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# Review of 2014 EPA Economic Analysis of Proposed Revised Definition of Waters of the United States

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PREPARED FOR


The Waters Advocacy Coalition

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## Executive Summary

The Environmental Protection Agency's (EPA) March 2014 *Economic Analysis of Proposed Revised Definition of Waters of the United States* (EPA analysis) presents the agency's estimates of the probable costs and benefits associated with a definitional change to the term "waters of the United States" used throughout Clean Water Act (CWA) programs. EPA is proposing an expansion of the definition of the term "waters of the United States" to include categories of waters that were previously never regulated as waters of the United States, such as all waters in floodplains, riparian areas, and certain ditches. The inclusion of these waters will broaden the scope of the CWA and will increase the costs associated with each program. Unfortunately, the EPA analysis relies on a flawed methodology for estimating the extent of newly jurisdictional waters that systematically underestimates the impact of the definitional changes. This is compounded by the exclusion of several important types of costs and the use of a flawed benefits transfer methodology, which EPA uses to estimate the benefits of expanding jurisdiction. The errors, omissions, and lack of transparency in EPA's study are so severe as to render it virtually meaningless. The agency should withdraw the economic analysis and prepare an adequate study of this major change in the implementation of the CWA.

## I. Introduction

The March 2014 *Economic Analysis of Proposed Revised Definition of Waters of the United States* represents EPA's estimate of the economic impacts associated with a change in the scope of the waters regulated under the CWA. The analysis centers on the meaning of the term "waters of the United States," which determines whether the requirements of the federal CWA apply. After several landmark Supreme Court decisions rejected expansive federal jurisdiction, EPA produced several guidance documents explaining how the agency would proceed in making jurisdictional determinations in the CWA section 404 program. The guidance documents were not legally binding and created additional uncertainties about the scope of CWA jurisdiction.

Recently, EPA proposed a rule to revise the “waters of the United States” definition for all CWA programs (402, 401, 311, etc.). The draft rule, for the first time, includes a regulatory definition of “tributary” that explicitly includes many kinds of irrigation, storm water, roadside and other ditches. The draft rule also extends jurisdiction to “adjacent waters,” which includes, for the first time, adjacent non-wetlands. It also defines a new component of the “adjacent” definition—“neighboring.” The term “neighboring,” for the purposes of defining the term “adjacent” in the new rule, includes waters located within riparian and floodplain areas. The draft rule also defines “riparian areas” and “floodplain” for the first time. The new rule would also regulate all “other waters” if they have significant nexus, which would be determined on a case by case basis. EPA asserts that these changes would improve the clarity of the CWA and would expand environmental benefits by requiring additional compensatory mitigation for discharges of dredged or fill material into such waters. It also recognizes the possibility of increased costs to permit seekers and regulatory agencies, albeit for a very narrow range of potential actions. EPA’s economic analysis, which is required by law for a proposed rule change, outlines the economic impacts associated with a change in the definition of “waters of the United States.”

A threshold problem with EPA’s analysis is that it deals only with the “other waters” category of CWA jurisdiction. The economic analysis focuses on how jurisdiction might change for “isolated waters” that are not jurisdictional under the current CWA framework as a result of *SWANCC*, but are likely to become jurisdictional under an expanded definition of “other waters”. This would allow for jurisdiction over isolated areas that, when aggregated, are found to have a significant nexus to traditional navigable waters.

According to EPA’s analysis, “‘other waters’ is a regulatory term for wetlands and non-wetlands waters that do not fall into the category of waters susceptible to interstate commerce (e.g., ‘traditional navigable waters’ or TNWs), interstate waters, the territorial seas, tributaries, or waters adjacent to waters in one of the first four categories on this list.” As discussed in more detail below, to determine how jurisdiction would change for the “other waters” category, the U.S. Army Corps of Engineers (Corps) performed a sample review of 262 project files from the Corps’ ORM2 database “isolated waters” category. All of these 262 records are considered outside

the scope of CWA jurisdiction under current regulatory policies, but the agencies predicted that approximately 17% of these records would be subject to CWA jurisdiction under the new rule.<sup>1</sup> The agencies did not do a similar sample review to determine how jurisdiction might change for other jurisdictional categories of waters (i.e., tributaries and adjacent waters, as newly defined). EPA's Economic Analysis simply assumes that the small percentage of FY 2009-2010 ORM2 streams and wetlands records that are not jurisdictional under current regulatory policies (2% of streams and 1.5% of wetlands) would become jurisdictional under the new rule.

But the agencies' draft rule does much more than just expand the scope of the "other waters" category. As previously explained, it also includes several new categories of jurisdiction and new definitions for regulatory terms, which will result in regulation of new features and areas that are not jurisdictional or considered waters of the United States under the current CWA framework. These changes will sweep in many new areas yet EPA's analysis does not quantify or address this change.

This report provides an analysis of the calculations employed by EPA. In many cases, the lack of transparency and supporting documentation in EPA's analysis made the replication of calculations difficult. The following sections address the methodology behind the incremental acreage determination, the program cost calculations, and the benefit calculations.

## **II. EPA Cannot Accurately Quantify Increases in Jurisdiction by Using the Corps' ORM2 Database**

To quantify the increased extent to which EPA and the Corps will assert CWA jurisdiction as a result of the draft waters of the U.S. rule, EPA evaluated data records from FY 2009-2010 in the Corps' ORM2 (Operation and Maintenance Business Information Link, Regulatory Module) database. Although records from the Corps' internal ORM2 database are not available to the

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<sup>1</sup> Given the existing confusion regarding 404 jurisdiction that has been well documented, see GAO-04-297, it is questionable whether the assertion of jurisdiction by the Corps was consistent or accurate. Indeed, many have questioned existing assertions as overbroad.

public, we obtained a portion of the underlying ORM2 data used for these calculations through a Freedom of Information Act request. EPA's use of the ORM2 numbers to calculate how much the draft rule will increase CWA jurisdiction is problematic because the ORM2 database was not designed for this purpose and its data do not fit this exercise.

EPA cannot accurately quantify increases in jurisdiction by relying solely on the Corps' ORM2 database for several reasons. As is explained more fully below, the categories of ORM2 records do not marry up with the draft rule's categories of jurisdictional waters. In addition, the ORM2 data fail to capture the entire universe of areas that are jurisdictional under the current CWA framework because it only accounts for situations in which regulated entities engage in the section 404 jurisdictional determination or permitting process. Even for those instances where regulated entities engage in that process, the ORM2 database does not capture all aquatic resources on the subject parcel because the Corps focuses only on impacted areas and mitigation sites. Finally, because Corps staff is not required to fill in the "aquatic resource type" field in the ORM2 database, EPA failed to account for a large portion of records in its calculations of the increase in jurisdiction.

#### A. THE ORM2 RECORDS ARE NOT COMPATIBLE WITH THE DRAFT RULE'S JURISDICTIONAL CATEGORIES

The categories of records available on the ORM2 database do not match up with the categories of jurisdictional waters provided in the proposed "waters of the US" rule. The ORM2 records are categorized according to "aquatic resource types" based on EPA's and the Corps' 2008 Guidance on Clean Water Act Jurisdiction Following the Supreme Court Decision in *Rapanos v. U.S.* and *Carabell v. U.S.* Therefore, the ORM2 database records are categorized based on concepts developed by the agencies after *Rapanos* and *SWANCC*, such as "traditional navigable waters,"

“relatively permanent waters,” “wetlands adjacent to relatively permanent waters,” and “isolated waters.”<sup>2</sup>

In the draft rule, the agencies introduce new categories of jurisdictional waters and new definitions for important terms. The draft rule provides, for the first time, a regulatory definition of “tributaries,” which explicitly includes ditches. It also includes an “adjacent waters” category that includes both wetlands and non-wetlands. As it did previously, the draft rule defines “adjacent” as “bordering, contiguous or neighboring.” But the rule, for the first time, defines “neighboring” to include riparian areas and floodplains, and provides new, broad definitions of “riparian area” and “floodplain.” The rule also, for the first time, provides a regulatory definition for “significant nexus,” and provides that “other waters” may be jurisdictional on a case-specific basis if they, individually or when aggregated with other similarly situated waters, have a significant nexus with other jurisdictional waters.

Importantly, the ORM2 database does not track information on these new terms and categories of jurisdiction. For example, EPA’s analysis recognizes that the ORM2 “isolated waters” category does not take into account the rule’s new aggregation principle and explains that EPA could not assess the potential impacts of aggregation of other waters within a watershed without “actual field experience.” Indeed, EPA’s analysis also acknowledges that there will be additional costs to the Corps to update the ORM2 system to “reflect needed data elements” as a result of the rule’s new jurisdictional categories. But EPA does not alter its analysis to account for this major deficiency. As a result, numbers extrapolated from the ORM2 records, which do not marry up

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<sup>2</sup> When inputting records into the ORM2 database, a Corps field officer can select any one of the following aquatic resource types: (1) traditional navigable waters (TNWs); (2) wetlands adjacent to TNWs; (3) relatively permanent waters (RPWs) that flow directly or indirectly into TNWs; (4) wetlands directly abutting RPWs that flow directly or indirectly into TNWs; (5) wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs; (6) non-RPWs that flow directly or indirectly into TNWs; (7) wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs; (8) tributary consisting of both RPWs and non-RPWs; (9) isolated (interstate or intrastate waters), including isolated wetlands; (10) uplands; (11) wetlands assessed for delineation purposes only (and not for jurisdictional purposes); and (12) impoundments. Alternatively, as discussed below, the Corps field officer may input records without completing the “aquatic resource type” field.



with the draft rule's categories of jurisdiction, are not useful for approximating the percentage of increase in jurisdiction or the increase in jurisdictional acreage.

## **B. THE ORM2 RECORDS UNDERREPRESENT THE UNIVERSE OF JURISDICTIONAL AREAS**

The ORM2 data does not capture the entire universe of jurisdictional areas under the current CWA framework. First, the Corps records account only for situations in which regulated entities seek a section 404 permit, approved jurisdictional determination (AJD), or wetland delineation. The ORM2 database does not include records for preliminary jurisdictional determinations (PJDs), which allow for a party to voluntarily waive or set aside questions regarding CWA jurisdiction over a particular site, usually in the interest of allowing the landowner to move ahead expeditiously to obtain a Corps permit. With a PJD, the landowner agrees to treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S.<sup>3</sup> Thus, EPA's Economic Analysis fails to account for large numbers of acres across the country that may be impacted by the regulations. Indeed, most regulated entities in the 404 program have relied on PJDs after 2008 due to the uncertainty of jurisdiction stemming from inconsistency across agency policies. Waters for which jurisdiction is unclear is precisely the group of waters that the agencies are purporting to address in this draft rule. Accordingly, EPA's claim that these waters are irrelevant for analyzing the draft rule's economic impacts is incorrect.

Second, EPA purports to account for its failure to capture the entire universe of jurisdictional areas by explaining,

Landowners and developers may assume that some waters are non-jurisdictional and not request a determination or engage in the permitting process. These waters would not be represented in the ORM2 FY2009-2010 database. However, these waters are also likely to be the most isolated and the least connected to

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<sup>3</sup> See U.S. Army Corps of Engineers, Regulatory Guidance Letter 08-02 (June 26, 2006).

other waters and therefore the least likely to have their status changed under this proposed rule.

In other words, EPA is saying that the waters for which a reasonable person is likely to have never needed a JD are only those so isolated that they would not be jurisdictional anyway. But the new rule, by capturing ditches, intermittent streams, streams that are connected only underground, adjacent waters, and waters that have been disconnected from downstream waters by barriers, includes many waters that no reasonable person every would have thought of as jurisdictional.

In relying on the Corps' ORM2 database, EPA's Economic Analysis does not recognize the instances in which landowners have not engaged in the section 404 permitting process because they have not sought to fill areas of their land or because their property is not jurisdictional under the current regulatory framework. This situation is not limited to areas with isolated waters. The draft rule brings in many features (*e.g.*, adjacent waters, ditches) that were not previously jurisdictional and would not be included in the Corps' ORM2 records.

Third, even for those instances where landowners engage in the jurisdictional determination or permitting process, the ORM2 database does not capture all aquatic resources on the subject parcel. Rather, the Corps records focus on *impacted* areas and mitigation sites. For example, if an applicant seeks a permit to impact .25 acres on a 5-acre parcel of land, only the aquatic resources on the .25 acres that would be impacted are captured in the ORM2 database. Aquatic resources on the remainder of the parcel would not be captured.

Fourth, "aquatic resource type" is not a required field for Corps staff to fill out in the ORM2 database. As a result, of the 196,208 ORM2 FY2009-2010 records used by EPA in its calculations, 36,063 (18.4%) did not have an associated aquatic resource type selected. This "water type null" category was not accounted for in EPA's calculation of the 2.7% increase in jurisdictional waters under the new rule or any other calculations in the economic analysis.

Finally, by relying on only ORM2 data, EPA fails to evaluate the extent to which the expansion of jurisdiction could have consequences for activities other than the discharge of dredged or fill material. EPA's analysis simply assumes that the distribution of water body types and the relative distribution of jurisdictional vs. non-jurisdictional waters will be the same, regardless of whether the activity in question is the discharge of dredged or fill material, the discharge of wastewater or stormwater, or an activity subject to CWA section 311 or similar spill control requirement. EPA did not make any attempt to evaluate whether the numbers and types of water affected by these activities were the same as those affected by activities subject to 404.

For all these reasons, EPA's use of ORM2 data throughout its economic analysis to quantify the increase in jurisdiction is highly suspect and results in woefully inaccurate projections.<sup>4</sup>

### **III. Errors with EPA's Incremental Acreage Calculations**

Calculations of costs and benefits in EPA's analysis rely on an estimate of the acreage that would become jurisdictional under a definitional change. The Corps estimates this incremental acreage by examining their ORM2 database of CWA permit applications. Corps staff reviewed a sample of 262 old project files relating to section 404 using the new jurisdictional criteria. Of these files, 67% pertained to streams, 27% to wetlands, and 6% to "other waters." The Corps found that 98% of the streams, 98.5% of the wetlands, and 0% of the other waters were jurisdictional under existing guidance. Under the new criteria, it found that 100% of the streams and wetlands and 17% of the other waters would become jurisdictional.<sup>5</sup> Corps staff concluded that an expanded definition of "waters of the United States" would result in 2.7% more jurisdictional waters than under the current definition. These calculations are summarized in Table 1.

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<sup>4</sup> As explained more fully below, EPA's sensitivity analysis does not adequately make up for this deficiency because the 2.7% percentage increase figure used throughout the economic analysis is based on ORM2 data without sensitivity analysis calculations.

<sup>5</sup> EPA reviewed a subset of 50 project files for "other waters" and determined 15% would be jurisdictional.

**Table 1: Calculation of Increased Jurisdiction**

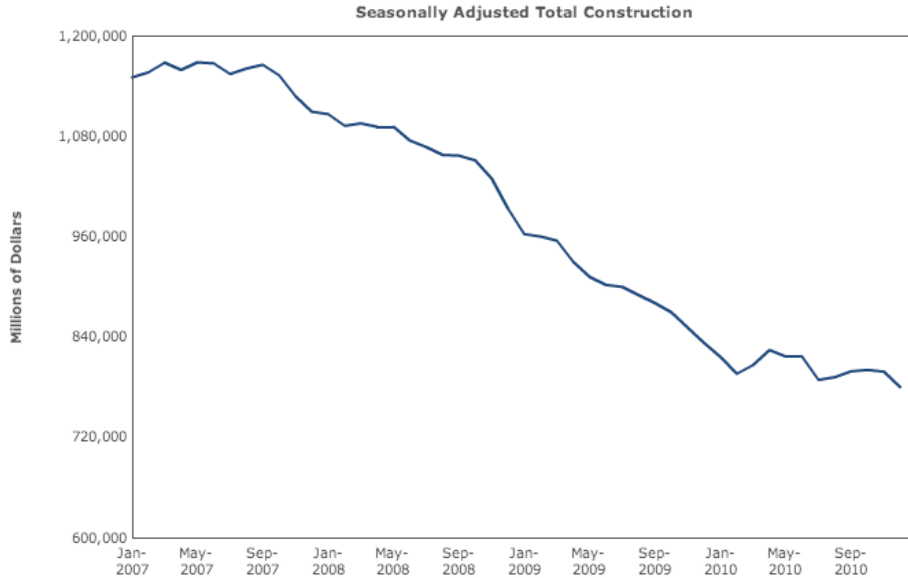
	No. ORM Records	No. Positive Juris.	Proj. Positive Juris.	% Total ORM2		
				Records	% Positive Juris.	Proj. Positive Juris.
Streams	95,476	93,538	95,476	67%	98.0%	100.0%
Wetlands	38,280	37,709	38,280	27%	98.5%	100.0%
Other Waters	8,209	0	1,396	6%	0.0%	17.0%
Total	141,965	131,247	135,152	100%	92.5%	95.2%

EPA’s analysis arrives at the conclusion that the new rule will result in a total of 1,332 acres of added impacts from additional permits under section 404 alone. This incremental acreage represents a 2.7% increase in the number of permits multiplied by the average impact per permit (see Table 3). Although EPA argues that it has used upper bound estimates of costs for many of the cost categories, its analysis is flawed in at least four major ways. This leads to a significant underestimation of total added impacts.

The analysis uses FY 2009/2010 as the baseline year to estimate impacts. FY 2009/2010 was a period of significant contraction in the housing market due to the financial crisis. As Figure 1 indicates, construction spending during these two fiscal years was 24% below that of the previous two-year period. In statistical terms, this is an issue of sample selection, where due to exogenous events the sample selected for the analysis is not representative of the overall population. The report bases its finding on a period of extremely low construction activity, which will result in artificially low numbers of applications and affected acreage. Even if the percent increase in added permits is correct, using the number of permits issued in 2010 as a baseline is very likely a significant underestimation of the affected acreage in years not subject to a crisis in the building sector.

**Figure 1: United States Construction Spending, 2007-2010**

Source: Construction Spending  
Annual Rate for Total Construction: U.S. Total  
Jan-2007 to Dec-2010



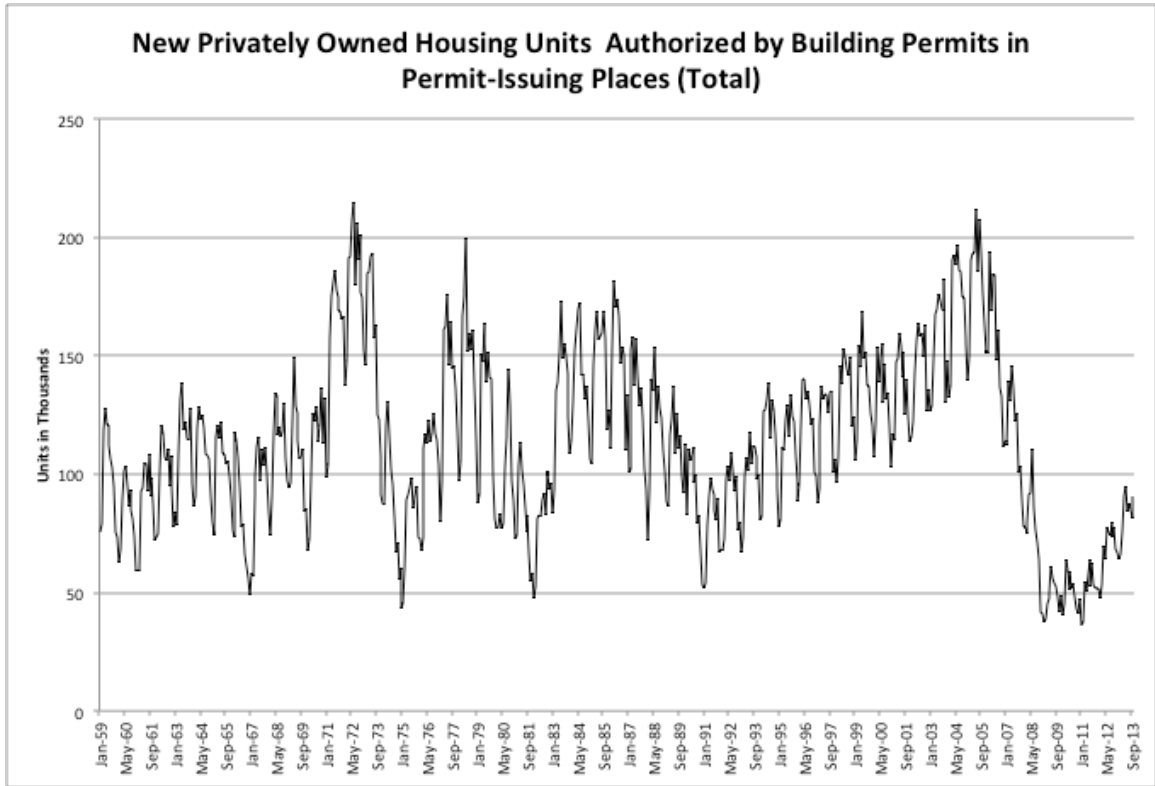
Data Extracted on: December 17, 2013 (1:14 am) EST

These data are subject to sampling and nonsampling error. For more information see <http://www.census.gov/constructionspending>



If one examines building permit data for all types of construction since 1959, it is apparent that choosing FY 2009/2010 as representative years is problematic, as building permit filings were at an all-time low during this period. Figure 2 displays Census data on building permits at the national level. Again, this figure shows that the baseline time period chosen by EPA is not representative and biases the added acres calculation downwards, unless the nation's building sector never recovers.

**Figure 2: New Privately Owned Housing Units Authorized by Building Permits**



EPA’s analysis uses an expert review to calculate a percent increase in jurisdiction. In order to arrive at the 2.7% estimate, EPA reviewed historical filing and made judgment calls as to which filings would be subject to the new rule. According to its analysis the projected percent of positive jurisdiction would rise to 100% for streams and wetlands filings (up from 98% and 98.5%, respectively) and 17% for “other waters” (up from 0%). This analysis assumes that the new rule will not affect the number of total filings. It is clear that projects that were previously not thought to be subject to the new rules did not file permitting requests. Under the new rules, however, more projects likely will be required to seek permits. What this means is that the share of projects entering the permitting process is likely to increase, which will increase the projected number of positive jurisdictional determinations and the incremental acreage estimates.

Although the report’s conclusions remain unchanged, EPA provides a brief sensitivity analysis to address the influx of new applicants that had previously not entered the permitting process. It acknowledges that permit applications associated with “other” waters could double under the

proposed rule and provides several alternative estimates of the incremental effects associated with this increase. These scenarios are included in Table 2, which is reproduced from the EPA analysis.

**Table 2: Alternative Incremental Jurisdiction Results from EPA Analysis <sup>6</sup>**

Scenario <sup>1</sup>	Description	Option 1: Proportional Doubling <sup>2</sup>		Option 2: Non-Juris. Doubling <sup>3</sup>	
		% Other Waters Juris.	% Incremental Increase	% Other Waters Juris.	% Incremental Increase
A	5% of non-jurisdictional other waters are jurisdictional under the proposed rule	21.0%	2.9%		
B	10% of non-jurisdictional other waters are jurisdictional under the proposed rule	26.0%	3.2%		
C	There are double the number of other waters	17.0%	3.5%	8.5%	2.7%
D	There are double the number of other waters and 5% of non-jurisdictional other waters are jurisdictional under the proposed rule	21.0%	4.0%	13.0%	3.2%
E	There are double the number of other waters and 10% of non-jurisdictional other waters are jurisdictional under the proposed rule	26.0%	4.5%	18.0%	3.6%
1	Scenarios A and B do not include a doubling of records. Their impacts are listed under the proportional doubling columns for simplicity				
2	Proportional doubling refers to the doubling of records for both jurisdictional and non-jurisdictional other waters "in the same proportions as the original set of records"				
3	Non-Jurisdictional doubling refers to the doubling that "includes only [non-jurisdictional] other waters, and that adjacent other waters are only represented in the original set of records".				

EPA suggests that the doubling of records for only non-jurisdictional waters and an additional 5% increase in jurisdictional waters (scenario D, option 2) is the most likely alternative. Thus, EPA's upper bound estimate of the incremental increase in jurisdiction associated with a definitional change is 3.2%. However, the assertion is completely unjustified and is not accompanied by an explanation for why the number of section 404 permits may double with only a 5% increase in residual positive jurisdictional determinations. Additionally, this

<sup>6</sup> The derivation of these values is complex and omitted from this table. There are small discrepancies between EPA values and the author's recreation of EPA values, presumably due to rounding.

assessment is completed as an afterthought to the economic analysis and has no bearing on the calculations of costs and benefits associated with a definitional change.

The analysis considers only permitting data from section 404 and applies the estimated shares to all other relevant sections of the CWA. There is no reason to believe that this is a valid approach given the significant differences in the location of these types of economic activities and the nature of the activities that give rise to permitting requirements across the sections. EPA recognizes this limitation, writing “while there is only one CWA definition of ‘waters of the United States,’ there may be other statutory factors that define the reach of a particular CWA program or provision.”<sup>7</sup> Unfortunately, this warning is ignored in the current analysis, and the incremental acreage estimation for all programs relies wholly on section 404 estimates.

EPA derived the number of acres per permit using the FY 2009/2010 data, taking the total number of acres permitted during that period and dividing this number by the number of permits issued. The analysis as presented does not allow one to study the underlying heterogeneity at the state level. There is a danger of significantly underestimating the impacts by using a 2.7% increase in combination with the average project size. If the new rules disproportionately affect larger projects, the proposed approach using averages underestimates the affected acres. There is no way of knowing whether this is the case without being able to review the expert judgment analysis conducted by EPA and the Corps.

Before turning to the calculation of incremental costs, it is worth noting that there are scientifically valid approaches to determining the number of acres that would become jurisdictional under the proposed rule. For the reasons describe above, the ORM2 database used by EPA is not a valid basis for inferring incremental impacts. The most important reason is that it is not a random or representative sampling of all affected projects and areas, rather it suffers from potentially severe selection bias.

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<sup>7</sup> EPA 2011. *Draft Guidance on Identifying Waters Protected by the Clean Water Act*. p 3.



## IV. Errors with EPA's Incremental Cost Calculations

### A. SECTION 404

EPA's analysis calculates the costs of the proposed definitional change for several CWA regulatory programs, but emphasizes costs associated with section 404. Since many 404 permits are issued for development near wetlands and small streams, the systematic inclusion of these waters in the CWA is expected to increase costs to developers and administrative entities. Authors of EPA's analysis recognize four categories of costs associated with section 404 compliance. These include: permit application costs; compensatory mitigation costs; permitting time costs; and impact avoidance and minimization costs. Due to information constraints, the report quantifies only the first two types of costs.

Section 404 permit application costs are calculated by taking the number of individual and general section 404 permits that were issued in FY 2009/2010 and determining how many more would be issued under the new rule (2.7%).<sup>8</sup> These additional permits are multiplied by the average geographic impact per permit to determine how many additional acres would be impacted under the revised definition.<sup>9</sup> This incremental acreage of newly jurisdictional waters is multiplied by two different estimates of per-acre costs; a 1999 Corps review of permitting costs for "typical" projects up to three acres in size and a study by Sunding and Zilberman in 2000 that synthesized internal estimates of permitting costs from a sample of public and private developers. These calculations are summarized in Table 3.

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<sup>8</sup> Information about section 404 permits comes from the Corps' ORM2 database.

<sup>9</sup> Average impact per added permit reflects an average of permanent impacts from projects in FY2010 and excludes temporary impacts, ecological restoration and conversion activities.

**Table 3: Derivation of Permit Application Costs**

Permit Type	Permits issued FY2010	Added Permits (2.7% increase)	Average Impact Per Added Permit (Acres)	Total Added Impacts (Acres)	Costs from Corps' Analysis (2010\$)	Costs from Sunding and Zilberman Study (2010\$)	Additional Annual Cost (2010\$ millions)
Individual	2,766	75	12.81	960	\$31,400 / permit	\$57,180 / permit + \$15,441 / acre	\$2.4 - \$19.1
General	49,151	1,327	0.28	372	\$13,100 / permit	\$22,079 / permit + \$12,153 / acre	\$17.4 - \$33.8
Total	51,917	1,402		1,332			\$19.8 - \$52.9
<i>Calculations</i>	<i>A</i>	$B = A * 0.027$	<i>C</i>	$D = B * C$	<i>E</i>	$F_{1,2}$	Lower: $E * B$ Upper: $(F_1 * B) + (F_2 * D)$

The distinction between individual and general permits is important for the purpose of evaluating the cost of a definitional change. Individual permits are required for activities that are expected to have significant impacts on a nearby water body. General permits are issued for projects that will have minimally adverse effects and fit within specific categories (i.e., bank stabilization projects, hydropower projects, etc.). The EPA analysis ignores any potential changes to the distribution of individual and general permits. The addition of jurisdictional waters could force a restructuring in the permitting system where projects that were previously eligible for general permits must apply for individual permits. These changes would have notable implications to the overall cost of the definitional change, but they are omitted from the analysis.

The EPA analysis also ignores the heterogeneity in impacted acreage within these two categories. Instead, they calculate an average for each type of permit that provides a single estimate of project size. This estimate is derived from FY 2009/2010 ORM2 data and suffers from the same sampling limitations discussed above. Since projects developed during this period were likely smaller (in addition to less numerous), this has the effect of compounding the underestimation of project costs. To illustrate the implications of this methodology, suppose the incremental

increase estimates are “updated” by increasing the number of new permits by 24% and the average size of impacts by 10%.<sup>10</sup> The incremental acreage estimates would be 36% higher (1,812 acres), with associated costs ranging from \$24.5 million to \$68.0 million (a 24-28% increase from EPA estimates). While this methodology still suffers from important shortcomings, this exercise reveals how sensitive section 404 permitting costs are to issues of sampling bias.

EPA’s analysis of section 404 permit application costs suffers from several additional deficiencies. The data on permitting costs from the Sunding and Zilberman study are nearly 20 years old and are not adjusted for inflation or any other changes in the permit system. Thus, they likely underestimate the present cost of the permitting process. This underestimation is enhanced by the exclusion of other costs addressed in the Sunding and Zilberman study. Specifically, the EPA analysis ignores the costs of avoidance and delay, which are likely to dominate the out-of-pocket expenses for permit application and mitigation. The study suggests that general permits cost \$28,915 and take an average of 313 days to complete, and individual permits cost \$271,596 and take an average of 788 days to complete, not counting the costs of mitigation or design changes.<sup>11</sup> These delay estimates are likely to be larger if the influx of new permits is not offset by additional staff and infrastructure for processing. Delays and forced design changes stifle economic output and may prevent businesses from functioning at their full potential. Thus, the Sunding and Zilberman study is misused in the EPA analysis to generate upper bound estimates that markedly underestimate the cost of section 404 permitting.

The incremental costs of compensatory mitigation were calculated by taking the amount of wetland and stream mitigation that occurred in each state during FY 2010 and multiplying by EPA’s expected 2.7% growth in the acreage of jurisdictional waters. This incremental mitigation

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<sup>10</sup> As discussed above, construction spending at the end of 2010 was 24% below spending at the end of 2008. A 10% increase in project size is a reasonable adjustment to account for the use of FY 2009/2010 data in cost estimations.

<sup>11</sup> Sunding and Zilberman, 2002. *The Economics of Environmental Regulation by Licensing: An Assessment of Recent Changes to the Wetland Permitting Process*, 42 *Natural Resources Journal* 59, pp 74-76.

requirement is multiplied by an average unit cost for mitigation (a weighted average across all states) to get an estimate of the annual costs of compensatory mitigation. These calculations are summarized in Table 4.

**Table 4: Derivation of Compensatory Mitigation Costs**

Water Body Type	Units of Mitigation	Unit Costs (\$2010)	Annual Cost (2010\$ millions)
Streams	49,075 feet	\$177 - \$265	\$8.7 - \$13.0
Wetlands	2,042 acres	\$24,989 - \$49,207	\$51.0 - \$100.5
Total			\$59.7 - \$113.5
<i>Calculations</i>	<i>A</i>	<i>B</i>	<i>C = A*B</i>

The EPA analysis derives estimates for the amount of mitigation using methods discussed in their 2011 economic analysis.<sup>12</sup> It assumes that all non-jurisdictional streams would become jurisdictional, requiring 49,075 feet (9.3 miles) of mitigation. The 2011 estimate of incremental wetland mitigation where all non-“other” waters are jurisdictional and 17% of “other” waters are jurisdictional (the same assumptions adopted in the current EPA analysis) is 2,517 acres. This value is more than 23% higher than the estimate provided in Table 5. This discrepancy results from different estimations of baseline mitigation in the two analyses.<sup>13</sup> Despite this difference, EPA suggests the current estimate “is consistent with the level of mitigation the Corps has estimated for the past 10-15 years” and provides no justification of the discrepancy. For reasons discussed above, this is likely to underestimate the extent of mitigation in a “normal” year.

<sup>12</sup> EPA 2011. *Potential Indirect Economic Impacts and Benefits Associated with Guidance Clarifying the Scope of Clean Water Act Jurisdiction*.

<sup>13</sup> The 2014 analysis suggests there were approximately 32,500 acres of permittee-responsible mitigation documented in ORM2 records, 8,200 acres of bank mitigation documented in the Regional Internet Bank Information Tracking System (RIBITS) database, and 2,200 acres of in-lieu fee (ILF) mitigation in FY 2010 (Description to Exhibit 7). The 2011 analysis suggests there were approximately 44,000 acres of permittee-responsible mitigation, 7,000 acres of bank mitigation, and 2,000 acres of ILF mitigation in FY 2010 (EPA 2011, footnote 3).

The unit costs of mitigation also do not match 2011 EPA estimates. The weighted average utilized in the current analysis relies on state-level unit costs that are systematically lower than previously published. Table 5 provides a sample of these discrepancies for the first 10 states (listed alphabetically). While the lower bound estimates are the same between the two analyses, the upper bound estimates are depressed in the 2014 analysis. There is no discussion of these differences. If the higher estimates are accurate, this creates a strong downward bias of mitigation cost estimates in the 2014 analysis. Even if the lower estimates are more accurate, the exclusion of proper documentation and explanation is troublesome and reduces the validity of the current analysis.

**Table 5: Discrepancies Between EPA Estimates for Unit Costs of Mitigation**

State	2011 Analysis				2013 Analysis			
	Unit Cost Stream-Low	Unit Cost Stream-High	Unit Cost Wetland-Low	Unit Cost Wetland-High	Unit Cost Stream-Low	Unit Cost Stream-High	Unit Cost Wetland-Low	Unit Cost Wetland-High
AK	\$170	\$316	\$500	\$30,000	\$170	\$243	\$500	\$15,250
AL	\$350	\$888	\$10,000	\$20,000	\$350	\$619	\$10,000	\$15,000
AR	\$170	\$316	\$2,000	\$5,000	\$170	\$243	\$2,000	\$3,500
AZ	\$170	\$316	\$9,000	\$23,000	\$170	\$243	\$9,000	\$16,000
CA	\$170	\$316	\$18,500	\$300,000	\$170	\$243	\$18,500	\$159,250
CO	\$170	\$316	\$32,000	\$100,000	\$170	\$243	\$32,000	\$66,000
CT	\$170	\$316	\$124,000	\$160,000	\$170	\$243	\$124,000	\$142,000
DE	\$170	\$316	\$40,000	\$40,000	\$170	\$243	\$40,000	\$40,000
FL	\$170	\$316	\$35,000	\$145,000	\$170	\$243	\$35,000	\$90,000
GA	\$106	\$293	\$12,000	\$122,000	\$106	\$200	\$12,000	\$67,000

EPA estimates administrative costs associated with a rule change to be between \$7.4 and \$11.2 million annually. This calculation is based on a 2.7% increase in the number of employee hours needed to make jurisdictional determinations, process permits, consult with various stakeholders, generate environmental impact statements, ensure program compliance, and enforce permit regulations. Additionally, EPA suggests that additional permit applications may require increased consultation with other agencies (to comply with the Endangered Species Act and other statutes). This would increase costs to these agencies and drive up the price tag of a definitional change. These costs are omitted from this analysis.

## B. OTHER (NON-404) PROGRAMS

EPA calculated costs associated with other CWA programs by adopting previous estimates and accounting for growth in jurisdictional waters and changes in program size. The cost analysis of other CWA programs is simplistic and relies on the same 2.7% acreage increase figure derived for section 404. This is especially problematic given the errors associated with the derivation of this estimate. Unsubstantiated assumptions from the incremental acreage calculations are revisited and recycled in subsequent sections to generate other cost estimates. Some of these errors could be avoided through a careful assessment of program-specific effects. Unfortunately, the EPA analysis falls short in this regard.

In its sensitivity analysis regarding the incremental acreage estimate, EPA recalculates costs and benefits under the alternative assumptions for project files related to other waters. Depending on the scenario, upper or lower bound designation, and type of doubling, they acknowledge costs could be as high as \$422 million (compared to its working upper-bound estimate of \$231 million). EPA's most-likely alternative estimate is that costs could be \$278 million, a 20% increase from current estimates. The variation between these values reveals how relatively small changes in the assumptions used to generate incremental acreages can have substantial impacts on the cost estimates. Since the validity of these assumptions is highly suspect, it becomes clear that the EPA analysis is entirely insufficient at predicting the costs associated with a "waters of the United States" definition change.

EPA explicitly omits costs to some programs that may be affected due to lack of data. EPA asserts that other programs are likely to be "cost-neutral or minimal" without providing an analysis to support this conclusion. Specifically, EPA states that a definitional change will have little to no effect on section 303 (state water quality standards and implementation plans) and section 402 (National Pollutant Discharge Elimination System (NPDES) permitting). These are bold claims that should be substantiated with a thorough analysis.

## 1. Section 401 State Certification

Section 401 of the CWA requires any applicant for a federal license or permit to conduct any activity that will result in a discharge to waters of the United States to obtain a state water quality certification from the state where the discharge will occur. 33 U.S.C. § 1341(a)(1). With the proposed rule's expanded definition of "waters of the United States," more activities that require federal licenses (in particular, activities requiring section 404 permits) are likely to discharge into "waters of the United States" and will therefore require section 401 certification. EPA estimated that state certification under section 401 would experience increased annual costs of \$737,100 as a result of the proposed rule. This figure is the result of a 2.7% increase in full time employees (FTE) needed to staff state permitting offices. This figure may partially account for the increased amount of state resources needed to accommodate additional state certification requests, but it does not account for the increased costs to applicants that must now obtain 401 state certification. EPA's analysis recognizes that there will be additional section 404 permits required under the proposed rule, but it does not account for the increased costs of obtaining 401 certification that are triggered by those additional section 404 permits. Nor does it address the cost of delay caused by increased Section 401 certification requirements.

## 2. Section 402 NPDES Permits

The CWA section 402 National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into "waters of the United States." As discussed in further detail below, EPA states that the proposed rule would be cost-neutral or minimal with respect to traditional section 402 discharge permits such as those for municipal wastewater treatment facilities or industrial operations.

To calculate the incremental costs of the rule with respect to section 402 construction stormwater permitting, EPA used the October 1999 *Economic Analysis of Final Phase II Storm Water Rule*. EPA then adjusted for a 2.7% increase in jurisdictional waters and a 30% increase in

program size.<sup>14</sup> Accounting for inflation, this yields costs of \$25.6 to \$31.9 million per year. EPA concluded that the cost impacts for Municipal Separate Storm Sewer Systems (MS4s) would be negligible. However, under the agencies' proposed rule, which, for the first time, includes a regulatory definition of "tributary" that explicitly includes ditches and extends jurisdiction to "adjacent waters," including adjacent non-wetlands, many of the stormwater systems and features themselves could now be classified as "waters of the United States." EPA's economic analysis does not address or quantify the increased permitting requirements for stormwater conveyances that would result from the proposed rule. For example, work on the stormwater conveyances, including work aimed at achieving environmental best management practices (BMPs) as well as routine improvements required by stormwater permits, will trigger section 404 permitting requirements. Additionally, if stormwater conveyances are deemed "waters of the United States," then they will be subject to water quality standards. The costs of complying with water quality standards are discussed in more detail below.

EPA calculated incremental costs from section 402 Concentrated Animal Feeding Operations (CAFO) permitting in a manner similar to EPA's calculations for construction stormwater costs. It scaled up values from a 2003 rulemaking by 2.7% to account for increase in jurisdictional waters, but reduced them by 50% to account for a reduction in program size.<sup>15</sup> After converting to 2010 dollars, the incremental costs totaled approximately \$5.5 million per year.

EPA calculated costs associated with increased numbers of Pesticide General Permits (PGP) to be between \$2.9 and \$3.2 million annually for operators, but made no attempt to calculate the increased impact on government entities. Growth in PGP permitting was determined to be

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<sup>14</sup> 30% program growth is derived from 130,000 "construction starts" in 1994 (from 1999 Economic Analysis) to 169,000 construction sites with permit coverage in 2011 (from EPA's GPRA management measures tracking).

<sup>15</sup> Benefit values taken from Federal Register volume 68 number 29. 50% decrease in program growth derived from ~15,000 CAFOs considered in 2003 analysis to 7,318 permit holders in 2011 (from EPA's GPRA management measures tracking).



almost 1000%, from 35,376 affected entities where EPA administers permits to a potential group of 365,000 entities where states administer permits.

EPA claims that a definitional change will have little to no effect on traditional Section 402 NPDES discharge permits such as those for municipal wastewater treatment facilities or industrial operations.

The exclusion of potential section 402 costs associated with the NPDES permitting is troubling. EPA provides several possible explanations for its observation that discharging entities are likely to acquire permits regardless of the jurisdictional status of the receiving water, and will not be impacted by a definitional change. One explanation is that EPA has authorized 46 states to administer section 402 permitting. Because state-level jurisdictional waters must be at least as inclusive as “waters of the United States,” many states already have implemented the sort of programmatic changes being proposed in this analysis. However, this explanation has limited merit, given EPA’s assertion that “approximately two-thirds of all states place some legal constraint on the authority of state and local government officials to adopt aquatic resource protections beyond waters of the U.S.” Either way, all states will need to revisit their programs and EPA will need to reassess whether states comply with the definitional changes. As a result, both federal and state agencies will incur additional costs. Moreover, EPA completely fails to acknowledge or account for the fact that the proposed rule could affect compliance feasibility and costs for facilities that already have NPDES permits, by classifying as jurisdictional ditches, ponds, and other water features on facility sites, that facilities use for plant operations and/or compliance, and for which no discharge permit has been required previously. EPA does not account for additional costs that facilities will incur to comply with effluent limits and implement BMPs for these newly jurisdictional features. Nor does EPA’s analysis account for the fact that work done to comply with NPDES permits for these newly jurisdictional ditches, ponds, and other water features (*e.g.*, installation of structures for sediment removal) will trigger costly section 404 permitting requirements and requirements to comply with water quality standards.

### 3. Section 311 Oil Spill Prevention Plans

Under section 311, inland non-transportation oil facilities of a certain size that have potential to discharge to “waters of the United States” must prepare and implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan. *See* 40 C.F.R. § 112.1(d)(1). EPA calculated incremental costs to Section 311 oil spill prevention plans by using average annual costs from production and storage facilities, and scaling up based on an estimate of 1,000 new facilities that will need to spend money on compliance. The average annual clean-up cost is \$9,128 for production facilities and \$13,038 for storage facilities.<sup>16</sup> Production facilities make up approximately 35% of all facilities, while storage facilities make up the remaining 65%. After adjusting for inflation, this yields approximately \$11.7 million annually in incremental costs.

The expansion of the “waters of the United States” definition will mean a significant increase in the number of facilities that could “reasonably be expected” to discharge oil to jurisdictional waters. As a result, many facilities not previously subject to the SPCC program requirements (because they did not previously have potential to discharge to “waters of the United States”) will now be required to develop and implement an SPCC plan. This is particularly true in the arid west, where companies generally do not maintain SPCC plans because their operations are not located near navigable waters.

### 4. Section 303 Water Quality Standards

EPA claims that a definitional change will have little to no effect on section 303 (state water quality standards and implementation plans). This is a bold claim that should be substantiated with a thorough analysis. For example, section 303(c) requires states to establish water quality standards (consisting of uses, criteria, and an anti-degradation policy) for all navigable waters. EPA (p. 6) assumes that states may simply apply uses and criteria developed for other categories of waters (e.g., freshwater rivers and streams used by the public for fishing, swimming, boating,

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<sup>16</sup> Derived from EPA 2009, *Regulatory Impact Analysis for the Final Amendments to the Oil Pollution Prevention Regulations*.

and as sources of drinking water) for ditches, ephemeral streams, and other newly jurisdictional waters for which those uses and criteria would seem to be wholly inappropriate. In reality, though, states will have to designate uses and set water quality criteria for new waters and features that now meet the agencies' expanded definition of "waters of the United States." This process is extremely costly and burdensome for the states. Indeed, if states do not designate water quality standards for these newly jurisdictional waters, they are likely to be sued by third parties. In the past, states have been sued for failure to assign uses and set water quality criteria for all jurisdictional waters located within the state. EPA's analysis does not account for these obligations that will be forced upon the states and the states' increased litigation risk created by the proposed rule.

Similarly, Section 303(d) requires states to generate a list of impaired waters that do not meet specific water quality standards. States also must calculate total maximum daily loads (TMDLs) of various pollutants that are necessary to bring these waters into compliance. It stands to reason that the addition of newly-jurisdictional waters would increase the surveying, planning, monitoring, and enforcement necessary to achieve these tasks. EPA claims: "[t]o the extent that this proposed rule may increase the coverage where a state would wish to apply its monitoring resources, states are likely to adjust sampling locations or sampling frequency without a net cost increase."<sup>17</sup> This is simultaneously disingenuous and discouraging, suggesting states must make important decisions about water quality from a less-comprehensive scientific investigation by spreading already scarce resources even thinner.

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<sup>17</sup> This quote is in reference to Section 305(b), which requires states to issue a report about the water quality in all navigable waters and how they meet specific water quality goals. However, it appears to reflect the EPA's position about all programs where water quality monitoring is necessary.

## V. Errors with EPA's Incremental Benefits Calculations

### A. SECTION 404

EPA lists several section 404 benefits that will result from a change in the “waters of the United States” definition. These include avoidance and minimization of permit impacts, which result from improved clarity in the CWA, and ecosystem benefits associated with additional compensatory mitigation that will now be required. Since quantifying the former is difficult, its analysis focuses on benefits from incremental compensatory mitigation requirements.<sup>18</sup> The authors use a benefits transfer approach and adopt estimates of the value of wetland mitigation from previous studies. Specifically, they select 10 contingent valuation studies that provide willingness to pay (WTP) estimates for wetland preservation. Those studies span 12 states and yield estimates for wetlands that “provide a suite of services expected to be similar to those provided by waters incrementally protected under the proposed rule”. The results from these studies were standardized by determining WTP at the per-household per-acre level.<sup>19</sup> The authors then calculate an average WTP, weighted by the number of respondents in each study. This yields values of \$0.016 and \$0.012 per household per acre using a 3% and 7% discount rate, respectively.

EPA calculates benefits for incremental compensatory mitigation by multiplying WTP estimates by the number of households and the number of acres impacted in eight different “wetland regions.” These regions were developed by the US Department of Agriculture’s Economic Research Service, and the analysis operates under the assumption that “per acre benefits values

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<sup>18</sup> EPA only addresses benefits associated with wetland mitigation and omits benefits from stream mitigation.

<sup>19</sup> For studies that reported annual WTP, total present value was determined over a period of 50 years using a 3% and 7% discount rate. For studies that reported WTP per individual, one individual per household was assumed.

accrue to all citizens in the region.”<sup>20</sup> The calculations used to generate incremental compensatory mitigation benefits are presented in Table 6.

**Table 6: Derivation of Compensatory Mitigation Benefits**

Region	Incremental Impact Estimate (Acres)	Number of Households	Present Value of Benefits per Year- 7% Discount (2010\$ millions)	Present Value of Benefits per Year- 3% Discount (2010\$ millions)
Central Plains	30	3,201,336	\$1.20	\$1.50
Delta and Gulf	85	14,521,178	\$14.80	\$19.80
Mountain	145	7,390,812	\$12.90	\$17.30
Midwest	322	23,909,088	\$92.30	\$123.70
Northeast	240	23,839,690	\$68.70	\$92.10
Pacific	79	16,163,714	\$15.30	\$20.50
Prairie Potholes	241	2,176,626	\$6.30	\$8.40
Southeast	187	20,485,107	\$46.10	\$61.70
Other	3	234,779	\$0.00	\$0.00
National	1,332	111,922,330	\$257.60	\$345.10
<i>Calculations</i>	<i>A</i>	<i>B</i>	<i>C = A*B*0.012</i>	<i>D = A*B*0.016</i>

The benefit transfer analysis used to approximate section 404 benefits is poorly documented and not consistent with best practices in environmental economics. EPA synthesizes ten previous studies to estimate an average WTP for each acre of wetland mitigation. Those studies are largely irrelevant and do not provide accurate estimates of benefits. Nine of the ten studies were conducted more than a decade ago, and the earliest was written nearly 30 years ago. Several of the studies EPA relies on were never published in peer-reviewed journals. Given these shortcomings, it is reasonable to suspect that WTP estimates may not reflect the actual preferences of individuals for expanding jurisdiction over various types of waters.

While EPA attempts to value ecological services provided by wetland mitigation, it assumes that the wetlands included in the contingent valuation studies have identical functions as the wetlands that are being considered in the current analysis. This is an important flaw that undermines EPA’s benefit transfer analysis. Benefit transfer analysis operates under the

<sup>20</sup> Heimlich, R.E., R. Claassen, K.D. Wiebe, D. Gadsby, and R.M. House. 1998. Wetlands and Agriculture: Private Interests and Public Benefits. AER-765, U.S. Dept. Agr. Econ. Res. Serv., Aug.

presumption that benefits calculated for a specific geography and time can be readily applied elsewhere. This oversimplification comes at the expense of accuracy. For example, the Loomis et al. study used in the EPA analysis examined WTP to reduce contamination from agricultural drainage in wetlands in California. While this service may have considerable value, this value is likely highly localized. Indeed, Loomis found that respondents near the wetlands in question had WTPs approximately 15% higher than respondents elsewhere in the state.<sup>21</sup> This pattern is likely to be more pronounced when extrapolating benefits to regions containing multiple states and heterogeneous patterns of wetlands.

EPA's analysis rests on an unstated assumption that all of the incremental wetlands affected by the definitional change would be compromised if federal jurisdiction is not expanded. Conversely, it also assumes that all would be preserved or mitigated if federal jurisdiction is extended. The reality is likely to be quite different. State and local regulatory programs frequently protect wetlands even in the absence of federal jurisdiction. State-level planning, monitoring, and enforcement activities can be carried out with state-specific concerns in mind, and may be better-suited to effectively preserve wetland resources. Thus, the benefits associated with expanding federal jurisdiction over wetlands could be partially offset by programmatic changes that pass control from states to federal agencies.

EPA makes little effort to account for changes in economic trends, recreational patterns, and stated preferences over time. It simply applies a multiplier based on the growth (or decrease) in permit applications. This suffers from the same error discussed above, where growth is based only on the subset of individuals who have already sought a permit. It does not address those who may seek a permit under the proposed rule. Even in the sensitivity analysis, which was conducted to address this issue, alternative calculations are carried out using the same multipliers and many of the same assumptions from the initial analysis. EPA concludes: "because estimated

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<sup>21</sup> Respondents in the San Joaquin Valley had a WTP of \$174 annually to prevent the degradation of an 85,000 acre tract of wetlands. Respondents in the rest of the state had a WTP of \$152.

benefits would also rise with more wetland protection, benefits would continue to justify costs.” This amounts to a doubling down on the original benefits estimates, which contain all of the original biases and shortcomings. This is insufficient for evaluating the benefits associated with programmatic changes of this scale.

## B. OTHER (NON-404) PROGRAMS

Much like its cost estimates, EPA calculates benefits to other CWA programs by scaling up previous estimates according to the growth in jurisdictional waters and program size. Incremental benefits associated with section 402 stormwater permitting are estimated to be between \$25.4 and \$32.3 million per year. This is based on programmatic growth of 30% and a jurisdictional expansion of 2.7% from original 1998 estimates.<sup>22</sup> Incremental benefits from additional section 402 CAFO permitting range from \$3.4 to \$5.9 million per year, and are based on a 50% contraction in program size from 2001 estimates.<sup>23</sup> These estimates reflect benefits to large CAFOs, which comprise 85% of the operator costs and 66% of the administrative costs.

Incremental benefits associated with section 311 (oil spill prevention plans) are calculated by summing expected annual benefits of \$14,255 per spill over 1,000 non-complying facilities.<sup>24</sup> This calculation yields annual benefits of approximately \$14.3 million.

The EPA analysis does not quantify benefits derived from expanded state certification of waters (section 401). It recognizes the lack of uniformity in section 401 implementation across states, and suggests: “[t]o the extent that states condition permits, added costs to permittees and environmental benefits associated with compensatory mitigation would be accounted for in the methodology for assessing those incremental impacts: they would accrue to the same extent as represented in the baseline.”

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<sup>22</sup> See footnote 14.

<sup>23</sup> See footnote 15.

<sup>24</sup> Average spill volume of 1,290 gallons (2000-2005 National Response Center data) multiplied by average clean-up costs of \$221/gallon, assuming a 1/20 chance of a spill.

Benefits to some programs that may be affected are explicitly omitted due to lack of data. EPA suggests there may be “across the board” savings in program enforcement related to increased clarity in the CWA. While there may be some legitimacy to this claim, it remains unquantified and thus plays little value in the economic analysis. Whatever enforcement benefits are realized may be offset by programmatic changes that expand permitting and administrative requirements.

A summary of costs and benefits associated with a change in the “waters of the United States” definition are provided in Table 7.



**Table 7: Summary of Costs and Benefits (2010\$ millions)**

Program	Costs		Benefits	
	low	high	low	high
§404 Mitigation- Streams <sup>2</sup>	\$8.7	\$13.0		
§404 Mitigation- Wetlands	\$51.0	\$100.5	\$257.6	\$345.1
§404 Permit Application <sup>3</sup>	\$19.7	\$52.9		
§404 Administration	\$7.4	\$11.2		
§401 Administration <sup>4</sup>		\$0.7		
§402 Construction Stormwater	\$25.6	\$31.9	\$25.4	\$32.3
§402 Stormwater Administration		\$0.2		
§402 CAFO Implementation <sup>5</sup>		\$5.5	\$3.4	\$5.9
§402 CAFO Administration		\$0.2		
§402 Pesticide General Permit <sup>6</sup>	\$2.9	\$3.2		
§311 Implementation		\$11.7		\$14.3
<b>Total</b>	<b>\$133.7</b>	<b>\$231.0</b>	<b>\$300.7</b>	<b>\$397.6</b>

Notes (from EPA documents):

- |   |   |
|---|---|
| 1 | §303 impacts are assumed to be cost-neutral; §402 impacts are components of costs and benefits previously identified for past actions, not new costs and benefits associated with this proposed rule  |
| 2 | Benefits of stream mitigation are not quantified  |
| 3 | Costs of potential delayed permit issuance and costs and benefits of avoidance/minimization are not quantified, nor are any benefits from reduced uncertainty   |
| 4 | Costs to permittees and benefits of any additional requirements as a result of §401 certification are reflected in the mitigation estimates to the extent additional mitigation is the result, yet not calculated to the extent avoidance/minimization is the result. |
| 5 | Benefits apply to large CAFOs only, which account for 85% of implementation costs and 66% of administrative costs   |
| 6 | PGP benefits and government administrative costs are not available  |

## VI. Conclusion

The estimates associated with section 404 compensatory wetland mitigation, which contain some of the most glaring errors, represent approximately 40% of the total costs and 85% of the total benefits. This suggests the entire analysis is fraught with uncertainty as to render it insufficient for evaluating programmatic impacts of this scale. Estimates of economic impacts to other programs rely on an incremental jurisdiction determination that is deeply flawed. Additionally,

the systematic exclusion of various costs and benefits ignores important impacts to permit applicants and permitting agencies.

In addition to the methodological errors discussed above, EPA's analysis suffers from a lack of transparency. Explanations of calculations, basic assumptions, and discrepancies between various EPA analyses are rarely provided. This is particularly troubling given that the entire report is based on records from the Corps' internal ORM2 database, which is unavailable to outside entities. The author of this report spent considerable time replicating the calculations used in the analysis, but was unable to vet the validity of the underlying data. Any errors or inconsistencies in documentation, sample selection, or data extraction are necessarily overlooked. These shortcomings indicate that a more thorough analysis is required to properly assess the economic impacts of a definitional change.

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