] 33 C.F.R. § 209.120(d)(2)(h) (1976).
[13] 42 FR 37122, 37144 (July 19, 1977).
[14] 123 Cong. Rec. 10426-32 (House Debate); *id* at 26710-26729 (Senate Debate).
[15] 33 U.S.C. § 33 §1344(g-i).
[16] Hearing on "Forty Years after the CWAClean Water Act: Is It Time for the States to Implement Section 404" (112–106) Hearing Before the Subcommittee on Water Resources and Environment of the Committee on Transportation and Infrastructure, House of Representatives, One Hundred and Twelfth Congress, Second Session, September 2012.

In 1985, the Supreme Court issued its opinion in *U.S. v. Riverside Bayview Homes, Inc*., analyzing whether the Corps has jurisdiction over wetlands "adjacent to" navigable waters.[17] The wetland in question was (as described in the 6th Circuit Brief):

> eighty acres of undeveloped land north of Detroit in Harrison Township, Michigan, […] located in a suburban area approximately a mile west of Lake St. Clair and south of South River Road, roughly paralleling the Clinton River. Its southern boundary is separated from the man-made Savan Drain by two ten-acre parcels. Its western boundary is formed by Jefferson Avenue, a heavily travelled road.[18]

As an initial matter, the *Riverside Bayview Homes* Court concluded that the definition of "wetland" encompassed the land in question because it was saturated by "either surface or ground water" and it was "sufficient to and does support wetland vegetation."[19] Moreover, the "wetland" was clearly adjacent to a "navigable water," notably determined to be adjacent via saturation by groundwater[20] with surface inundation occurring "on four to six occasions in the past eighty years."[21] This case is widely recognized to have established that adjacent wetlands, including those with continuous saturated groundwater connections, are within the jurisdiction of the Corps by agency rule and furthermore by Congressional intent:

> the court found that the wetland located on respondent's property was adjacent to a body of navigable water, since the area characterized by saturated soil conditions and wetland vegetation extended beyond the boundary of respondent's property to Black Creek, a navigable waterway […] Hence, it is part of the "waters of the United States."[22]

The Court concluded that the Corps' construction of the statute was reasonable and not in conflict with the intent of Congress, in part because of deference to the Corps in interpreting the statute, but also because Congress was made aware of the interpretation and ultimately decided against changing it (i.e., doctrine of Congressional acquiescence). [23] The Court recognized that the definition used in the CWA was "far from obvious" and that the Corps must "choose some point at which water ends and land begins," concluding they could not reject that **"adjacent wetlands are inseparably bound up with the 'waters' of the United States — based as it is on the Corps' and EPA's technical expertise"** [emphasis ours].[24]

> In view of the breadth of federal regulatory authority contemplated by the Act itself and the inherent difficulties of defining precise bounds to regulable waters, **the Corps' ecological**

[17] 474 U.S. 121 (1985).
[18] *U.S. v. Riverside Bayview Homes, Inc.*, 729 F.2d 391, 398 (6th Cir. 1984).
[19] 474 U.S. 121 (1985). at 131.
[20] *Id*.
[21] 729 F.2d at391, 398
[21] *Id.*
[22] 474 U.S. 121, 131 (1985). at 131
[23] *Id*. at 137.
[24] *Id*. at 132.

> **judgment about the relationship between waters and their adjacent wetlands provides an adequate basis for a legal judgment that adjacent wetlands** may be defined as waters under the Act. [emphasis ours].[25]

The *Riverside Bayview Homes* decision also emphasizes the role of technical expertise and ecological knowledge in interpreting rules.

The Supreme Court, in *Solid Waste Agency of Northern Cook Cty. v. Army Corps of Engineers* ("*SWANCC"*), addressed whether wetlands isolated from navigable waters and not covering any state border could be brought under jurisdiction via the application of the "Migratory Bird Rule" promulgated as part of the preamble of the 1986 WOTUS rule-making process.[26] There, the waters at issue were "remnant excavation trenches" that had "evolve[ed] into a scattering of permanent and seasonal ponds."[27] The Court determined that, to include these waters solely on the basis of their nexus with waterfowl-based interstate commerce would stretch the legal limit of Congress's jurisdictional power under the Commerce Clause, and absent a clear statement of intent from Congress, it was not permitted.[28] The Court rejected the position that the wetlands were jurisdictional ***solely*** under the "Migratory Bird Rule" and instead determined the waters were not within the jurisdiction of the Corps because they posed no "significant nexus" to navigable waters.[29]

After the *SWANCC* decision, the Corps and EPA issued guidance instructing field staff on the proper interpretation of the "waters of the United States." The guidance interpreted the *SWANCC* decision as invalidating the Migratory Bird Rule and instructed staff:

> In view of *SWANCC*, neither agency will assert CWA jurisdiction over isolated waters that are both intrastate and non-navigable, where the sole basis available for asserting CWA jurisdiction rests on any of the factors listed in the ''Migratory Bird Rule.''[30]

In 2006, the Court took up the case of *Rapanos v. United States*, another landmark case on the subject.[31] The *Rapanos* opinions analyzed the question of whether wetlands that are 11–20 miles from a navigable water and connected to those waters via a series of overflow drains, ditches, and streams, are within the jurisdiction of the Corps under the Commerce Clause. In other words, what was the definition of "adjacent" from the *Riverside Bayview Homes* case? The Court ultimately ruled 4-1-4, with Justice Scalia offering the plurality opinion and Justice Kennedy authoring the concurrence.

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[25] *Id.* at 134.
[26] 531 U.S. 159 (2001).)
[27] *Id.* at 163.
[28] *Id*. at 172.
[29] 531 U.S. 159 (2001) *Id.* at 167, -72.
[30] 68 Fed. Reg. Appendix A (2003).)
[31] 547 U.S. 715 (2006).

The Kennedy Opinion notes that Congress clearly intended some wetlands to be encompassed in the definition of "navigable waters," and pursuant to the "significant nexus" test in *SWANCC*, the Corps has the ability to regulate wetlands with a significant nexus to a navigable water.[32] Justice Kennedy explained:

> Accordingly, wetlands possess the requisite nexus, and thus come within the statutory phrase "navigable waters," if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical and biological integrity of the covered waters more readily understood as "navigable." **When, in contrast, wetlands' effects on water quality are speculative or insubstantial, they fall outside the zone fairly encompassed by the statutory term "navigable waters**."[33]

In contrast to Justice Kennedy's concurring opinion, Justice Scalia wrote for a four-justice plurality. After reviewing the legislative history and relevant case law, Justice Scalia opined that the term "waters of the United States" "includes only those relatively permanent, standing, or continuously flowing bodies of water 'forming geographic features' that are described in ordinary parlance as 'streams[,] . . . oceans, rivers, [and] lakes.'" [34]As for adjacent wetlands, "only those wetlands with a continuous surface connection to bodies of water that are 'waters of the United States' in their own right, so that there is no clear demarcation between 'waters' and wetlands, are 'adjacent to' such waters and covered by the Act."[35] "Wetlands with only an intermittent, physically remote hydrologic connection" are not "waters of the United States."[36] Justice Scalia further argued, "clean water is not the *only* purpose of the statute. So is the preservation of primary state responsibility for ordinary land-use decision." [37] Accordingly, a four-justice plurality would narrow the scope of the definition of "waters of the United States" and allow States greater control over those waters not covered.

Since the decision, lower courts have continued to struggle with how to interpret the 4-1-4 decision, as it does not easily conform to the *Marks* standard.[38] Given that the three main cases regarding WOTUS (*Riverside Bayview, SWANCC,* and *Rapanos*) address waters that punctuate only three instances along a vast spectrum of connectivity or "nexus" with navigable waters, these three decisions alone can hardly be expected to establish clarity on the issue. **Nevertheless, Justice Kennedy's concurrence has generally been interpreted by the lower courts as**

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[32] 547 U.S. 715 (2006). *Id*. at 759.
[33] *Id*. at 780.
[34] *Id*. at 739.
[35] *Id*. at 742.
[36] *Id*.
[37] *Id*. at 755-56 (citing 33 U.S.C. § 1251(b)) (emphasis in original)
[38] Under *Marks v. United States*, 430 U.S. 188 (1977), the general rule is that, when there is no majority opinion, the holding of the Court may be viewed as that position taken by those Members who concurred in the judgments on the narrowest grounds. *Id*. at 193.

controlling opinion under the Marks test.[39] The Seventh Circuit reasoned that where Justice Kennedy found jurisdiction, so would the four dissenting justices, giving them the controlling opinion.[40] The Ninth and Eleventh Circuit arrived at similar conclusions via different reasoning, while the First Circuit utilized Justice Stevens' opinion (concurring with the dissent) instructing lower courts that either the plurality or Kennedy's test would apply.[41] The Second, Fourth, Fifth and Sixth Circuits have not ruled, but have accepted stipulations that follow the approaches of other Circuits, in effect finding that Kennedy alone or either Kennedy or the Plurality tests apply.[42] **To date, no court has identified solely the plurality as the controlling opinion. We therefore recommend the Agencies consider aspects of Justice Kennedy's standard in their rulemaking.**

In 2008, after the *Rapanos* decision, the EPA and Corps issued additional guidance, interpreting their jurisdiction over "waters of the United States" to traditional navigable waters; wetlands adjacent to traditional navigable waters; relatively permanent non-navigable tributaries of navigable waters; wetlands that abut those other covered waters; non-navigable tributaries that are not relatively permanent if they have a significant nexus with a navigable water, and wetlands adjacent thereto. Significant nexus analysis was deemed to include "consideration of hydrologic and ecologic factors." A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters.

On June 29, 2015, the EPA and Corps issued a final rule redefining the "waters of the United States." The 2015 Rule included navigable waters, interstate waters, tributaries that "contribute flow, either directly or through another water," but defined "tributary" as requiring a "physical indicator of a bed and banks and an ordinary high-water mark" (OHWM).[43]

The 2015 Rule also included coverage of wetlands "adjacent to" other covered waters, and defined "adjacent" to mean "bordering, contiguous, or neighboring."[44] "Neighboring" was defined to be a physical distance, either 100 feet, or 1500 feet, depending on the circumstances. The Corps at the time rejected these distances as arbitrary, and the 2015 Rule also specifically identified 5 subcategories of wetlands, including prairie potholes, pocosins, Texas coastal prairies, Delmarva/Carolina bays, and vernal pools that are "similarly situated" on the landscape and would in the aggregate qualify for Justice Kennedy's "significant nexus" designation.[45] The

[39] *Id.*
[40] Foster &, Wade.2018. 'Parsing *Rapanos'*.Va. Envtl. L.J., syndicated on Envtl. L. Rev. Virginia Environmental Law Journal. Environmental Law Review Syndicate.
[41] *Id.*
[42] *Id.*
[43] 80 Fed. Reg. 37104-06 (2015).
[44] *Id.* at 37105
[45] *Id.*

2015 Rule also included a 4000-foot rule, requiring a case-by-case analysis of "significant nexus" in certain circumstances.[46]

After publication of the 2015 Rule, many States and other parties sued the federal government objecting to the 2015 Rule. Prior to the 2015 Rule's effective date, it was enjoined by the District Court of North Dakota as to the 13 states involved in that lawsuit.[47] Judges in the Southern Districts of Georgia and Texas then also enjoined the 2015 Rule in 14 additional states.[48] The 2015 Rule is currently in effect in 22 States and the District of Columbia. When issuing the preliminary injunction, the Southern District of Georgia stated that the 2015 Rule failed to meet the standard expounded in *SWANCC* and *Rapanos* and was fatally defective because it ''allows the Agencies to regulate waters that do not bear any effect on the 'chemical, physical, and biological integrity' of any navigable-in-fact water.''

On February 14th, 2019, upon direction of President Trump's Executive Order 13778 "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule," the EPA and Corps issued a revised definition (the "2019 Rule") of the "waters of the United States" to comport with Justice Scalia's plurality opinion in *Rapanos*. The 2019 Rule proposes to encompass: traditional navigable waters, including the territorial seas; tributaries that contribute perennial or intermittent flow to such waters; certain ditches; certain lakes and ponds; impoundments of otherwise jurisdictional waters; and wetlands adjacent to other jurisdictional waters.

Ditches are generally not considered "waters of the United States" unless they relocate an otherwise jurisdictional tributary or are within jurisdictional waters. Notably, "adjacent wetlands" must "*abut* or have a *direct hydrological surface connection* to other 'waters of the United States' in a typical year." [emphasis added]. "Abut" would mean that, "a wetland touches an otherwise jurisdictional water at either a point or side." A "direct hydrologic surface connection" would occur "as a result of inundation from a jurisdictional water to a wetland or via perennial or intermittent flow between a wetland and jurisdictional water." Wetlands "physically separated" by "upland or by dikes, barriers, or similar structures and also lacking a direct hydrological surface connection" would not be considered "waters of the United States." This definition would exclude from jurisdiction wetlands that that do not touch an otherwise jurisdictional water in a "typical year."

Since Congress passed the CWA, there have been multiple interpretations, judgements, court rulings, Administrative rules, etc. to rectify Congressional intent regarding the Act. It is obvious that the current processes, after almost 50 years, are not going to remedy the CWA debate that has taken place among the Judicial and Executive Branches. Since the Act was passed, we have experienced significant gains in many areas of our country's waters; but yet we continue to have

[46] *Id.*
[47] *See North Dakota v. EPA*, No. 3:15-cv-59 (D.N.D. Sept 18, 2018).
[48] *See Georgia v. Pruitt*, 326 F. Supp. 2d 1356 (S.D. Ga June 8, 2018); *Texas v. EPA*, No. 3:15-cv-162 (S.D. Tex. Sept. 12, 2018)

catastrophic flooding, major algal blooms due to excess nutrients, loss of fish and wildlife habitat, and concerns about water quality and quantity around our nation. We encourage the Administration and Congress to work together to ensure one of our Nation's most precious resources, our waters, are conserved for our future prosperity and health, including agriculture, industry, fish and wildlife, outdoor recreation, and most importantly, clean and reliable drinking water.

In summary, ***DU recommends that the Administration invite Congress to revisit the original intent of the CWA and produce new and/or modified legislation that would succinctly clarify 1) the types and definitions of waters of the United States essential to achieving the fundamental goal of the CWA, and 2) how we best achieve the fundamental goal, including both regulatory AND incentive-based elements to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."***

b. Overarching Criteria for DU's Assessment of the Rule

i. Is the proposed Rule in line with historical Agency interpretation, legislative intent and judicial opinion?

We have assessed the proposed Rule, to the best of our ability, in the context of the extensive documentation of District and Supreme Court opinions, records of Congressional proceedings, Agency rule making, and the historical interpretation of rules by the Agencies themselves as detailed in the previous section. **We feel it is important not only for the final Rule to be consistent with legislative intent and judicial opinion as detailed above in Section I.a. (pp. 15) of our comments, but to also maintain continuity with historical Agency interpretation of terminology to avoid confusion and minimize regulatory disruption.**

ii. Is the proposed Rule consistent with the preponderance of the existing and emerging science?

There is a wealth of scientific information indicating the extent to which connectivity exists between many wetlands across the U.S. and downstream waters. **We believe it is reasonable to conclude that the unanimous decision in *Riverside Bayview*, when combined with *SWANCC* and *Rapanos* decisions, can reasonably be interpreted to indicate that in the absence of statutory or Constitutional challenges, the agencies' "technical expertise" and "ecological judgment" should prevail. Thus, any rulemaking process must apply both legal and scientific filters.**

The U.S. EPA's Office of Research and Development compiled an extensive report, known in shorthand as the "Connectivity Report,"[49] detailing the state of the science of connectivity of waterways and their influence on the primary purpose of the CWA— "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." **Any Rule meant to**

[49] Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence. January 2015. EPA/600/R-14/475F.

clearly set forth a path to achieve this central goal of the CWA should be consistent with the scientific conclusions of the Connectivity Report. We utilized the Connectivity Report, supplemented with recent peer-reviewed publications related to the subjects within the report, to assess the science behind the rulemaking. Given that the Connectivity Report underwent rigorous review by a panel of scientific experts, U.S. EPA Staff, and 27 members of the EPA Science Advisory Board (SAB), in addition to being subject to a public comment, we are confident the Connectivity Report reflects the high standard for science established by the Agency in its Scientific Integrity Policy (2012), Improving Regulation and Regulatory Review, Exec. Order No. 13,563, 76 Fed. Reg. 3821, 3821 (2011) and Strengthening Transparency in Regulatory Science, 83 Fed. Reg. 18,768, 18,769 (2018). **The final Rule should be consistent with the science of connectivity and the significance of connections to the integrity of navigable waters. The final Rule, following the precedent of all other preceding WOTUS rules, should also explicitly acknowledge specific scientific underpinnings**. **Furthermore, the final Rule should utilize language and definitions that correspond to accepted scientific meaning to avoid any potential conflicts or confusion with existing laws, regulation, or polices that would undermine the Agencies' stated goals of clarity** (discussed below in Section I.b.iii.)**.**

iii. Will the proposed Rule promote increased clarity, certainty, and predictability as directed by Executive Order 13778 and stated by the Agencies?

We agree with the stated objective of the Agencies, and the strongly expressed desire of most stakeholders, which is to have a final Rule that provides as much clarity, certainty, and predictability as possible while still protecting the chemical, physical, and biological integrity of our Nation's waters. Administrator Wheeler has stated that the Agencies' "overarching principle in drafting this new proposal for water in the U.S. was that any landowner could stand on his or her property and figure out for themselves based on the definition what is and is not a federal waterway without having to hire an outside consultant or attorney."[50] While we can appreciate this sentiment as part of the regulated community, we do not believe the proposed Rule would provide sufficient clarity and certainty necessary for any landowner to reasonably delineate federal jurisdiction for waters or wetlands on their property. **We draw from our extensive experience in the field and in dealing with regulatory processes to examine how the proposed Rule will or will not fulfill the stated goal of the Agency and the President's Executive order. We will further analyze carefully the Agencies' proposal to map WOTUS to aid achieving this goal of clarity, certainty, and predictability.**

Although not expressly stated as a goal by the Agencies, it is implicit that the Rule must also be administratively pragmatic. Post-*Rapanos* in 2009, in an interview with OIG staff, EPA Headquarters staff commented that "*Rapanos* has created a lot of uncertainty with regards to EPA's compliance and enforcement activities. Processing enforcement cases where there is a

[50] Recorded interview with Clinton Griffiths, AgDay TV, March 18th, 2019.

jurisdictional issue has become very difficult."[51] This uncertainty is also a contributing factor to the processing time required for permits and the inconsistent enforcement actions observed across the US. **Another important criterion for DU and our partners working across diverse landscapes is that any revised WOTUS rule should improve the longstanding inconsistencies between Districts and Offices in reviewing jurisdictional determinations.** In reviewing the proposed Rule with our staff and partners, we found that the GAO's 2004 observation that "Although districts used generally similar criteria to identify the jurisdictional limits of tributaries, they used differing approaches in how they apply these criteria"[52] remains a significant impediment to regulatory consistency across the U.S. **We are concerned this rulemaking has not addressed this inconsistency in a substantive way.**

iv. Does the supporting economic analysis follow established federal guidelines and best practices (OMB Circular A-4, 2003) and provide robust support that the Rule will promote economic growth as directed by Executive Order 13778?

Benefit-cost analysis is the primary tool used to assess proposed regulations. OMB Circular A-4 establishes a clear objective of providing decision makers with

> "a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society (ignoring distributional effects). This is useful information for decision makers and the public to receive, even when economic efficiency is not the only or the overriding public policy objective."[53]

Following the guidance of the OMB, we will assess the Rule based on its net benefit to society, recognizing that "the most efficient alternative will not necessarily be the one with the largest quantified and monetized net-benefit estimate." Although there is some debate surrounding the monetization of ecosystem services, we will attempt to exercise our best knowledge of the subject to compare with the Agencies' published data on permit cost and also conduct a "threshold" analysis consistent with OMB guidance.[54] While our expertise can be valuable in assessing the Agencies' supplied economic analysis from the benefit-cost perspective and a rigorous examination of the assumptions, data, and models included therein, we are not qualified to assess the role the Rule may or may not play in promoting economic growth. Given

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[51] U.S. EPA Office of the Inspector General. Special Report: Congressionally Requested Report on Comments Related to Effects of Jurisdictional Uncertainty on CWAClean Water Act Implementation. Report No. 09-N-0149. April 30, 2009.

[52] GAO Report to the Chairman, Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs, Committee on Government Reform, House of Representatives. Waters and Wetlands: Corps of Engineers Needs to Evaluate Its District Office Practices in Determining Jurisdiction. March 2004.

53 Office of Management and Budget. Circular A-4. September 17, 2003. This Circular provides the Office of Management and Budget's (OMB's) guidance to Federal agencies on the development of regulatory analysis as required under Section 6(a)(3)(c) of Executive Order12866, "Regulatory Planning and Review," the Regulatory Right-to-Know Act, and a variety of related authorities. The Circular also provides guidance to agencies on the regulatory accounting statements that are required under the Regulatory Right-to-Know Act.

[54] Threshold or "break-even" analysis answers the question, "How small could the value of the non-quantified benefits be (or how large would the value of the non-quantified costs need to be) before the rule would yield zero net benefits?"

the preponderance of potential covariates and externalities inherent in attempting to analyze how policy changes may impact economic growth, we express doubt over whether it is possible to quantify a net benefit with any certainty. However, we carefully examine some of the assumptions underlying the inherent idea that reducing the number and type of "waters" subject to federal CWA jurisdiction, and therefore permitting processes, could be tied to economic growth.

II. Comments Specific to Proposed Categories of Waters

a. Traditional Navigable Waters and Territorial Seas

We support the Agencies' stated intention to retain the status quo definition in 33 CFR 328.3 (a)(1) that includes waters that are currently, have in the past or could be in the future used for use in interstate or foreign commerce, including land subject to the tide. While we concur with the Agencies' assessment that it is difficult to imagine that Territorial Seas would not fall within the category Traditional Navigable Waters (pp. 4170 of the proposed Rule), we also do not see any benefit to removing "Traditional Navigable Waters" from the definition. We do not support any new or modified exclusions to this category without further public review.

b. Interstate Waters

We recommend the Agencies retain Interstate Waters, including intrastate wetlands, as a separate category of WOTUS. We understand that many of these waters will, indeed, be captured with the Traditional Navigable waters (a.) definition, but some, namely wetlands, will not. The framework of the CWA is intended to establish a consistency in the application of regulations and while waters that are wholly interstate can be afforded intrastate management, we believe it runs counter to the intentions of the CWA framework to remove Interstate Waters, navigable or not, as this would return states to the pre-CWA condition of litigating individual interstate compacts regarding the degradation of waters via dredge and fill or pollution discharges. We also emphasize our position as a regulated entity that historical consistency is a desired component of the rulemaking process when consistency does not run afoul of judicial opinion or administrative pragmatism.

We have not found the designation of interstate waters as jurisdictional under the CWA to be problematic, nor have we identified judicial or agency determinations that run counter to the inclusion of interstate waters as a distinct class of WOTUS. The GAO and OIG reports we have reviewed have not identified this category as a source of uncertainty or unpredictability in the regulatory process. Instead, we fear removing historical jurisdiction from interstate waters, including intrastate wetlands, serves only to place the financial and administrative burden of preventing, mitigating and managing the degradation of these waters on multiple State governments and ultimately (using pre-CWA history as our guide) the Supreme Court to resolve

intestate disputes.[55] This is exactly the type of litigation the CWA framework was intended to avoid. We acknowledge the Agencies' argument stemming from their inclination not to rely on the Congressional acquiescence doctrine (pp. 4171 of the proposed Rule), but respectfully note that the *SWANCC* court was applying their analysis strictly to isolated, intrastate waters, not WOTUS as a whole.

c. Impoundments

DU routinely works to restore, manage, improve, and/or decommission managed wetland impoundments (i.e., areas where hydrology is controlled and manipulated by a series of berms, levees, and water control structures) and thus we are particularly well suited to comment upon the Agencies' proposed treatment of impoundments in the proposed Rule. We support the proposal to retain the historical treatment of impoundments as a category of WOTUS and agree that altering a WOTUS via impoundment should not change the water's jurisdictional status. However, we ask the Agencies to clarify that this is inclusive of *wetland and waters* that are impoundments of jurisdictional waters. We support longstanding practice that impoundments are considered to "convey" jurisdiction between upstream (qualified) tributaries and downstream jurisdictional waters even when the impoundment may impede flow.

We believe retaining impoundments as a separate WOTUS category is necessary for providing regulatory clarity, consistency and predictability, and given our extensive experience with impoundments across the country, we believe impoundments should be retained as an individual category of WOTUS encompassing open water and wetland impoundments. We respectfully disagree with the Agencies' statement that "An impounded wetland frequently becomes a pond" (pp. 4173 of the proposed Rule) as DU and our partners manage wetland impoundments to mimic natural hydrologic patterns (spring drawdowns and fall flooding), or mitigate effects of elevated salinity and altered hydrology, to stimulate growth and productivity of wetland plants (e.g., annual seed producing plants like wild millet, smartweed, etc.) that provide abundant food and cover resources for wetland-dependent birds. If water is held at high and stable levels, then eventually lake-stage wetland conditions (open water/submerged aquatic vegetation with wetland vegetation around the perimeter) will develop over time. However, even in those cases, periodic (every 3–5 years) dewatering becomes a necessary practice to control invasive aquatic vegetation and regain the productivity for which such impounded wetlands were originally designed. We are familiar with examples such as flowages in Wisconsin that were developed on blue-line streams by installing water control structures or dams that are managed in that fashion, but most other impoundments are managed as diverse wetland systems emulating natural conditions in highly altered systems. Management of impoundments, whether seasonal or perennial, and its ecological trajectory can be highly variable given desired management context and outcome,

[55] Paavola, Jouni, "Interstate Water Pollution Problems and Elusive Federal Water Pollution Policy in the United States, 1900-1948." Environment and History 12, no 4. (November 2006): 435-65.

thus we recommend the agencies retain the Impoundments as a separate category for their consideration as jurisdictional waters.

We also recommend that the Agencies include clarifying language that will distinguish between impoundment types, which per the proposed Rule expressly do not break jurisdiction upstream between tributaries and downstream traditionally navigable waters, and breaks in tributaries (d., discussed below) or wetlands (g., discussed below) that convey less than intermittent flow and therefore cause a break in jurisdiction. We discuss this further below in section g. (pp. 24)

d. Tributaries

The definition of Tributaries under the proposed Rule is problematic both from a scientific and administrative perspective. By qualifying a "tributary" as requiring perennial or intermittent flow, the Agencies have divorced the regulatory use of the word from its commonly held scientific meaning. We have included two definitions, one from the U.S. Geological Survey and another from standard hydrology texts:

- USGS – A river or stream flowing into a larger river, stream, or lake.[56]
- Standard hydrology text – A smaller branching stream channel that flows into a larger stream, river, or lake. Within a watershed, all the land drains through a network of tributary streams to a single channel and outflow point. In the application of Strahler stream order, first-order headwater streams flow downgradient until they join another first order channel to form a second-order stream. It is not until a second-order stream combines with another second-order stream that it becomes a third-order stream. This process continues until reaching the highest order stream which drains to the outflow point of the watershed. [57]

Neither definition requires a prescribed flow regime. We believe that the proposed Rule will generate unnecessary administrative challenges for the Agencies and generate unnecessary conflict with other agencies by re-defining "tributary" to exclude ephemeral tributaries.

The Agencies have specifically solicited comments on further narrowing the definition of Tributary to perennial waters only. For the reasons outlined in this section we do not support the limitation of tributaries to perennial waters only. Furthermore, we believe the Congressional intent was clear to extend jurisdiction beyond the traditional navigable waterways to tributaries that exert substantial control over chemical, physical, and biological processes over these waterways.

We also urge the Agencies to retain the traditionally accepted scientific definitions for each class of stream to align with other agencies and practitioners:

[56] U.S. Geological Survey. Water Basics Glossary. https://water.usgs.gov/water-basics_glossary.html#T
[57] (Strahler, 1952) (Horton, 1945) (Chow, et al. 1988)

1. *Scientific Definition: Ephemeral*
   - USGS – A stream or part of a stream that flows only in direct response to precipitation; it receives little or no water from springs, melting snow, or other sources; its channel is always above the water table.[58]
   - Standard hydrology text – A stream that is normally dry most of the year and flows only in direct response to precipitation events. In an ephemeral stream, the groundwater table normally lies below the elevation of the stream bed and normally does not receive contributions to streamflow from groundwater. Ephemeral streams are critical to the health of river systems, are hydrologically and biologically connected to downstream waters, and provide many of the same functions and values as larger streams and rivers. [59]

2. *Scientific Definition: Intermittent*
   - USGS – A stream that flows only when it receives water from rainfall runoff or springs, or from some surface source such as melting snow.[60]
   - Standard hydrology text – A stream that is discontinuous in time and space. Specifically, intermittent streams exhibit streamflow when the elevation of the groundwater table exceeds the elevation of the streambed, and conversely, surface flow ceases when the groundwater table drops below the elevation of the streambed. A spatially intermittent stream may maintain flow over some sections or surface water in deep pools even during dry periods due to locally elevated groundwater tables or perched aquifers. During periods of drought, intermittent streams can exhibit characteristics of ephemeral streams when a depletion of soil moisture and lack of surface runoff result in a lowering of the groundwater table. During prolonged wet periods, the increase in surface runoff and soil moisture can raise the groundwater table resulting in sustained streamflow, described as perennial, until the next dry period.[61]

3. *Scientific Definition: Perennial*
   - USGS – A stream that normally has water in its channel at all times.[62]
   - Standard hydrology text – A stream with continuous flow throughout the year, except during periods of drought. In perennial streams, the groundwater table is generally located above the elevation of the streambed for most of the year and groundwater discharge sustains flows during the driest parts of the year. During wetter periods,

[58] U.S. Geological Survey. Water Basics Glossary. https://water.usgs.gov/water-basics_glossary.html#T
[59] (Mitsch J & Gosselink J, 2007) (Chow, et al. 1988) (Meinzer, 1942)
[60] U.S. Geological Survey. Water Basics Glossary. https://water.usgs.gov/water-basics_glossary.html#T
[61] (Meinzer, 1942) (Chow, et al. 1988)
[62] U.S. Geological Survey. Water Basics Glossary. https://water.usgs.gov/water-basics_glossary.html#T

> surface flow is composed of upstream tributary water and groundwater, and runoff from rainfall or snowmelt is considered supplemental.[63]

We anticipate that utilizing the accepted definitions for streams and working in concert with other agencies (e.g., those that monitor and develop data sets for these streams) to ensure there is consistency, predictability, and clarity in definitions across agencies will streamline the use of geospatial data and interagency monitoring for Jurisdictional Determinations, thereby reducing unnecessary conflicts arising from misaligned definitions. We also believe this will negate the need to specify requirements for the origination of flows (pp. 4177 of the proposed Rule).

Problematic regulatory definition notwithstanding, we are also concerned about the practicality of implementing this Rule as proposed. As a regulated entity that applies for permits to work on flowing water features, we recognize there is currently no database that distinguishes between intermittent and ephemeral streams that could be utilized either by regulated parties or the Agency, making the Agencies' proposal to regulate one (intermittent) but not the other (ephemeral) a difficult task. We are aware of EPA's intention to expand the Streamflow Duration Assessment Method beyond Oregon, Idaho, and Washington, to aid with stream classification and mapping, yet the development for this 3-state region was a 6-year process. We believe under the proposed Rule, both the Agencies and public will struggle to distinguish these features, resulting in less certainty and more regulatory delays.

Scientifically, there is ample evidence that ephemeral tributaries contribute significantly to the conveyance of flow and materials into waters that impact the chemical, physical, and biological integrity of downstream waters. Ephemeral tributaries are particularly important in the arid and semi-arid regions of the U.S.[64] Given that ephemeral tributaries are both important to the "chemical, physical, and biological integrity" of traditionally navigable waters and currently are indistinguishable across large geographic scales using available methodology, we believe it is pragmatic to include ephemeral streams in the "Tributaries" category.

In lieu of including all ephemeral tributaries as jurisdictional waters, we encourage the Agencies to at a minimum utilize an ecoregional approach. While we recognize and understand the need for consistency between Corps districts, we also recognize that there are key differences in geographies that impact the importance of different water bodies regionally in the U.S. For instance, there is sufficient scientific evidence to support the conclusion that ephemeral streams contribute proportionally more to the chemical, physical, and biological integrity of traditionally navigable waters in the arid and semi-arid West. We ask the Agencies to consider not how often a water is connected or for how many days, but the volumetric and mass contribution made by

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[63] (Meinzer, 1942) (Chow, et al. 1988)

[64] Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

these waters to other jurisdictional waters. This approach may be most consistent with the recommendation of the SAB cited on pp. 4175–4176 of the proposed Rule that "the interpretation of connectivity be revised to reflect a gradient approach that recognizes the variation in the frequency, duration, magnitude, predictability, and consequences, of physical, chemical and biological connections."[65] Because these ecoregions are well-defined both scientifically and cartographically by the Agency, this approach should allow clear delineation but still provide a straightforward and clear framework. This approach may accommodate both protecting ephemeral features in regions where they have substantial roles in maintaining the integrity of downstream waters, but also prioritizing the development of those data sets to distinguish intermittent and ephemeral features in a timely manner where this distinction is needed.

e. Ditches

We support the addition of ditches as a category of WOTUS and the extensive clarification as outlined and defined within the proposed Rule. We believe the proposed definition is in line with the historical interpretation and application of the Rule, and codifying these rules is a necessary addition. For many regulated entities this is a difficult aspect of the CWA to understand and thus generates significant strife amongst the regulated community. With this proposed approach, the Agencies seek to exempt several ditch types of concern to many stakeholders, and ditches that are not identified in the ditch category of "waters of the United States" are excluded in the proposed Rule, which DU supports. DU also concurs that the Agencies' approach reasonably balances the need to preserve jurisdiction over tributaries and adjacent wetlands as defined in the proposed Rule.

f. Lakes and Ponds

We generally support this addition and the clarifications it provides, we urge the Agencies to consider not the duration of the connection, but the magnitude of the consequences of that connection as described above in Section d. of our comments regarding tributaries. We believe this is another aspect of the regulation that may benefit from utilizing an ecoregional approach. Adjacency, as addressed below in Section f., should apply here as well.

g. Wetlands

As demonstrated by previous judicial rulings and opinions on the matter, DU acknowledges the complexity and uncertainty involved in defining CWA jurisdiction over wetlands, and as a member of the regulated community, DU understands the Agencies' desire for a rule that enables consistent interpretation and application of CWA jurisdiction.

i. Adjacency

[65] SAB Review Letter.

A central issue in defining CWA jurisdiction over wetlands is the concept of "adjacency," specifically identifying the threshold at which wetlands are deemed to significantly affect the chemical, physical, and biological integrity of waters otherwise covered under the CWA.

As a point of potential confusion in the proposed Rule, the Agencies acknowledge the value of retaining the longstanding regulatory term "adjacent," but then redefine adjacency as "abut," which is stated to mean, "when a wetland touches a water of the United States at either a point or side" (page 4184 of proposed Rule). The proposed Rule cites the definition of adjacent as "include[ing] the term 'abut,'" and notes that the common understanding for the term "adjacent" means "next to," "adjoining," "to lie near," or "close to." We note that in every definition we surveyed, we cannot find a reference that so limits the term to mean only "abut." Instead it is most often defined as "near," "nearby," or "not distant." This is consistent with the root meaning and definition of the word "adjacent," and also, perhaps most importantly, with historical agency interpretation.

In keeping with our review criteria concerning the pragmatism and clarity of the Rule, we are concerned that the significant re-definition of "adjacency" may generate greater confusion in light of current practice and past regulatory precedent as we understand it. Past practice and judicial opinion have relied on all understood meanings of the word, including "abut" and "not distant." We specifically recommend inclusion of the full definition of "adjacent" as historically applied, and we believe this is wholly consistent with our review of the judicial history and science of connectivity and conclusions of the SAB Connectivity Report.

We strongly encourage that in light of the abundant related science, adjacency be viewed from the context of "functional adjacency." The SAB articulated the same concern in the Connectivity Report, stating that,

> *"*importantly, the available science supports defining adjacency or determination of adjacency on the basis of functional relationships, not on how close an adjacent water is to a navigable water. The Board also notes that local shallow subsurface water sources ***and regional groundwater sources*** [emphasis ours] can strongly affect connectivity. Thus, the Board advises the EPA that adjacent waters and wetlands should not be defined solely on the basis of geographical proximity or distance to jurisdictional waters*."*

Under the proposed Rule as we interpret it, because any barrier serves to sever adjacency, it is plausible that the wetlands at issue in the *Riverside Bayview* decision (continuous groundwater saturation with wetland abutting tributary of navigable water, but surface connection was interrupted by roadway berm) would be ruled as not jurisdictional. We do not believe the Agencies intended to disregard this key decision affirming their jurisdiction over adjacent waters. We therefore recommend they return to the historical application under which features such as dunes and berms do not sever jurisdiction if there is a clear, continuous hydrologic connection.

Acknowledging the Agencies' desire to strike an appropriate balance when defining the "limits of waters on the continuum between water and land," we suggest that there is strong scientific support for categorical inclusion of waters in the riparian zone and floodplain. Although proximity to navigable waters or jurisdictional tributaries is only one aspect of the demonstrated interrelationships between wetlands and other waters, and in scientific reality should not in itself be used as a surrogate for the existence of a metric for the level of its significance in influencing otherwise covered waters, we encourage the Agencies to consider categorical inclusion of wetlands having demonstrable influences on covered waters, particularly those occurring in riparian areas and within a floodplain, be considered to increase regulatory certainty and reduce confusion when utilizing the historical application of "adjacent."

ii. Riparian Areas

The USGS Water Basics Glossary defines "riparian" as "pertaining to or situated on the bank of a natural body of flowing water," while NRCS defines it as:

> "Ecotones that occur along streams, rivers, lakes, ponds, and wetlands. They are distinctively different from the surrounding lands because of unique soil and vegetative characteristics that are strongly influenced by free or unbound water in the soil. Riparian ecosystems occupy the transitional area between the terrestrial and aquatic ecosystems. Typical examples include floodplains, stream banks, and lakeshores."

The term "riparian area" means "an area bordering a water where surface or subsurface hydrology directly influence the ecological processes and plant and animal community structure in that area. Riparian areas are transitional areas between aquatic and terrestrial ecosystems that influence the exchange of energy and materials between those ecosystems."

Waters, including wetlands, ponds, oxbows, and impoundments that overlap with this riparian zone, are "hotspots" of ecological function/processes and species diversity that affect the flux of materials (water, sediment, energy, organic matter, pollutants, and organisms) to navigable waters[66]. These adjacent waters affect the movement of pollutants from uplands into streams and rivers; regulate stream temperatures, light, and flow regimes; reduce downstream flooding; and provide nursery areas and critical habitat for aquatic biota, including threatened and endangered species.[67] Riparian wetlands act as buffers, effectively reducing concentrations of nutrients and

[66] Groffman, P.M., D.J. Bain, L.E. Band, K.T. Belt, G.S. Brush, J.M. Grove, R.V. Pouyat, I.C. Yesilonis, and W.C. Zipperer. 2003. Down by the riverside: urban riparian ecology. Frontiers of Ecology and the Environment 3:315–321.

[67] RD, J. V., TOCKNER, K. , ARSCOTT, D. B. and CLARET, C. (2002), Riverine landscape diversity. Freshwater Biology, 47: 517-539. doi:10.1046/j.1365-2427.2002.00893.x

other pollutants. For example, riparian wetlands may remove up to 100% of the nitrate-nitrogen that enters them.[68]

Adjacent waters also capture and store sediment eroded from nearby uplands, reduce downstream sediment transport and its negative effects on wildlife and fish communities, and provide temporary storage of excess water during flood events.[69] Wetlands in particular mitigate nonpoint source pollution, such as insecticides and fertilizers, thus protecting stream quality and drinking water supplies[70]. Overall, the benefits of protecting waters within the riparian zone accrue both locally (at that point on the river system) and cumulatively (at the watershed scale).

iii. Floodplain Areas

The term floodplain means "an area bordering inland or coastal waters that was formed by sediment deposition from such water under present climatic conditions and is inundated during periods of moderate to high water flows." There are a number of scientific studies (included in literature cited in the section above and in the Connectivity Report) that highlight the chemical, physical, and biological connections between a primary water and other waterbodies located within its floodplain, regardless of a distinct surficial connection, thus justify their consideration for categorical inclusion as jurisdictional waters. These floodplains are mapped by FEMA in concert with data collected by other agencies, and this would be a data set that may be straightforward to incorporate into a geospatial system for WOTUS mapping.

iv. Geographically Isolated Wetlands

Interpretation and guidance for CWA jurisdiction following the *SWANCC* and *Rapanos* decisions rested heavily upon the determination of a "significant nexus" between wetlands and traditionally navigable waters or their tributaries. Wetlands geographically isolated from jurisdiction waters are among the wetlands to which the "significant nexus" evaluation most readily apply. Within the implementation of the CWA, this principle remains a key point of debate and has accentuated the need for case-by-case determinations of jurisdictional coverage. In this vein, we recognize the Agencies' desire to reduce ambiguity and provide greater regulatory certainty for landowners and other members of the regulated community.

Prior comments about the need for additional clarity in the definition of "adjacency" notwithstanding, the proposed Rule effectively eliminates CWA jurisdiction over essentially all geographically isolated wetlands, which we believe runs counter to the prevailing science demonstrating the important benefits and influences that this category of wetlands has on the chemical, physical, and biological properties of jurisdictional waters. Although geographically isolated wetlands occur in virtually all ecoregions, our comments pertain to two selected wetland

[68] Hansen, A. T., Dolph, C. L., Foufoula-Georgiou, E., & Finlay, J. C. (2018). Contribution of wetlands to nitrate removal at the watershed scale. *Nature Geoscience*, *11*(2), 127–132. https://doi.org/10.1038/s41561-017-0056-6
[69] Mitsch, W. J. and J. G. Gosselink. 1986. Wetlands. Van Nostrand Reinhold Co. Inc. N.Y., N.Y. 539 pp.
[70] *id*

types of significant importance to our organizational mission and about which we are most knowledgeable, specifically prairie potholes and playa wetlands.

The Prairie Pothole Region (PPR) of the northern Great Plains encompasses over 300,000 square miles and is the most important breeding area for ducks (e.g., mallards, blue-winged teal, northern pintails, canvasbacks) in North America.[71] One analysis[72] suggested that duck production in the PPR of the U.S. northern prairies would decline by over 70% if all wetlands less than one acre were lost, and another analysis[73] estimated that pre-CWA wetland loss in a five-county portion of the PPR in west-central Minnesota resulted in a reduction in waterfowl productivity in excess of 80%. Because of the PPR's importance to continental waterfowl populations, and as a response to the challenges of wetland loss in the region, Ducks Unlimited and its partners have expended billions of dollars to protect and conserve the wetlands and other habitats that remain in the region.

Prairie pothole wetlands are prime example of wetlands that would generally be characterized as being "geographically isolated." The region is characterized by high wetland densities, and typically contains between 15 and up to 150 wetlands per square mile.[74,75] In general, the PPR possesses a limited internal drainage system so inflow and outflow to prairie potholes via streams is uncommon (Winter and Woo 1990; Carroll et al. 2005). One analysis (Petrie et al. 2001) documented that most (>95%) prairie potholes would likely not be considered adjacent to, or even located within 0.6 mi (~50%) of navigable or jurisdictional waters. Nevertheless, the scientific literature abounds with examples of the important benefits that prairie pothole wetlands do in fact provide to the chemical, physical, and biological integrity of jurisdictional waters.

Their nature and position on the landscape is the primary reason that prairie potholes serve so well in capturing runoff and storing it in intact "non-contributing" basins (i.e., wetlands and lakes)[76]. In general, the presence of many isolated wetlands decreases runoff velocity and volume by capturing high magnitude short duration flows (e.g., runoff of spring thaws) and

[71] Ducks Unlimited, INC. 2001. Ducks Unlimited's Conservation Plan: Meeting the annual life cycle needs of North America's waterfowl. Memphis, TN. 212 pp.
[72] U.S. Fish and Wildlife Service. 2001. Habitat and Population Evaluation Team Office Report. Bismarck, ND, USA.
[73] Johnson, R.R. 2010. Drained wetland data for Minnesota. Unpublished. Fergus Falls, Minnesota: U.S. Fish and Wildlife Service. Available: http://prairie.ducks.org/index.cfm?&page=Minnesota/restorablewetlands/home.htm
[74] National Wetlands Working Group. 1988. Wetlands of Canada. Ecological Land Classification Series, No. 24. Environment Canada, Ottawa, ON, Canada, and Polyscience Publications Inc., Montreal, QC, Canada.
[75] Baldassare, G.A. and E.G. Bolen. 2006. Waterfowl Ecology and Management, 2nd edition. Kreiger Publishing, Malabar, Florida, USA.
[76] Winter, T.C., R.D. Benson, R.A. Engberg, G.J. Wiche, D.G. Emerson, O.A. Crosby, and J.E. Miller. 1984. Synopsis of ground-water and surface-water resources of North Dakota. U.S. Geological Survey Open File Report 84-732.

releasing water (such as through groundwater and evaporation) over an extended period.[77,78] The net effect of this important wetland function is to abate flooding by lowering and moderating the peaks of flood stages, thereby reducing flood damages.[79] Prairie potholes store surface water and attenuate flood flows[80,81,82], and potholes in North Dakota have been estimated to hold roughly half the surface water within the state.[83] Miller and Nudds compared U.S. and Canadian rivers and landscape changes on each side of the international border to provide further evidence that wetland drainage in the upper reaches of the Mississippi River watershed has increased flooding in the Cannonball and Sheyenne rivers in North Dakota and the Moreau and Big Sioux rivers in South Dakota.[84]

Wetland drainage has significantly decreased the cumulative storage capacity of wetlands,[85,86] and this decrease has been linked to increases in the frequency of flooding in and around the PPR.[87,88,89] In most cases when a pothole is drained or filled, the water that would have otherwise been retained in the basin is diverted to a ditch or other conveyance and makes its way to a navigable waterway much more rapidly than when the wetland was intact, thus bringing more water, carrying more sediment, nutrients and other pollutants, much more rapidly, to the navigable water and downstream communities, farms, and other landowners.

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[77] Carter, V. 1996. Technical aspects of wetlands: wetland hydrology, water quality and associated functions, in J.D. Fretwell, J.S. Williams, P.J. Redman (eds.), National Water Summary on Wetland Resources, USGS Water Supply Paper 2425.

[78] Carroll, R., G. Pohll, J. Tracy, T. Winter, and R. Smith. 2005. Simulation of a semipermanent wetland basin in the Cottonwood Lake area, east-central North Dakota. Journal of Hydrologic Engineering 10:70–84.

[79] Mitsch, W. J. and J. G. Gosselink. 1986. Wetlands. Van Nostrand Reinhold Co. Inc. N.Y., N.Y. 539 pp.

[80] Hubbard, D. and R.L. Linder. 1986. Spring runoff retention in prairie pothole wetlands. Journal of Soil and Water Conservation 41:122–125.

[81] Gleason, R.A. and B.A. Tangen. 2008. Floodwater storage. In Gleason, R.A., M.K. Laubhan, and N.H. Euliss, Jr. (ed.) Ecosystem services derived from wetland conservation practices in the United States prairie pothole region with an emphasis on the U.S. Department of Agriculture Conservation Reserve and Wetlands Reserve Programs. U.S. Geological Survey, Reston, VA. USA. Professional Paper 1745.

[82] Minke, A.G., C.J. Westbrook, and G. Van Der Kamp. 2009. Simplified volume-area-depth method for estimating water storage of prairie potholes. Wetlands 30:541–551.

[83] Ripley, D. 1990. An overview of North Dakota's Water Resources. North Dakota Water Quality Symposium. North Dakota State Extension Service.

[84] Miller, M.W. and T.D. Nudds. 1996. Prairie landscape change and flooding in the Mississippi River Valley. Conservation Biology 10:847–853

[85] Dahl, T.E. 1990. Wetland losses in the United States 1780's to 1980's. U.S. Department of the Interior: Fish and Wildlife Service, Washington, DC. 21 pp.

[86] Dahl, T.E. and C.E. Johnson. 1991. Status and trends of wetlands in the conterminous United States, mid-1970s to mid-1980s: Washington, D.C., U.S. Department of the Interior, Fish and Wildlife Service.

[87] Miller, J.E. and D.L. Frink. 1984. Changes in flood response of the Red River of the North basin, North Dakota-Minnesota. U.S. Geological Survey Water-Supply Paper 2243.

[88] Miller and Nudds, 1996

[89] Manale, A. 2000. Flood and water quality management through targeted, temporary restoration of landscape functions – paying upland farmers to control runoff. Journal of Soil and Water Conservation 55:285–295.

Prairie potholes also act as sinks for nutrients and other chemicals and thereby affect and improve the quality of runoff water.[90,91,92,93] With pothole wetlands being the landscape's primary storage area for nutrients and salts, these solutes (along with increased sediment loads) are transported via these new surface connections downstream when the potholes are drained.[94,95] Yang et al.'s [96] study of the Broughton Creek watershed estimated that a 31% increase in nitrogen and phosphorus load from the watershed and a 41% increase in sediment loading were associated with wetland loss in the watershed. Thus, when as a result of the ditching, tiling, or filling of wetlands the retention time is shortened or eliminated and the associated biochemical processes are thereby altered, the cleansing or filtration function of the former wetland is lost or degraded, with direct negative impacts on the quality of the downstream navigable waters.

In addition, the cumulative impacts of pothole drainage to downstream waters, including increased pesticide levels[97] and increased turbidity and sedimentation, would impact the biological integrity of downstream waters. [98,99] Gleason et al.[100] found that sediment deposition of only 0.5 cm resulted in a 99.7% reduction in total invertebrate emergence and 91.7% reduction in seedling emergence in an experiment conducted in the context of the PPR. The increased flows in downstream waters resulting from drainage or filling of potholes would also affect the capability of those waters to sustain populations of organisms more suited to the lower flows, decreased concentrations of nutrients and other solutes, and lower sedimentation rates of waters not impacted by drainage. Thus, the biological impacts to aquatic life in navigable waters that result from the increased hydrological connectivity and corresponding increases in stream

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[90] Van Der Valk, A.G. 1989. Northern Prairie Wetlands. Iowa State University Press, Ames, Ia.Weeks, J.B. and E.D. Gutentag. 1984. The High Plains regional aquifer: geohydrology. Pages 6–25 in G.A. Whitestone, editor. Proceedings of the Ogallala Aquifer Symposium. Texas Tech. University, Lubbock, USA.

[91] Davis, C.B., J.L. Baker, A.G. Van Der Valk, and C.E. Beer. 1981. Prairie pothole marshes as traps for nitrogen and phosphorous in agricultural runoff. pp. 153–163. In B. Richardson (ed.) Selected proceedings of the Midwest Conference on Wetland Values and Management. Freshwater Society, Navaree, MN, USA.

[92] Crumpton, W.G. and L.G. Goldsborough. 1998. Nitrogen transformation and fate in prairie wetlands. Great Plains Research 8:57–72.

[93] Whigham, D.F. and T.E. Jordan. 2003. Isolated wetlands and water quality. Wetlands 23:541–549.

[94] Brunet, N.N. and C.J. Westbrook. 2012. Wetland drainage in the Canadian prairies: Nutrient, salt and bacteria characteristics. Agriculture, Ecosystems and Environment 146:1–12.

[95] Lenhart, C.A., H. Peterson, and J. Nieber. 2011. Increased streamflow in agricultural watersheds of the Midwest: Implications for management. Watershed Science Bulletion 2011(spring):25–31.

[96] Yang, W., X. Wang, S. Gabor, L. Boychuk, and P. Badiou. 2008. Water quantity and quality benefits from wetland conservation and restoration in Broughton's Creek Watershed. Research report submitted to Ducks Unlimited Canada.

[97] Donald, D. B., J. Syrgiannis, F. Hunter, and G. Weiss. 1999. Agricultural pesticides threaten the ecological integrity of northern prairie wetlands. Science of the Total Environment 231:173–181.

[98] Gleason, R.A., D.H. Euliss, D. Hubbrad, and W. Duffy. 2003. Effects of sediment load on emergence of aquatic invertebrates and plants from wetland soil egg and seed banks. Wetlands 23:26–34.

[99] Schottler, S.P., J. Ulrich, P. Belmont, R. Moore, J.W. Lauer, D.R. Engstrom, and J.W. Almendinger. 2013. Twentieth century agricultural drainage creates more erosive rivers. Hydrological Processes 28:1951–1961.

[100] Gleason et al. 2003

flow and erosiveness, sediment loads, and nutrient and pesticide concentrations, cannot be ignored as an important component of the significant nexus evaluation for the ecoregion.

From an economic perspective, some of the greatest consequences of draining prairie potholes are those associated with increased flood damages resulting from reduced flood attenuation functions. For example, the estimated net benefit of artificially storing water in the Red River Valley as described by Kurz et al.[101] exceeded $800 million over 50 years in some scenarios as a result of reduced flood stages in the Red River and avoided damages and other benefits. Hey and Phillipi[102] documented that mean annual flood damage in the Upper Mississippi River basin had increased 140% over the previous 90 years (in adjusted dollars). Given the extent of increasingly frequent damaging floods along rivers in and flowing out of the PPR (as well as in other areas around the country), the economics associated with avoided damages through wetland protection and maintenance of flood water storage functions should be an important consideration of the value of geographically isolated wetlands to interstate economies. Additionally, a recent study[103] also estimated the value of the nutrient removal and carbon sequestration services lost due to draining or altering potholes in the Broughton's Creek watershed since 1968 to be $430 million.

Playa Wetlands—The science of playa wetlands and related waters provides another excellent example of the linkages between geographically isolated wetlands and navigable waters, in this case via critical groundwater connections. Playas are relatively shallow, ephemeral, closed-basin wetlands usually not located adjacent to navigable waters. They occur in high densities in several areas within the Central Great Plains. These shallow, typically circular, basins lie at the lowest points in relatively low-relief watersheds, and each collects runoff from the surrounding area. About 66,000 playas remain in the relatively flat topographic landscape of the Great Plains of Kansas, Colorado, Oklahoma, Texas, and New Mexico.[104,105] Playas tend to occur in clusters of high density in several distinct areas across the ecoregion and are dominant components of the landscape in these areas.[106]

The High Plains aquifer, which includes the Ogallala aquifer, underlies about 170,000 square miles across eight states, including most of the Playa Lakes region, as well as the Rainwater Basin area of Nebraska. This aquifer is the primary source of water in the region with about 97%

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[101] Kurz , B.A., X. Wang, L. De Silva, S.K. Hanson, M. D. Kurz, and W.D. Peck. 2007. An evaluation of basinwide, distributed storage in the Red River Basin: The Waffle® Concept. Energy & Environmental Research Center.

[102] Hey, D.L. and N.S. Phillipi. 1995. Flood reduction through wetland restoration: The Upper Mississippi River basin as a case history. Restoration Ecology 3:4–17.

[103] Yang et al. 20

[104] Playa Lakes Joint Venture http://www.pljv.org

[105] Smith, L.M., D.A. Haukos, and S. McMurry. 2012. High Plains Playas. In Batzer, D. and A. Baldwin (eds.), Wetland Habitats of North America: Ecology and Conservation Concerns, pp.299–311. University of California Press, Berkeley, USA.

[106] Bowen, M.W., W.C. Johnson, S.L. Egbert, and S.T. Klopfenstein. 2010. A GIS-based approach to identify and map playa wetlands on the High Plains, Kansas, U.S.A. Wetlands 30:675–684.

being used to support irrigated agriculture.[107] Water from the aquifer has an economic value of approximately $20 billion annually[108] and provides drinking water for about 82% of the region's residents.[109]

Conceptual models have recognized for years that the playas are critical recharge zones for the Ogallala aquifer.[110] Gurdak and Roe[111,112] provided a comprehensive synthesis of the related literature (approximately 175 studies) and concluded that playas are pathways of relatively rapid recharge and provide an important percentage of recharge to the Ogallala aquifer. Thus, playas are critical to supplying water to an important, interstate water body and impact the water quantity of the underlying aquifer.[113] An example is the recent partnership between the Playa Lakes Joint Venture and the City of Clovis, New Mexico to implement a playa conservation program to manage playas for recharge, wildlife habitat and stormwater management or water retention. Within the Joint Venture's six-state region, there are nearly 150 towns and cities, similar to Clovis, that are experiencing declining availability of groundwater and have a number of playas surrounding the community. Furthermore, Rainwater and Thompson[114] stated that landscape changes increased water collection in playas and that infiltration had also increased. They further stated that these factors increased the contribution of playas to Ogallala aquifer recharge and that, in some areas, infiltration from playas that receive runoff are the principal source of aquifer recharge.

Understanding that the CWA has no jurisdiction over groundwater, the importance of the aquifer to human health, welfare and economic benefit is therefore not a direct, independent concern of the Act except as it is affected by the condition of surface water and wetlands and in turn as it impacts waters to which the aquifer discharges. For example, Weeks and Gutentag[115] stated that groundwater from this aquifer discharges naturally into flowing streams and springs, and that the aquifer and valley-fill deposits and associated streams comprise a stream-aquifer system that links the High Plains aquifer to surface tributaries of the Platte, Republican and Arkansas rivers,

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[107] Maupin, M.A. and N.L. Barber. 2005. Estimated withdrawals from principal aquifers in the United States, 2000: U.S. Geological Survey Circular 1279. 46pp.
[108] Moody, D.W. 1990. Groundwater contamination in the United States. Journal of Soil and Water Conservation 45:170–179.
[109] Maupin and Barber 2005
[110] Wood, W.W. 2000. Ground-water recharge in the southern high plains of Texas and New Mexico. U.S. Geological Survey FS-129-99.
[111] Gurdak, J.J. and C.D. Roe. 2010. Review: Recharge rates and chemistry beneath playas of the High Plains aquifer, U.S.A. Hydrogeology Journal 18:1747–1772.
[112] Gurdak, J.J. and C.D. Roe. 2009. Recharge rates and chemistry beneath playas of the High Plains aquifer – a literature review and synthesis. U.S. Geological Survey Circular 1333. 39pp.
[113] Id.
[114] Rainwater, K. and D.B. Thompson. 1994. Playa lake influence on ground-water mounding in Lubbock, Texas. Pages 113–118 in L.V. Urban and A.W. Wyatt, eds. Proceedings of the Playa Basin Symposium. Texas Tech. University, Lubbock, USA.
[115] Weeks and Gutentag, 1984

as well as the Pecos and Canadian rivers.[116] In addition to the impact that playa wetlands have on the quantity of water moving from the wetlands, through the aquifer, and to navigable waters, they also have an impact on the quality of that water. Ramsey et al.[117] showed that playa wetlands improve the water quality of storm runoff, demonstrating that water quality in the playa is better than that found in storm runoff before entering the wetland. They stated that this wetland function thereby contributes to improving/maintaining groundwater quality in the aquifer[118] and thus must also improve water quality in those streams and rivers.

A particularly interesting example of the linkages between geographically isolated wetlands and traditional navigable waters is Nebraska's Platte River and its tributaries in Colorado (South Platte River) and Wyoming (North Platte), an area covering 23,000 sq. mi. Large amounts of surface water have been diverted from this river for irrigation and other purposes, the effects of which have been significant enough to contribute to the Platte River in Nebraska occasionally running dry (e.g., in 2003). Because of the over-appropriation of water in the region, and the acceptance as fact that wetlands and other geographically isolated, non-adjacent waters in this region provide groundwater recharge and in turn base flow to these navigable rivers, artificial groundwater recharge sites and wetlands have long been used as a tool for replenishing river water.[119,120]

Hydrologic models have been developed so landowners and regulators can estimate how much water, and in what time frame, will be "delivered" to the river from a particular wetland or recharge site[121]. Through contractual agreements supported by Colorado water law, and under the auspices of the interstate federal "Platte River Recovery Implementation Program Cooperative Agreement" signed in 2006, the water in this interlinked wetland/lake/groundwater/Platte river system is commercially exchanged based on this well-established and scientifically demonstrated significant nexus. Notably, recharge wetlands and other sites are typically located a mile or more away from the river and would not be considered "adjacent" according to the definition in the proposed Rule. Some sites are much farther away, such as the Fort Morgan recharge sites[122] and Brush Prairie wetlands/ponds that are located 5–7 miles from the South Platte. These wetlands are credited with the capacity to recharge 13,000 acre-feet of water annually to the river, although it is estimated that it takes five years for water to move from the Brush Prairie wetlands to the South Platte River. Regardless of the distance

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[116] Kreitler, C.W. and A.R. Dutton. 1984. Hydrogeology of the Palo Duro Basin: Interactions with the Ogallala aquifer. Pages 392–404 in G.A. Whetstone, ed. Proceedings of the Ogallala Aquifer Symposium II. Texas Tech. Univ., Lubbock, TX.

[117] Ramsey, R.H., R.E Zartman, L.S. Buck, and A. Huang. 1994. Water quality studies in selected playas in the Southern High Plains. Pages 127–136 in L.V. Urban and A.W. Wyatt, editors. Proceedings of the Playa Basin Symposium. Texas Tech. University, Lubbock, USA.

[118] Rainwater and Thompson 1994

[119] Warner et al. 1986

[120] Watt 2003

[121] Warner et al. 1986

[122] *Id.*

and time involved, this water is bought and sold, and constitutes a significant component of the fiscal and water economy of the region, all based upon the accepted certainty of the functional connectivity and significant nexus that exists between the Platte River and waters that do not currently fit within the proposed definition of "adjacent."

Depletion of the Ogallala aquifer, which is influenced by both groundwater withdrawals and recharge from surface sources, has profound economic consequences in the region. As aquifer withdrawals exceed recharge rates, water levels in the aquifer decline, requiring additional energy and financial inputs to extract water. For agricultural producers, the costs of pumping from deeper wells eventually renders it unprofitable to grow irrigated crops and requires shifting to lower value dryland crops, ranching, or risking the annual influence of drought,[123,124] with at least short-term economic consequences throughout the region.[125] Thus, the loss or impairment of geographically isolated wetlands within this region will eliminate important recharge sites, with "downstream" indirect consequences to regional economies.

v. Creating Voluntary, Incentive- or Market-based Programs to Maintain Functions of Non-Jurisdictional Wetlands

In summary, the weight of the existing scientific evidence clearly demonstrates that draining or filling of prairie potholes, playa wetlands, and other geographically isolated wetlands prevents them from fulfilling key functions such as water storage and water quality maintenance that are felt on an interstate scale. As such, the chemical, physical, and biological integrity of the receiving downstream navigable waters is negatively affected. **The cited body of science makes a compelling case for specifically and categorically including prairie potholes and playa wetlands as WOTUS particularly in light of their impacts on navigable waters and other social and economic benefits. Should, however, the Agencies maintain a definition of "adjacency" that eliminates CWA jurisdictional coverage of geographically isolated wetlands, we strongly recommend that the Agencies initiate a robust process to develop new or strengthen existing non-regulatory programs that will incentivize land-owners to conserve the benefits of these lands voluntarily, and we welcome the opportunity to engage and assist in such a process.**

There is growing emphasis on preserving and restoring watersheds and floodplains for both water quality and flood abatement purposes. These solutions can be highly cost-effective. DU has been working with a coalition of non-profit and for-profit entities to accelerate the adoption of natural and hybrid infrastructure. While infrastructure has historically been viewed as buildings, roads, levees, wastewater treatment plants, storm sewers, etc.—*gray infrastructure*—

[123] Hornbeck, R., and P. Keskin. 2014. The historically evolving impact of the Ogallala aquifer: agricultural adaptation to groundwater and drought. American Economic Journal: Applied Economics 6:190–219.
[124] Vestal, M.K., B.L. Guerrero, B.B. Golden, and L.D. Harkey. 2017. The impact of discount rate and price on intertemporal groundwater models in southwest Kansas. Journal of Water Resource and Protection 9:745–749.
[125] Terrell, B.L., P.N. Johnson, and E. Segarra. 2002. Ogallala aquifer depletion: economic impact on the Texas High Plains. Water Policy 4:33–46.

the sections above highlight that many waterbodies can serve much the same functions, supporting transportation, flood management, and water purification—*natural infrastructure*. This concept is already incorporated into several major initiatives, including Engineering with Nature at the Army Corps, which recently published an Engineering with Nature Atlas, highlighting natural infrastructure projects and their financial, environmental, and societal benefits. By considering a spectrum of infrastructure options from gray to natural and hybrid options in between, communities can enhance resilience and reduce costs. A 2015 report produced from the Caterpillar-organized summit "Restoring Natural Infrastructure" notes that

> **"the mindset used to establish existing policies was focused on stopping negative actions to the environment.** Thus, existing policies often lack flexibility and are not appropriate for restoring natural infrastructure, causing delays in approvals and project execution. **Policies need to be modified to incorporate positive action by encouraging the innovation and experimentation needed to develop more creative solutions that allow flexibility and promote entrepreneurial opportunities**."

DU is already proactively working with EPA on their recent proposal to accelerate the adoption of water quality trading markets to improve water quality[126], and based on our operating philosophy and general assessment as practitioners of incentive-based conservation, we believe this approach can be a transformative approach. **Having worked to deliver wetlands in the context of carbon, water, and nutrient trading markets and in coastal protection, DU would greatly value an opportunity to discuss our experience with market- and voluntary-based conservation with the Agencies.**

h. *Prior Converted Cropland (PCC)*

DU supports the proposed Rule in its treatment of PCC, including the clarification that any PCC designation made by USDA will be recognized by the Agencies, and the clarification that PCC is considered abandoned if it is not used for, or in support of, agricultural purposes at least once in the immediately preceding five years for CWA purposes.

We concur that agricultural purposes include land uses that make the production of an agriculture product possible, including but not limited to grazing and haying. We would also include fallow rotations, crawfish aquaculture rotations, silviculture, conservation of fish, wildlife and their habitats, and any other practices which can be reasonably interpreted as an agricultural purpose. This has been a particular point of consternation among our agricultural partners who are told, for instance, that crawfish rotations in rice fields are interpreted as a change in use or count towards abandonment. Accordingly, we also urge the Agencies to work in conjunction with USDA NRCS to develop a comprehensive list of acceptable practices that clarify which aquaculture production or purposes are included in the supported practices. There should be no

[126]February 6, 2019, https://www.epa.gov/newsreleases/epa-announces-new-water-quality-trading-policy-memorandum

conflict between conservation practices certified by NRCS to protect land and water resources and the federal regulations meant to accomplish the same goal.

III. Comments Specific to Proposal to Map Waters of the US

We have previously advocated for mapping of WOTUS [Docket ID No. EPA-HQ-OW-2011-0880] because we recognize that there is no national spatial base layer of protected wetlands as defined by WOTUS under past or proposed definitions. Currently, there are no national spatial datasets that can be used to readily identify wetlands protected by WOTUS and the best available spatial data sets that are available for a Conterminous United States analysis are the National Hydrography Dataset (NHD) and National Wetlands Inventory (NWI). However, neither of these datasets are jurisdictional datasets and should not be used as such. Caveats regarding these datasets include:

- The NWI data is delineated by wetland type. The WOTUS rule is by wetland basin. The NWI would therefore need to be summarized by wetland basin, which would take a lot of processing time to perform over the conterminous U.S.
- The date and quality of the NWI data vary by location— some are as old as 1978 and some are just a "mashup" of existing data—not done to NWI standards.
- The NHD dataset does not have the necessary attributes to distinguish between the different river types (e.g., navigable, ephemeral) in WOTUS.
- The specific spatial and attribute accuracy of the NHD and NWI data are not known for the required WOTUS definitions.
- When combining the NHD and NWI, the spatial accuracy of the intersection of the datasets is unknown. A quick analysis in the Prairie Pothole and Great Lakes regions conducted by DU staff with a sample size of 1,288 wetlands revealed:
    - 14% of wetlands in the NWI database that did not intersect with NHD dataset features *did* intersect based on aerial photo analysis, and
    - 1% of wetlands in the NWI dataset that did intersect NHD features *did not* intersect based on an aerial photo analysis.

Furthermore, based on DU's extensive experience contracting with State agencies to update the NWI in selected priority geographies, estimates for using current techniques to update the NWI dataset to conform with current standards would approach $80 million and take many years to complete. This update would still not be considered a jurisdictional delineation of wetlands. However, sampling techniques similar to the U.S. Fish and Wildlife Service's Wetlands Status and Trends analysis and the EPA's National Wetland Condition Assessment could be used to validate this data set without the large expenditures of time and funds that it would take to map the US.

Because traditional navigable waters, interstate waters, and the territorial seas ultimately provide the basis for designating by rule or assessing potential CWA jurisdiction for all other categories of waters, we strongly recommend that existing and readily available technology be used to map

at least all traditional navigable waters, interstate waters, and the territorial seas across the U.S. At the moment, it is extremely difficult, if not impossible, to find maps that clearly depict these waters, even at the level of individual Corps districts. While there are limited maps available in some instances and lists for some of these waters in some areas, we lack a cohesive, nationwide system of compiling and making this information available. Although not an "emerging" technology, existing technology related to mapping, remote sensing, geographic information systems and existing geo-databases could and should be used to develop this valuable, basic tool. We also request the Agencies consider continuing the established practice of providing maps of Approved Jurisdictional Determinations for public inspection[127] and furthermore develop polygon boundaries for these Determinations.

IV. Comments Specific to Economic Analysis Supporting the Rule

The cost-benefit analysis in the proposed Rule relies solely on the concept of "forgone benefits" and "avoided costs" principally derived from regulatory program decisions and Willingness to Pay assessments within states. **This analysis discounts the unavoidable costs borne by downstream states when upstream states fail to protect the integrity of intrastate waters.** We further explore the value associated with wetlands below.

a. Impacts to Ecosystem Services

The Agencies' Stated Impacts to Ecosystem Services focused on the statement that "Narrowing the scope of federal jurisdiction under the CWA may result in a reduction in the ecosystem services provided by some waters, such as less habitat, increased flood risk, and higher pollutant loads[…]For example the loss of wetlands can increase the risk of property damage due to flooding." Many states have expressed concern about the transmission of flooding and pollution downstream as a result of insufficient wetland and water management upstream and we believe these concerns are well founded, particularly in light of several recent court cases.

The economic and social implications of restoring and maintaining protection to wetlands and other waters and of striving "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" should provide important context within which the final Rule is developed. There are significant economic and societal implications if water quality and wetland conservation continue to be compromised.

In the context of documenting connectivity between other waters and navigable waters, the discussions above essentially focus on some of the primary functions of wetlands, all of which provide valuable services to our society and the economy. Costanza et al.[128] updated earlier estimates of the total global value of ecosystem services provided by a number of major ecosystems. They estimated that the value of those services for "inland wetlands" averaged

[127] https://watersgeo.epa.gov/cwa/CWA-JDs/

[128] Costanza, R., R. De Groot, P. Sutton, S. Van Der Ploeg, S.J. Anderson, I. Kubiszewski, S. Farber, and R.K. Turner. 2014. Changes in the global value of ecosystem services. Global Environmental Change 26:152–158.

$25,682/ha/yr, significantly higher than their 1997 estimates, in part because of the continued loss of those wetland habitats. Interestingly, the value of the services provided by the navigable waters themselves (included within "rivers and lakes") averaged only $4,267/ha/yr. In the U.S., every sector of the economy, and every individual person, is affected by the economy of water in various ways. The water systems that supply 86% of the U.S. population with household water, for example, involves at least $53 billion a year, even though domestic water supplies accounted for only 12% of off-stream use of water in 2005.

The issue of the negative economic consequences of increased flooding associated with a reduction in the flood storage capacity of wetlands in the Nation's watersheds was touched upon earlier. Another indication of the economic implications of protecting the Nation's water resources is revealed in the example of the actions taken by New York City to initiate a $250 million program to acquire and protect up to 350,000 acres of wetlands and riparian lands in the Catskill Mountains.[129] The city viewed this as a way to protect the quality of its water supply as an alternative to constructing water treatment plants which could cost as much as $6–8 billion. In South Carolina, a study showed that without the wetland services provided by the Congaree Swamp, a $5 million wastewater treatment plant would be required.[130] Thus, wetlands provide low-cost services to society and reduce the cost of infrastructure and long-term maintenance.

The algal blooms that cause health problems also come at high economic costs. For example, Dodds et al.[131] estimated that the total annual cost of the eutrophication of U.S. freshwaters was $2.2 billion. This estimate included recreational and angling costs, property values, drinking water treatment costs, and a conservative estimate of the costs of the loss of biodiversity. Polasky and Ren[132] cited research that estimated that if two lakes (Big Sandy and Leech) in Minnesota had an increase in water clarity of three feet, lakefront property owners would realize a benefit of between $50 and $100 million. Southwick Associates[133] estimated that the present value of Saginaw Bay coastal marshes for active recreational use was $239 million, or approximately $10,000 per acre.

Additionally, the vast majority of the citizens of the United States and our society place a high priority on conservation of wetlands and maintenance of high standards of water quality, for

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[129] Daily. G.C., S. Alexander, P. R. Ehrlich, L. Goulder, J. Lubchenco, P.A. Matson, H.A. Mooney, S. Postel, S. H. Schneider, D. Tilman, and G. M. Woodwell. 1999. Ecosystems services: benefits supplied to human societies by natural ecosystems. Issues in Ecology. Ecological Society of America. http://www.hillcountryalliance.org/uploads/HCA/Ecosystem_Services_Daily.pdf

[130] www.epa.gov/owow/wetlands

[131] Dodds, W.F., W.W. Bouska, J.L. Eitzmann, T.J. Pilger, K.L. Pitts, A.J. Riley, J.T. Schloesser, and D.J. Thornbrugh. 2009. Eutrophication of U.S. freshwaters: Analysis of potential economic damages. Environmental Science and Technology 43:12–19.

[132] Polasky, S. and B. Ren. 2010. Minnesota water sustainability framework water valuation technical work team report. http://wrc.umn.edu/prod/groups/cfans/@pub/@cfans/@wrc/documents/asset/cfans_asset_224665.pdf

[133] Southwick Associates, Inc. 2006. Economic values of Saginaw Bay Coastal Marshes with a focus on recreational values. Report to USEPA Great Lakes and Ducks Unlimited. 65 pp.

many reasons that go well beyond their direct economic values. A nationwide survey documented that there were 15 times the number of citizens who believed there were too few wetlands compared to those who thought there were too many.[134] The same survey showed that 91% of the public thought that it was "very" (64%) or "somewhat" (27%) important to protect or conserve wetlands. Only 3% were neutral or considered it unimportant.

Furthermore, survey after survey has documented that the American public has a deep concern about water quality and high expectations for water conservation. For example: water pollution was identified as the most important environmental issue facing Florida[135]; 65% of Idaho residents thought more time and money should be spent on protecting Idaho's water resources[136] (Responsive Management 1994); 89% of Indiana residents thought that improving water quality was very important[137]; 75% of West Virginia residents thought much more effort should be spent on restoring streams that have been damaged by acid rain or acid mine drainage.[138] Kaplowitz and Kerr[139] noted that 75% of Michigan residents viewed the flood control services provided by wetlands as very or extremely important, and 87% viewed the wildlife habitat functions provided by wetlands similarly. A recent survey of Minnesota residents found that 83% of the electorate is concerned about the pollution of drinking water.[140] Duda et al.[141] describes how survey after survey of sportsmen and of the general public shows significant concern regarding safe, abundant, high quality water resources.

Many additional studies could be cited that demonstrate the value of wetlands and other water resources to federal, state and local economies, and to the great majority of U.S. citizens. Although we understand that this issue is not directly relevant to the technical aspects of the proposed Rule, we nevertheless believe that the available literature regarding the economic benefits of protecting the Nation's wetlands and other resources, and regarding the sentiment of

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[134] Responsive Management. 2001. Public awareness of, attitudes toward, and propensity to become a member of Ducks Unlimited in the United States. Report prepared for Ducks Unlimited. Responsive Management, Harrisonburg, VA, USA.

[135] Responsive Management. 1998. A needs assessment for environmental education in Florida: final report: phase V of a 5 phase environmental education needs assessment. Report prepared for the Florida Advisory Council on Environmental Education. Responsive Management, Harrisonburg, VA, USA.

[136] Responsive Management. 1994. Idaho residents' opinions and attitudes toward the Idaho Department of Fish and Game. Report prepared for the Idaho Department of Fish and Game. Responsive Management, Harrisonburg, VA, USA.

[137] Responsive Management. 1998. Public attitudes toward fish and wildlife management in Indiana. Report prepared for the Indiana Division of Fish and Wildlife. Responsive Management, Harrisonburg, VA, USA.

[138] Responsive Management. 1998. West Virginia residents' attitudes toward the land acquisition program and fish and wildlife management. Report prepared for the West Virginia Division of Natural Resources. Responsive Management, Harrisonburg, VA, USA.

[139] Kaplowitz, M.D. and J. Kerr. 2003. Michigan residents' perceptions of wetlands and mitigation. Wetlands 23:267–277.

[140] Fairbank, Maslin, Maulin, Metz and Assoc. and Public Opinion Strategies. 2010. Why invest in conserving natural areas? Minnesota Environmental Partnership. 2pp.

[141] Duda, M.D., M.F. Jones, and A. Criscione. 2010. The Sportsman's Voice: Hunting and fishing in America. Venture Publishing, Inc. State College, PA. 259 pp.

the general public in support of clean and abundant water, provides valuable context for the overall direction that the final Rule should take. Taken together, the overall message of the relevant economic and societal information supports the view, frequently shown to be shared by the vast majority of the public, that the conservation of wetlands and water resources is not and should not be viewed as a choice between economic and environmental benefits, but rather that long-term, shared economic benefits are dependent upon water resource protection.

b. Economic Analysis – Water Quality Models

To evaluate the water quality impacts of the proposed Rule, the Agencies developed numerical models of three selected case study watersheds (Ohio, Lower Missouri, and Rio Grande watersheds) using the Soil and Water Assessment Tool (SWAT). Each model encompassed one 4-digit HUC and delineated sub-basins at the 12-digit HUC resolution. We are concerned that the Agencies have conducted an analysis that did not conform to the Agencies' own standards and practices regarding watershed modeling with the SWAT tool.

The SWAT models incorporate a simplified representation of wetland functions in a watershed. Only wetlands adjacent to perennial or intermittent streams were modeled using the "wetland" function in SWAT. The "pond" function was used to model all geographically isolated wetlands in the SWAT analysis despite the EPA's own Office of Research and Development developed isolated wetlands functions[142] and dozens of other peer-reviewed publications dating back to 2005. The algorithms used to model these two types of water bodies differ in the way outflow is calculated. Wetland outflow is calculated whenever the water volume exceeds the normal storage volume (at full pool, inflow equals outflow). This is a simple water balance approach that does not consider the numerous complex flow pathways associated with true wetland function. Pond outflow on the other hand is calculated as a function of target storage. Target storage varies based on the month of the year (function of flood season) and soil water content of the sub-basin and must be defined. In areas that contained actual ponds, the wetland areas were added to the pond areas since only one node is supported for each sub-basin in the model.

The agencies claim that the models were configured with the two distinct functions (pond and wetland) so that the impacts of jurisdictional change could be compared side-by-side. This approach is categorically flawed for at least three reasons: (1) To accurately compare the impact of the proposed regulatory change, all wetlands should have been modeled with the same function. This approach does not follow EPA's past publications modeling wetland functions. (2) The utilization of the pond function for geographically isolated wetlands is perplexing. The Agencies state that geographically isolated wetlands are not directly connected to downstream waterways via surface water, yet the pond function models outflow through the principal spillway and emergency spillway of the pond. (3) Neither function accounts for groundwater recharge and discharge, or shallow subsurface flows.

[142] Evenson, G. R., Golden, H. E., Lane, C. R., and D'Amico, E. (2016) An improved representation of geographically isolated wetlands in a watershed-scale hydrologic model. *Hydrol. Process.*, 30: 4168– 4184. doi: 10.1002/hyp.10930.

We also are concerned that the Agencies' approach may have underestimated the impacts of the proposed Rule. Whenever the Cowardin et al.[143] code field did not specify stream type, the Agencies assumed it would remain jurisdictional. This assumption could greatly underestimate negative impacts to the proposed Rule. The case study locations do not include watersheds predicted to see the largest changes in wetland areas or ephemeral streams and may therefore not be representative of impacts of the proposed Rule across the U.S. Thus, we suspect that the finding may underestimate the negative impacts apparent in the Ohio River and Lower Missouri case studies: (1) changes in runoff/recharge and response to precipitation due to changes in land cover (Water Quantity Impacts) and (2) reduction in water storage and nutrient and sediment removal capacity (pollutant loading to streams).

There were several other inconstancies that do not conform to standard practices.

- Singular HUC12 watersheds were picked for sensitivity analyses, rather than the entire model domain.
- The riparian buffer width utilized for the primary water quality analyses was 50 feet and the sensitivity analysis utilized 100 feet.
- The category of "Temporary" impacts was added without documentation as to what constitutes temporary.
- Permit Analysis
    - "Agencies' assumed that projects permitted under the 404 programs (2011-2015) are representative of projects that may be permitted over the next 20 years in terms of the type and location of the projects, extent and character of the affected resources, and mitigation requirements."
    - "Analysis omits isolated (non-abutting wetlands), many of which have previously been found to be jurisdictional following significant nexus determination."
    - In addition to the exclusion of geographically isolated wetlands and water ways from future 404 requirements, the following interpretations underestimated the negative consequences of the proposed Rule in the case studies:
- Exclusion of all "Riverine Ephemeral" classified wetlands (ORM2 database)
- NWI data used to in the models but the Cowardin definition of wetlands is different from the Agencies' definition. There is no ephemeral subsection under Cowardin.
- Within the "Riverine Intermittent" classification, the "Temporarily Flooded" and "Intermittently Flooded" water regime modifiers were considered ephemeral and removed from the models.

[143] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. Laroe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C., USA. 79pp.

Overall, we are concerned that this analysis underestimates impact and is not repeatable as required by OMB Circular A-4.

c. Impacts to Ecosystem Services – Outdoor Recreation

Focusing on economic issues more directly related to conservation interests, the outdoor industry contributes an estimated $887 billion to the Nation's.[144] In recent years, fish and wildlife-related recreation (hunting, angling, and wildlife-watching) accounted for approximately $156.9 billion in annual expenditures and is a major industry.[145] A high percentage of that economy is associated with water resources. For Ducks Unlimited, waterfowl alone represent a tremendously valuable interstate and international economic resource. Waterfowl produced in the Prairie Pothole Region (5 primary states of ND, SD, MT, MN and IA) have been recovered by hunters in all 50 states, Canada and Mexico. In 2011, more than 1.5 million waterfowl hunters expended approximately $1.3 billion on hunting trips and related equipment purchases, accounting for a total industry output of $3.0 billion.[146] This analysis also calculated that waterfowl hunting created approximately 27,350 jobs and $956 million in employment income. Bird-watching, much of it also water-related as evidence by waterfowl accounting for the type of bird observed by 49% of away-from-home birders, supported total trip-related and equipment expenditures of $66 billion in 2016.[147]

d. Impacts to the Mitigation Sector

The proposed 2019 Rule would reduce the number of permits requiring compensatory mitigation under section 404 of the CWA. Estimates range from 20–60% reductions in aquatic resources [wetlands, streams] that would require compensatory mitigation.

Moreover, in the most recent USFWS Wetlands Status and Trends report[148] (Dahl 2014), wetland loss on a national basis had slowed through the 1990s but increased in the early 2000s. The proposed Rule would likely exacerbate wetland loss, thereby decreasing ecosystem services that provide financial benefits such as clean water, flood reduction, green space, and carbon sequestration.

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[144] Outdoor Industry Association. 2017. The outdoor recreation economy. Outdoor Industry Association, Bounder, Colorado, USA. 20pp.
[145] U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau. 2016. 2016 National survey of fishing, hunting, and wildlife-associated recreation, revised 2018. Washington, D.C., USA. 144pp.
[146] Carver, E. 2015. Economic impact of waterfowl hunting in the United States. Addendum to the 2011 National survey of fishing, hunting, and wildlife-associated recreation. U.S. Fish and Wildlife Service, Report 2011-6, 16pp.
[147] U.S. Department of the Interior, U.S. Fish and Wildlife Service, U.S. Department of Commerce, and U.S. Census Bureau. 2016. 2016 National survey of fishing, hunting, and wildlife-associated recreation, revised 2018. Washington, D.C., USA. 144pp.
[148] Dahl, T.E. 2014. Status and trends of prairie wetlands in the United States 1997 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Ecological Services, Washington, D.C. 67 pp.

The characterization of the proposed Rule in its debut press release on December 10, 2018 suggested it would substantially streamline the permitting process by reverting to more of a common-sense approach to determining adjacency and connectivity to navigable waterways. We believe this characterization is inaccurate, as jurisdictional determinations will still lie with the Corps, which are determined by the formal delineation process described in the 1987 Manual and Regional Supplements. Development projects will therefore still require jurisdictional determinations. The press release overstated the reductions in costs for typical development projects by suggesting formal wetland determinations will no longer be required.

In general, the potential negative consequences of reduced mitigation requirements on the economy appear to be understated. For the mitigation banking industry, a multi-billion-dollar industry, consequences of such a contraction in mitigation credit demand could be far-reaching. It is unlikely that these markets will not respond to contain associated financial challenges the proposed Rule is likely to impart on the mitigation industry. For instance, with a substantial contraction in the mitigation banking industry, it is highly unlikely that the cost for mitigation will remain the same. The proposed Rule may have the effect of substantially increasing competition for remaining mitigation work, while simultaneously drastically altering the economics of existing mitigation banks and In-Lieu Fee (ILF) programs. With a substantial reduction in the number of permits that would require mitigation, existing workforces providing such services are bound to contract.

As advocated in the proposed Rule, decentralization of wetland regulation is suggested to result in increased efficiencies in resource management. However, we question this characterization as it does not account for the fact that many mitigation and ecological service providers work across state lines. An environment where states are expected to fill regulatory voids will almost certainly result in a more fragmented regulatory landscape, bringing greater costs as consulting firms adapt to dynamic and spatially-variable regulations. These added costs can be expected to be passed to permit applicants.

Contraction of regulatory coverage of the CWA under the proposed Rule would translate into lower credit demand, causing providers to consider less expensive mitigation methods such as preservation or enhancement. This would result in further loss of aquatic resources beyond the direct effects of loss of regulatory authority. Further, establishment of fewer mitigation banks and ILF sites may result in a greater proportion of mitigation being performed as individual permittee responsible sites, which typically are smaller and spatially isolated.

For ILF programs, three-year delivery windows are required to put habitat on the ground. If it takes an ILF program longer to secure funds to put a project on the ground, resource replacement could occur on protracted timelines as program finances are no longer sufficient to replace resources as quickly. The real risk to ILF programs is that certain watersheds will be starved for capital to put projects on the ground. Such scenarios will force sponsors to identify creative

solutions for habitat delivery, most of which would serve to short-change aquatic resources put on the ground in some capacity.

The 2008 mitigation rule allows for consolidation of funds within larger watersheds (6-digit HUCs). The typical watershed or service area is the smaller 8-digit HUC. Consolidation of impacts into fewer sites with larger service areas is likely to emerge as a potential strategy to address fewer credit demands. Here the economics of delivery may result in a loss of local wetland functions. These shifts could result in inequitable distribution of resources providing important ecological benefits away from population centers to more rural areas. Additionally, this may erode ecological value of mitigation wetlands as service providers would be increasingly tempted to employ cost-saving measures that come at the expense of ecological function—the so called "race to the bottom" in terms of common mitigation practices. Examples of cost-saving measures may include: mitigation being performed on smaller, less expensive properties; increased emphasis to mitigate on lands that are already protected, resulting in fewer acres protected overall; shifts to more passive restoration techniques that may not fully recover aquatic resource function in degraded systems (e.g., incomplete hydrological restorations; and reduction in planting rates, site management, or long-term stewardship.

For ILF programs, interagency review team members (USFWS, USEPA, USACE, NRCS, state agencies) may disagree, or have conflicting mandates on how mitigation should be provided. This is one of the larger problems already facing ILF programs in general; the proposed Rule is likely to exacerbate this problem and could delay the production of credits available for mitigation needs.

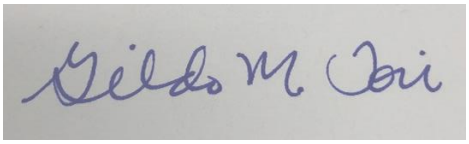
e. State Wetland Regulations and Compensatory Mitigation

While it is possible that state regulations in some cases may assume protection of non-jurisdictional wetlands under the proposed Rule, many state wetlands laws function much differently than existing federal protections. The proposed Rule appears to grossly mischaracterize the breadth of current state wetland protections. For instance, Table 11-2 on page 44 leads the reader to believe New York's wetland protections cover most federally regulated wetlands under pre-2019 rules; however, they in fact protect only wetlands 12.4 acres and larger or "ecologically significant wetlands." Recent studies have shown that in practice the state of New York has poor inventories of "ecologically significant wetlands," which hinders the use of state regulations replace federal protections that would be lost under the proposed Rule. We have also heard concerns from our state level wetland program contacts across the country that the rapid and significant change in rules will pose significant challenges to state agencies. We do not believe these costs were properly accounted for in the analysis. For example some state agencies have proposed increased fees to cover additional staff.

V. Closing and Contact Information

We appreciate the opportunity to provide our comments on this important rulemaking. If you have any questions about Ducks Unlimited's comments, please do not hesitate to contact Nick Wiley (nwiley@ducks.org or 901-758-3784) or Gildo Tori (gtori@ducks.org or 734-623-2001).

Sincerely,



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