DECISION DOCUMENT
NATIONWIDE PERMIT 21

This document discusses the factors considered by the Corps of Engineers (Corps) during the issuance process for this Nationwide Permit (NWP). This document contains: (1) the public interest review required by Corps regulations at 33 CFR 320.4(a)(1) and (2); (2) a discussion of the environmental considerations necessary to comply with the National Environmental Policy Act; and (3) the impact analysis specified in Subparts C through F of the 404(b)(1) Guidelines (40 CFR Part 230). This evaluation of the NWP includes a discussion of compliance with applicable laws, consideration of public comments, an alternatives analysis, and a general assessment of individual and cumulative environmental effects, including the general potential effects on each of the public interest factors specified at 33 CFR 320.4(a).

1.0 Text of the Nationwide Permit

Surface Coal Mining Activities. Discharges of dredged or fill material into waters of the United States associated with surface coal mining and reclamation operations, provided the following criteria are met:

(a) The activities are already authorized, or are currently being processed by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977 or by the Department of the Interior, Office of Surface Mining Reclamation and Enforcement;

(b) The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into tidal waters or non-tidal wetlands adjacent to tidal waters; and

(c) The discharge is not associated with the construction of valley fills. A “valley fill” is a fill structure that is typically constructed within valleys associated with steep, mountainous terrain, associated with surface coal mining activities.

Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) (Authorities: Sections 10 and 404)

1.1 Requirements

General conditions of the NWPs are in the Federal Register notice announcing the issuance of this NWP. Pre-construction notification requirements, additional conditions, limitations, and restrictions are in 33 CFR part 330.

1.2 Statutory Authorities

- Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)
- Section 404 of the Clean Water Act (33 U.S.C. 1344)

1.3 Compliance with Related Laws (33 CFR 320.3)

1.3.1 General

Nationwide permits are a type of general permit designed to authorize certain activities that have no more than minimal individual and cumulative adverse environmental effects and generally comply with the related laws cited in 33 CFR 320.3. Activities that result in more than minimal individual and cumulative adverse environmental effects cannot be authorized by NWPs. Individual review of each activity authorized by an NWP will not normally be performed, except when preconstruction notification to the Corps is required or when an applicant requests verification that an activity complies with an NWP. Potential adverse impacts and compliance with the laws cited in 33 CFR 320.3 are controlled by the terms and conditions of each NWP, regional and case-specific conditions, and the review process that is undertaken prior to the issuance of NWPs.

The evaluation of this NWP, and related documentation, considers compliance with each of the following laws, where applicable: Section 10 of the Rivers and Harbors Act of 1899; Sections 401, 402, and 404 of the Clean Water Act; Section 307(c) of the Coastal Zone Management Act of 1972, as amended; Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended; the National Environmental Policy Act of 1969; the Fish and Wildlife Act of 1956; the Migratory Marine Game-Fish Act; the Fish and Wildlife Coordination Act, the Federal Power Act of 1920, as amended; the National Historic Preservation Act of 1966; the Interstate Land Sales Full Disclosure Act; the Endangered Species Act; the Deepwater Port Act of 1974; the Marine Mammal Protection Act of 1972; Section 7(a) of the Wild and Scenic Rivers Act; the Ocean Thermal Energy Act of 1980; the National Fishing Enhancement Act of 1984; the Magnuson-Stevens Fishery and Conservation and Management Act, the Bald and Golden Eagle Protection Act; and the Migratory Bird Treaty Act. In addition, compliance of the NWP with other Federal requirements, such as Executive Orders and Federal regulations addressing issues such as floodplains, essential fish habitat, and critical resource waters is considered.

1.3.2 Terms and Conditions

Many NWPs have pre-construction notification requirements that trigger case-by-case review of certain activities. Two NWP general conditions require case-by-case review of all activities that may adversely affect Federally-listed endangered or threatened species or historic properties (i.e., general conditions 18 and 20, respectively). General condition 16 restricts the use of NWPs for activities that are located in Federally-designated wild and scenic rivers. None of the NWPs authorize the construction of artificial reefs. General condition 28 addresses the use of an NWP with other NWPs to authorize a single and complete project, to ensure that the acreage limits of each of the NWPs used to authorize that project are not exceeded.

In some cases, activities authorized by an NWP may require other federal, state, or local authorizations. Examples of such cases include, but are not limited to: activities that are in marine sanctuaries or affect marine sanctuaries or marine mammals; the ownership, construction, location, and operation of ocean thermal conversion facilities or deep water ports beyond the territorial seas; activities that result in discharges of dredged or fill material into waters of the United States and require Clean Water Act Section 401 water quality certification; or activities in a state operating under a coastal zone management program approved by the Secretary of Commerce under the Coastal Zone Management Act. In such cases, a provision of the NWPs states that an NWP does not obviate the need to obtain other authorizations required by law. [33 CFR 330.4(b)(2)]

Additional safeguards include provisions that allow the Chief of Engineers, division engineers, and/or district engineers to: assert discretionary authority and require an individual permit for a specific activity; modify NWPs for specific activities by adding special conditions on a case-by-case basis; add conditions on a regional or nationwide basis to certain NWPs; or take action to suspend or revoke an NWP or NWP authorization for activities within a region or state. Regional conditions are imposed to protect important regional concerns and resources. [33 CFR 330.4(e) and 330.5]

1.3.3 Review Process

The analyses in this document and the coordination that was undertaken prior to the issuance of the NWP fulfill the requirements of the National Environmental Policy Act (NEPA), the Fish and Wildlife Coordination Act, and other acts promulgated to protect the quality of the environment.

All NWPs that authorize activities that may result in discharges into waters of the United States require compliance with the water quality certification requirements of Section 401 of the Clean Water Act. Nationwide permits that authorize activities within, or affecting land or water uses within a state that has a Federally-approved coastal zone management program, must also be certified as consistent with the state's program, unless a presumption of concurrence occurs. The procedures to ensure that the NWPs comply with these laws are described in 33 CFR 330.4(c) and (d), respectively.

1.4 Public Comments and Responses

For a summary of the public comments received in response to the September 15, 2020, Federal Register notice, refer to the preamble in the Federal Register notice announcing the reissuance of this NWP. The substantive comments received in response to the September 15, 2020, Federal Register notice were used to improve the NWP by changing NWP terms and limits, pre-construction notification requirements, and/or NWP general conditions, as necessary.

The Corps proposed to modify this NWP to remove the 300 linear foot limit for losses of stream bed, remove the reference to integrated permit processing procedures, and remove the requirement for the permittee to obtain written verification from the district engineer so that the 45-day PCN review period would apply to this NWP as it does to other NWPs with 1/2-acre limits for losses of waters of the United States.

In the proposed rule, the Corps proposed to remove the 300 linear foot for losses of stream bed from this NWP. This NWP has a 1/2-acre limit for losses of non-tidal waters of the United States, including non-tidal wetlands and non-tidal streams. This NWP requires pre-construction notification for all activities. Therefore, district engineers will review all proposed activities for these on a case-by-case basis. When reviewing these PCNs, district engineers apply the 10 criteria in paragraph 2 of Section D, District Engineer's Decision, to determine whether the proposed activities will result in no more than minimal individual and cumulative adverse environmental effects.

In the proposed rule, the Corps presented a number of reasons for the proposed removal of the 300 linear foot limit for losses of stream bed from this NWP. The Corps' rationale comprises four categories of considerations: (1) the Corps employs several tools in the NWP Program to ensure that NWP activities result only in no more than minimal individual and cumulative adverse environmental effects; (2) removing the 300 linear foot limit would provide consistency across the numeric limits used by the NWP Program for all categories of non-tidal waters of the United States (i.e., jurisdictional wetlands, streams, ponds, and other non-tidal waters); (3) it would further the objective of the NWP Program stated in 33 CFR 330.1(b) (i.e., to authorize with little, if any, delay or paperwork certain activities having minimal impacts), by providing equivalent quantitative limits for jurisdictional wetlands, streams, and other types of non-tidal jurisdictional waters, and NWP authorization for losses of jurisdictional stream bed that have no more than minimal individual and cumulative adverse environmental effects; and (4) using acres or square feet (i.e., an area-based metric) instead of linear feet is a more accurate approach to quantifying losses of stream bed and also serves as a better surrogate for losses of stream functions when a functional assessment method is not available or practical to use.

After reviewing the comments received in response to the proposed rule, for the reasons discussed below the Corps has decided to remove the 300 linear foot limit for losses of stream bed from this NWP. The comments received in response to the proposed rule are summarized below. The Corps' responses to those comments are also provided along with the comment summaries.

Retaining the 1/2-acre limit for losses of non-tidal jurisdictional waters and wetlands in this NWP while removing the 300 linear foot limit for losses of stream bed will help further Congressional intent with respect to Section 404(e) of the Clean Water Act when that provision was enacted into law in 1977. Section 404(e) authorizes the Corps to issue, after notice and opportunity for public hearing, general permits on a state, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if the Corps determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment. Section 404(e) does not prescribe any particular approaches for ensuring that activities authorized by general permits result in no more than minimal individual and cumulative adverse environmental effects, thus the Corps developed the PCN process and provided division and district engineers with the authority to modify, suspend, or revoke NWP authorizations on a regional or activity-specific basis after the NWPs are issued by Corps Headquarters. General permits provide a process for authorizing, with minimal paperwork and delays, activities that have no more than minimal individual and cumulative adverse environmental effects. General permits are an important tool for the Corps managing its personnel and workload so that it can focus its efforts on evaluating permit applications for proposed activities that have the potential to cause more than minimal adverse environmental effects.

Removing the 300 linear foot limit for losses of stream bed under this NWP provides equivalent quantitative limits for all categories of non-tidal jurisdictional waters, including non-tidal "tributaries," "lakes, ponds, and impoundments of jurisdictional waters," and "adjacent wetlands" (see 33 CFR 328.3(a)). These non-tidal waters will continue to be subjected to the 1/2-acre limit for losses of non-tidal waters. This NWP requires PCNs for all authorized activities, and district engineers will review these PCNs to determine which activities can be authorized by this NWP and which activities should require individual permits. When reviewing a PCN, the district engineer has the authority to exercise discretionary authority to modify, suspend, or revoke the NWP authorization (see 33 CFR 330.1(d)). When a district engineer reviews a PCN, and if she or he determines that the proposed activity would have more than minimal individual or cumulative net adverse effects on the environment or otherwise may be contrary to the public interest, he or she will either modify the NWP authorization to reduce or eliminate those adverse effects, or instruct the prospective permittee to apply for a regional general permit or an individual permit (§330.1(d)). To determine whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects, the district engineer will apply the 10 criteria in paragraph 2 of Section D, District Engineer's decision.

Those ten criteria for making minimal adverse environmental effects determinations are:

(1) the direct and indirect effects caused by the NWP activity;
(2) the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal;
(3) the environmental setting in the vicinity of the NWP activity;
(4) the type of resource that will be affected by the NWP activity;
(5) the functions provided by the aquatic resources that will be affected by the NWP activity;
(6) the degree or magnitude to which the aquatic resources perform those functions;
(7) the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss);
(8) the duration of the adverse effects (temporary or permanent);
(9) the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion); and
(10) mitigation required by the district engineer.

If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to help determine whether the proposed activity will result in no more than minimal adverse environmental effects.

The removal of the 300 linear foot limit for losses of stream bed will help increase administrative efficiency by providing a mechanism to authorize, through the NWP Program activities that result in the loss of greater than 300 linear feet of jurisdictional stream bed, but less than 1/2-acre of non-tidal jurisdictional waters. Under the 2017 NWPs, filling or excavating more than 300 linear feet of a perennial stream bed requires an individual permit even under circumstances where the loss of the stream bed would result in no more than minimal individual and cumulative adverse environmental effects. Under this final rule, district engineers would review PCNs for proposed losses of jurisdictional stream bed (plus any other losses of non-tidal waters of the United States) that are less than 1/2-acre and determine whether those proposed activities can be authorized by this NWP. If, for a particular PCN, the district engineer determines that the individual and cumulative adverse environmental effects would be more than minimal, he or she will exercise discretionary authority and require an individual permit. This approach provides administrative efficiency by providing a mechanism for district engineers to distinguish which proposed activities should be authorized by an NWP versus which activities should require individual permits with a public notice and comment process and activity-specific evaluations under NEPA, the public interest review, and the Clean Water Act section 404(b)(1) Guidelines.

This approach also adds efficiency in terms of reducing processing times and paperwork for proposed activities that have no more than minimal adverse environmental effects and that are likely to generate few, if any, public or agency comments in response to a public notice for an individual permit application. When more activities that result in no more than minimal adverse environmental effects can be authorized by an NWP, there can be more staff and other resources for Corps districts to devote to undertaking other tasks, such as the review and approval of mitigation banks and in-lieu fee programs and overseeing their operation, conducting compliance actions to ensure that authorized activities are being conducted in accordance with the terms and conditions of their DA authorizations, and conducting approved and preliminary jurisdictional determinations that help project proponents plan and design their proposed projects to avoid and minimize impacts to jurisdictional waters and wetlands.

Another benefit of removing the 300 linear foot limit for losses of jurisdictional stream bed and shifting the quantification of losses of jurisdictional stream bed towards the 1/2-acre limit for losses of non-tidal waters of the United States is more accurate accounting of the impacts of activities authorized by this NWP. The discharges of dredged or fill material authorized by this NWP occur over an area of a river or stream bed and also may include impacts to other aquatic resources such as wetlands or open water areas (e.g., lakes or ponds). The discharge of dredged or fill material to a river or stream has a length and a width, and the width can vary depending on the physical characteristics of the impact area, the type of activity being conducted (e.g., bank stabilization, channel excavation, channel realignment), and other factors. To be regulated under Section 404 of the Clean Water Act, a discharge of dredged material involves any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States that is incidental to any activity, including mechanized land clearing, ditching, channelization, or other excavation (see 33 CFR 323.2(d)(1)(iii)). A regulated discharge of fill material involves the addition of fill material into waters of the United States that has the effect of either replacing any portion of a water of the United States with dry land or changing the bottom elevation of any portion of a water of the United States (see 33 CFR 323.3(e) and (f)). The direct impacts of these activities are most accurately quantified on an area basis, not a linear basis, to inform a district engineer's decision on whether a proposed activity should be or is authorized by an NWP and to track cumulative impacts.

Accurate quantification of stream bed losses authorized by an NWP is an important component of determining whether a proposed NWP activity will result in no more than minimal individual adverse environmental effects. (See item 1 above from paragraph 2 of Section D, District Engineer's Decision: understanding "the direct and indirect effects caused by the NWP activity.") Accurate quantification of stream bed losses is also important for tracking cumulative impacts of activities authorized by an NWP, both on a national and regional basis, and for determining whether a particular NWP activity will contribute to more than minimal cumulative adverse environmental effects. (See item 2 of paragraph 2 of the District Engineer's

Decision: “the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal.”)

As discussed in the 2020 Proposal (85 FR 57316), discharges of dredged or fill material into jurisdictional streams can cause losses of stream bed along only a portion of the stream bed (e.g., bank stabilization projects that involve discharging fill along the edge of the stream, with no fill in the rest of the stream bed) or across the entire stream bed (e.g., excavating the stream bed to mine aggregates) along a stream reach. A wide variety of activities involving filling or excavating stream bed may be authorized by the NWPs, such as bank stabilization, channel realignment, culvert installation or replacement, stream channel restoration, the installation of grade control structures (e.g., rock), fills for footings for bridges, livestock crossings, utility line crossings, and temporary fills for construction and access. Quantifying losses of stream bed in linear feet does not distinguish between filling or excavation activities that occur only in a portion of the stream bed along an ordinary high water mark versus filling or excavation activities that occur in the entire stream bed, from ordinary high water mark to ordinary high water mark.

Accurate quantification of losses of stream bed and losses of other types of jurisdictional waters and wetlands is also important for monitoring and evaluating the cumulative adverse environmental effects caused by NWP activities. In response to the 2020 Proposal, numerous commenters criticized the Corps’ assessment of cumulative effects for the NWPs. An essential step in conducting a cumulative effects analysis for an NWP is estimating how many times that NWP may be used during the period the NWP is in effect, the quantity of jurisdictional waters and wetlands that may be lost or directly altered by the activities authorized by that NWP, whether those losses or alterations are permanent or temporary, and what, if any compensatory mitigation is being used to offset those losses. The Corps provides those estimates in its national decision documents, and those estimates are more robust if they use a common metric, so that it is possible to calculate total losses and offsets during the period the NWP is in effect.

Division engineers have discretionary authority to modify, suspend, or revoke NWP authorizations on a regional basis (33 CFR 330.5(c)) to help ensure that the NWPs are only used to authorize activities that have no more than minimal individual and cumulative adverse environmental effects. For example, if a Corps district determines, in a particular watershed, county, Corps district, or other geographic region, that cumulative losses of stream bed authorized by NWPs may be approaching a level that might exceed the “no more than minimal cumulative adverse environmental effects” threshold, the Corps district can request that the division engineer modify, suspend, or revoke the relevant NWP authorizations in that region. The division engineer can add regional conditions to the appropriate NWPs to restrict or prohibit their use in particular categories of waters, or suspend or revoke the NWP authorization so that those NWP(s) can no longer be used to authorize regulated activities in that geographic region. The division engineer’s authority to modify, suspend, or revoke NWP authorizations on a regional basis can also be used to sort out which activities can be authorized by an NWP versus which activities should require individual permits.

District engineers have discretionary authority to modify, suspend, or revoke NWP authorizations on a case-specific basis (see 33 CFR 330.5(d)) to help ensure that NWPs are only used to authorize specific activities that have no more than minimal individual and cumulative adverse environmental effects. A district engineer can add conditions to an NWP authorization to reduce potential adverse environmental effects that might be caused by a proposed NWP activity, such as mitigation requirements to avoid or minimize direct and indirect effects caused by that activity. One example is a time of year restriction to prevent discharges of dredged or fill material from occurring during spawning seasons for fish or other aquatic organisms. Another example of a permit conditions to help reduce adverse environmental effects caused by an NWP activity might be to require the use of certain best management practices. A district engineer might also add permit conditions to the NWP authorization to require compensatory mitigation to offset losses of waters of the United States caused by the NWP activity.

As the Corps implements this final rule, it will continue to rely on these administrative tools that have long been used with this NWP to help ensure that authorized activities will result in no more than minimal individual and cumulative adverse environmental effects. Those tools are the 1/2-acre limit for losses of non-tidal waters of the United States, the pre-construction notification requirements and associated activity-specific review by district engineers, the regional conditions that can be added by division engineers, and the activity-specific conditions that can be added by district engineers when reviewing individual PCNs.

The proposal was made in accordance with the recommendations in the report issued by the Office of the Assistant Secretary of the Army (Civil Works) in response to E.O. 13783 on ways to streamline the NWPs. In the proposed rule, the Corps invited public comment on the proposal to remove the 300 linear foot limit and to rely on the 1/2-acre limit, the PCN process, the proposed modification of the “mitigation” general condition (general condition 23), and other tools to comply with the statutory and regulatory requirement that activities authorized by an NWP must result in no more than minimal individual and cumulative adverse environmental effects. The Corps also invited comment on whether there are situations where quantifying losses of stream bed in linear feet might more accurately represents the actual amount of stream bed filled or excavated as a result of an NWP activity and would result in more defensible determinations on whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects. In the proposed rule, the Corps asked commenters to provide information that would help illustrate or explain how and under what circumstance using a linear foot measure to quantify losses of stream bed would be more accurate than using square feet or acres to quantify the amount of authorized impacts.

The Corps also invited comment on the legal, regulatory, policy, or scientific bases for imposing different numeric limits on jurisdictional stream bed losses versus losses of non-tidal jurisdictional wetlands or other types of non-tidal jurisdictional waters. Commenters were encouraged to provide supporting information in the form of citations to laws, regulations, and policies, and the scientific literature, because substantive information would be valuable in assisting the Corps in preparing the final NWPs.

The Corps also requested comment on an alternative hybrid approach to establishing consistent quantitative limits for losses of stream bed authorized by this NWP. Under the proposed hybrid approach, losses of stream bed would continue to be quantified in linear feet as long as the activities authorized by this NWP would result only in the loss of stream bed. There would be linear foot limits for losses of stream bed by stream order identified using the Strahler (1957) method, and the mean stream widths identified by Downing et al. (2012). If a proposed NWP activity would result in the loss of jurisdictional stream bed plus other types of waters of the United States, such as non-tidal jurisdictional wetlands, the losses of waters of the United States would be quantified in acres and subjected to the 1/2-acre limit. In the preamble to the proposed rule, the Corps provided a table for the hybrid approach (see 85 FR 57321). A critical component of effectively applying the hybrid approach is identifying the correct stream order for the stream segment that is proposed to be filled or excavated as a result of the proposed NWP activity. In this hybrid approach, the linear foot limits would only apply to losses of stream bed. If a proposed NWP activity would result in a combination of losses of jurisdictional stream bed and other types of waters of the United States, such as non-tidal jurisdictional wetlands, then the 1/2-acre limit would apply to the combined losses of stream bed and non-tidal wetlands, to keep those losses below 1/2-acre.

In conjunction with the proposal to remove the 300 linear foot limit for losses of stream bed, the Corps proposed to remove the provisions in this NWP regarding the ability of district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed when the applicant submits a PCN and requests a waiver of that 300 linear foot limit. On April 21, 2020, EPA and the Department of the Army published a final rule to define “waters of the United States” entitled the Navigable Waters Protection Rule (85 FR 22250). On June 22, 2020, the Navigable Waters Protection Rule became effective in all states and jurisdictions except for the State of Colorado due to a federal district court-issued stay in that state. The rule revised the definition of “waters of the United States” at 33 CFR 328.3 such that ephemeral features, including ephemeral streams, are categorically excluded from jurisdiction under the Clean Water Act (see 33 CFR 328.3(b)(3)). Therefore, there would be no need to request waivers for losses of ephemeral stream bed (regardless of length) since NWP authorization (or any other form of DA authorization) will not be needed to authorize discharges of dredge or fill material into ephemeral streams. See Section III.C, for more discussion on the potential impact of the Navigable Water Protection Rule on the NWPs.

In addition, the Corps proposed to remove the agency coordination process for seeking input from federal and state agencies on whether the district engineer should grant the waiver of the 300 linear foot limit requested by an applicant for an NWP verification. Removing the waiver provision may reduce costs to permittees by reducing the amount of time the district engineer needs to make her or his decision. For example, the district engineer would not have to wait up to 25 days (see paragraph (d)(3) of the "pre-construction notification" general condition (GC 32) to make the decision on whether to issue the NWP verification. Removal of the agency coordination for these activities is also likely to reduce administrative costs to the Corps, by reducing the amount of staff time needed to send copies of PCNs to the agencies and summarizing and responding to agency comments. Removal of the waiver provision and associated agency coordination would also free up additional time for Corps staff to review other PCNs, other permit applications, and other regulatory actions such as jurisdictional determinations and compliance activities. As mentioned above, under the Navigable Waters Protection Rule, ephemeral streams are not "waters of the United States." See 33 CFR 328.3(b)(3). Therefore, it should be noted that this would likely reduce the current number of waivers and required interagency coordination process from state and federal agencies, since the current waivers apply only to certain intermittent streams.

Many commenters opposed the removal of the 300 linear foot limit for losses of stream bed. Many commenters supported the proposed change, stating that calculating losses of stream bed in acres is a more accurate measure of those losses since acreage takes both the length and width of the stream channel into account when determining the amount of stream bed filled or excavated by an NWP activity. Several commenters in favor of the proposed change expressed concern with how this change would affect mitigation banks and credit calculations for future and past permits. Several commenters believed this change would continue to ensure that the activities authorized by this NWP would result in no more than minimal impacts.

As discussed above, the Corps is removing the 300 linear foot limit for losses of stream bed from this NWP for the reasons discussed in this final rule to increase the efficiency of the NWP program, utilize a metric that more accurately reflects the amount of impact, and to allow NWP authorization of losses of stream bed where district engineers determine that those losses would have no more than minimal adverse environmental effects after reviewing PCNs. Quantifying losses of stream bed in acres or square feet will be more accurate, provide a more substantial and defensible basis for decision-making by district engineers on PCNs for these activities, and provide more accurate data for the Corps to track cumulative impacts of the activities authorized by this NWP. The removal of the 300 linear foot limit will not affect the ability of district engineers to require compensatory mitigation or other forms of mitigation for losses of stream bed. In addition, it should not have a substantial effect on mitigation banks that have already been approved and mitigation banks that may be approved in the future. Depending on how existing mitigation banks quantify the credits they produce, there may have to be some technical changes in how credit transactions occur between mitigation bank sponsors and permittees, to determine the appropriate number of stream credits that are needed to offset a permitted loss of stream bed.

A few commenters supported the removal of the 300 linear foot limit because the district engineer retains the ability to exercise discretionary authority to require individual permits if the adverse environmental effects caused by a proposed activity would be more than minimal. These commenters also said they support the removal of the 300 linear foot limit as long as Corps divisions and districts can continue to develop and use regional conditions in districts that have specific resource concerns.

The PCN process is an administrative tool that helps ensure that activities authorized by NWPs cause no more than minimal individual and cumulative adverse environmental effects, by providing activity-specific review of these activities by district engineers before they are authorized by an NWP. The 1/2-acre limit is another tool that helps ensure that activities authorized by this NWP have no more than minimal adverse environmental effects. In geographic areas where there are concerns about cumulative losses of headwater streams and the functions they provide, division engineers can add regional conditions to this NWP to reduce the acreage limit from 1/2-acre to a lower acreage limit, such as 1/4-acre or 1/10-acre. In addition, division engineers can add regional conditions to this NWP to lower the threshold for requiring stream compensatory mitigation from 3/100-acre to a different acreage threshold.

Many commenters expressed concerns with removing the 300-linear foot limit on loss of stream bed for this NWP, stating that this change would allow much larger impacts to smaller stream channels since they typically have smaller widths and therefore a permittee could impact a much longer length of stream before reaching the 1/2-acre limit. Many commenters said that a linear foot measurement was more appropriate for calculating stream impacts and losses than an acreage-based system because streams are fundamentally linear features in the landscape. Many commenters stated that the Corps has not provided any scientific rational or reasoning behind this change and even the scientific studies cited by the Corps were not interpreted appropriately.

As discussed above, the Corps will rely on other, existing protective mechanisms within the NWPs to ensure that the activities authorized by this NWP will result in no more than minimal individual and cumulative adverse environmental effects. Those tools include the 1/2-acre limit, the PCN requirements for this NWP, and the ability of division and district engineers to further condition or restrict the applicability of an NWP in situations where they have concerns for the aquatic environment under the Clean Water Act section 404(b)(1) Guidelines or for any factor of the public interest (see 33 CFR 330.1(d)). While rivers and streams have a strong linear component, they also vary substantially in width. Discharges of dredged or fill material into waters of the United States that cause losses of waters of United States through the filling or excavation of stream beds occur over an area, and using acres or square feet to quantify losses of stream bed is more informative to determinations of minimal effects and accurate in data accounting than using linear feet. The potential losses of stream functions, and whether those losses are more than minimal, can be addressed through the PCN review process. When determining whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects, district engineers will apply the 10 criteria in paragraph 2 of Section D, District Engineer's Decision. Decisions regarding quantitative limits for the NWPs are administrative decisions because the legal threshold for general permits ("no more than minimal individual and cumulative adverse environmental effects") is a subjective threshold. Applying this subjective threshold to complex ecological systems requires a district engineer to exercise his or her judgment as to whether that threshold is crossed for particular NWP activity.

Another tool that the Corps added to this final rule to help ensure that the activities authorized by this NWP will result in no more than minimal individual and cumulative adverse environmental effects is the addition of a 3/100-acre threshold for stream compensatory mitigation in paragraph (d) of the mitigation general condition (general condition 23). The 1/10-acre wetland mitigation threshold in general condition 23 has been effective in providing incentives for project proponents to reduce wetland losses well below the 1/2-acre limit to avoid the costs of providing wetland compensatory mitigation. As shown in figure 5.1 of the Regulatory Impact Analysis for this final rule, more than 80 percent of losses of waters of the United States verified by district engineers in fiscal year 2018 as qualifying for NWP authorization were less than 1/10-acre. The losses of waters of the United States in figure 5.1 include losses of stream bed, which were quantified in acres. The Corps anticipates that the 3/100-acre stream compensatory mitigation threshold will also be an effective incentive to permittees to reduce losses of stream bed to avoid the costs of providing stream compensatory mitigation to offset losses of greater than 3/100-acre of stream bed. For NWP activities that require PCNs, district engineers continue to have discretion to require stream compensatory mitigation for losses of stream bed above or below the 3/100-acre threshold in paragraph (d) of general condition 23.

Several commenters also questioned the Corps' use of the study by Downing et al. (2012), which examined stream channels all over the world, stating that stream channels may be narrower in the United States (citing an average width in the United States of 2.6 feet). Several commenters stated support of a hybrid approach in lieu of an acreage calculation, but were concerned about the variability of stream order classifications and the availability of tools to Corps districts to implement that approach in an effective and defensible manner. One of these commenters noted that LiDAR is not available in all areas of the country. Many commenters opposed the proposed 'hybrid approach' in the preamble in which stream impact limits would vary by stream order by applying a mean stream width. Some of these commenters asserted that a linear foot metric is still likely a more accurate and easier method since determining stream order is highly varied along with determining a stream width.

The Corps acknowledges that the study by Downing et al. (2012) does not fully represent the variability in stream dimensions. One of the purposes of using the information in that study was to demonstrate how a linear foot limit for losses of stream bed results in disparate differences in the amount of stream bed that can be filled or excavated under an NWP depending on where an affected stream reach is located in a tributary network (i.e., a headwater stream versus a stream segment located further downstream in a watershed). In a study of headwater streams in North America and New Zealand, using field surveys of headwater streams instead of the published data and satellite imagery used by Downing et al. (2012), Allen et al. (2018) found a typical width of 1.05 feet for headwater streams. The Corps agrees that the hybrid approach proposed in the preamble to the 2020 Proposal would not be an efficient or effective approach to establishing quantitative limits for this NWP. There is not sufficiently accurate mapping of headwater streams in the United States to implement such a hybrid approach, and the hybrid approach would not take into account regional variability in stream geomorphology. The Corps does not agree that a linear foot metric is easier or more accurate than an acreage-based metric. The area of stream bed filled or excavated as a result of an NWP activity is already calculated by the Corps to record impacts to aquatic resources, and it represents the amount of stream bed lost as a result the discharges of dredged or fill material regulated under Section 404 of the Clean Water Act.

Many commenters also questioned how stream width was to be measured (ordinary high water mark to ordinary high water mark versus stream bed/bottom) which could also produce variability in how an acreage limit would be applied. Many commenters recognized that the measures for small and large streams should be different but until a more appropriate metric is developed, acreage should not be used in lieu of linear feet since it would be inappropriate to adopt a measure that better represents larger stream systems while the overwhelming majority of impacts occur to smaller streams and are therefore better represented for the time being by a linear foot measurement.

Stream width should be measured from ordinary high water mark to ordinary high water mark, perpendicular to the longitudinal direction of the stream channel. That is consistent with the definition of “stream bed” in Section F of the NWPs. Commenters did not suggest a more accurate method for quantifying impacts to small and large streams in their comments. Establishing different metrics for small versus large streams also presents challenges in terms of consistently determining what constitutes a small stream versus a large stream, which has the potential for being an arbitrary distinction and would add another layer of complexity to the NWP program.

Many commenters noted that smaller stream channels provide important ecological functions and values and they provided numerous references to scientific studies that document the importance of these stream channels as linear systems in the landscape. Some of these commenters said impacts to small stream channels were more severe and/or permanent (e.g., complete losses by filling entire stream reaches) and noted that small streams are more susceptible to fragmentation impacts, are harder to restore/mitigate, and have compounding effects to downstream waters when impacts are cumulative and more than minimal. Many commenters noted that, in general, disproportionate impacts already occur to these smaller order stream channels because it is easier from an engineering standpoint and ultimately less costly to impact them versus larger order stream channels, and that removing the 300 linear foot limit would provide even less incentive to avoid and minimize impacts to these important resources.

The ecological functions of smaller stream channels are to be considered by district engineers when they review PCNs for proposed activities involving filling or excavating stream beds. When evaluating PCNs, district engineers consider the 10 criteria in paragraph 2 or Section D, District Engineer's Decision. Those criteria include: the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity, and the importance of the aquatic resource functions to the region. Division engineers can add regional conditions to this NWP to impose lower acreage limits or other restrictions to address concerns about potential losses of smaller stream channels and the functions they provide, including cumulative impacts to those smaller stream channels. The Corps acknowledges that, because of their size, smaller stream channels may be more susceptible to proposed development activities and other activities involving discharges of dredged or fill material into waters of the United States. Project proponents are less likely to fill larger stream channels because of the water that flows towards those larger stream channels, but other activities such as bank stabilization, excavation activities in the stream bed, and realigning stream channels may be authorized by the NWPs. Removing the 300 linear foot limit and relying on the 1/2-acre limit and PCN review process to identify activities that require individual permits helps the Corps implement its permit program more effectively, to efficiently authorize activities with no more than minimal adverse environmental effects via NWP, and focusing more of its resources on evaluating individual permit applications for activities that are likely have more substantial environmental impacts.

Many commenters said that this change would allow more than minimal impacts because of the disproportionate length of impacts to headwater streams that would be allowed now under the NWP program, which is said to be counter to and inconsistent with the goal and purpose of the NWP program. Many commenters questioned how the Corps could reconcile and justify this change based on the long-standing history of the 300-linear foot limit for losses of stream bed in the NWP program. Many commenters stated that individual permits should be required for proposed impacts to more than 300 linear feet of stream bed, to allow for the public and federal, state, and local resource agencies to comment on proposals to fill or excavate several thousand feet of stream bed.

The Corps will be relying on other, existing protective mechanisms within the NWPs to ensure that this NWP authorizes only those activities that have no more than minimal adverse environmental effects. The NWP program has changed over time as new information is considered and alternative ways of implementing the program are identified to further the program's objective of regulating, "with little, if any, delay or paperwork certain activities having minimal impacts" (33 CFR 330.1(b)). The removal of the 300 linear foot limit, continued application of the 1/2-acre limit, plus the ability of division and district engineers to exercise their discretionary authority to modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis, respectively, will ensure that activities that would cause more than minimal adverse environmental effects will be evaluated through the individual permit process.

Many commenters expressed concern about other changes within this proposal, when combined with the removal of the 300 linear feet limit would eliminate agency coordination with federal and state resource agencies under paragraph (d) of general condition 32. One commenter said that when reviewing the number of individual permits issued versus activities authorized under NWPs that even with what the commenter considers the more stringent 300-linear foot limit in place there is no justifiable need for reducing regulatory burden since the number of individual permits is so small compared to NWP verifications and this change would likely not result in any significant decrease in number of individual permits or regulatory burden.

For this NWP, the agency coordination process in paragraph (d) of general condition 32 was limited to requests for waivers of the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Ephemeral streams are not waters of the United States (see 33 CFR 328.3(b)(3)) and therefore not subject to jurisdiction under Section 404 of the Clean Water Act. In its Regulatory Impact Analyses for the proposed and final rules, the Corps acknowledges that the removal of the 300 linear foot limit is likely to result in a modest increase in NWP authorizations (174 per year), and a commensurate decrease in the number of activities that require individual permits. However, a modest reduction in the number of individual permits that must be processed each year can help improve administration of the Corps Regulatory Program and allow the Corps to devote more time and resources to working with project proponents to reduce the environmental impacts of activities that have the potential to result in more substantial impacts to jurisdictional wetlands and waters.

Many commenters said that the proposed 1/10-acre mitigation threshold for losses of stream bed was not an adequate tool for ensuring no more than minimal adverse environmental effects based on the disproportionately large amount of impacts to smaller headwater streams that would need to occur before compensatory mitigation was required. Many commenters expressed concern about the potential for increased likelihood for out-of-kind mitigation being provided to offset headwater stream impacts if mitigation is based on an acreage or other area-based metric for losses of stream bed. These commenters said that out-of-kind mitigation would likely increase because it would be the only option available to permittees due to fewer stream credits being generated and available as mitigation bankers and other mitigation providers adapt to this change and the uncertainty in the market that this change might create.

The comments received on the proposed 1/10-acre threshold for stream mitigation are discussed in the section of this preamble that discusses the comments received on general condition 23. In response to those comments, the Corps reduced the threshold for stream mitigation from 1/10-acre to 3/100-acre. As explained in the discussion of general condition 23 below, this change in the stream mitigation threshold aligns with current practice for stream mitigation requirements in the NWP program, and the recommendations for the stream mitigation threshold provided by commenters. The Corps uses a watershed approach for compensatory mitigation (see 33 CFR 332.3(c)). The goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites (see 33 CFR 332.3(c)(1)). A watershed approach considers how the types and locations of compensatory mitigation projects will provide the desired aquatic resource functions, and will continue to function over time in a changing landscape (33 CFR 332.3(c)(2)(i)), and may involve the use of out-of-kind mitigation.

Under a watershed approach, other approaches to stream restoration may be used to generate stream credits besides headwater stream channel reconfiguration projects. These other approaches may include process-based stream restoration activities such as dam removal, culvert replacements, levee setbacks or removals, riparian area restoration, allowing beavers to construct dams to aggrade incised channels, or installing structures that mimic beaver dams to aggrade incised channels (Beechie et al. 2010) to generate compensatory mitigation credits for activities authorized by this NWP. The use of beaver dams or structures to aggrade incised stream channels may result in wetland/stream complexes for which an area-based credit metric may be more appropriate than a linear foot-based metric. Focusing on restoring stream functions can be more ecologically successful in improving stream functions than form-based restoration approaches such as channel reconfiguration that have had questionable success in restoring degraded streams (Palmer et al. 2014). The stream credits generated by channel reconfiguration projects in headwater streams can be quantified in linear feet or acres, because the Corps' compensatory mitigation regulations do not mandate a specific approach for quantifying stream credits. Section 332.8(o)(1) states that the principal units for credits and debits are acres, linear feet, functional assessment units, or other suitable metrics of particular resource types. The preamble to the 2008 mitigation rule states that "district engineers retain the discretion to quantify stream impacts and required compensatory mitigation in terms of area or other appropriate units of measure" (73 FR 19633).

The Corps received many comments and questions about how these changes would likely negatively affect long-standing stream mitigation accounting and the mitigation banking industry in general. These commenters said that a linear foot metric has always been used for stream assessment methodologies and the basis for mitigation accounting systems, and many commenters stated that changing this metric would be unnecessarily burdensome and costly to stream restoration professionals and likely result in fewer stream restoration projects. One commenter stated that the proposed change would not increase mitigation opportunities in larger or higher order stream channels as proposed since the restoration of larger streams is more complex than smaller streams and is dependent on many variables to include funding availability, site selection, engineering and design considerations, mitigation requirements associated with the project, market incentives, and the inability to control future impacts in the headwaters which can jeopardize the larger stream restoration project.

As stated in the previous paragraphs, the Corps' regulations do not require use of a linear foot metric for stream assessment methodologies or for quantifying stream impacts or compensatory mitigation credits. The removal of the 300 linear foot limit for losses of stream bed and the changes to general condition 23 are likely to benefit the mitigation banking industry by providing more opportunities for stream restoration projects that can generate stream credits to offset losses of stream bed authorized by the NWPs and other types of DA permits. The Corps acknowledges that some efforts will need to be made to address differences in accounting systems, but mitigation providers including mitigation bank sponsors and in-lieu fee program sponsors should be able to estimate the amount of stream credits quantified in linear feet that are needed to offset an specific acreage of stream bed lost as the result of an NWP activity. The district engineer can assist in these determinations to ensure that the amount of stream mitigation credits is roughly proportional to the authorized losses of stream bed.

Several commenters said that establishing a stream compensatory mitigation threshold of 1/10-acre would allow approximately 1,675 linear feet of a first order stream channel with a 2.6-foot wide channel to be impacted under this NWP before any compensatory mitigation would be required, which does not meet the Corps' mandated goal of no net loss to aquatic resources and would cause more than minimal effects to these aquatic resources.

In response to public comment, the Corps has modified paragraph (d) of general condition 23 to change the proposed 1/10-acre threshold for stream mitigation to 3/100-acre to make the threshold more consistent with current practice and the recommendations made by commenters. The reasons for changing the proposed 1/10-acre stream mitigation threshold to 3/100-acre are provided in the discussion of general condition 23 below. There is no mandated goal of no net less to aquatic resources in any law or regulation that applies to the Corps' NWP program.

Compensatory mitigation, including stream compensatory mitigation, is required for NWP activities on a case-by-case basis to ensure that the authorized activities result in no more than minimal adverse environmental effects. District engineers determine when compensatory mitigation is required for NWP activities. In prior versions of the NWPs, the Corps had no threshold for requiring compensatory mitigation for losses of stream bed, so those commenters were referring to district practices. Corps districts determined on an activity-specific basis when stream mitigation is necessary for specific NWP activities.

One commenter asserted that based on ORM2 data analyzed for stream channel impacts, that the proposed 1/10-acre stream compensatory mitigation threshold would result in the loss of an additional 130,000 linear feet of headwater streams in which no mitigation would be provided. Several commenters expressed concerns about how this change would affect current mitigation banks that were in the process of being approved and inquired whether all previously executed mitigation banking instruments would need modification to continue to operate and sell credits to permittees. One commenter said that the proper regulatory tool to rectify the disparity between stream impacts versus stream mitigation would be the 2008 mitigation rule and requiring higher mitigation ratios and not revision of this NWP.

The 2017 NWPs and prior NWPs had no threshold for requiring stream mitigation for NWP activities. The proposed addition of the 1/10-acre stream mitigation threshold in paragraph (d) of general condition 23 is a new threshold. That threshold has been reduced to 3/100-acre in response to many commenters that provided calculations to support the reduction. Many commenters did not take into account the ability of district engineers to require stream compensatory mitigation for losses of stream bed less than the acreage threshold specified in paragraph (d) of general condition 23. This is similar in practice to the 1/10-acre wetland mitigation threshold in paragraph (c) of general condition 23, where district engineers also have had the authority to require wetland compensatory mitigation for wetland losses less than 1/10-acre.

Several commenters recommended delaying these changes to allow for more time to study potential effects and one commenter requested that due to the potential for significant environmental effects, an environmental impact statement should be prepared for this propose change. One commenter said that the Corps already converts stream loss/impacts to acreage in their Regulatory Program database (ORM2) for accounting purposes and asked whether the change from linear feet to acreage would even be needed in the first place. Several commenters said that the current 300-linear foot threshold was too high and should be even further reduced.

The Corps is only removing a quantitative limit from this NWP, and is not changing stream compensatory mitigation requirements aside from establishing an acreage threshold in paragraph (d) of general condition 23 that is generally consistent with current agency practice. Under the waiver provision in the 2017 version of this NWP, district engineers could waive the 300 linear foot limit for losses of intermittent and ephemeral stream beds, but the loss of stream bed could not exceed 1/2-acre. Therefore, it has been a long-standing practice in the NWP program to quantify of losses of stream bed in acres. The removal of the 300 linear foot limit and the change to general condition 23 does not require an environmental impact statement. As one commenter recognized, the Corps tracks losses of stream bed in its ORM2 database in acres.

Several commenters seemed to misunderstand the PCN requirements of this NWP and believed that the proposed changes implied that no notification would be required for any losses of waters of the United States less than 1/10-acre for this NWP and that the 1/10-acre mitigation threshold was the same as the PCN threshold. This misunderstanding resulted in many comments concerned about the Corps not even knowing what impacts are occurring if PCN thresholds are not triggering activity-specific review of these activities by district engineers, and stated that this change would allow activities with more than minimal adverse environmental effects to occur. Several commenters said that the rulemaking process for the NWPs in cases where the Corps does not review PCNs the authorization is automatically issued in some cases with no mitigation proposed. These commenters stated that not requiring PCNs could cause more than minimal impacts.

The 1/10-acre stream mitigation threshold proposed in paragraph (d) of general condition 23 was not the same as the 1/10-acre PCN threshold in NWP 51. If activities are authorized by NWPs without the requirement to submit PCNs, then compensatory mitigation is not required for those NWP activities, because compensatory mitigation requirements must be imposed by district engineers by adding conditions to the NWP authorization. However, it should be noted that all activities authorized by this NWP require PCNs.

Many commenters said that the removal of the 300 linear foot limit would result in a loss of critical habitat for many aquatic species listed under the Endangered Species Act which have cultural and economic importance to tribes. One commenter stated that the removal of the 300 linear foot limit could result in long reaches of streams channels upstream of tribal lands being developed which could cause, without any notification to the affected tribes, downstream changes to tribal lands in terms of stream flow, water quality, subsistence of water use, or cultural water use. Several commenters asked how the tools that the Corps mentioned in the proposed rule as safeguards, such as the PCN review process, regional conditions, activity-specific permit conditions, and use of discretionary authority, prevent more than minimal adverse environmental effects. Several commenters oppose the proposed removal of the 300 linear foot limit because it could essentially be a ‘tipping point’ for a headwater stream system, and that there would be no way to recover the functions and values lost to that system because of approval of large impacts to streams.

The removal of the 300 linear foot limit does not affect how compliance with Section

7 of the ESA is conducted for the NWPs. If the district engineer reviews a PCN for a proposed activity authorized by this NWP and determines that activity may affect listed species or designated critical habitat, she or he will conduct section 7 consultation with the U.S. FWS or NMFS as appropriate. Activities authorized by this NWP must also comply with general condition 17, tribal rights. During the rulemaking process for this NWP, Corps districts have been consulting or coordinating with tribes to identify regional conditions and coordination procedures to help ensure compliance with general condition 17. As discussed in the proposed rule, the PCN review process, regional conditions, and activity-specific conditions have been used successfully for years to ensure that activities authorized by the NWPs result in no more than minimal adverse environmental effects. Tipping points are difficult to identify, and if they can be identified, they are likely to vary from watershed to watershed.

One commenter said that headwater streams warrant more protection because of their relative importance in providing habitat, hydrologic, and water quality benefits to downstream waters, and said that replacing a linear metric with an area-based metric will reduce protection of headwater streams. This commenter stated that most nutrient and hydrologic inputs to streams occur along the borders of riparian zones and streams, so impacts to streams should be quantified in linear feet. In addition, this commenter noted that the longer total stream length and higher nitrogen removal efficiency of lower order streams is the main reason stream length is so important to water quality and why headwater streams are much more important to water quality functions in stream networks than are higher order streams. This commenter said that headwater streams are being lost at high rates, and that more losses of these streams will result in increases of eutrophication of downstream waters, more downstream flooding, and more transportation of pollutants to downstream waters. This commenter stated that using area as a quantitative limit for both headwater streams and higher order rivers will decrease protection and diminish the ecological importance of headwater streams. This commenter concluded that the current linear foot limit is appropriate for streams because they are linear systems that interact with their landscapes along linear borders.

The Corps believes that an appropriate level of protection can be provided to headwater streams through the 1/2-acre limit, the PCN process, and the ability of division and district engineers to modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis, respectively. When reviewing PCNs, district engineers will apply the 10 criteria identified in paragraph 2 of Section D, District Engineer’s Decision. In regions where there are concerns that the use of the NWPs may result in more than minimal cumulative adverse effects to headwater streams and the functions they provide, division engineers can add regional conditions to this NWP to establish an acreage limit lower than 1/2-acre or revoke this NWP. Headwater streams are not provided any special status under the Corps’ regulations or the U.S. EPA’s Clean Water Act Section 404(b)(1) Guidelines. The only streams that are special aquatic sites under the 404(b)(1) Guidelines are riffle and pool complexes (see 40 CFR 230.45), and many headwater streams are not riffle and pool complexes.

Many commenters opposed removing the provision that requires a written verification from the district engineer before commencing the authorized activity, instead of allowing a default authorization to occur if the Corps does not respond to a complete PCN within 45 days. Several commenters expressed support for the default authorization to occur if the district engineer does not respond to the PCN within 45 days. Many commenters opposed removal of the PCN requirements from this NWP. One commenter said that in order to further expedite permitting for a coal mining project, no PCNs should be required.

The Corps removed the requirement for the permittee to obtain written authorization before commencing the activity to be consistent with the other NWPs that have a 1/2-acre limit for discharges of dredged or fill material into non-tidal waters of the United States (e.g., NWPs 29, 39, 40, 42, 43, 44, 51, and 52). The Corps did not propose to remove any PCN requirements from this NWP. All activities authorized by this NWP require PCNs.

One commenter stated support for the language regarding integrated permitting processing procedure language. One commenter requested addition of text to the NWP stating that no work can begin until formally approved by the U.S. Department of Interior or the state, and final approval is not necessary before submitting a PCN to the district engineer. One commenter said that NWP 21 should be expanded to include a requirement for federal and state agency coordination when pitcher plant bog wetlands, bald cypress, and/or tupelo swamps are impacted. This commenter also stated that this NWP should not authorize discharges of dredged or fill material into these types of wetlands.

The Corps removed the language referencing integrated permit processing procedures, since those procedures have never been developed for this NWP since that text was added to the NWP in 2007 (see 72 FR 11184). Project proponents may be required to obtain separate authorizations from the Department of Interior's Office of Surface mining or the state, but those authorizations are a separate process from the Corps' NWP authorization process. Authorization by an NWP does not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law. (See item 2 in Section E, Further Information.) Division engineers can add regional conditions to this NWP to restrict or prohibit discharges of dredged or fill material into certain wetland types if those discharges are likely to result in more than minimal individual and cumulative adverse environmental effects. District engineers can also exercise discretionary authority to modify, suspend, or revoke an NWP after reviewing the PCN, to ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects.

Several commenters said that NWP 21 should be revoked because the adverse effects of surface coal mining on the environment are significant. One commenter objected to the removal of stream mitigation requirements. One commenter said that the applicant should be required to ensure that toxic substances are not released back into the water column through re-exposure from dredge activities. Several commenters said that the proposed changes to this NWP unlawfully put the interests of the regulated public above the Corps statutory mandate to protect the environment.

The activities authorized by this NWP cannot result in the loss of greater than 1/2-acre of non-tidal waters of the United States, excluding non-tidal wetlands adjacent to tidal waters. In addition, all activities authorized by this NWP require PCNs. The 1/2-acre limit, the PCN requirements, and the ability of division and district engineers to modify, suspend, or revoke this NWP on a regional or activity-specific basis ensure that the activities authorized by this NWP result in no more than minimal adverse environmental effects. The Corps did not propose to remove any stream mitigation requirements from this NWP. Despite the changes to this NWP, these activities are reviewed by district engineers on a case-by-case basis since all activities require PCNs.

2.0 Purpose and Need for the Proposed Action

The proposed action is the issuance of this NWP to authorize discharges of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act and work in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899 for surface coal mining and reclamation operations that result in no more than minimal individual and cumulative adverse environmental effects. This proposed action is needed for efficient implementation of the Corps Regulatory Program, by authorizing with little, if any, delay or paperwork this category of activities, when those activities have no more than minimal individual and cumulative adverse environmental effects. The NWP also provides an incentive to project proponents to reduce impacts to jurisdictional waters and wetlands to receive the required authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 in less time than it takes to obtain individual permits for those activities. Issuing an NWP to authorize activities that have no more than minimal adverse environmental effects instead of processing individual permit applications for these activities, reduces regulatory burdens on the public, benefits the environment through reduced losses of jurisdictional waters and wetlands, and allows the Corps to allocate more of its resources towards evaluating proposed activities requiring authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 that have the potential to cause more substantial adverse environmental effects.

3.0 Alternatives

This evaluation includes an analysis of alternatives based on the requirements of NEPA, which requires a more expansive review than the Clean Water Act Section 404(b)(1) Guidelines. The alternatives discussed below are based on an analysis of the potential environmental impacts and impacts to the Corps, Federal, Tribal, and state resource agencies, general public, and prospective permittees. Since the consideration of off-site alternatives under the 404(b)(1) Guidelines does not apply to specific projects authorized by general permits, the alternatives analysis discussed below consists of a general NEPA alternatives analysis for the NWP.

3.1 No Action Alternative (Do Not Reissue or Modify the Nationwide Permit)

The no action alternative would be to allow this NWP to continue to authorize activities until it expires on March 18, 2022, and not reissue or modify the NWP. After the NWP expires, under the no action alternative activities that were authorized by this NWP would require individual permits, unless Corps districts issued regional general permits to authorize a similar category of activities that the NWP authorized.

3.2 Reissue the Nationwide Permit With Modifications

This alternative consists of modifying and reissuing the NWP while considering the comments received in response to the proposal to reissue this NWP with modifications, including the proposed changes identified by the Corps and changes suggested by commenters. This alternative includes changes to the terms and conditions of this NWP, including quantitative limits for this NWP, pre-construction notification thresholds and requirements, and other provisions of this NWP. This alternative also includes consideration of modifying, adding, or removing general conditions that apply to this NWP. In addition, this alternative includes the mechanisms in the Corps' NWP program regulations at 33 CFR 330.5(c) and (d) where division and district engineers can modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis to ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects.

In the September 15, 2020, Federal Register notice, the Corps requested comments on the proposed reissuance of this NWP. The Corps proposed to modify this NWP to removing the 300 linear foot limit for losses of stream bed. The Corps also proposed to remove the ability for district engineers to waive the 300 linear foot limit for losses intermittent or ephemeral stream bed when the district engineer determines the proposed activity will result in no more than minimal individual and cumulative adverse environmental effects. The Corps also proposed to remove the requirement for a written verification from the district engineer prior to the project proponent commencing the NWP activity.

Since the Corps' NWP program began in 1977, the Corps has continuously strived to develop NWPs that only authorize activities that result in no more than minimal individual and cumulative adverse environmental effects. Every five years the Corps reevaluates the NWPs during the reissuance process, and may modify an NWP to address concerns for the aquatic environment. Utilizing collected data and institutional knowledge concerning activities authorized by the Corps regulatory program, the Corps reevaluates the potential impacts of activities authorized by NWPs. The Corps also uses substantive public comments on proposed NWPs to assess the expected impacts.

3.3 Reissue the Nationwide Permit Without Modifications

This alternative consists of reissuing the NWP without any modifications before it expires on March 18, 2022. This alternative also includes the mechanisms in the Corps' NWP program regulations where division and district engineers can modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis to ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.5(c) and (d)).

4.0 Affected Environment

This environmental assessment is national in scope because the NWP may be used across the country, unless the NWP is revoked or suspended by a division or district engineer under the procedures in 33 CFR 330.5(c) and (d), respectively. The affected environment consists of terrestrial and aquatic ecosystems in the United States, as they have been directly and indirectly affected by past and present federal, non-federal, and private activities. The past and present activities include activities authorized by the various NWPs issued from 1977 to 2017, activities authorized by other types of Department of the Army (DA) permits, as well as other federal, tribal, state, and private activities that are not regulated by the Corps. Aquatic ecosystems are also influenced by past and present activities in uplands, because those land use/land cover changes in uplands and other activities in uplands have indirect effects on aquatic ecosystems (e.g., MEA 2005a, Reid 1993). Due to the large geographic scale of the affected environment (i.e., the entire United States), as well as the many past and present human activities that have shaped the affected environment, it is only practical to describe the affected environment in general terms. In addition, it is not possible to describe the environmental conditions for specific sites where the NWPs may be used to authorize eligible activities.

The total land area in the United States is approximately 2,260,000,000 acres, and the total land area in the contiguous United States is approximately 1,891,000,000 acres (Bigelow and Borchers 2017). Land uses in the United States as of 2012 is provided in Table 4.1 (Bigelow and Borchers 2017). Of the land area in the entire United States, approximately 60 percent (1,370,000,000 acres) is privately owned (Bigelow and Borchers 2017). Of the remaining lands in the United States, the federal government hold 28 percent (644,000,000 acres), state and local governments own 8 percent (189,000,000 acres), and 3 percent (63,000,000 acres) is held in trust by the Bureau of Indian Affairs (Bigelow and Borchers 2017).

Table 4.1. Major land uses in the United States – 2012 (Bigelow and Borchers 2017).

Land Use	Acres	Percent of Total
Agriculture	1,186,000,000	52.5
Forest land	502,000,000	22.2
Transportation use	27,000,000	1.2
Recreation and wildlife areas	254,000,000	11.2
National defense areas	27,000,000	1.2
Urban land	70,000,000	3.1
Miscellaneous use	196,000,000	8.5
Total land area	2,260,000,000	100.0

4.1 Quantity of Aquatic Ecosystems in the United States

There are approximately 283.1 million acres of wetlands in the United States; 107.7 million acres are in the conterminous United States and the remaining 175.4 million acres are in Alaska (Mitsch and Hernandez 2013). Wetlands occupy less than 9 percent of the global land area (Zedler and Kercher 2005). According to Dahl (2011), wetlands and deepwater habitats cover approximately 8 percent of the land area in the conterminous United States. Rivers and streams comprise approximately 0.52 percent of the total land area of the continental United States (Butman and Raymond 2011). Therefore, the wetlands, streams, rivers, and other aquatic habitats that are potentially waters of the United States and subject to regulation by the Corps under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 comprise a minor proportion of the land area of the United States. The remaining land area of the United States (more than 92 percent, depending on the proportion of wetlands, streams, rivers, and other aquatic habitats that are subject to regulation under those two statutes) is outside the Corps regulatory authority.

Dahl (1990) estimated that approximately 53 percent of the wetlands in the conterminous United States were lost in the 200-year period from the 1780s to 1980s, while Alaska lost less than one percent of its wetlands and Hawaii lost approximately 12 percent of its original wetland acreage. In the 1780s, there were approximately 221 million acres of wetlands in the conterminous United States (Dahl 1990). California lost the largest percentage of its wetlands (91 percent), whereas Florida lost the largest acreage (9.3 million acres) (Dahl 1990). During that 200-year period, 22 states lost more than 50 percent of their wetland acreage, and 10 states have lost more than 70 percent of their original wetland acreage (Dahl 1990).

Frayer et al. (1983) evaluated wetland status and trends in the United States during the period of the mid-1950s to the mid-1970s. During that 20-year period, approximately 7.9 million acres of wetlands (4.2 percent) were lost in the conterminous United States. Much of the loss of estuarine emergent wetlands was due to changes to estuarine subtidal deepwater habitat, and some loss of estuarine emergent wetlands was due to urban development. For palustrine vegetated wetlands, nearly all of the losses of those wetlands were due to agricultural activities (e.g., conversion to agricultural production).

The U.S. Fish and Wildlife Service also examined the status and trends of wetlands in the United States during the period of the mid-1970s to the 1980s, and found that there was a net loss of more than 2.6 million acres of wetlands (2.5 percent) during that time period (Dahl and Johnson 1991). Freshwater wetlands comprised 98 percent of those wetland losses (Dahl and Johnson 1991). During that time period, losses of estuarine wetlands were estimated to be 71,000 acres, with most of that loss due to changes of emergent estuarine wetlands to open waters caused by shifting sediments (Dahl and Johnson 1991). Conversions of wetlands to agricultural use were responsible for 54 percent of the wetland losses, and conversion to other land uses resulted in the loss of 41 percent of wetlands (Dahl and Johnson 1991). Urban development was responsible for five percent of the wetland loss (Dahl and Johnson 1991). The annual rate of wetland loss has decreased substantially since the 1970s (Dahl 2011), when wetland regulation became more prevalent (Brinson and Malvárez 2002).

Between 2004 and 2009, there was no statistically significant difference in wetland acreage in the conterminous United States (Dahl 2011). According to the 2011 wetland status and trends report, during the period of 2004 to 2009 urban development accounted for 11 percent of wetland losses (61,630 acres), rural development resulted in 12 percent of wetland losses (66,940 acres), silviculture accounted for 56 percent of wetland losses (307,340 acres), and wetland conversion to deepwater habitats caused 21 percent of the loss in wetland area (115,960 acres) (Dahl 2011). Some of the losses occurred to wetlands that are not subject to Clean Water Act jurisdiction and some losses are due to activities not regulated under Section 404 of the Clean Water Act, such as unregulated drainage activities, exempt forestry activities, or water withdrawals. From 2004 to 2009, approximately 100,020 acres of wetlands were gained as a result of wetland restoration and conservation programs on agricultural land (Dahl 2011). Another source of wetland gain is conversion of other uplands to wetlands, resulting in a gain of 389,600 acres during the period of 2004 to 2009 (Dahl 2011). Inventories of wetlands, streams, and other aquatic resources are incomplete because the techniques used for those studies cannot identify some of those resources (e.g., Dahl (2011) for wetlands; Meyer and Wallace (2001) for streams).

Losses of vegetated estuarine wetlands due to the direct effects of human activities have decreased significantly due to the requirements of Section 404 of the Clean Water Act and other laws and regulations (Dahl 2011). During the period of 2004 to 2009, less than one percent of estuarine emergent wetlands were lost as a direct result of human activities, while other factors such as sea level rise, land subsidence, storm events, erosion, and other ocean processes caused substantial losses of estuarine wetlands (Dahl 2011). The indirect effects of other human activities, such as oil and gas development, water extraction, development of the upper portions of watersheds, and levees, have also resulted in coastal wetland losses (Dahl 2011). Eutrophication of coastal waters can also cause losses of emergent estuarine wetlands, through changes in growth patterns of marsh plants and decreases in the stability of the wetland substrate, which changes those marshes to mud flats (Deegan et al. 2012).

The Emergency Wetlands Resources Act of 1986 (Public Law 99-645) requires the USFWS to submit wetland status and trends reports to Congress (Dahl 2011). The latest status and trends report, which covers the period of 2004 to 2009, is summarized in Table 4.2. The USFWS status and trends report only provides information on acreage of the various aquatic habitat categories and does not assess the quality or condition of those aquatic habitats (Dahl 2011).

Table 4.2. Estimated aquatic resource acreages in the conterminous United States in 2009 (Dahl 2011).

Aquatic Habitat Category	**Estimated Area in 2009 (acres)**
Marine intertidal	227,800
Estuarine intertidal non-vegetated	1,017,700
Estuarine intertidal vegetated	4,539,700
All intertidal waters and wetlands	5,785,200
Freshwater ponds	6,709,300
Freshwater vegetated	97,565,300
• Freshwater emergent wetlands	27,430,500
• Freshwater shrub wetlands	18,511,500
• Freshwater forested wetlands	51,623,300
All freshwater wetlands	104,274,600
Lacustrine deepwater habitats	16,859,600
Riverine deepwater habitats	7,510,500
Estuarine subtidal habitats	18,776,500
All wetlands and deepwater habitats	153,206,400

The acreage of lacustrine deepwater habitats does not include the open waters of Great Lakes (Dahl 2011).

The Federal Geographic Data Committee has established the Cowardin system developed by the U.S. Fish and Wildlife Service (USFWS) (Cowardin et al. 1979) as the national standard for wetland mapping, monitoring, and data reporting (Dahl 2011) (see Federal Geographic Data Committee (2013)). The Cowardin system is a hierarchical system which describes various wetland and deepwater habitats, using structural characteristics such as vegetation, substrate, and water regime as defining characteristics. Wetlands are defined by plant communities, soils, or inundation or flooding frequency. Deepwater habitats are permanently flooded areas located below the wetland boundary. In rivers and lakes, deepwater habitats are usually more than two meters deep. The Cowardin et al. (1979) definition of "wetland" differs from the definition used by the Corps and U.S. EPA for the purposes of implementing Section 404 of the Clean Water Act. The Corps-U.S. EPA regulations defines wetlands 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." [33 CFR 328.3(c)(4); 40 CFR 230.3(o)(3)(iv)] The Cowardin et al. (1979) requires only one factor (i.e., wetland vegetation, soils, hydrology) to be present for an area to be a wetland, while the Corps-U.S. EPA wetland definition requires all three factors to be present under normal circumstances (Tiner 2017, Mitsch and Gosselink 2015). The NWI produced by applying the Cowardin et al. (1979) definition is the only national scale wetland inventory available. There is no national inventory of wetland acreage based on the Corps' wetland definition at 33 CFR 328.3(c)(16).

There are five major systems in the Cowardin classification scheme: marine, estuarine, riverine, lacustrine, and palustrine (Cowardin et al. 1979). The marine system consists of open ocean on the continental shelf and its high energy coastlines. The estuarine system consists of tidal deepwater habitats and adjacent tidal wetlands that are usually partially enclosed by land, but may have open connections to open ocean waters. The riverine system generally consists of all wetland and deepwater habitats located within a river channel. The lacustrine system generally consists of wetland and deepwater habitats located within a topographic depression or dammed river channel, with a total area greater than 20 acres. The palustrine system generally includes all non-tidal wetlands and wetlands located in tidal areas with salinities less than 0.5 parts per thousand; it also includes ponds less than 20 acres in size. Approximately 95 percent of wetlands in the conterminous United States are freshwater wetlands, and the remaining 5 percent are estuarine or marine wetlands (Dahl 2011).

According to Hall et al. (1994), there are more than 204 million acres of wetlands and deepwater habitats in the State of Alaska, including approximately 174.7 million acres of wetlands. Wetlands and deepwater habitats comprise approximately 50.7 percent of the surface area in Alaska (Hall et al. 1994).

The National Resources Inventory (NRI) is a statistical survey conducted by the Natural Resources Conservation Service (NRCS) (USDA 2018) of natural resources on non-federal land in the United States. The NRCS defines non-federal land as privately owned lands, tribal and trust lands, and lands under the control of local and state governments. Acreages of palustrine and estuarine wetlands and the land uses those wetlands are subjected to are summarized in Table 4.3. The 2015 NRI estimates that there are 110,638,500 acres of palustrine and estuarine wetlands on non-Federal land and water areas in the United States (USDA 2018). The 2015 NRI estimates that there are 49,598,800 acres of open waters on non-federal land in the United States, including lacustrine, riverine, and marine habitats, as well as estuarine deepwater habitats.

Table 4.3. The 2015 National Resources Inventory acreages for palustrine and estuarine wetlands on non-federal land, by land cover/use category (USDA 2018).

National Resources Inventory Land Cover/Use Category	Area of Palustrine and Estuarine Wetlands (acres)
cropland, pastureland, and Conservation Reserve Program land	17,300,000
forest land	65,800,000
rangeland	7,800,000
other rural land	14,600,000
developed land	1,500,000
water area	3,600,000
Total	111,000,000

The land cover/use categories used by the 2015 NRI are defined below (USDA 2018). Croplands are areas used to produce crops grown for harvest. Pastureland is land managed for livestock grazing, through the production of introduced forage plants. Conservation Reserve Program land is under a Conservation Reserve Program contract. Forest land is comprised of at least 10 percent single stem woody plant species that will be at least 13 feet tall at maturity. Rangeland is land on which plant cover consists mostly of native grasses, herbaceous plants, or shrubs suitable for grazing or browsing, and introduced forage plant species. Other rural land consists of farmsteads and other farm structures, field windbreaks, marshland, and barren land. Developed land is comprised of large urban and built-up areas (i.e., urban and built-up areas 10 acres or more in size), small built-up areas (i.e., developed lands 0.25 to 10 acres in size), and rural transportation land (e.g., roads, railroads, and associated rights-of-way outside urban and built-up areas). Water areas are comprised of waterbodies and streams that are permanent open waters.

The wetlands data from the Fish and Wildlife Service's Status and Trends study and the Natural Resources Conservation Service's National Resources Inventory should not be compared, because they use different methods and analyses to produce their results (Dahl 2011).

Leopold, Wolman, and Miller (1964) estimated that there are approximately 3,250,000 miles of river and stream channels in the United States. This estimate is based on an analysis of 1:24,000 scale topographic maps. Their estimate does not include many small streams. Many small streams, especially headwater streams, are not mapped on 1:24,000 scale U.S. Geological Survey (USGS) topographic maps (Leopold 1994) or included in other inventories (Meyer and Wallace 2001), including the National Hydrography Dataset (Elmore et al. 2013). Many small streams and rivers are not identified through maps produced by aerial photography or satellite imagery because of inadequate image resolution or trees or other vegetation obscuring the visibility of those streams from above (Benstead and Leigh 2012). In a study of stream mapping in the southeastern United States, only 20 percent of the stream network was mapped on 1:24,000 scale topographic maps, and nearly none of the observed intermittent or ephemeral streams were indicated on those maps (Hansen 2001). Another study in Massachusetts showed that 1:25,000 metric scale topographic maps exclude over 27 percent of stream miles in a watershed (Brooks and Colburn 2011). For a 1:24,000 scale topographic map, the smallest tributary found by using 10-foot contour interval has a drainage area of 0.7 square mile and length of 1,500 feet, and smaller stream channels are common throughout the United States (Leopold 1994). Benstead and Leigh (2012) found that the density of stream channels (length of stream channels per unit area) identified by digital elevation models was three times greater than the drainage density calculated by using USGS maps. Elmore et al. (2013) made similar findings in watersheds in the mid-Atlantic, where they determined that the stream density was 2.5 times greater than the stream density calculated with the National Hydrography Dataset. Due to the difficulty in mapping small streams, there are no accurate estimates of the total number of river or stream miles in the conterminous United States that might be considered as "waters of the United States."

The quantity of the Nation's aquatic resources presented by studies that estimate the length or number of stream channels (see above) or the acreage of wetlands (USFWS status and trends studies, National Wetlands Inventory (NWI), and Natural Resources Inventory (NRI) are underestimates, because those inventories do not include many small wetlands and streams. The USFWS status and trends study does not include Alaska, Hawaii, or the territories. The underestimate of national wetland acreage by the USFWS status and trends study and the NWI is primarily the result of the minimum size of wetlands detected through remote sensing techniques and the difficulty of identifying certain wetland types through those remote sensing techniques. The remote sensing approaches used by the USFWS for its NWI maps and its status and trends reports result in errors of omission that exclude wetlands that are difficult to identify through photointerpretation (Tiner 2017). These errors of omission are due to wetland type and the size of target mapping units (Tiner 2017). Therefore, it is important to understand the limitations of the source data when describing the environmental baseline for wetlands using maps and studies produced by remote sensing, especially in terms of wetland quantity.

Factors affecting the accuracy of wetland maps made by remote sensing include: the degree of ease or difficulty in identifying a particular wetland type, map scale, the quality and scale of the source information (e.g., aerial or satellite photos), the environmental conditions when the imagery was obtained, the time of year the imagery was obtained (e.g., leaf-off versus leaf on), the quality of the images, the minimum mapping unit (or target mapping unit), the mapping equipment, and the skills of the people drawing the maps (Tiner 2017). In general, wetland types that are difficult to identify through field investigations are likely to be underrepresented in maps made by remote sensing (Tiner 2017). Wetlands difficult to identify through remote sensing include evergreen forested wetlands, wetlands and the drier end of the wetland hydrology continuum, and significantly drained wetlands (Tiner 2017). Wetland types that are more readily identified and delineated through remote sensing techniques include ponds, marshes, bogs, and fens (Tiner 2017). In the most recent wetland status and trends report published by the U.S. Fish and Wildlife Service, the target minimum wetland mapping unit was 1 acre, although some easily identified wetlands as small as 0.1 acre were identified in that effort (Dahl 2011). The National Wetlands Inventory identifies wetlands regardless of their jurisdictional status under the Clean Water Act (Tiner 2017).

Activities authorized by NWPs will adversely affect a smaller proportion of the Nation's wetland base than indicated by the wetlands acreage estimates provided in the most recent status and trends report, or the NWI maps for a particular region.

Not all wetlands, streams, and other types of aquatic resources are subject to federal jurisdiction under the Clean Water Act (Mitsch and Gosselink 2015). Two U.S. Supreme Court decisions have identified limits to Clean Water Act jurisdiction. In 2001, in *Solid Waste Agency of Northern Cook County v. Army Corps of Engineers* (531 U.S. 159) the U.S. Supreme Court held that the use of isolated, non-navigable, intrastate waters by migratory birds is not, by itself a sufficient basis for exercising federal regulatory authority under the Clean Water Act (see 80 FR 37056). In the Supreme Court's 2006 decision in *Rapanos* v. *United States,* (547 U.S. 715), one justice stated that waters and wetlands regulated under the Clean Water Act must have a "significant nexus" to downstream traditional navigable waters. Four justices (the plurality) concluded that Clean Water Act jurisdiction applies only to relatively permanent waters connected to traditional navigable waters and to wetlands that have a continuous surface connection to those relatively permanent waters. The remaining justices in *Rapanos* stated that Clean Water Act jurisdiction applies to waters and wetlands that meet either the significant nexus test or the Plurality's test.

There are 94,133 miles of shoreline in the United States (NOAA 1975). Of that shoreline, 88,633 miles are tidal shoreline and 5,500 miles are shoreline along the Great Lakes and rivers that connect those lakes to the Atlantic Ocean. More recently, Gittman et al. (2015) estimated that there are 99,524 miles of tidal shoreline in the conterminous United States.

4.2 Quality of Aquatic Ecosystems in the United States

The USFWS status and trends study does not assess the condition or quality of wetlands and deepwater habitats (Dahl 2011). Information on water quality in waters and wetlands, as well as the causes of water quality impairment, is collected by the U.S. EPA under Sections 305(b) and 303(d) of the Clean Water Act. Table 4.4 provides U.S. EPA's most recent national summary of water quality in the Nation's waters and wetlands.

Table 4.4. National summary of water quality data (U.S. EPA, https://iaspub.epa.gov/waters10/attains_nation_cy.control accessed 11/27/2020).

Category of water	Total waters	Total waters assessed	Percent of waters assessed	Good waters	Threatened waters	Impaired waters
Rivers and streams	3,533,205 miles	1,110,961 miles	31.4	518,293 miles	4,495 miles	588,173 miles
Lakes, reservoirs and ponds	41,666,049 acres	18,629,795 acres	44.7	5,390,570 acres	30,309 acres	13,208,917 acres
Bays and estuaries	87,791 square miles	56,141 square miles	63.9	11,516 square miles	0 square miles	44,625 square miles
Coastal shoreline	58,618 miles	4,627 miles	7.9	1,298 miles	0 miles	3,329 miles
Ocean and near coastal waters	54,120 square miles	6,944 square miles	12.8	726 square miles	0 square miles	6,218 square miles
Wetlands	107,700,000 acres	1,242,252 acres	1.2	569,328 acres	0 acres	672,924 Acres
Great Lakes shoreline	5,202 miles	4,460 miles	85.7	106 miles	0 miles	4,354 miles
Great Lakes open waters	196,343 square miles	39,231 square miles	20.0	1 square mile	0 square miles	39,230 square miles

Waters and wetlands classified by states as “good” meets all their designated uses. Waters classified as “threatened” currently support all of their designated uses, but if pollution control measures are not taken one or more of those uses may become impaired in the future. A water or wetland is classified by the state as “impaired” if any one of its designated uses is not met. The definitions of “good,” “threatened,” and “impaired” are applied by states to describe the quality of their waters (the above definitions were found in the metadata in U.S. EPA (2015)). Designated uses include the “protection and propagation of fish, shellfish and wildlife,” “recreation in and on the water,” the use of waters for “public water supplies, propagation of fish, shellfish, wildlife, recreation in and on the water,” and “agricultural, industrial and other purposes including navigation.” (40 CFR 130.3). These designated uses are assessed by states in a variety of ways, by examining various physical, chemical and biological characteristics, so it is not possible to use the categories of “good,” “threatened,” and “impaired” to infer the level of ecological functions and services these waters perform.

According to the latest U.S. EPA national summary data, 52.9 percent of assessed rivers and streams, 70.9 percent of assessed lakes, reservoirs, and ponds, 79.5 percent of assessed bays and estuaries, 71.9 percent of assessed coastal shoreline, 89.5 percent of assessed ocean and near coastal waters, 54.2 percent of assessed wetlands, 97.6 percent of assessed Great Lakes shoreline, and 100 percent of Great Lakes open water are impaired.

For rivers and streams, 34 causes of impairment were identified, and the top 10 causes are pathogens, sediment, nutrients, organic enrichment/oxygen depletion, temperature, metals (other than mercury), polychlorinated biphenyls, mercury, habitat alterations, and turbidity. The top 10 primary sources of impairment for the assessed rivers and streams are: unknown sources, agriculture, hydromodification, atmospheric deposition, habitat alterations not directly related to hydromodification, unspecified non-point source, municipal discharges/sewage, natural/wildlife, urban-related runoff/stormwater, and silviculture (forestry).

Thirty-three causes of impairment were identified for lakes, reservoirs, and ponds. The top 10 causes of impairment for these waters are: mercury, nutrients, polychlorinated biphenyls, turbidity, organic enrichment/oxygen depletion, metals (other than mercury), pH/acidity/caustic conditions, salinity/total dissolved solids/chlorides/sulfates, algal growth, and nuisance exotic species. For lakes, reservoirs, and ponds, the top 10 sources of impairment are: atmospheric deposition, unknown sources, agriculture, natural/wildlife, unspecified non-point source, other sources, urban-related runoff/stormwater, legacy/historic pollutants, municipal discharges/sewage, and hydromodification.

Twenty-eight causes of impairment were identified for bays and estuaries. The top 10 causes of impairment for these waters are: polychlorinated biphenyls, nutrients, mercury, turbidity, dioxins, toxic organics, metals (other than mercury), pesticides, pathogens, and organic enrichment/oxygen depletion. For bays and estuaries, the top 10 sources of impairment are: legacy/historic pollutants, urban-related runoff/stormwater, unknown sources, atmospheric deposition, municipal discharges/sewage, unspecified non-point sources, other sources, natural/wildlife, agriculture, and industrial.

Coastal shorelines were impaired by 16 identified causes, the top 10 of which are: mercury, pathogens, turbidity, organic enrichment/oxygen depletion, pH/acidity/caustic conditions, nutrients, oil and grease, temperature, cause unknown – impaired biota, and algal growth. The top 10 sources of impairment of coastal shorelines are municipal discharges/sewage, urban-related runoff/stormwater, unknown sources, recreational boating and marinas, hydromodification, industrial, unspecified non-point sources, agriculture, legacy/historic pollutants, and land application/waste sites/tanks.

Ocean and near coastal waters were impaired by 16 identified causes, the top 10 of which are: mercury, organic enrichment/oxygen depletion, pathogens, metals (other than mercury), pesticides, turbidity, nuisance exotic species, total toxics, pH/acidity/caustic conditions, and polychlorinated biphenyls. The top 10 sources of impairment of ocean and near coastal waters are: atmospheric deposition, unknown sources, unspecified non-point sources, other sources, recreation and tourism (non-boating), recreational boating and marinas, urban-related runoff/stormwater, hydromodification, municipal discharges/sewage, and construction.

For wetlands, 23 causes of impairment were identified, and the top 10 causes are: organic enrichment/oxygen depletion, mercury, metals (other than mercury), salinity/total dissolved solids/chlorides/sulfates, pathogens, nutrients, toxic inorganics, temperature, pH/acidity/caustic conditions, and turbidity. The 10 primary sources for wetland impairment are: unknown sources, natural/wildlife, agriculture, atmospheric deposition, resource extraction, hydromodification, unspecified non-point sources, other, land application/waste sites/tanks, and groundwater loadings/withdrawals.

For Great Lakes shorelines, 12 causes of impairment were identified, and the top 10 causes are: polychlorinated biphenyls, dioxins, mercury, pesticides, toxic organics, pathogens, nutrients, nuisance exotic species, sediment, and habitat alterations. The 10 primary sources for Great Lakes shoreline impairment are: atmospheric deposition, unknown sources, legacy/historic pollutants, agriculture, municipal discharges/sewage, hydromodification, urban-related runoff/stormwater, habitat alterations (not directly related to hydromodifications), industrial, and unspecified non-point sources.

For Great Lakes open waters, 8 causes of impairment were identified, and those causes are: polychlorinated biphenyls, mercury, dioxins, pesticides, toxic organics, nutrients, metals (other than mercury), and sediment. The 8 sources for Great Lakes open water impairment are: atmospheric deposition, unknown sources, agriculture, municipal discharges/sewage, unspecified non-point sources, industrial, urban-related runoff/stormwater, and legacy/historic pollutants.

Water quality standards are established by states, with review and approval by the U.S. EPA (see Section 303(c) of the Clean Water Act and the implementing regulations at 40 CFR part 131). Under Section 401 of the Clean Water Act States review proposed discharges to determine compliance with applicable water quality standards.

Most causes and sources of impairment identified by states in the water quality summary discussed above are not due to activities regulated under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Inputs of sediments into aquatic ecosystems can result from erosion occurring within a watershed (Beechie et al. 2013, Gosselink and Lee 1989). As water moves through a watershed it carries sediments and pollutants to streams (e.g., Allan 2004, Dudgeon et al. 2005, Paul and Meyer 2001) and wetlands (e.g., Zedler and Kercher 2005, Wright et al. 2006). Non-point sources of pollution (i.e., pollutants carried in runoff from farms, roads, and urban areas) are largely uncontrolled (Brown and Froemke 2012) because the Clean Water Act only requires permits for point sources discharges of pollutants (i.e., discharges of dredged or fill material regulated under section 404 and point source discharges of other pollutants regulated under section 402). Habitat alterations as a cause or source of impairment may be the result of activities regulated under section 404 and section 10 because they involve discharges of dredged or fill material or structures or work in navigable waters, but habitat alterations may also occur as a result of activities not regulated under those two statutes, such as the removal of vegetation from upland riparian areas. Hydrologic modifications may or may not be regulated under section 404 or section 10.

The indirect effects of changes in upland land use (which are highly likely not to be subject to federal control and responsibility, at least in terms of the Corps Regulatory Program), including the construction and expansion of upland developments, have substantial adverse effects on the quality (i.e. the ability to perform hydrologic, biogeochemical, and habitat functions) of jurisdictional waters and wetlands because those upland activities alter watershed-scale processes. Those watershed-scale processes include water movement and storage, erosion and sediment transport, and the transport of nutrients and other pollutants.

Habitat alterations as a cause or source of impairment may be the result of activities regulated under section 404 and section 10 because they involve discharges of dredged or fill material into jurisdictional waters or structures or work in navigable waters, but habitat alterations may also occur as a result of activities not regulated under those two statutes, such as the removal of vegetation from upland riparian areas. Hydrologic modifications may or may not be regulated under section 404 or section 10, depending on whether those hydrologic modifications are the result of discharges of dredged or fill material into waters of the United States regulated under Section 404 of the Clean Water Act or structures or work in navigable waters of the United States regulated under Section 10 of the Rivers and Harbors Act of 1899. When states, tribes, or the U.S. EPA establish total maximum daily loads (TMDLs) for pollutants and other impairments for specific waters, there may be variations in how these TMDLs are defined (see 40 CFR part 130).

As discussed below, many anthropogenic activities and natural processes affect the ability of jurisdictional waters and wetlands to perform ecological functions. Stream and river functions are affected by activities occurring in their watersheds, including the indirect effects of land uses changes (Beechie et al. 2013, Allan 2004, Paul and Meyer 2001). Booth at al. (2004) found riparian land use in residential areas also strongly affects stream condition because many landowners clear vegetation up to the edge of the stream bank. The removal of vegetation from upland riparian areas and other activities in those non-jurisdictional areas do not require DA authorization. Wetland functions are also affected by indirect effects of land use activities in the land area that drains to the wetland (Zedler and Kercher 2005, Wright et al. 2006). Human activities within a watershed or catchment that have direct or indirect adverse effects on rivers, streams, wetlands, and other aquatic ecosystems are not limited to discharges of dredged or fill material into waters of the United States or structures or work in a navigable waters. Human activities in uplands have substantial indirect effects on the structure and function of aquatic ecosystems, including streams and wetlands, and their ability to sustain populations of listed species. It is extremely difficult to distinguish between degradation of water quality caused by upland activities and degradation of water quality caused by the filling or alteration of wetlands (Gosselink and Lee 1989).

The U.S. Environmental Protection Agency (U.S. EPA) has undertaken the National Wetland Condition Assessment (NWCA), which is a statistical survey of wetland condition in the United States (U.S. EPA 2016). The NWCA assesses the ambient conditions of wetlands at the national and regional scales. The national scale encompasses the conterminous United States. The regional scale consists of four aggregated ecoregions: Coastal Plains, Eastern Mountains and Upper Midwest, Interior Plains, and West. In May 2016, U.S. EPA issued a final report on the results of its 2011 NWCA (U.S. EPA 2016).

The 2011 NWCA determined that, across the conterminous United States, 48 percent of wetland area (39.8 million acres) is in good condition, 20 percent of the wetland area (12.4 million acres) is in fair condition, and 32 percent (19.9 million acres) is in poor condition (U.S. EPA 2016). The 2011 NWCA also examined indicators of stress for the wetlands that were evaluated. The most prevalent physical stressors were vegetation removal, surface hardening via conversion to pavement or soil compaction, and ditching (U.S. EPA 2016). In terms of chemical stressors, most wetlands were subject to low exposure to heavy metals and soil phosphorous, but substantial percentages of wetland area in the West and Eastern Mountains and Upper Midwest ecoregions were found to have moderate stressor levels for heavy metals (U.S. EPA 2016). For soil phosphorous concentrations, stressor levels were high for 13 percent of the wetland area in the Eastern Mountains and Upper Midwest ecoregion (U.S. EPA 2016). Across the conterminous United States, for biological stressors indicated by non-native plants, 61 percent of the wetland area exhibited low stressor levels (U.S. EPA 2016). When examined on an ecoregion basis, the Eastern Mountains and Upper Midwest and Coastal Plains ecoregions had high percentages of wetland area with low non-native plant stressor levels, but the West and Interior Plains ecoregions had small percentages of areas with low non-native plant stressor levels (U.S. EPA 2016).

4.3 Aquatic Resource Functions and Services

Functions are the physical, chemical, and biological processes that occur in ecosystems (33 CFR 332.2). Wetland functions occur through interactions of their physical, chemical, and biological features (Smith et al. 1995). Wetland functions depend on a number of factors, such as the movement of water through the wetland, landscape position, surrounding land uses, vegetation density within the wetland, geology, soils, water source, and wetland size (NRC 1995). In its evaluation of wetland compensatory mitigation in the Clean Water Act Section 404 permit program, the National Research Council (2001) recognized five general categories of wetland functions:

- Hydrologic functions
- Water quality improvement
- Vegetation support
- Habitat support for animals
- Soil functions

Hydrologic functions include short- and long-term water storage and the maintenance of wetland hydrology (NRC 1995). Water quality improvement functions encompass the transformation or cycling of nutrients, the retention, transformation, or removal of pollutants, and the retention of sediments (NRC 1995). Vegetation support functions include the maintenance of plant communities, which support various species of animals as well as economically important plants. Wetland soils support diverse communities of bacteria and fungi which are critical for biogeochemical processes, including nutrient cycling and pollutant removal and transformation (NRC 2001). Wetland soils also provide rooting media for plants, as well as nutrients and water for those plants. These various functions generally interact with each other, to influence overall wetland functioning, or ecological integrity (Smith et al. 1995; Fennessy et al. 2007). As discussed earlier in this report, the Corps regulations at 33 CFR 320.4(b) list wetland functions that are important for the public interest review during evaluations of applications for DA permits, and for the issuance of general permits.

Not all wetlands perform the same functions, nor do they provide functions to the same degree (Smith et al. 1995). Therefore, it is necessary to account for individual and regional variation when evaluating wetlands and the functions and services they provide. The types and levels of functions performed by a wetland are dependent on its hydrologic regime, the plant species inhabiting the wetland, soil type, and the surrounding landscape, including the degree of human disturbance of the landscape (Smith et al. 1995).

Streams also provide a variety of functions, which differ from wetland functions. Streams also provide hydrologic functions, nutrient cycling functions, food web support, and corridors for movement of aquatic organisms (Allan and Castillo 2007). When considering stream functions, the stream channel should not be examined in isolation. The riparian corridor next to the stream channel is an integral part of the stream ecosystem and has critical roles in stream functions (NRC 2002). Riparian areas provide many of the same general functions as wetlands (NRC 1995, 2002). Fischenich (2006) conducted a review of stream and riparian corridor functions, and through a committee, identified five broad categories of stream functions:

- Stream system dynamics
- Hydrologic balance
- Sediment processes and character
- Biological support
- Chemical processes and landscape pathways

Stream system dynamics refers to the processes that affect the development and maintenance of the stream channel and riparian area over time, as well as energy management by the stream and riparian area. Hydrologic balance includes surface water storage processes, the exchange of surface and subsurface water, and the movement of water through the stream corridor. Sediment processes and character functions relate to processes for establishing and maintaining stream substrate and structure. Biological support functions include the biological communities inhabiting streams and their riparian areas. Chemical processes and pathway functions influence water and soil quality, as well as the chemical processes and nutrient cycles that occur in streams and their riparian areas. Rivers and streams function perform functions to different degrees, depending on watershed condition, the severity of direct and indirect impacts to streams caused by human activities, and their interactions with other environmental components, such as their riparian areas (Allan 2004, Gergel et al. 2002).

Ecosystem services are the benefits that humans derive from ecosystem functions (33 CFR 332.2). The Millennium Ecosystem Assessment (2005a) describes four categories of ecosystem services: provisioning services, regulating services, cultural services, and supporting services. For wetlands and open waters, provisioning services include the production of food (e.g., fish, fruits, game), fresh water storage, food and fiber production, production of chemicals that can be used for medicine and other purposes, and supporting genetic diversity for resistance to disease. Regulating services relating to open waters and wetlands consist of climate regulation, control of hydrologic flows, water quality through the removal, retention, and recovery of nutrients and pollutants, erosion control, mitigating natural hazards such as floods, and providing habitat for pollinators. Cultural services that come from wetlands and open waters include spiritual and religious values, recreational opportunities, aesthetics, and education. Wetlands and open waters contribute supporting services such as soil formation, sediment retention, and nutrient cycling.

Aquatic ecosystems in the current affected environment provide a wide variety of ecological functions and services to differing degrees (MEA 2005a) to human communities. Degraded ecosystems can provide ecological functions and services that continue to provide some conservation value (Weins and Hobbs 2015).

Examples of services provided by wetland functions include flood damage reduction, maintenance of populations of economically important fish and wildlife species, maintenance of water quality (NRC 1995, MEA 2005a) and the production of populations of wetland plant species that are economically important commodities, such as timber, fiber, and fuel (MEA 2005a). Wetlands can also provide important climate regulation and storm protection services (MEA 2005a).

Stream functions also result in ecosystem services that benefit society. Streams and their riparian areas store water, which can reduce downstream flooding and subsequent flood damage (NRC 2002, MEA 2005a). These ecosystems also maintain populations of economically important fish, wildlife, and plant species, including valuable fisheries (MEA 2005a, NRC 2002). The nutrient cycling and pollutant removal functions help maintain or improve water quality for surface waters (NRC 2002, MEA 2005a). Streams and riparian areas also provide important recreational opportunities. Rivers and streams also provide water for agricultural, industrial, and residential use (MEA 2005a).

Freshwater ecosystems provide services such as water for drinking, household uses, manufacturing, thermoelectric power generation, irrigation, and aquaculture; production of finfish, waterfowl, and shellfish; and non-extractive services, such as flood control, transportation, recreation (e.g., swimming and boating), pollution dilution, hydroelectric generation, wildlife habitat, soil fertilization, and enhancement of property values (Postel and Carpenter 1997).

Marine ecosystems provide a number of ecosystem services, including fish production; materials cycling (e.g., nitrogen, carbon, oxygen, phosphorous, and sulfur); transformation, detoxification, and sequestration of pollutants and wastes produced by humans; support of ocean-based recreation, tourism, and retirement industries; and coastal land development and valuation, including aesthetics related to living near the ocean (Peterson and Lubchenco 1997).

Costanza et al. (2014) estimated the value of ecosystem services, by general categories of ecosystem type. Their estimates, based on data analysis conducted in 2011 and using the 2007 value of the U.S. dollar, are provided in Table 4.5. The ecosystem categories providing the highest values of ecosystem services by acre per year were coral reefs ($142,661 per acre per year), followed by tidal marshes and mangrove wetlands ($78,506 per acre per year). Forested and floodplain wetlands had a value of $10,401 per acre per year.

Table 4.5 – Estimates of the value of ecosystem services, by ecosystem category (Costanza et al. 2014)

Ecosystem category	2007$ per acre per year
Marine	554
open ocean	24
coastal	3,622
• estuaries	11,711
• seagrass/algae beds	11,711
• coral reefs	142,661
• coastal shelf	900
Terrestrial	1,985
forest	1,539
• tropical	2,180
• temperate/boreal	1,270
grass/rangelands	1,687
wetlands	56,770
• tidal marsh/mangroves	78,506
• swamps/floodplains	10,401
lakes/rivers	5,067
desert	-
tundra	-
ice/rock	-
cropland	2,255
urban	2,698

This NWP authorizes discharges of dredged or fill material into non-tidal waters of the United States, but it does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. These non-tidal waters are included in the palustrine, lacustrine, and riverine systems of the Cowardin classification system.

Activities authorized by this NWP will provide goods and services that are valued by society. For example, coal extracted through surface coal mining operations provide energy for a wide range of uses. Energy produced from coal may be converted into electrical energy that is used by residents, businesses, industry, and other entities. When natural ecosystems are converted to human-dominated ecosystems, there are tradeoffs between the losses in ecosystem services provided by natural ecosystems and the gains in goods and services provided by land use changes, resource extraction, harvesting, and other activities (MEA 2005c). For thousands of years, human communities have altered landscapes and ecosystems to serve their needs, such as food, safety, and commerce, and made trade-offs by increasing certain ecosystem functions and services while reducing other ecosystem functions and services (Karieva et al. 2007).

4.4 Human Activities and Natural Factors that Affect the Quantity and Quality of Aquatic Ecosystems in the United States

The affected environment is the current environmental setting against which the environmental effects of the proposed action is evaluated, to determine whether the issuance of the NWP will have a significant impact on the quality of the human environment. The affected environment is also used as a basis for comparison to determine whether activities authorized by the NWP will result in no more than minimal individual and cumulative adverse environmental effects when added to the current environmental setting.

For thousands of years, humans have caused substantial impacts on ecosystems and the ecological functions and services they provide (Ellis et al. 2010, Evans and Davis 2018). Around the beginning of the 19th century, the degree of impacts of human activities on the Earth's ecosystems began to exceed the degree of impacts to ecosystems caused by natural disturbances and variability (Steffen et al. 2007). All of the Earth's ecosystems have been affected either directly or indirectly by human activities (Vitousek et al. 1997). Over 75 percent of the ice-free land on Earth has been altered by human occupation and use (Ellis and Ramankutty 2008). Approximately 33 percent of the Earth's ice-free land consists of lands heavily used by people: urban areas, villages, lands used to produce crops, and occupied rangelands (Ellis and Ramankutty 2008). For marine ecosystems, Halpern et al. (2008) determined that there are no marine waters that are unaffected by human activities, and that 41 percent of the area of ocean waters are affected by multiple anthropogenic stressors (e.g., land use activities that generate pollution that go to coastal waters, marine habitat destruction or modification, and the extraction of resources). The marine waters most highly impacted by human activities are continental shelf and slope areas, which are affected by both land-based and ocean-based human activities (Halpern et al. 2008). Human population density is a good indicator of the relative effect that people have had on local ecosystems, with lower population densities causing smaller impacts to ecosystems and higher population densities having larger impacts on ecosystems (Ellis and Ramankutty 2008). Human activities such as urbanization, agriculture, and forestry alter ecosystem structure and function by changing their interactions with other ecosystems, their biogeochemical cycles, and their species composition (Vitousek et al. 1997). Changes in land use reduce the ability of ecosystems to produce ecosystem services, such as food production, reducing infectious diseases, and regulating climate and air quality (Foley et al. 2005).

Ecosystems are not separate from human communities, and they are interdependent and comprise a single social-ecological system (Folke et al. 2011). Social-ecological systems are altered by human activities, as well as natural perturbations and changing environmental conditions, but they possess resilience and adaptive capacities that allow them to continue to provide ecological functions and services when properly managed (Chapin et al. 2010). Social-ecological systems exist at a number of scales, ranging from local to regional to global (Folke et al. 2010). Despite the prevalence of human activities altering landscapes and seascapes and the ecosystems within those landscapes and seascapes over long periods of time, many of those ecosystems continue to provide ecological functions and services to varying degrees (Clewell and Aronson 2013). Disturbances to ecosystems, landscapes, and seascapes may result in those systems recovering to their original state through biotic and abiotic characteristics and processes that provide resilience, or those systems may be transformed to a different ecological state (i.e., an alternative stable state) (van Andel and Aronson 2012). From the perspective of social-ecological systems, resilience is defined by Folke et al. (2010) as the capacity of a social-ecological system to withstand disturbance and undergo changes, while retaining its ability to exhibit similar structure, functions, and interactions. If the ecosystem, landscape, or seascape changes to an alternative stable state, the alternative stable state may be considered an improvement or degradation, depending on the perspective of the person evaluating the change (Backstrom et al. 2018, van Andel and Aronson 2012). This NWP will be used to authorize certain activities that require DA authorization in these social-ecological systems, and the potential environmental consequences of the reissuance of this NWP is evaluated under the current environmental setting and the potential impacts to jurisdictional waters and wetlands that may occur during the 5-year period this NWP is anticipated to be in effect. The environmental consequences of the reissuance of this NWP is also considered for the various public interest review factors in section 6.0 of this document, which include social and ecological components.

Recent changes in climate have had substantial impacts on natural ecosystems and human communities (IPCC 2014). Climate change, both natural and anthropogenic, is a major driving force for changes in ecosystem structure, function, and dynamics (Millar and Brubaker 2006). However, there are other significant drivers of change to aquatic and terrestrial ecosystems. In addition to climate change, aquatic and terrestrial ecosystems are also adversely affected by land use and land cover changes, natural resource extraction (including water withdrawals), pollution, species introductions, and removals of species (NAS and RS 2019, Staudt et al. 2013, Bodkin 2012, MEA 2005a) and changes in nutrient cycling (Julius et al. 2013). During the past century, changes to ecosystems have been driven primarily by changes in biological factors, such as land use/land cover changes and the spread of non-native species, but in the future changes in abiotic processes, such as climate change and nitrogen deposition, may become predominant drivers of ecosystem change (Radeloff et al. 2015). The current contribution of climate change to changes in ecosystems is small compared to other anthropogenic causes of change to ecosystems (Radeloff et al. 2015, Williams et al. 2019) that are identified above, especially land use and land cover changes.

The affected environment (i.e., the current environmental setting) has been shaped by a wide variety of human activities. Wetlands, streams, and other aquatic resources and the ecological functions and services they provide are directly and indirectly affected by changes in land use and land cover, alien species introductions, overexploitation of species, pollution, eutrophication due to excess nutrients, resource extraction including water withdrawals, climate change, and various natural disturbances (MEA 2005a). A more detailed list of activities is provided below in Table 4.6. Activities regulated and authorized by the Corps under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 through NWPs, individual permits, letters of permission, and regional general permits comprise a small subset of those activities. The impacts of human activities have altered, to some degree, all ecosystems, including the quantity and quality of wetlands, streams, and other aquatic resources in the United States, and the ecological functions and services they provide. Other federal, non-federal, and private activities also contribute to the current environmental setting by changing the quantity and quality of aquatic resources and the ecological functions and services they provide. Human activities that have affected ecosystems, landscapes, and seascapes may have legacy effects that continue under the current environmental setting and affected the quantity of those resources and the ecological functions and services they provide.

Table 4.6 – Human activities and natural factors that cause changes in aquatic ecosystems and the functions and services they perform

Resource type(s)	Human activities and natural factors that drive ecosystem change	Reference(s)
wetlands and waters (generally)	• land use/land cover changes • alien species introductions • species overexploitation • pollution • eutrophication • resource extraction (e.g., water withdrawals) • climate change • natural disturbances	MEA (2005a)

Resource type(s)	Human activities and natural factors that drive ecosystem change	Reference(s)
rivers and streams	• agriculture • urban development • industrial development • deforestation • mining • water removal • flow alteration • invasive species • point source and non-point source pollution • dams (hydroelectric, water supply) and navigational aids such as locks • dredging • erosion • filling • overfishing • road construction • drainage and channelization • sediment deposition • boating	Palmer et al. (2010) Carpenter et al. (2011) Allan (2004) NRC (1992)
wetlands	• wetland conversion through drainage, dredging, and filling • hydrologic modifications that change wetland hydrology and hydrodynamics • pollutants (point source and non-point source), including nutrients and contaminants • waterfowl and wildlife management activities • agriculture and aquaculture activities • flood control and stormwater protection (e.g., severing hydrologic connections between rivers and floodplain wetlands) • silvicultural activities • agricultural activities • urban development • mining activities • water withdrawals, aquifer depletion • river management (e.g., channelization, navigation improvements, dams, locks, weirs) • altered sediment transport • introductions of non-native species • land subsidence, erosion	Mitsch and Gosselink (2015) Mitsch and Hernandez (2013) Wright et al. (2006) Zedler and Kercher (2005) Brinson and Malvárez (2002)

Resource type(s)	Human activities and natural factors that drive ecosystem change	Reference(s)
seagrass beds	• dredging • coastal development activities • degradation of water quality • sediment and nutrient runoff from adjacent lands • physical disturbances • natural processes, such as herbivore grazing, physical disturbances caused by waves and tidal currents • invasive species • diseases • commercial fishing activities • aquaculture • algal blooms • low light availability • nutrient limitations • global climate change	Borum et al. (2013) Waycott et al. (2009) Orth et al. (2006)
coral reefs	• overexploitation/overfishing • destructive fishing practices • nutrients, sediments, pesticides, and other pollutants (point source and non-point source) • nutrient loading • changes in storm frequency and intensity • increasing ocean surface temperatures • ocean acidification • coastal land uses, including development and agriculture • coral mining • sea level rise • invasive species • diseases • bleaching • global climate change	Sheppard (2014) MEA (2005a) Hughes et al. (2003)

coastal areas	• development activities, including the construction of residences, commercial buildings, industrial facilities, resorts, and port developments • agricultural and forestry activities • point source and non-point source pollution (nutrients, organic matter, other pollutants) • aquaculture • fishing activities • overharvesting of species • intentional and unintentional introductions of non-native species • dredging • reclamation • shore protection and other structures • habitat modifications • changes to hydrology and hydrodynamics • global climate change • shoreline erosion • pathogens and toxins • debris and litter	Robb (2014) Day et al. (2013) Lotze et al. (2006) MEA (2005b) NRC (1994)
oceans	• pollution (point and non-point source) • fishing activities • changes in sea temperatures • ultraviolet light • ocean acidification • species invasions • commercial activities • other human activities • benthic structures • offshore energy infrastructure (e.g., wind farms, pipelines)	Halpern et al. (2015) Halpern et al. (2008)

Wetlands, streams, and other aquatic resources and the functions and services they provide are directly and indirectly affected by changes in land use and land cover, alien species introductions, overexploitation of species, pollution, eutrophication due to excess nutrients, resource extraction including water withdrawals, climate change, and various natural disturbances (MEA 2005a). Freshwater ecosystems such as lakes, rivers, and streams are altered by changes to water flow, climate change, land use changes, additions of chemicals, resource extraction, and aquatic invasive species (Carpenter et al. 2011). Cumulative effects to wetlands, streams, and other aquatic resources that form the current environmental setting are the result of landscape-level processes (Gosselink and Lee 1989). As discussed in more detail below, cumulative or aggregate effects to aquatic resources are caused by a variety of activities (including activities that occur entirely in uplands) that take place within a landscape unit, such as the watershed for a river or stream (e.g., Allan 2004, Paul and Meyer 2001, Leopold 1968) or the contributing drainage area for a wetland (e.g., Wright et al. 2006, Brinson and Malvárez 2002, Zedler and Kercher 2005).

There is little national-level information on the current ecological state of the Nation's wetlands, streams, and other aquatic resources, or the general degree to which they perform various ecological functions, although reviews have acknowledged that most of these aquatic resources are degraded to some degree (Zedler and Kercher 2005, Allan 2004) or impaired (U.S. EPA 2015) because of various activities, disturbances, and other stressors. Therefore, the analysis in this environmental assessment is a qualitative analysis.

There is a wide variety of causes and sources of impairment of the Nation's rivers, streams, wetlands, lakes, estuarine waters, and marine waters (U.S. EPA 2015), which also contribute to cumulative effects to these aquatic resources. Many of those causes of impairment are point and non-point sources of pollutants that are not regulated under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Two common causes of impairment for rivers and streams, habitat alterations and flow alterations, may be due in part to activities regulated by the Corps under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. Habitat and flow alterations may also be the caused by activities that do not involve discharges of dredged or fill material or structures or work in navigable waters. For wetlands, impairment due to habitat alterations, flow alterations, and hydrology modifications may involve activities regulated under section 404, but these causes of impairment may also be due to unregulated activities, such as changes in upland land use that affects the movement of water through a watershed or contributing drainage area or the removal of vegetation.

The Millennium Ecosystem Assessment (MEA 2005a) broadly defines wetlands as inland wetlands (e.g., swamps, marshes, lakes, rivers, peatlands, and underground water habitats), coastal and near-shore marine wetlands (e.g., coral reefs, mangroves, seagrass beds, and estuaries), and human-made wetlands (e.g., rice fields, dams, reservoirs, and fish ponds). According to the MEA (2005a), the principal drivers of direct change to estuarine and marine wetlands include the conversion of saltwater marshes, mangroves, seagrass meadows, and coral reefs to other land uses, diversions of freshwater flows, increased inputs of nitrogen, overharvesting various species, water temperature changes, and species introductions. These changes are indirectly driven by increases in human populations in coastal areas (MEA 2005a). Robb (2014) identified a number of threats to estuaries and estuarine habitats such as salt marshes, seagrass beds, and sand flats. Those threats include land-based activities in surrounding watersheds, such as development activities, agricultural activities, forestry activities, pollution, freshwater diversions, shoreline stabilization, waterway impairments, and inputs of debris and litter. With respect to activities occurring directly in coastal waters, Robb (2014) identified the following threats: shoreline development, the construction and operation of port facilities, dredging, marine pollution, aquaculture activities, resource extraction activities, species introductions, and recreational activities. Changing climate conditions also pose threats to estuaries through sea level rise, changing water temperatures, ocean acidification, and changing precipitation patterns (Robb 2014).

Marine and coastal waters are affected by human activities in the ocean, coastal areas, and watersheds that drain to those marine and coastal waters (Korpinen and Andersen 2016). In marine and coastal environments, human activities and other disturbances that affect resources in those waters can come from a variety of sources, including water-based activities (e.g., transportation, fishing, mariculture, power generation, and tourism) and land-based activities (e.g., urban and suburban development, agriculture, non-point source pollution, forestry activities, power generation, and mining activities) (Clark Murray et al. 2014).

Activities that affect wetland quantity and quality include: land use changes that alter local hydrology (including water withdrawal), clearing and draining wetlands, constructing levees that sever hydrologic connections between rivers and floodplain wetlands, constructing other obstructions to water flow (e.g., dams, locks), constructing water diversions, inputs of nutrients and contaminants, and fire suppression (Brinson and Malvárez 2002). Wetland loss and degradation is caused by hydrologic modifications of watersheds, drainage activities, logging, agricultural runoff, urban development, conversion to agriculture, aquifer depletion, river management, (e.g., channelization, navigation improvements, dams, weirs), oil and gas development activities, levee construction, peat mining, and wetland management activities (Mitsch and Hernandez 2013). Upland development adversely affects wetlands and reduces wetland functionality because those activities change surface water flows and alter wetland hydrology, contribute stormwater and associated sediments, nutrients, and pollutants, cause increases in invasive plant species abundance, and decrease the diversity of native plants and animals (Wright et al. 2006). Many of the remaining wetlands in the United States are degraded (Zedler and Kercher 2005). Wetland degradation and losses are caused by changes in water movement and volume within a watershed or contributing drainage area, altered sediment transport, drainage, inputs of nutrients from non-point sources, water diversions, fill activities, excavation activities, invasion by non-native species, land subsidence, and pollutants (Zedler and Kercher 2005). According to Mitsch and Gosselink (2015), categories of activities that alter wetlands include: wetland conversion through drainage, dredging, and filling; hydrologic modifications that change wetland hydrology and hydrodynamics; highway construction and its effects on wetland hydrology; peat mining; waterfowl and wildlife management; agriculture and aquaculture activities; water quality enhancement activities; and flood control and stormwater protection.

The ecological condition of rivers and streams is dependent on the state of their watersheds (NRC 1992), because they are affected by activities that occur in those watersheds, including agriculture, urban development, deforestation, mining, water removal, flow alteration, and invasive species (Palmer et al. 2010, Allan 2004). Land use changes affect rivers and streams through increased sedimentation, larger inputs of nutrients (e.g., nitrogen, phosphorous) and pollutants (e.g., heavy metals, synthetic chemicals, toxic organics), altered stream hydrology, the alteration or removal of riparian vegetation, and the reduction or elimination of inputs of large woody debris (Allan 2004). Agriculture is the primary cause of stream impairment, followed by urbanization (Foley et al. 2005, Paul and Meyer 2001). Agricultural land use adversely affects stream water quality, habitat, and biological communities (Allan 2004). Urbanization causes changes to stream hydrology (e.g., higher flood peaks, lower base flows), sediment supply and transport, water chemistry, and aquatic organisms (Paul and Meyer 2001). Leopold (1968) found that land use changes affect the hydrology of an area by altering stream flow patterns, total runoff, water quality, and stream structure. Changes in peak flow patterns and runoff affect stream channel stability. Stream water quality is adversely affected by increased inputs of sediments, nutrients, and pollutants, many of which come from non-point sources (Paul and Meyer 2001, Allan and Castillo 2007).

The construction and operation of water-powered mills in the 17th to 19th centuries substantially altered the structure and function of streams in the eastern United States (Walter and Merritts 2008) and those effects have persisted to the present time. In urbanized and agricultural watersheds, the number of small streams has been substantially reduced, in part by activities that occurred between the 19th and mid-20th centuries (Meyer and Wallace 2001). Activities that affect the quantity and quality of small streams include residential, commercial, and industrial development, mining, agricultural activities, forestry activities, and road construction (Meyer and Wallace 2001), even if those activities are located entirely in uplands.

Waycott et al. (2009) estimated that the areal extent of seagrass beds across the world has declined by nearly 30 percent since the late 19th century. They identified two main categories of causes for that decline: direct impacts from dredging and coastal development activities, and indirect impacts from degradation of water quality. Submersed aquatic vegetation is affected by a wide variety of human activities such as dredging in seagrass meadows, anchoring vessels in seagrass beds, coastal development activities, increased sediment inputs from a variety of sources including land development activities, habitat conversions resulting from mariculture activities, increased nutrient inputs to coastal waters, and climate change (MEA 2005a). According to Orth et al. (2006), seagrasses are threatened by numerous stressors, such as sediment and nutrient runoff from adjacent lands, physical disturbances, overgrazing, invasive species, diseases, commercial fishing activities, aquaculture, algal blooms, and global climate change. Human activities that contribute to cumulative effects to submerged aquatic vegetation include coastal development, hard shore stabilization structures, land uses changes in surrounding watersheds that increase inputs of sediments, nutrients, and pollutants to waters inhabited (or could be inhabited) by seagrasses, discharges of pollutants directly into waters, aquaculture activities, and boating activities (Orth et al. 2017, Orth et al. 2006). Orth et al. (2017, 2006) did not quantify how frequently each of these stressors pose threats to seagrasses. the relative contributions of each of the identified human activities that affect seagrasses. Submersed aquatic vegetation may be affected by natural processes, such as herbivore grazing, physical disturbances caused by waves and tidal currents, and other stressors such as low light availability, higher temperatures, or nutrient limitations (Borum et al. 2013). Boating activities (e.g., mooring, use of propellers) and fish and shellfish harvesting activities can also contribute to cumulative impacts to submersed aquatic vegetation beds (Fonseca et al. 1998). The recovery of submersed aquatic vegetation from anthropogenic and natural disturbances can vary by species, and is dependent in part on the reproductive mechanisms of those species (Borum et al. 2013, Fonseca et al. 1998). At the meadow or landscape scale, seagrass beds can fully recover after disturbance within 5 years, but recovery can take longer if there are persistent environmental changes persist or seagrass seeds or other propagules are not available to reestablish seagrasses in the affected area (O'Brien et al. 2018).

A variety of human activities have caused, and are continuing to cause declines in corals and coral reefs. Coral reefs are adversely affected by pollution, including sedimentation, excess nutrients, oil discharges, pesticides, and sewage (Sheppard 2014; MEA 2005a; Hughes et al. 2003). Shoreline development activities, development activities in watersheds draining to coastal waters, and agriculture activities in coastal watersheds also contribute to declines in corals and coral reefs (Sheppard 2014; MEA 2005a; Hughes et al. 2003). The pollution may be in runoff from nearby lands or discharged directly into waters inhabited by corals. Corals and coral reefs are also harmed by overexploitation, including overfishing, as well as destructive fishing practices (MEA 2005a) and anchors used by boats (Sheppard 2014). Climate change and associated increases in storm frequency and intensity, diseases, water temperatures, and coral bleaching also contribute to declines in corals and coral reefs (Sheppard 2014; MEA 2005a; Hughes et al. 2003). Invasive species have also affected corals and coral reefs (Sheppard 2014).

For aquatic ecosystems, climate change affects water quality, biogeochemical cycling, and water storage (Julius et al. 2013). Climate change will also affect the abundance and distribution of wetlands across the United States, as well as the functions they provide (Mitsch and Gosselink 2015). Climate change results in increases in stream temperatures, more waterbodies with anoxic conditions, degradation of water quality, and increases in flood and drought frequencies (Julius et al. 2013). The increasing carbon dioxide concentration in the atmosphere also changes the pH of the oceans, resulting in ocean acidification (RS and NAS 2014), which adversely affects corals and some other marine organisms.

In the United States, approximately 39 percent of its population lives in counties that are next to coastal waters, the territorial seas, or the Great Lakes (NOAA 2013). Those counties comprise less than 10 percent of the land area of the United States (NOAA 2013). Humans have been altering estuarine waters and coastal areas for millennia, but those changes have rapidly accelerated over the past 150 to 300 years (Lotze et al. 2006). Coastal waters are also affected by a wide variety of activities. Day et al. (2013) identified the following general categories of human activities that impact estuaries: physical alterations (e.g., habitat modifications and changes in hydrology and hydrodynamics), increases in inputs of nutrients and organic matter (enrichment), releases of toxins, and changes in biological communities as a result of harvesting activities and intentional and unintentional introductions of new species. The major drivers of changes to coastal areas are: development activities that alter coastal forests, wetlands, and coral reef habitats for aquaculture and the construction of urban areas, industrial facilities, and resort and port developments (MEA 2005b). Dredging, reclamation, shore protection and other structures (e.g., causeways and bridges), and some types of fishing activities also cause substantial changes to coastal areas (MEA 2005b). Nitrogen pollution to coastal zones change coral reef communities (MEA 2005b). Adverse effects to coastal waters are caused by habitat modifications, point source pollution, non-point source pollution, changes to hydrology and hydrodynamics, exploitation of coastal resources, introduction of non-native species, global climate change, shoreline erosion, and pathogens and toxins (NRC 1994). Over the course of history, in estuarine waters human activities caused declines of greater than 90 percent of important species, losses of more than 65 percent of seagrasses and wetland habitat, substantially degraded water quality, and facilitated introductions of new species (Lotze et al. 2006).

Substantial alterations of coastal hydrology and hydrodynamics are caused by land use changes in watersheds draining to coastal waters, the channelization or damming of streams and rivers, water consumption, and water diversions (NRC 1994). Approximately 52 percent of the population of the United States lives in coastal watersheds (NOAA 2013). Eutrophication of coastal waters is caused by nutrients contributed by waste treatment systems, non-point sources, and the atmosphere, and may cause hypoxia or anoxia in coastal waters (NRC 1994). Changes in water movement through watersheds may also alter sediment delivery to coastal areas, which affects the sustainability of wetlands and intertidal habitats and the functions they provide (NRC 1994). Most inland waters in the United States drain to coastal areas, and therefore activities that occur in inland watersheds affect coastal waters (NRC 1994). Inland land uses, such as agriculture, urban development, and forestry, adversely affect coastal waters by diverting fresh water from estuaries and by acting as sources of nutrients and pollutants to coastal waters (MEA 2005b).

Coastal wetlands have been substantially altered by urban development and changes to the watersheds that drain to those wetlands (Mitsch and Hernandez 2013). Coastal habitat modifications are the result of dredging or filling coastal waters, inputs of sediment via non-point sources, changes in water quality, or alteration of coastal hydrodynamics (NRC 1994). Coastal development activities, including those that occur in uplands, affect marine and estuarine habitats (MEA 2005a). The introduction of non-native species may change the functions and structure of coastal wetlands and other habitats (MEA 2005a). Fishing activities may also modify coastal habitats by changing habitat structure and the biological communities that inhabit those areas (NRC 1994).

In order to effectively understand and manage ecosystems, including aquatic ecosystems, it is necessary to take into account how people and societies have reshaped aquatic and terrestrial resources over time (Ellis 2015), through the effects of human activities on those ecosystems. This includes permitting programs that regulate activities in aquatic resources and other types of natural resources. The current state of an ecosystem (e.g., a wetland or an estuary) can range from "near natural" (i.e., minimally disturbed) to semi-natural to production systems such as agricultural lands to overexploited (i.e., severely impaired) (van Andel and Aronson 2012). Degradation occurs when an ecosystem is subjected to a prolonged disturbance (Clewell and Aronson 2013), and the degree of degradation can be dependent, in part, on the severity of disturbance. Disturbances can be caused by human activities or by natural events, such as changes to ecosystems caused by ecosystem engineers (e.g., beavers) and other organisms, storms, fires, or earthquakes. Two important factors that affect how aquatic ecosystems and other ecosystems respond to disturbances are resistance and resilience.

For ecosystems, stability is the ability of an ecosystem to return its starting state after one or more disturbances cause a significant change in environmental conditions (van Andel et al. 2012). Resistance is the ability of an ecosystem to exhibit little or no change in structure or function when exposed to a disturbance (van Andel et al. 2012). Resilience is the ability of an ecosystem to regain its structural and functional characteristics in a relatively short amount of time after it has been exposed to a disturbance (van Andel et al. 2012). Human activities can change the resilience of ecosystems (Gunderson 2000). In some situations, resilience can be a positive attribute (e.g., the ability to withstand disturbances), and in other situations, resilience can be a negative attribute (e.g., when it is not possible to restore ecosystem because it has changed to the degree where it is resistant to being restored) (Walker et al. 2004). The concept of ecological resilience presumes the existence of multiple stable states, and the ability of ecosystems to tolerate some degree of disturbance before transitioning to an alternative (different) stable state (Gunderson 2000). A regime shift (i.e., a change from one stable state to an alternative stable state) can occur when human activities reduce the resilience of an ecosystem, or functional groups of species within that ecosystem, or when there are changes in the magnitude, frequency, and duration of disturbances (Folke et al. 2004). Folke et al. (2004) and Gunderson (2000) provide examples of aquatic ecosystems that can exist in multiple stable states.

An example of a regime change in an estuary is a shift from an estuary with clear waters and benthic communities dominated by seagrasses, to an estuary with turbid waters dominated by phytoplankton that has insufficient light for seagrasses to grow and persist (Folke et al. 2004). Another example of a regime shift is where an increase in nutrients to a wetland (likely from many sources in the area draining to that wetland) causes a wetland's plant community from a diverse plant community dependent on low nutrient levels to a monotypic plant community dominated by an invasive species that can persist under the higher nutrient levels (Gunderson 2000).

Determining whether an ecosystem altered by human activities is degraded or in an alternative stable state depends on the perspective of the person making that judgment (Hobbs 2016). That judgment is dependent in part on the ecological functions and services currently being provided by the alternative stable state and the value local stakeholders place on those ecosystem functions and services. In other words, different people may have different views on the current ecological state of a particular ecosystem (Hobbs 2016, Walker et al. 2004): some people may think it is degraded and other people may think it continues to provide important ecological functions and services. It is also important to understand that degradation falls along a continuum, ranging from minimally degraded to severely degraded, since all ecosystems have been directly or indirectly altered by human activities to some degree. Degraded ecosystems can continue to provide important ecological functions and services, although they may be different from what they provided historically. In summary, the affected environment or current environmental setting consists of a variety of aquatic and terrestrial resources that have been subjected to varying degrees of disturbance by human activities, and provide different degrees of aquatic resource functions and services.

5.0 Environmental Consequences

5.1 General Evaluation Criteria

This document contains a general assessment of the reasonably foreseeable effects of the individual activities authorized by this NWP and the anticipated cumulative effects of the activities authorized by this NWP during the 5-year period it is anticipated to be in effect. In the assessment of these individual and cumulative effects, the terms and limits of the NWP, pre-construction notification requirements, and the standard NWP general conditions are considered. The NWP general conditions include mitigation measures that reduce individual and cumulative adverse environmental effects. The supplemental documentation provided by division engineers will address how regional conditions affect the individual and cumulative effects of the NWP.

The environmental effects of proposed activities are evaluated by assessing the direct and indirect effects that those activities have on the current environmental setting (Canter 1996). The current environmental setting is the product of the cumulative or aggregated effects of human activities that have persisted over time, as well as the natural processes that have influenced, and continue to influence, the structure, functions, and dynamics of ecosystems. The current environmental setting includes the present effects of past activities authorized by previously issued versions of this NWP and other NWPs. The current environmental setting can vary substantially in different areas of the country and in different waterbodies. The current environmental setting is dependent in part on the degree to which past and present human activities have altered aquatic and terrestrial resources in a particular geographic area over time. For a particular site in which an NWP may take place, the current environmental setting can range from highly developed/overexploited (e.g., urban areas, where human impacts to ecosystems are highest) to production systems (e.g., agricultural lands) to seminatural (e.g., parks) to near natural (e.g., wilderness areas, where human impacts to ecosystems are lowest) (van Andel and Aronson 2012). Human impacts on semi-natural ecosystems are lower than human impacts to production ecosystems (van Andel and Aronson 2012). Since humans have altered aquatic and terrestrial environments in numerous, substantial ways for thousands of years (e.g., Evans and Davis 2018, Ellis 2015), the current environmental setting takes into account how human activities and changing biotic and abiotic conditions have modified existing aquatic and terrestrial resources.

The terms “cumulative effects” and “cumulative impacts” have been defined in various ways. For example, the National Research Council (NRC) (1986) defined “cumulative effects” as the on-going degradation of ecological systems caused by repeated perturbations or disturbances. MacDonald (2000) defines “cumulative effects” as the result of the combined effects of multiple activities that occur in a particular area that persist over time. Cumulative effects are caused by the interaction of multiple activities in a landscape unit, such as a watershed or ecoregion (Gosselink and Lee 1989). Cumulative effects can accrue in a number of ways. Cumulative effects can occur when there are repetitive disturbances at a single site over time, and the resource is not able to fully recover between each disturbance. Cumulative effects can also occur as a result of multiple activities occurring in a geographic area over time.

Consistent with the definitions cited above, the cumulative impacts of this NWP are the product of how many times this NWP is used to authorize discharges of dredged or fill material into waters of the United States across the country during the 5-year period this NWP is anticipated to be in effect. In section 8.2.2 of this document, the Corps estimates the number of times this NWP will be used during the 5-year period it is expected to be in effect, as well as estimates of the acreage of permanent and temporary impacts, and the acreage of compensatory mitigation required by district engineers to offset losses of jurisdictional waters and wetlands. The individual and cumulative impacts of activities authorized by this NWP are evaluated against the current environmental setting. This approach is consistent with the Council on Environmental Quality’s definition of “effects or impacts” at 40 CFR 1508.1(g): “Effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives.” The estimated use of this NWP, as well as the estimated authorized impacts and required compensatory mitigation, over the next 5 years are reasonably foreseeable and have a reasonably close causal relationship to the reissuance of this NWP.

The following evaluation comprises the NEPA analysis, the public interest review specified in 33 CFR 320.4(a)(1) and (2), and the impact analysis specified in Subparts C through F of the 404(b)(1) Guidelines (40 CFR Part 230).

The issuance of an NWP is based on a general assessment of the effects on public interest and environmental factors that are likely to occur as a result of using this NWP to authorize activities in waters of the United States. As such, this assessment must be speculative or predictive in general terms. Since NWPs authorize activities across the nation, projects eligible for NWP authorization may be constructed in a wide variety of environmental settings, and affect waters and wetlands of varying quality, from severely degraded to performing one or more functions to a high degree. Nationwide permit activities may result in permanent or temporary losses of aquatic resources, or partial or complete losses of aquatic resources. Therefore, it is difficult to predict all of the direct and indirect impacts that may be associated with each activity authorized by an NWP. For example, the NWP that authorizes 25 cubic yard discharges of dredged or fill material into various types of waters of the United States may be used to fulfill a variety of project purposes, and the direct and indirect effects may vary depending on the specific activity and the environmental characteristics of the site in which the activity takes place. Therefore, certain NWPs require pre-construction notification for certain activities to provide district engineers the opportunity to review proposed activities on a case-by-case basis and determine whether they will result in no more than minimal individual and cumulative adverse environmental effects.

Indication that a factor is not relevant to a particular NWP does not necessarily mean that the NWP would never have an effect on that factor, but that it is a factor not readily identified with the authorized activity. Factors may be relevant, but the adverse effects on the aquatic environment are negligible, such as the impacts of a boat ramp on water level fluctuations or flood hazards. Consistent with 40 CFR 1501.8(g), only the reasonably foreseeable effects or impacts that have a reasonably close causal relationship to the activities authorized as a result of the reissuance of this NWP are evaluated in detail in the environmental assessment for this NWP. Division and district engineers will impose, as necessary, additional conditions on the NWP authorization or exercise discretionary authority to address regionally or locally important factors or to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects. In any case, adverse effects will be controlled by the terms, conditions, and additional provisions of the NWP. For example, Section 7 Endangered Species Act consultation will be required for all activities that may affect endangered or threatened species or critical habitat (see 33 CFR 330.4(f) and NWP general condition 18).

In a specific watershed, division or district engineers may determine that the cumulative adverse environmental effects of activities authorized by this NWP are more than minimal. Division and district engineers will conduct more detailed assessments for geographic areas that are determined to be potentially subject to more than minimal cumulative adverse environmental effects. Division and district engineers have the authority to require individual permits in watersheds or other geographic areas where the cumulative adverse environmental effects are determined to be more than minimal, or add conditions to the NWP either on a case-by-case or regional basis to require mitigation measures to ensure that the cumulative adverse environmental effects of these activities are no more than minimal. When a division or district engineer determines, using local or regional information, that a watershed or other geographic area is subject to more than minimal cumulative adverse environmental effects due to the use of this NWP, he or she will use the revocation and modification procedure at 33 CFR 330.5. In reaching the final decision, the division or district engineer will compile information on the cumulative adverse effects and supplement the information in this document.

The Corps expects that the convenience and time savings associated with the use of this NWP will encourage applicants to design their projects within the scope of the NWP rather than request individual permits for projects which could result in greater adverse impacts to the aquatic environment. The minimization encouraged by the issuance of this NWP, as well as compensatory mitigation that may be required for specific activities authorized by this NWP, is likely to help reduce cumulative effects to the Nation's wetlands, streams, and other aquatic resources.

5.2 Impact Analysis

This NWP authorizes discharges of dredged or fill material into waters of the United States for surface coal mining activities that are already authorized, or are currently being processed by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977. These activities include contour mining, mountaintop mining, and area mining. Activities authorized by this NWP can result in the loss of no more than 1/2-acre of waters of the United States.

Pre-construction notification is required for all activities authorized by this NWP. The pre-construction notification requirement allows district engineers to review proposed activities on a case-by-case basis to ensure that the individual and cumulative adverse environmental effects of those activities are no more than minimal. If the district engineer determines that the adverse environmental effects of a particular project are more than minimal after considering mitigation, then discretionary authority will be asserted and the applicant will be notified that another form of DA authorization, such as a regional general permit or individual permit, is required (see 33 CFR 330.4(e) and 330.5).

The potential impacts of activities authorized by this NWP on the Corps' public interest review factors listed in 33 CFR 320.4(a)(1) are discussed in more detail in section 6.0 of this document. The potential impacts on the aquatic environment that could be caused by discharges of dredged or fill material into waters of the United States authorized by this NWP are discussed, in general terms, in section 8.0 of this document in the Clean Water Act Section 404(b)(1) Guidelines analysis.

The terms of this NWP, including any acreage limits or any other quantitative limits in the text of the NWP, the protections provided by many of the NWP general conditions, plus any regional conditions imposed by division engineers and activity-specific conditions imposed by district engineers will help ensure that the activities authorized by this NWP result in no more than minimal individual and cumulative adverse environmental effects. An additional safeguard is the ability of district engineers to exercise discretionary authority and require project proponents to obtain individual permits for proposed activities whenever a district engineer determines that a proposed activity will result in more than minimal individual or cumulative adverse environmental effects after considering any mitigation proposed by the applicant (see 33 CFR 330.1(e)(3)).

The Council on Environmental Quality's NEPA regulations at 40 CFR 1508.1(g) defines "effects or impacts' as "changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." Furthermore, 40 CFR 1508.1(g)(2) states that:

> [a] "but for" causal relationship is insufficient to make an agency responsible for a particular effect under NEPA. Effects should generally not be considered if they are remote in time, geographically remote, or the product of a lengthy causal chain. Effects do not include those effects that the agency has no ability to prevent due to its limited statutory authority or would occur regardless of the proposed action.

Therefore, the impact analysis in this environmental assessment focuses on the impacts or effects that are reasonably foreseeable and have a reasonably close causal relationship to the activities authorized by this NWP under the Corps' permitting authorities (i.e., work in navigable waters regulated under Section 10 of the Rivers and Harbors Act of 1899 and/or discharges of dredged or fill material into waters of the United States regulated under Section 404 of the Clean Water Act).

This NWP authorizes discharges of dredged or fill material into waters of the United States. The Corps' regulations define "dredged material" as "material that is excavated or dredged from waters of the United States." [33 CFR 323.2(c)] The term "discharge of dredged material" means "any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States." [33 CFR 323.2(d)(1)] The term "discharge of dredged material" includes, but is not limited to, (1) the addition of dredged material to a specified discharge site located in waters of the United States; (2) the runoff or overflow from a contained land or water disposal area; and (3) any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation. [33 CFR 323.2(d)(1)]

Under 33 CFR 323.2(d)(2), the term “discharge of dredged material” does not include any of the following:

> (1) discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill). These discharges are subject to section 402 of the Clean Water Act even though the extraction and deposit of such material may require a permit from the Corps or applicable State section 404 program.
>
> (2) Activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chainsawing) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material.
>
> (3) Incidental fallback.

The term “fill material” is defined at 33 CFR 323.2(e)(1) as meaning “material placed in waters of the United States where the material has the effect of: (1) replacing any portion of a water of the United States with dry land; or (2) changing the bottom elevation of any portion of a water of the United States. Examples of fill material include: “rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States.” [33 CFR 323.2(e)(2)] “Fill material” does not include trash or garbage (see 33 CFR 323.2(e)(3)). Discharges of trash or garbage may be regulated under Section 402 of the Clean Water Act or other federal, state, or local laws and regulations.

The Corps’ regulations define the term “discharge of fill material” as meaning “the addition of fill material into waters of the United States.” [33 CFR 323.2(f)] Examples of discharges of fill material provided in section 323.2(f) include, but are not limited to, the following activities: (1) the placement of fill that is necessary for the construction of any structure or infrastructure in a water of the United States; (2) the building of any structure, infrastructure, or impoundment requiring rock, sand, dirt, or other material for its construction; (3) site-development fills for recreational, industrial, commercial, residential, or other uses; (4) causeways or road fills; (5) dams and dikes; (6) artificial islands; (7) property protection and/or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; (8) beach nourishment; (9) levees; (10) fill for structures such as sewage treatment facilities, intake and outfall pipes associated with power plants and subaqueous utility lines; (11)_ placement of fill material for construction or maintenance of any liner, berm, or other infrastructure associated with solid waste landfills; (12) placement of overburden, slurry, or tailings or similar mining-related materials; and

(13) artificial reefs. Under 33 CFR 323.2(f), the term “discharge of fill material” does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products.

Discharges of dredged or fill material into a jurisdictional water or wetland authorized under Section 404 of the Clean Water Act may result in the complete or partial loss of stream bed, wetland area, or area of another type of aquatic resource. That complete or partial loss of aquatic ecosystem area may result in a complete or partial loss of aquatic resource functions and services. The direct effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may change those waters and wetlands to components of the built environment or uplands, convert an aquatic resource type to another aquatic resource type, or alter the functions and services provided by those waters and wetlands. The direct effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may be permanent or temporary. The indirect effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may also convert an aquatic resource type to another aquatic resource type. The indirect effects to jurisdictional waters and wetlands caused by activities authorized by this NWP may be permanent or temporary. The contribution of activities authorized by this NWP to cumulative or aggregate effects to ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources is also dependent on the degree or magnitude to which the potentially affected aquatic resources perform ecological functions and services. Nearly all ocean waters, estuaries, lakes, wetlands, streams, and other aquatic resources have been directly and indirectly affected by human activities over time (e.g., Halpern et al. 2008 for oceans, Lotze et al. 2006 for estuaries, Zedler and Kercher (2005) for wetlands, Allan 2004 for streams), including land uses in areas that drain to these aquatic resources.

This NWP also authorizes work in navigable waters of the United States, more specifically discharges of dredged or fill material into waters of the United States that are also navigable waters of the United States as defined in 33 CFR part 329. The Corps’ section 10 regulations define the term “work” as including, “without limitation, any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States.” [33 CFR 322.2(c)] Under this NWP, the section 10 authorization applies to discharges of dredged or fill material into waters of the United States that are also navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Work in navigable waters of the United States, such as discharges of dredged or fill material, may alter the ecological functions and services performed by those navigable waters.

Work in navigable waters of the United States does not typically result in losses of navigable waters. Examples of exceptions would include fills in navigable waters to create fast land along the shoreline, or artificial islands. Work in navigable waters may alter the physical, chemical, and biological characteristics of those waters, but they generally do not result in a loss in the quantity of navigable waters. Work in navigable waters may alter the ecological functions and services provided by those waters. Those alterations will vary, depending on the specific characteristics of the specific activity authorized by this NWP and the environmental setting in which the NWP activity may occur. The environmental setting will vary from site to site, and from region to region across the country.

The individual environmental impacts are the environmental impacts caused by an activity authorized by this NWP, including the direct and indirect impacts caused by the specific NWP activity at the project site. In the context of the Corps' public interest review (33 CFR 320.4(a)(1) and Section 404(e) of the Clean Water Act, the cumulative environmental impacts are the environmental impacts caused by the activities authorized by this NWP during the 5-year period the NWP is anticipated to be in effect. Both the individual and cumulative environmental impacts are evaluated against the current environmental setting, which is described at a national scale in section 4.0 of this document. The current environmental setting varies substantially throughout the United States. In some areas of the country, the current environmental setting is the result of substantial alteration of waterbodies and other ecosystems by various human activities, but in other areas of the country, the current environmental setting has been less affected by various human activities, and those alterations are more subtle and more difficult to discern (Clewell and Aronson 2013). The categories of human activities that have altered aquatic ecosystems are discussed in section 4.4 of this document, and are summarized in Table 4.6. The types of ecological functions and services provided by aquatic ecosystems also vary considerably by region and by specific ecosystems, with some ecosystems performing ecological functions and services to a high degree, and other ecosystems performing ecological functions and services to a lesser degree.

The analysis of environmental consequences in this environmental assessment is a qualitative analysis because of the lack of quantitative data at a national scale on the various human activities and natural factors that may concurrently alter the current environmental setting during the 5-year period this NWP is expected to be in effect. As discussed in section 4.4, the activities authorized by this NWP are just one category among many categories of human activities and natural factors that affect ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources, and the ecological functions and services they provide.

As discussed in section 4.0 of this document and the Millennium Ecosystem Assessment (2005c), all ecosystems have been affected by human activities to some degree. According to Clewell and Aronson (2013), anthropogenic and natural disturbances to ecosystems can be placed in three categories: (1) stress with maintenance of ecosystem integrity; (2) moderate disturbance where the ecosystem can recover in time through natural processes; and (3) impairment, which may result in a more severe disturbance that may require human intervention (e.g., restoration) to prevent the ecosystem from changing into an alternative, perhaps less functional ecological state. Ecosystems can often tolerate gradual changes and continue to provide ecological functions and services before those changes reach a threshold, that when crossed, causes the ecosystem to change abruptly into an alternative stable state (Scheffer et al. 2001). For some ecosystems, multiple impacts or disturbances can cause an ecosystem to pass a threshold can result in substantial changes to that ecosystem, but for other ecosystems the changes may be more subtle (Folke et al. 2004). It is difficult to predict where these thresholds are, and ecosystems may exhibit little change before that threshold is reached (Scheffer et al. 2009).

The severity of potential impacts to aquatic resources caused by NWP activities is dependent, in part, on ecosystem resilience and resistance, whether the permitted impacts are temporary or permanent, and how the affected resources respond to the permitted impacts. Impacts to aquatic resources caused by NWP activities may result in a partial, total, or no loss of aquatic resource functions and services, depending on the specific characteristics of the NWP activity and the environmental setting in which those impacts occur. In addition, the duration of the adverse effects (temporary or permanent) caused by NWP activities, can be influenced by the resilience and resistance of the aquatic resource to disturbances caused by those NWP activities. Since there is considerable variation across the country in terms of the types of aquatic resources, the ecological functions and services they provide, and their resilience and resistances to disturbances caused by NWP activities, other human activities, and natural disturbances, the environmental consequences of the issuance of this NWP will vary by site and by region. Given the geographic scope in which this NWP can be used to authorize activities that require DA authorization and the wide variability in aquatic resource structure, functions, and dynamics from site to site and from region to region, the analysis of environmental consequences is a qualitative analysis.

The environmental effects or impacts that are likely to be caused by individual activities authorized by this NWP are evaluated against the current environmental setting (i.e., the affected environment, which is described at a national scale in section 4.0 of this document). The current environmental setting is the result of human activities altering ecosystems over thousands of years (Perring and Ellis 2013), as well as natural changes in environmental conditions that have occurred over time. Since historical baselines (i.e., the state of ecosystems in the absence of modifications caused by human activities) no longer exist in most areas, ecosystem management decisions should be made by using contemporary baselines that acknowledge how humans have dominated and changed ecosystems over long periods of time (Kopf et al. 2015). Permit decisions are an example of management decisions for ecosystems such as oceans, estuaries, lakes, rivers, streams, and wetlands, where the proposed impacts that require a permit are evaluated against the current environmental setting to decide whether the permit (e.g., an NWP authorization) should be issued by the regulatory authority.

The impacts of activities authorized by this NWP during the 5-year period it is anticipated to be in effect are evaluated against the current affected environment, to determine the potential severity of those anticipated impacts in light of the human alterations and natural changes to aquatic ecosystems that have occurred over time and space. This evaluation takes into account how the activities authorized by this NWP might affect aquatic ecosystems, the resilience of aquatic ecosystems, and the ability of aquatic ecosystems to continue to provide ecological functions and services after the authorized activities have occurred. When evaluating pre-construction notifications, district engineers should be taking into account the current environmental setting, as well as how the jurisdictional waters and wetlands might respond as a result of conducting the NWP activity, including how resilient those waters and wetlands are to disturbances caused by discharges of dredged or fill material and/or structures or work in navigable waters.

Compensatory mitigation required by district engineers for specific activities authorized by this NWP may help reduce the contribution of those activities to the cumulative effects caused by NWPs on the Nation's wetlands, streams, and other aquatic resources, by providing ecological functions to partially or fully replace some or all of the aquatic resource functions lost as a result of those activities. Mitigation requirements, including compensatory mitigation requirements for the NWPs, are described in general condition 23. Compensatory mitigation projects must also comply with the applicable provisions of 33 CFR part 332. District engineers will establish compensatory mitigation requirements on a case-by-case basis, after evaluating pre-construction notifications. Compensatory mitigation requirements for individual NWP activities will be specified through permit conditions added to NWP authorizations. When compensatory mitigation is required, the permittee is required to submit a mitigation plan prepared in accordance with the requirements of 33 CFR 332.4(c). Credits from approved mitigation banks or in-lieu fee programs may also be used to satisfy compensatory mitigation requirements for NWP authorizations. Monitoring is required to demonstrate whether the permittee-responsible mitigation project, mitigation bank, or in-lieu fee project is meeting its objectives and providing the intended aquatic resource structure and functions. If the compensatory mitigation project is not meeting its objectives, adaptive management will be required by the district engineer. Adaptive management may involve taking actions, such as site modifications, remediation, or design changes, to ensure the compensatory mitigation project meets its objectives (see 33 CFR 332.7(c)).

The estimated use of this NWP during the 5-year period the NWP is expected to be in effect and the estimated impacts to wetlands, streams, and other aquatic resources in the United States, plus the estimated acreage of compensatory mitigation, is provided in section 8.2.2 of this document. Division and district engineers will monitor the use of this NWP on a regional and case-specific basis, and under their authorities in 33 CFR 330.5(c) and (d), modify, suspend, or revoke NWP authorizations in situations when the use of the NWP will result in more than minimal cumulative adverse environmental effects. Because the activities authorized by this NWP constitute only a small proportion of the categories of human activities that directly and indirectly affect ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources, the activities authorized by this NWP over the next 5 years are likely to result in only a minor incremental change to the current environmental setting for ocean waters, estuarine waters, lakes, wetlands, streams, and other aquatic resources and the ecological functions and services they provide.

Under 33 CFR 330.4(f)(2), for an NWP activity proposed by a non-federal permittee, the district engineer will review the pre-construction notification and if she or he determines the proposed NWP activity may affect listed species or designated critical habitat, section 7 consultation will be conducted with the U.S. Fish and Wildlife Service (U.S. FWS) or National Marine Fisheries Service (NMFS) depending on which species the district engineer determined may be affected by the proposed NWP activity. During the ESA section 7 consultation process the U.S. FWS or NMFS will evaluate the effects caused by a proposed NWP activity, the environmental baseline, the status of the species and critical habitat, and the effects of any future state or private activities that are reasonably certain to occur within the action area. For formal ESA section 7 consultations, the U.S. FWS or NMFS will formulate their opinion as to whether the proposed NWP activity is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat (see 50 CFR 402.14(g)). The ESA section 7 consultation requirements may also be fulfilled through informal consultation, when the U.S. FWS or NMFS provide their written concurrence that the proposed activity is not likely to adversely affect endangered or threatened species or their designated critical habitat (see 50 CFR 402.13(c)).

When determining whether a proposed NWP activity will cause no more than minimal individual and cumulative adverse environmental effects, the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by the NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. These criteria are listed in the NWPs in Section D, “District Engineer’s Decision.” The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

Additional conditions can be placed on proposed activities on a regional or case-by-case basis by division or district engineers to ensure that the activities have no more than minimal individual and cumulative adverse environmental effects. Regional conditions added to this NWP will be used to account for differences in aquatic resource functions, services, and values across the country, ensure that the NWP authorizes only those activities with no more than minimal individual and cumulative adverse environmental effects, and allow each Corps district to prioritize its workload based on where its efforts will best serve to protect the aquatic environment. Regional conditions can prohibit the use of an NWP in certain waters (e.g., high value waters or specific types of wetlands or waters. Specific NWPs can also be revoked on a geographic or watershed basis where the individual and cumulative adverse environmental effects resulting from the use of those NWPs are more than minimal.

In high value waters, division and district engineers can: 1) prohibit the use of the NWP in those waters and require an individual permit or regional general permit; 2) impose an acreage limit for the NWP; 3) add regional conditions to the NWP to ensure that the adverse environmental effects are no more than minimal; or 4) for those NWP activities that require pre-construction notification, add special conditions to NWP authorizations, such as compensatory mitigation requirements, to ensure that the adverse environmental effects are no more than minimal. NWPs can authorize activities in high value waters as long as the individual and cumulative adverse environmental effects are no more than minimal.

The construction and use of fills for temporary access for construction may be authorized by NWP 33 or regional general permits. The related activity must meet the terms and conditions of the specified permit(s). If the activity is dependent on portions of a larger project that require an individual permit, this NWP will not apply. [See 33 CFR 330.6(c) and (d)]

5.3 Impact Analysis for Alternatives to the Proposed Action

<u>5.3.1 No Action Alternative (Do Not Modify or Reissue the Nationwide Permit)</u>

The no action alternative would not achieve one of the goals of the Corps' Nationwide Permit Program, which is to regulate with little, if any, delay or paperwork certain activities having minimal impacts (33 CFR 330.1(b)). The no action alternative would also reduce the Corps' ability to pursue the current level of review for other activities that have greater adverse effects on the aquatic environment, including activities that require individual permits as a result of division or district engineers exercising their discretionary authority under the NWP program. The no action alternative would also reduce the Corps' ability to conduct compliance actions.

If this NWP is not available, substantial additional resources would be required for the Corps to evaluate these minor activities through the individual permit process, and for the public and federal, tribal, and state resource agencies to review and comment on the large number of public notices for these activities. In a considerable majority of cases, when the Corps publishes public notices for proposed activities that result in no more than minimal adverse environmental effects, the Corps typically does not receive responses to these public notices from either the public or federal, tribal, and state resource agencies. Therefore, processing individual permits for these minimal impact activities is not likely to result in substantive changes to those activities. Another important benefit of the NWP program that would not be achieved through the no action alternative is the incentive for project proponents to design their projects so that those activities meet the terms and conditions of an NWP. The Corps believes the NWPs have significantly reduced adverse effects to the aquatic environment because most applicants modify their activities that require DA authorization to comply with the NWPs and avoid the longer permit application review times and larger costs typically associated with the individual permit process.

Under the no action alternative, district engineers may issue regional general permits or programmatic general permits to authorize similar categories of activities that would have no more than minimal adverse environmental effects that could have been authorized by this NWP. However, those regional general permits or programmatic general permits may have different quantitative limits, different restrictions, and other permit conditions, and those quantitative limits, restrictions, and permit conditions may result in the authorization of activities that have greater, similar, or lesser adverse environmental effects than the activities that would have been authorized by this NWP. Under the no action alternative, there may be differences in consistency in implementation of the Corps Regulatory Program among Corps districts. District engineers can tailor their regional general permits and programmatic general permits to effectively address the specific categories of aquatic resources found in their geographic areas of responsibility, the specific categories of activities that occur in those geographic areas, and the ecological functions and services those categories of aquatic resources provide. The environmental consequences of this aspect of the no action alternative are more difficult to predict because of the potential variability of regional general permits and programmatic general permits among Corps districts across the country, when such general permits are available to authorize a similar category of activities as this NWP authorizes.

If this NWP is not reissued, districts would have to draft, propose, and issue regional general permits or programmatic general permits through the public notice and comment process and prepare applicable environmental documentation to support their decisions on whether to issue those regional general permits or programmatic general permits. It would take a substantial amount of time to issue those regional general permits and programmatic general permits, and in the interim proposed activities would have to be authorized through the individual permit process.

5.3.2 Reissue the Nationwide Permit With Modifications

This NWP was developed to authorize discharges of dredged or fill material into waters of the United States associated with surface coal mining and reclamation operations that have no more than minimal individual and cumulative adverse environmental effects. The Corps has considered changes to the terms and conditions of this NWP suggested by comments received in response to the proposed rule, as well as modifying or adding NWP general conditions, as discussed in section 1.4 of this document and the preamble of the Federal Register notice announcing the modification and reissuance of this NWP.

Changing the terms and conditions of this NWP would likely result in changes the number of activities authorized by this NWP, and the environmental impacts of authorized activities. The environmental consequences of changing the terms and conditions of this NWP may vary, depending on whether modifications for the reissued NWP are more restrictive, less restrictive, or is similarly restrictive compared to previously issued versions of this NWP. The environmental consequences of changing the terms and conditions of this NWP are also dependent on the application of existing tools used to ensure that activities authorized by this NWP will only have no more than minimal adverse environmental effects. Those tools include the quantitative limits of the NWP, the pre-construction notification process, and the ability of division and district engineers to modify, suspend, or revoke this NWP on a regional or case-by-case basis.

Changing the national terms and conditions of this NWP may change the incentives for project proponents to reduce their proposed impacts to jurisdictional waters and wetlands to qualify for NWP authorization, and receive the required DA authorization for regulated activities in less time than it would take to receive individual permits for those activities. Under the individual permit process, the project proponent may request authorization for activities that have greater impacts on jurisdictional waters and wetlands, and may result in larger losses of aquatic resource functions and services. The NWP program has been effective in reducing losses of jurisdictional waters and wetlands, with a substantial majority of losses of waters of the United States authorized by NWP being 1/10-acre or less (see figure 5.1 of the regulatory impact analysis for this rule).

The environmental consequences of division engineers exercising their discretionary authority to modify, suspend, or revoke this NWP on a regional basis may be a reduction in the number of activities that could be authorized by this NWP in a region or more NWP activities requiring pre-construction notification through regional changes in the PCN requirements for this NWP. The environmental consequences are likely to include reduced losses of waters of the United States because regional conditions can only further condition or restrict the applicability of an NWP (see 33 CFR 330.1(d)). The modification, suspension, or revocation of this NWP on a regional basis by division engineers may also reduce the number of activities authorized by this NWP, which may increase the number of activities that require standard individual permits. If more activities require standard individual permits, permitted losses of jurisdictional waters and wetlands may increase because standard individual permits have no quantitative limits.

An environmental consequence of regional conditions added to the NWPs by division engineers is the enhanced ability to address differences in aquatic resource functions, services, and values among different regions across the nation. Corps divisions may add regional conditions to the NWPs to enhance protection of the aquatic environment in a region (e.g., a Corps district, state, or watershed) and address regional concerns regarding jurisdictional waters and wetlands and other resources (e.g., listed species or cultural resources) that may be affected or impacted by the activities authorized by this NWP. Division engineers can also revoke an NWP in a region if the use of that NWP results in more than minimal adverse environmental effects, especially in high value or rare waters or wetlands. When an NWP is issued or reissued by the Corps, division engineers issue supplemental documents that evaluate potential impacts of the NWP at a regional level, and assess cumulative impacts caused by this NWP on a regional basis during the period this NWP is in effect. [33 CFR 330.5(c)]

An environmental consequence of district engineers modify, suspending, or revoking this NWP on a case-by-case basis is the ability of district engineers to address site-specific conditions, including the degree to which aquatic resources on the project site provide ecological functions and services. Activity-specific modifications may also address site-specific resources (e.g., listed species or cultural resources) that may be affected by NWP activities. The environmental consequences of modification of this NWP on an activity-specific basis by district engineers may be further reductions in losses of waters of the United States for specific activities authorized by NWP because of mitigation required by district engineers during their reviews of PCNs to ensure that those activities result in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). Examples of mitigation that may be required by district engineers include permit conditions requiring compensatory mitigation to offset losses of waters of the United States or conditions added to the NWP authorization to prohibit the permittee from conducting the activity during specific times of the year to protect spawning fish and shellfish. If a proposed NWP activity will result in more than minimal adverse environmental effects, then the district engineer will exercise discretionary authority and require an individual permit. The individual permit review process requires a project-specific alternatives analysis, including the consideration of off-site alternatives, and a public interest review.

5.3.3 Reissue the Nationwide Permit Without Modifications

Retaining the current terms and conditions of this NWP would likely result in little or no changes in the number of activities authorized by this NWP, and the environmental impacts of authorized activities. Project proponents would likely continue to design their project to qualify for NWP authorization. Retaining the current national terms and conditions of this NWP would likely continue to provide incentives for project proponents to reduce their proposed impacts to jurisdictional waters and wetlands to qualify for NWP authorization, and receive the required DA authorization for regulated activities in less time than it would take to receive individual permits for those activities. Under this alternative, for those activities that require individual permits project proponents may request authorization for activities that have greater impacts on jurisdictional waters and wetlands, and may result in larger losses of aquatic resource functions and services. The NWP program has been effective in reducing losses of jurisdictional waters and wetlands, with a substantial majority of losses of waters of the United States authorized by NWP being 1/10-acre or less (see figure 5.1 of the regulatory impact analysis for this rule).

Under this alternative, the environmental consequences of division engineers exercising their discretionary authority to modify, suspend, or revoke this NWP on a regional basis would be similar to the environmental consequences discussed in section 5.3.2. Corps divisions may add regional conditions to the NWPs to enhance protection of the aquatic environment in a region (e.g., a Corps district, state, or watershed) and address regional concerns regarding jurisdictional waters and wetlands and other resources (e.g., listed species or cultural resources) that may be affected or impacted by the activities authorized by this NWP. Division engineers can also revoke an NWP in a region if the use of that NWP results in more than minimal adverse environmental effects, especially in high value or rare waters or wetlands. When an NWP is issued or reissued by the Corps, division engineers issue supplemental documents that evaluate potential impacts of the NWP at a regional level, and assess cumulative impacts caused by this NWP on a regional basis during the period this NWP is in effect. [33 CFR 330.5(c)]

Under this alternative, the ability of district engineers to modify, suspended, or revoke this NWP on a case-by-case to address site-specific conditions, including the degree to which aquatic resources on the project site provide ecological functions and services, is likely to have environmental consequences similar to the environmental consequences of the alternative identified in section 3.2. Activity-specific modifications under this alternative may also address site-specific resources (e.g., listed species or cultural resources) that may be affected by NWP activities. Activity-specific modifications may also include mitigation requirements similar to the potential mitigation requirements discussed in section 5.3.2.

The modification and reissuance of this NWP adopts the alternative identified in section 3.2 of this document. The Corps has considered the comments received in response to the proposed rule, and made changes to the NWPs, general conditions, and definitions to address those comments. Division engineer may add regional conditions to this NWP to help ensure that the use of the NWPs in a particular geographic area will result in no more than minimal individual and cumulative adverse environmental effects. District engineers may also add regional conditions to this NWP to help ensure compliance with other applicable laws, such as Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, and the essential fish habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act. Division engineers may also add regional conditions to this NWP to fulfill its tribal trust responsibilities.

Corps divisions and districts also monitor the use of this NWP and the authorized impacts identified in NWP verification letters. At a later time, if warranted, a division engineer may add regional conditions to further restrict or prohibit the use of this NWP to ensure that it does not authorize activities that result in more than minimal adverse environmental effects in a particular geographic region (e.g., a watershed, landscape unit, or seascape unit). To the extent practicable, division and district engineers will use regulatory automated information systems and institutional knowledge about the typical adverse effects of activities authorized by this NWP, as well as substantive public comments, to assess the individual and cumulative adverse environmental effects resulting from regulated activities authorized by this NWP.

6.0 Public Interest Review

6.1 Public Interest Review Factors (33 CFR 320.4(a)(1))

For each of the 20 public interest review factors, the extent of the Corps consideration of expected impacts resulting from the use of this NWP is discussed, as well as the reasonably foreseeable cumulative adverse effects that are expected to occur. The Corps decision-making process involves consideration of the benefits and detriments that may result from the activities authorized by this NWP.

(a) <u>Conservation</u>: The activities authorized by this NWP may modify the natural resource characteristics of the project area. In response to a pre-construction notification, the district engineer may require mitigation, including compensatory mitigation, to ensure that the authorized activity will cause only minimal individual and cumulative adverse environmental effects. Compensatory mitigation, if required by the district engineer, will result in the restoration, enhancement, establishment, or preservation of aquatic habitats that will help offset losses of conservation values. The adverse effects of activities authorized by this NWP on conservation are likely to be minor.

(b) <u>Economics</u>: Surface coal mining activities may have positive impacts on local economies. These activities are likely to generate jobs and revenue for local contractors as well as revenue to companies that sell mining equipment and construction materials. The sale of coal extracted from these mines is likely to generate revenue for mining companies. The energy provided by coal-burning power plants may provide power for businesses, including manufacturing industries, as well as residences and recreational facilities. Activities authorized by this NWP may also benefit the community by improving the local economic base, which is affected by employment, tax revenues, community services, and property values.

(c) Aesthetics: Surface coal mining activities may alter the visual character of some waters of the United States. The extent and perception of these changes are likely to vary, depending on the size and configuration of the mining activities and any associated fills, the nature of the surrounding area, and the public uses of the area. Activities authorized by this NWP may also modify other aesthetic characteristics, such as air quality and the amount of noise. The increased human use of the project area and surrounding land may also alter local aesthetic values.

(d) General environmental concerns: Activities authorized by this NWP are likely to affect general environmental concerns, such as water, air, noise, and land pollution. The authorized activities may also affect the physical, chemical, and biological characteristics of the environment. The adverse effects of the activities authorized by this NWP on general environmental concerns are likely to be minor. Adverse effects to the chemical composition of the aquatic environment will be controlled by general condition 6, which states that the material used for construction must be free from toxic pollutants in toxic amounts. General condition 23 requires mitigation to minimize adverse effects to the aquatic environment through avoidance and minimization at the project site. Compensatory mitigation may be required by district engineers to ensure that the net adverse environmental effects are no more than minimal. Specific environmental concerns are discussed in other sections of this document.

(e) Wetlands: Surface coal mining activities may result in the loss or alteration of wetlands. In most cases, the affected wetlands will be permanently filled, especially where rocks and soil from coal mining activities are deposited, resulting in the permanent loss of aquatic resource functions and services. Wetlands may also be converted to other uses and habitat types. Some wetlands may be temporarily impacted by the activity through the use of temporary staging areas and access roads. These wetlands will be restored, unless the district engineer authorizes another use for the area, but the plant community may be different, especially if the site was originally forested. Compensatory mitigation may be required to offset the loss of wetlands and ensure that the adverse environmental effects are no more than minimal. Reclamation activities may also result in the restoration of wetlands.

Wetlands provide habitat, including foraging, nesting, spawning, rearing, and resting sites for aquatic and terrestrial species. The loss or alteration of wetlands may alter natural drainage patterns. Wetlands reduce erosion by stabilizing the substrate. Wetlands also act as storage areas for stormwater and flood waters. Wetlands may act as groundwater discharge or recharge areas. The loss of wetland vegetation and disturbance of wetland soils may adversely affect water quality because these plants trap sediments, pollutants, and nutrients and transform chemical compounds.

Wetland vegetation also provides habitat for microorganisms that remove nutrients and pollutants from water. Wetlands, through the accumulation of organic matter, may act as sinks for some nutrients and other chemical compounds, reducing the amounts of these substances in the water.

General condition 23 requires avoidance and minimization of impacts to waters of the United States, including wetlands, at the project site. Compensatory mitigation may be required by district engineers to ensure that the net adverse environmental effects are no more than minimal. General condition 22 prohibits the use of this NWP to discharge dredged or fill material in designated critical resource waters and adjacent wetlands, which may include high value wetlands. Division engineers can add regional conditions to this NWP to restrict or prohibit the use of this NWP in high value wetlands. District engineers will also exercise discretionary authority to require an individual permit if the wetlands to be filled are high value and the activity will result in more than minimal adverse environmental effects. District engineers can also add case-specific special conditions to the NWP authorization to provide protection to wetlands or require compensatory mitigation to offset losses of wetlands.

(f) Historic properties: General condition 20 states that in cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act have been satisfied. Reviews required under the Surface Mining Control and Reclamation Act will also ensure compliance with the National Historic Preservation Act.

(g) Fish and wildlife values: This NWP authorizes activities in waters of the United States, including streams and wetlands, which provide habitat to many species of fish and wildlife. Activities authorized by this NWP may alter the habitat characteristics of streams and wetlands, decreasing the quantity and quality of fish and wildlife habitat. Wetland and riparian vegetation provides food and habitat for many species, including foraging areas, resting areas, corridors for wildlife movement, and nesting and breeding grounds. Open waters provide habitat for fish and other aquatic organisms. Woody riparian vegetation shades streams, which reduces water temperature fluctuations and provides habitat for fish and other aquatic animals. Riparian vegetation provides organic matter that is consumed by fish and aquatic invertebrates. Woody riparian vegetation creates habitat diversity in streams when trees and large shrubs fall into the channel, forming snags that provide habitat and shade for fish. The morphology of a stream channel may be altered by activities authorized by this NWP, which can affect fish populations. However, pre-construction notification is required for all activities authorized by this NWP, which provides the district engineer with an opportunity to review the proposed activity and assess potential impacts on fish and wildlife values and ensure that the authorized activity results in no more than minimal adverse environmental effects. Compensatory mitigation may be required by district engineers to restore, enhance, establish, and/or preserve wetlands will offset losses of jurisdictional wetlands. Stream rehabilitation, enhancement, and preservation activities may be required as compensatory mitigation for impacts to streams. The establishment and maintenance of riparian areas next to open and flowing waters may also be required as compensatory mitigation. These methods of compensatory mitigation are likely to provide fish and wildlife habitat values.

General condition 2 will reduce the adverse effects to fish and other aquatic species by prohibiting activities that substantially disrupt the necessary life cycle movements of indigenous aquatic species, unless the primary purpose of the activity is to impound water. Compliance with general conditions 3 and 5 will ensure that the authorized activity has only minimal adverse effects on spawning areas and shellfish beds, respectively. The authorized activity cannot have more than minimal adverse effects on breeding areas for migratory birds, due to the requirements of general condition 4.

For an NWP activity, compliance with the Bald and Golden Eagle Protection Act (16 U.S.C. 668(a)-(d)), the Migratory Bird Treaty Act (16 U.S.C. 703; 16 U.S.C. 712), and the Marine Mammal Protection Act (16 U.S.C. 1361 et seq.) is the responsibility of the project proponent. General condition 19 states that the permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

Consultation pursuant to the essential fish habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act will occur as necessary for proposed NWP activities that may adversely affect essential fish habitat. Consultation may occur on a case-by-case or programmatic basis. Division and district engineers can impose regional and special conditions to ensure that activities authorized by this NWP will result in no more than minimal adverse effects on essential fish habitat.

(h) <u>Flood hazards</u>: The activities authorized by this NWP may affect the flood-holding capacity of 100-year floodplains, including surface water flow velocities. Changes in the flood-holding capacity of 100-year floodplains may impact human health, safety, and welfare. To minimize these adverse effects, general condition 10 requires the activity to comply with applicable FEMA-approved state or local floodplain management requirements. The requirements of general condition 10 will help ensure that the activities authorized by this NWP will have only minimal adverse effects on flood hazards. Compliance with general condition 9 will also reduce flood hazards. This general condition requires the permittee to maintain, to the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters, except under certain circumstances. Much of the land area within 100-year floodplains is upland, and outside of the Corps’ control and responsibility.

(i) Floodplain values: Activities authorized by this NWP may affect the flood-holding capacity of floodplains, as well as other floodplain values. The fish and wildlife habitat values of floodplains will be adversely affected by activities authorized by this NWP, by modifying or eliminating areas used for nesting, foraging, resting, and reproduction. The water quality functions of floodplains may also be adversely affected by these activities. Modification of the floodplain may also adversely affect other hydrological processes, such as groundwater recharge. All activities authorized by this NWP require pre-construction notification, so that district engineers can review the proposed activities on a case-by-case basis to ensure that those activities result in no more than minimal adverse environmental effects.

Compensatory mitigation may be required for activities authorized by this NWP, which will offset losses of waters of the United States and provide water quality functions and wildlife habitat. General condition 23 requires avoidance and minimization of impacts to waters of the United States to the maximum extent practicable at the project site, which will reduce losses of floodplain values. The mitigation requirements of general condition 23 will help ensure that the adverse effects of these activities on floodplain values are no more than minimal. Compliance with general condition 9 will also ensure that activities in 100-year floodplains will not cause more than minimal adverse effects on flood storage and conveyance.

(j) Land use: Activities authorized by this NWP may result in changes in land use. The mining of coal and the deposition of rock and soil from the mining operation will likely change the character of the land. Reclamation required for activities authorized by this NWP may restore natural land uses. Since the primary responsibility for land use decisions is held by state, local, and tribal governments, the Corps' control and responsibility is limited to significant issues of overriding national importance, such as navigation and water quality (see 33 CFR 320.4(j)(2)).

(k) Navigation: Activities authorized by this NWP must comply with general condition 1, which states that no activity may cause more than minimal adverse effects on navigation. This NWP requires pre-construction notification for all authorized activities, which will allow district engineers to review the proposed activity and determine whether adverse effects on navigation will be no more than minimal.

(l) Shore erosion and accretion: The activities authorized by this NWP may have minor direct effects on shore erosion and accretion processes, since surface coal mining activities are usually located in inland areas. Nationwide permit 13, regional general permits, or individual permits may be used to authorize bank stabilization projects associated with surface coal mining activities, which may affect shore erosion and accretion.

(m) Recreation: Activities authorized by this NWP may change the recreational uses of the area. Certain recreational activities, such as bird watching, hunting, and fishing may no longer be available in the area during the mining operation, but these activities might resume after the mined area has been successfully reclaimed. Some surface coal mining activities may permanently eliminate recreational uses of the area. Reclaimed mine sites may be used for hunting and other recreational activities.

(n) Water supply and conservation: Activities authorized by this NWP may adversely affect both surface water and groundwater supplies. During surface coal mining activities, there may increases in the demand for potable water in the region. The deposition of rock and soil from surface coal mining activities may alter groundwater recharge areas, which could decrease replenishment of groundwater supplies. Surface water flow patterns may be affected by the authorized activity. Activities authorized by this NWP can also affect the quality of water supplies by adding pollutants to surface waters and groundwater, but many causes of water pollution, such as discharges regulated under Section 402 of the Clean Water Act, are outside the Corps' control and responsibility. The quantity and quality of local water supplies may be enhanced through the construction of water treatment facilities. Division and district engineers can prohibit the use of this NWP in watersheds for public water supplies, if it is in the public interest to do so. General condition 7 prohibits discharges in the vicinity of public water supply intakes. Compensatory mitigation may be required for activities authorized by this NWP, which will help maintain or improve the quality of surface waters.

(o) Water quality: Surface coal mining activities in wetlands and open waters may have adverse effects on water quality. These activities can cause increases in nutrients, sediments, and pollutants in the water. They may release chemicals that can adversely affect water quality. The loss of wetland and riparian vegetation may adversely affect water quality because these plants trap sediments, pollutants, and nutrients and transform chemical compounds. Wetland and riparian vegetation also provides habitat for microorganisms that remove nutrients and pollutants from water. Wetlands, through the accumulation of organic matter, act as sinks for some nutrients and other chemical compounds, reducing the amounts of these substances in the water column. Wetlands and riparian areas also decrease the velocity of flood waters, removing suspended sediments from the water column and reducing turbidity. Riparian vegetation also serves an important role in the water quality of streams by shading the water from the intense heat of the sun. Compensatory mitigation may be required for activities authorized by this NWP, to ensure that those activities do not have more than minimal adverse environmental effects, including water quality. Wetlands and riparian areas restored, reestablished, enhanced, or preserved as compensatory mitigation are likely to provide local water quality benefits.

During surface coal mining operations, small amounts of oil and grease from mining and construction equipment may be discharged into the waterway. The frequency and concentration of these discharges are not expected to have more than minimal adverse effects on overall water quality.

The activities authorized by this NWP typically require Clean Water Act section 401 water quality certifications, because this NWP authorizes discharges of dredged or fill material into waters of the United States. Most water quality concerns are addressed by the state or tribal section 401 agency. The Office of Surface Mining or the state mining agency may require the permittee to implement water quality management measures that minimize the degradation of the downstream aquatic environment, including water quality. The reestablishment and maintenance of riparian areas may be required for activities authorized by the NWP, if there are streams or other open waters on the project site. The riparian areas will help protect downstream water quality and enhance the aquatic habitat.

(p) Energy needs: During surface coal mining activities, the activities authorized by this NWP may increase energy consumption in the area, especially electricity, natural gas, and petroleum products. The coal extracted from mines is likely to be used to fuel power plants, thereby providing energy to people. Existing infrastructure may have to be expanded to distribute the electricity generated by power plants to cities and other areas.

(q) Safety: The activities authorized by this NWP will be subject to Federal, state, and local safety laws and regulations. Therefore, the activities authorized by this NWP are not likely to adversely affect the safety of the project area.

(r) Food and fiber production: Activities authorized by this NWP may adversely affect food and fiber production, especially where rock and soil from surface coal mining activities are deposited in farm fields. The use of farmland for the disposal of mined material and wastes may reduce the amount of available agricultural land in the nation, unless that land is replaced by converting other land, such as forest, to agricultural land. After reclamation, some previously mined areas may be used for agricultural production. The loss of farmland is more appropriately addressed through the land use planning and zoning authority held by state and local governments.

(s) Mineral needs: Activities authorized by this NWP may increase demand for aggregates and stone, which could be used for mining activities. Activities authorized by this NWP may increase the demand for other building materials, such as steel, aluminum, and copper, which are made from mineral ores.

(t) Considerations of property ownership: The NWP complies with 33 CFR 320.4(g), which states that an inherent aspect of property ownership is a right to reasonable private use. The NWP provides expedited DA authorization for activities in waters of the United States for surface coal mining activities, provided the activities comply with the terms and conditions of the NWP and result in no more than minimal adverse environmental effects.

6.2 Additional Public Interest Review Factors (33 CFR 320.4(a)(2))

6.2.1 Relative extent of the public and private need for the proposed structure or work

This NWP authorizes discharges of dredged or fill material into waters of the United States for surface coal mining activities that have no more than minimal individual and cumulative adverse environmental effects. These activities satisfy public and private needs for energy. The need for this NWP is based upon the number of these activities that occur annually with no more than minimal individual and cumulative adverse environmental effects.

6.2.2 Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work

Most situations in which there are unresolved conflicts concerning resource use arise when environmentally sensitive areas are involved (e.g., special aquatic sites, including wetlands) or where there are competing uses of a resource. The nature and scope of the activity, when planned and constructed in accordance with the terms and conditions of this NWP, reduce the likelihood of such conflict. In the event that there is a conflict, the NWP contains provisions that are capable of resolving the matter (see Section 1.2 of this document).

General condition 23 requires permittees to avoid and minimize adverse effects to waters of the United States to the maximum extent practicable on the project site. Consideration of off-site alternative locations is not required for activities that are authorized by general permits. General permits authorize activities that have no more than minimal individual and cumulative adverse effects on the environment and the overall public interest. The district engineer will exercise discretionary authority and require an individual permit if the proposed activity will result in more than minimal adverse environmental effects on the project site. The consideration of off-site alternatives can be required during the individual permit process.

6.2.3 The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited

The nature and scope of the activities authorized by the NWP will most likely restrict the extent of the beneficial and detrimental effects to the area immediately surrounding the surface coal mining activity. Activities authorized by this NWP will have no more than minimal individual and cumulative adverse environmental effects.

The terms, conditions, and provisions of the NWP were developed to ensure that individual and cumulative adverse environmental effects are no more than minimal.

Specifically, NWPs do not obviate the need for the permittee to obtain other Federal, state, or local authorizations required by law. The NWPs do not grant any property rights or exclusive privileges (see 33 CFR 330.4(b) for further information). Additional conditions, limitations, restrictions, and provisions for discretionary authority, as well as the ability to add activity-specific or regional conditions to this NWP, will provide further safeguards to the aquatic environment and the overall public interest. There are also provisions to allow suspension, modification, or revocation of the NWP by division or district engineers.

7.0 Endangered and Threatened Species

No activity is authorized by any NWP if that activity is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA), or to destroy or adversely modify the critical habitat of such species (33 CFR 330.4(f)). If the district engineer determines a proposed NWP activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) as appropriate. The proposed NWP activity is not authorized until the ESA section 7 consultation process is completed or the district engineer determines the proposed NWP activity will have no effect on listed species or designated critical habitat. Current local procedures in Corps districts are effective in ensuring compliance with ESA. Those local procedures include regional programmatic consultations and the development of Standard Local Operating Procedures for Endangered Species (SLOPES). The issuance or reissuance of an NWP, as governed by NWP general condition 18 (which applies to every NWP and which relates to endangered and threatened species and critical habitat) and 33 CFR 330.4(f), results in “no effect” to listed species or critical habitat, because no activity that “may affect” listed species or critical habitat is authorized by NWP unless ESA Section 7 consultation with the USFWS and/or NMFS has been completed. If the non-federal project proponent does not comply with 33 CFR 330.4(f)(2) and general condition 18, and does not submit the required PCN, then the activity is not authorized by NWP. In such situations, it is an unauthorized activity and the Corps district will determine an appropriate course of action under its regulations at 33 CFR part 326 to respond to the unauthorized activity. Unauthorized activities may also be subject to the prohibitions of Section 9 of the ESA.

Each activity authorized by an NWP is subject to general condition 18, which states that “[n]o activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation.” In addition, general condition 18 explicitly states that the NWP does not authorize “take” of threatened or endangered species, which will ensure that permittees do not mistake the NWP authorization as a Federal authorization to take threatened or endangered species. General condition 18 also requires a non-federal permittee to submit a pre-construction notification to the district engineer if any listed species or designated critical habitat (or proposed species or proposed critical habitat) might be affected or is in the vicinity of the project, or if the project is located in designated or proposed critical habitat. The Corps established the “might affect” threshold in 33 CFR 330.4(f)(2) and paragraph (c) of general condition 18 because it is more stringent than the “may affect” threshold for section 7 consultation in the USFWS’s and NMFS’s ESA section 7 consultation regulations at 50 CFR part 402. The word “might” is defined as having “less probability or possibility” than the word “may” (Merriam-Webster’s Collegiate Dictionary, 10th edition). Since “might” has a lower probability of occurring, it is below the threshold (i.e., “may affect”) that triggers the requirement for ESA section 7 consultation for a proposed Federal action This general condition also states that, in such cases, non-federal permittees shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized.

Under the current Corps regulations (33 CFR 325.2(b)(5)), the district engineer must review all permit applications for potential impacts on threatened and endangered species or critical habitat. For the NWP program, this review occurs when the district engineer evaluates the pre-construction notification or request for verification. Nationwide permit general condition 18 requires a non-federal applicant to submit a pre-construction notification to the Corps if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat (or critical habitat proposed for such designation). Based on the evaluation of all available information, the district engineer will initiate consultation with the USFWS or NMFS, as appropriate, if he or she determines that the proposed activity may affect any threatened and endangered species or designated critical habitat. Consultation may occur during the NWP authorization process or the district engineer may exercise discretionary authority to require an individual permit for the proposed activity and initiate section 7 consultation during the individual permit process. If the district engineer determines a proposed NWP activity is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat, he or she will initiate a conference with the USFWS or NMFS. If ESA Section 7 consultation or conference is conducted during the NWP authorization process, then the applicant will be notified that he or she cannot proceed with the proposed NWP activity until section 7 consultation is completed.

If the district engineer determines that the proposed NWP activity will have no effect on any threatened or endangered species or critical habitat, then the district engineer will notify the applicant that he or she may proceed under the NWP authorization as long as the activity complies with all other applicable terms and conditions of the NWP, including applicable regional conditions. When the Corps makes a “no effect” determination, that determination is documented in the record for the NWP verification.

In cases where the Corps makes a “may affect” determination, formal or informal section 7 consultation is conducted before the activity is authorized by NWP. A non-federal permit applicant cannot begin work until notified by the Corps that the proposed NWP activity will have “no effect” on listed species or critical habitat, or until ESA Section 7 consultation has been completed (see also 33 CFR 330.4(f)). Federal permittees are responsible for complying with ESA Section 7(a)(2) and should follow their own procedures for complying with those requirements (see 33 CFR 330.4(f)(1)). Therefore, permittees cannot rely on complying with the terms of an NWP without considering ESA-listed species or critical habitat, and they must comply with the NWP conditions to ensure that they do not violate the ESA. General condition 18 also states that district engineers may add activity-specific conditions to the NWPs to address ESA issues as a result of formal or informal consultation with the USFWS or NMFS.

Each year, the Corps conducts thousands of ESA section 7 consultations with the USFWS and NMFS for activities authorized by NWPs. These section 7 consultations are tracked in ORM. During the period of March 19, 2017, to October 20, 2020, Corps districts conducted 1,294 formal consultations and 8,233 informal consultations under NWP PCNs where the Corps verified that the proposed activities were authorized by NWP. During that time period, the Corps also used regional programmatic consultations for 21,677 NWP verifications to comply with ESA section 7. Therefore, each year an average of 8,700 formal, informal, and programmatic ESA section 7 consultations are conducted with the USFWS and/or NMFS in response to NWP PCNs, including those activities that required PCNs under paragraph (c) of general condition 18. In a study on ESA section 7 consultations tracked by the USFWS, Malcom and Li (2015) found that during the period of 2008 to 2015, the Corps conducted the most formal and informal section 7 consultations, far exceeding the numbers of section 7 consultations conducted by other federal agencies.

Section 7 consultations are often conducted on a case-by-case basis for activities proposed to be authorized by NWP that may affect listed species or critical habitat, in accordance with the USFWS’s and NMFS’s interagency regulations at 50 CFR part 402. Instead of activity-specific section 7 consultations, compliance with ESA may also be achieved through formal or informal regional programmatic consultations. Compliance with ESA Section 7 may also be facilitated through the adoption of NWP regional conditions. In some Corps districts SLOPES have been developed through consultation with the appropriate regional offices of the USFWS and NMFS to make the process of complying with section 7 more efficient.

Corps districts have, in most cases, established informal or formal procedures with local offices of the USFWS and NMFS, through which the agencies share information regarding threatened and endangered species and their critical habitat.

This information helps district engineers determine if a proposed NWP activity may affect listed species or their critical habitat and, when a “may affect” determination is made, initiate ESA section 7 consultation. Corps districts may utilize maps or databases that identify locations of populations of threatened and endangered species and their critical habitat. Where necessary, regional conditions are added to one or more NWPs to require pre-construction notification for NWP activities that occur in known locations of threatened and endangered species or critical habitat. Any information provided by local maps and databases and any comments received during the pre-construction notification review process will be used by the district engineer to make a “no effect” or “may affect” determination for the pre-construction notification.

Based on the safeguards discussed in this section, especially general condition 18 and the NWP regulations at 33 CFR 330.4(f), the Corps believes that the activities authorized by this NWP comply with the ESA. Although the Corps continues to believe that these procedures ensure compliance with the ESA, the Corps has taken some steps to provide further assurance. Corps district offices meet with local representatives of the USFWS and NMFS to establish or modify existing procedures such as regional conditions, where necessary, to ensure that the Corps has the latest information regarding the existence and location of any threatened or endangered species or their critical habitat. Corps districts can also establish, through SLOPES or other tools, additional safeguards that ensure compliance with the ESA. Through ESA Section 7 formal or informal consultations, the Corps ensures that no activity is authorized by any NWP if that activity is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the ESA, or to destroy or adversely modify the critical habitat of such species. Other tools such as ESA section 7 conferences, SLOPES, the development of regional conditions added to the NWP by the division engineer, and conditions added to a specific NWP authorization by the district engineer help ensure compliance with the ESA.

If informal section 7 consultation is conducted, and the USFWS and/or NMFS issues a written concurrence that the proposed activity may affect, but is not likely to adversely affect, listed species or designated critical habitat based on conservation measures incorporated in the project to avoid or minimize potential effects to ESA resources, the district engineer will add conditions (e.g., conservation measures) to the NWP authorization. If the USFWS and/or NMFS does not issue a written concurrence that the proposed NWP activity “may affect, but is not likely to adversely affect” listed species or critical habitat, the Corps will initiate formal section 7 consultation if it changes its determination to “may affect, likely to adversely affect.”

If formal section 7 consultation is conducted and a biological opinion is issued, the district engineer will add conditions to the NWP authorization to incorporate appropriate elements of the incidental take statement of the biological opinion into the NWP authorization, if the biological opinion concludes that the proposed NWP activity is not likely to jeopardize the continued existence of listed species or adversely modify or destroy critical habitat. If the biological opinion concludes that the proposed NWP activity is likely to jeopardize the continued existence of listed species or adversely modify or destroy critical habitat, the proposed activity cannot be authorized by NWP and the district engineer will instruct the applicant to apply for an individual permit. The incidental take statement includes reasonable and prudent measures and terms and conditions such as mitigation, monitoring, and reporting requirements that minimize incidental take. To fulfill its obligations under Section 7(a)(2) of the ESA, the Corps will determine which elements of an incidental take statement are appropriate to be added as permit conditions to the NWP authorization (see 33 CFR 325.4(a)). The appropriate elements of the incidental take statement are those reasonable and prudent measures and terms and conditions that: (1) apply to the activities over which the Corps has control and responsibility (i.e., structures or work in navigable waters and/or the discharges of dredged or fill material into waters of the United States), and (2) the Corps has the authority to enforce under its permitting authorities. Incorporation of the appropriate elements of the incidental take statement into the NWP authorization through binding, enforceable permit conditions may provide the project proponent an exemption from the “take” prohibitions in ESA Section 9 (see Section 7(o)(2) of the ESA).

The Corps can modify this NWP at any time that it is deemed necessary to protect listed species or their critical habitat, either through: 1) national general conditions or national-level modifications, suspensions, or revocations of the NWPs; 2) regional conditions or regional modifications, suspensions, or revocations of NWPs; or 3) activity-specific permit conditions (modifications) or activity-specific suspensions or revocations of NWP authorizations. Therefore, although the Corps has issued the NWPs, the Corps can address any ESA issue, if one should arise. The NWP regulations also allow the Corps to suspend the use of some or all of the NWPs immediately, if necessary, while considering the need for permit conditions, modifications, or revocations. These procedures are provided at 33 CFR 330.5.

8.0 Clean Water Act Section 404(b)(1) Guidelines Analysis

The 404(b)(1) Guidelines compliance criteria for general permits are provided at 40 CFR 230.7. This 404(b)(1) Guidelines compliance analysis includes analyses of the direct, secondary, and cumulative effects on the aquatic environment caused by discharges of dredged or fill material authorized by this NWP.

For activities authorized by general permits, the analysis and documentation required by the 404(b)(1) Guidelines are to be performed at the time of issuance of a general permit, such as an NWP. The analysis and documentation will not be repeated when activities are conducted under the NWP. The 404(b)(1) Guidelines do not require reporting or formal written communication at the time individual activities are conducted under an NWP, but a particular NWP may require appropriate reporting. [40 CFR 230.6(d) and 230.7(b)]

8.1 Evaluation Process (40 CFR 230.7(b))

8.1.1 Alternatives (40 CFR 230.10(a))

General condition 23 requires permittees to avoid and minimize discharges of dredged or fill material into waters of the United States to the maximum extent practicable on the project site. The consideration of off-site alternatives is not directly applicable to general permits (see 40 CFR 230.7(b)(1)).

8.1.2 Prohibitions (40 CFR 230.10(b))

This NWP authorizes discharges of dredged or fill material into waters of the United States, which require water quality certification. Water quality certification requirements will be met in accordance with the procedures at 33 CFR 330.4(c).

No toxic discharges will be authorized by this NWP. General condition 6 states that the material must be free from toxic pollutants in toxic amounts.

This NWP does not authorize discharges of dredged or fill material into waters of the United States that are likely to jeopardize the continued existence of any listed threatened or endangered species or result in the destruction or adverse modification of critical habitat. Reviews of pre-construction notifications, regional conditions, and local operating procedures for endangered species will ensure compliance with the Endangered Species Act. Refer to general condition 18 and to 33 CFR 330.4(f) for information and procedures.

This NWP will not authorize discharges of dredged or fill material into waters of the United States that violate any requirement to protect any marine sanctuary. Refer to section 8.2.3(j)(1) of this document for further information.

8.1.3 Findings of Significant Degradation (40 CFR 230.10(c))

Potential impact analysis (Subparts C through F): The potential impact analysis specified in Subparts C through F is discussed in section 8.2.3 of this document. Mitigation required by the district engineer will help ensure that the adverse effects on the aquatic environment caused by discharges of dredged or fill material into waters of the United States are no more than minimal.

Evaluation and testing (Subpart G): Because the terms and conditions of the NWP specify the types of discharges of dredged or fill material into waters of the United States that are authorized, as well as those that are prohibited, individual evaluation and testing for the presence of contaminants will normally not be required. If a situation warrants, provisions of the NWP allow division or district engineers to further specify authorized or prohibited discharges of dredged or fill material into waters of the United States and/or require testing. General condition 6 requires that materials used for construction be free from toxic pollutants in toxic amounts.

Based upon Subparts B and G, after consideration of Subparts C through F, and because NWPs can authorize only those discharges of dredged or fill material into waters of the United States that result in no more than minimal individual and cumulative adverse environmental effects, the discharges of dredged or fill material into waters of the United States authorized by this NWP will not cause or contribute to significant degradation of waters of the United States.

8.1.4 Factual determinations (40 CFR 230.11)

The factual determinations required in 40 CFR 230.11 are discussed in section 8.2.3 of this document.

8.1.5 Appropriate and practicable steps to minimize potential adverse impacts (40 CFR 230.10(d))

As demonstrated by the information in this document, as well as the terms, conditions, and provisions of this NWP, actions to minimize adverse effects (Subpart H) have been thoroughly considered and incorporated into the NWP. General condition 23 requires permittees to avoid and minimize discharges of dredged or fill material into waters of the United States to the maximum extent practicable on the project site. Compensatory may be mitigation required by the district engineer to ensure that the net adverse effects on the aquatic environment are no more than minimal.

8.2 Evaluation Process (40 CFR 230.7(b))

8.2.1 Description of permitted activities (40 CFR 230.7(b)(2))

As indicated by the text of this NWP in section 1.0 of this document, and the discussion of potential impacts in section 5.0, the activities authorized by this NWP are sufficiently similar in nature and environmental impact to warrant authorization under a single general permit. Specifically, the purpose of the NWP is to authorize discharges of dredged or fill material into waters of the United States for surface coal mining and reclamation activities that are already authorized, or are currently being processed by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977. The nature and scope of the impacts are controlled by the terms and conditions of the NWP.

The discharges of dredged or fill material into waters of the United States authorized by this NWP are sufficiently similar in nature and environmental impact to warrant authorization by a general permit. The terms of the NWP authorize a specific category of activity (i.e., discharges of dredged or fill material for surface coal mining activities) in a specific category of waters (i.e., waters of the United States). The restrictions imposed by the terms and conditions of this NWP will result in the authorization of activities that have similar impacts on the aquatic environment, namely the replacement or modification of aquatic habitats, with fills associated with surface coal mining operations, such as valley fills, permanent stream diversions, impoundments, processing plants, and road crossings.

If a situation arises in which the activity requires further review, or is more appropriately reviewed under the individual permit process, provisions of the NWPs allow division and/or district engineers to take such action.

8.2.2 Cumulative effects (40 CFR 230.7(b)(3))

The 404(b)(1) Guidelines at 40 CFR 230.11(a) define cumulative effects as "…the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material." For the issuance of general permits, such as this NWP, the 404(b)(1) Guidelines require the permitting authority to "set forth in writing an evaluation of the potential individual and cumulative impacts of the categories of activities to be regulated under the general permit." [40 CFR 230.7(b)] More specifically, the 404(b)(1) Guidelines cumulative effects assessment for the issuance or reissuance of a general permit is to include an evaluation of "the number of individual discharge activities likely to be regulated under a general permit until its expiration, including repetitions of individual discharge activities at a single location." [40 CFR 230.7(b)(3)] If a situation arises in which cumulative effects are likely to be more than minimal and the proposed activity requires further review, or is more appropriately reviewed under the individual permit process, provisions of the NWPs allow division and/or district engineers to take such action.

Based on reported use of this NWP during the period of March 19, 2017, to March 18, 2019, the Corps estimates that this NWP will be used approximately 5 times per year on a national basis, resulting in impacts to approximately one acre of waters of the United States, including jurisdictional wetlands. All activities authorized by this NWP require pre-construction notification, so all NWP 21 activities are reported to Corps districts.

Based on reported use of this NWP during that time period, the Corps estimates that 50 percent of the NWP 21 verifications will require compensatory mitigation to offset the authorized impacts to waters of the United States and ensure that the authorized discharges of dredged or fill material into waters of the United States result in only minimal adverse effects on the aquatic environment. The verified discharges of dredged or fill material into waters of the United States that do not require compensatory mitigation will have been determined by Corps district engineers to result in no more than minimal individual and cumulative adverse effects on the aquatic environment without compensatory mitigation. During the period of 2021-2026, the Corps expects little change to the percentage of NWP 21 verifications requiring compensatory mitigation, because there have been no substantial changes in the mitigation general condition or the NWP regulations for determining when compensatory mitigation is to be required for NWP activities. The Corps estimates that approximately one acre of compensatory mitigation will be required each year to offset authorized impacts. The demand for these types of activities could increase or decrease over the five-year duration of this NWP.

Based on these annual estimates, the Corps estimates that approximately 25 activities could be authorized over a five year period until this NWP expires, resulting in impacts to approximately 5 acres of waters of the United States, including jurisdictional wetlands. Approximately 5 acres of compensatory mitigation would be required to offset those impacts. The authorized impacts are expected to result in only minor changes to the affected environment (i.e., the current environmental setting), which is described in section 4.0 of this document.

Compensatory mitigation is the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved (33 CFR 332.2). For activities authorized by NWPs, compensatory mitigation and other forms of mitigation may be used to ensure that the adverse environmental effects are no more than minimal, individually and cumulatively (33 CFR 330.1(e)(3); NWP general condition 23). Restoration is usually the first compensatory mitigation option considered because the likelihood of ecological success is greater (33 CFR 332.3(a)(2)). As discussed below, restoration of wetlands and streams can increase the ecological functions and services provided by those aquatic resources. However, restoration typically cannot return a degraded wetland or stream to a prior historic condition because of changes in environmental conditions at various scales over time (e.g., Higgs et al. 2014, Jackson and Hobbs 2009, Zedler and Kercher 2005; Palmer et al. 2014), and many of those environmental changes are beyond the control of the mitigation provider. Therefore, it is important to establish realistic goals and objectives for wetland and stream restoration projects (e.g., Hobbs 2007, Ehrenfeld 2000).

Rey Banayas et al. (2009) concluded that restoration activities can increase biodiversity and the level of ecosystem services provided. However, such increases do not approach the amounts of biodiversity and ecosystem services performed by undisturbed reference sites. The ability to restore ecosystems to provide levels of ecological functions and services similar to historic conditions or reference standard conditions is affected by human impacts (e.g., urbanization, agriculture) to watersheds or other landscape units and to the processes that sustain those ecosystems (Zedler et al. 2012, Hobbs et al. 2014). Those changes need to be taken into account when establishing goals and objectives for restoration projects (Zedler et al. 2012), including compensatory mitigation projects. The ability to reverse ecosystem degradation to restore ecological functions and services is dependent on the degree of degradation of that ecosystem and the surrounding landscape, and whether that degradation is reversible (Hobbs et al. 2014). Most studies of the ecological performance of compensatory mitigation projects have focused solely on the ecological attributes of the compensatory mitigation projects, and few studies have also evaluated the aquatic resources impacted by permitted activities (Kettlewell et al. 2008), so it is difficult to assess whether compensatory mitigation projects have fully or partially offset the lost functions provided by the aquatic resources that are impacted by permitted activities.

Wetland restoration, enhancement, and establishment projects can provide wetland functions, as long as the wetland compensatory mitigation project is placed in an appropriate landscape position, has appropriate hydrology for the desired wetland type, and the watershed condition will support the desired wetland type (NRC 2001). Site selection is critical to find a site with appropriate hydrologic conditions and soils to support a replacement wetland that will provide the desired wetland functions and services (Mitsch and Gosselink 2015). In a meta-analysis of 70 wetland restoration studies, Meli et al. (2014) concluded that wetland restoration activities increase biodiversity and ecosystem service provision in degraded wetlands, but the degree of recovery is context dependent. They identified the following factors as influencing wetland restoration outcomes: wetland type, the main cause of degradation, the type of restoration action conducted, and the assessment protocol used to evaluate restoration outcomes. Moreno-Mateos et al. (2015) reviewed the recovery trajectories of 628 wetland restoration and creation projects and concluded that restoring or establishing wetland hydrology is of primary importance, and is more likely to be ecologically successful if wetland hydrology can be achieved by re-establishing water flows instead of extensive earthwork. In addition, they determined that, with respect to the plant community, natural revegetation is sufficient for recovery and development of most wetland types after wetland hydrology is restored or established.

The ecological performance of wetland restoration, enhancement, and establishment is dependent on practitioner’s understanding of wetland functions, allowing sufficient time for wetland functions to develop, and allowing natural processes of ecosystem development (self-design or self-organization) to take place, instead of over-designing and over-engineering the replacement wetland (Mitsch and Gosselink 2015). The likelihood of ecological success in wetland restoration varies by wetland type, with the higher rates of success for coastal, estuarine, and freshwater marshes, and lower rates of success for forested wetlands and seagrass beds (Lewis et al. 1995). In its review, the NRC (2001) concluded that some wetland types can be restored or established (e.g., non-tidal emergent wetlands, some forested and scrub-shrub wetlands, seagrasses, and coastal marshes), while other wetland types (e.g., vernal pools, bogs, and fens) are difficult to restore and should be avoided where possible. Restored riverine and tidal wetlands achieved wetland structure and function more rapidly than depressional wetlands (Moreno-Mateos et al. 2012). Because of its greater potential to provide wetland functions, restoration is the preferred compensatory mitigation mechanism

(33 CFR 332.3(a)(2)). Bogs, fens, and springs are considered to be difficult-to-replace resources and compensatory mitigation should be provided through in-kind rehabilitation, enhancement, or preservation of these wetlands types (33 CFR 332.3(e)(3)).

In its review of outcomes of wetland compensatory mitigation activities, the NRC (2001) stated that wetland functions can be replaced by wetland restoration and establishment activities. They discussed five categories of wetland functions: hydrology, water quality, maintenance of plant communities, maintenance of animal communities, and soil functions. It is difficult to restore or establish natural wetland hydrology, and water quality functions are likely to be different than the functions provided at wetland impact sites (NRC 2001). Reestablishing or establishing the desired plant community may be difficult because of invasive species colonizing the mitigation project site (NRC 2001). The committee also found that establishing and maintaining animal communities depends on the surrounding landscape. Soil functions can take a substantial amount of time to develop, because they are dependent on soil organic matter and other soil properties (NRC 2001). The NRC (2001) concluded that the ecological performance in replacing wetland functions depends on the particular function of interest, the restoration or establishment techniques used, and the extent of degradation of the compensatory mitigation project site and its watershed.

The ecological performance of wetland restoration and enhancement activities is affected by the amount of changes to hydrology and inputs of pollutants, nutrients, and sediments within the watershed or contributing drainage area (Wright et al. 2006). Wetland restoration is becoming more effective at replacing or improving wetland functions, especially in cases where monitoring and adaptive management are used to correct deficiencies in these efforts (Zedler and Kercher 2005). Wetland functions take time to develop after the restoration or enhancement activity takes place (Mitsch and Gosselink 2015, Gebo and Brooks 2012), and different functions develop at different rates (Moreno-Mateos 2012, NRC 2001). Irreversible changes to landscapes, especially those that affect hydrology within contributing drainage areas or watersheds, cause wetland degradation and impede the ecological performance of wetland restoration efforts (Zedler and Kercher 2005). Gebo and Brooks (2012) evaluated wetland compensatory mitigation projects in Pennsylvania and compared them to reference standards (i.e., the highest functioning wetlands in the study area) and natural reference wetlands that showed the range of variation due to human disturbances. They concluded that most of the wetland mitigation sites were functioning at levels within with the range of functionality of the reference wetlands in the region, and therefore were functioning at levels similar to some naturally occurring wetlands. The ecological performance of mitigation wetlands is affected by on the landscape context (e.g., urbanization) of the replacement wetland and varies with wetland type (e.g., riverine or depressional) (Gebo and Brooks 2012). Moreno-Mateos et al. (2012) conducted a meta-analysis of wetland restoration studies and concluded that while wetland structure and function can be restored to a large degree, the ecological performance of wetland restoration projects is dependent on wetland size and local environmental setting. They found that wetland restoration projects that are larger in size and in less disturbed landscape settings achieve structure and function more quickly.

Under the Corps' regulations, streams considered to be are difficult-to-replace resources and compensatory mitigation should be provided through stream rehabilitation, enhancement, and preservation since those techniques are most likely to be ecologically successful (see 33 CFR 332.3(e)(3)). For the purposes of this section, the term "stream restoration" is used to cover river and stream rehabilitation and enhancement activities. Restoration can be done on large rivers and small streams, and sometimes entire stream networks (Wohl et al. 2015), in a variety of watershed land use settings, including urban and agricultural areas.

River and stream restoration activities can improve the functions performed by these aquatic ecosystems, and the ecosystem services they provide (Wohl et al. 2015, Beechie et al. 2010). Because of changes in land use and other changes in the watershed that have occurred over time, stream restoration can improve stream functions but cannot return a stream to a historic state (Wohl et al. 2015, Roni et al. 2008). Improvements in ecological performance of stream restoration projects is dependent on the restoration method and how outcomes are assessed (Palmer et al. 2014). The ability to restore the ecological functions of streams is dependent on the condition of the watershed draining to the stream being restored because human land uses and other activities in the watershed affect how that stream functions (Palmer et al. 2014). Ecologically successful stream restoration activities depend on addressing the factors that most strongly affect stream functions, such as water quality, water flow, and riparian area quality, rather than focusing solely on restoring the physical habitat of streams (Palmer et al. 2010, Roni et al. 2008), especially the stream channel.

To be effective, stream restoration activities need to address the causes of stream degradation, which are often within the watershed and outside of the stream channel (Palmer et al. 2014). Actions that focus on restoring processes and connectivity are more likely to be successful that channel reconfiguration efforts (Hawley 2018). Stream rehabilitation and enhancement projects, including the restoration and preservation of riparian areas, provide riverine functions (e.g., Allan and Castillo (2007) for rivers and streams, NRC (2002) for riparian areas). Ecologically effective stream restoration can be conducted by enhancing riparian areas, removing dams, reforestation, and implementing watershed best management practices that reduce storm water and agricultural runoff to streams (Palmer et al. 2014). Process-based stream restoration is intended to address the causes of stream degradation, and should be conducted at the appropriate scale for the cause of stream degradation, such as the watershed or stream reach (Beechie et al. 2010). Process-based stream restoration has substantial potential to re-establish the physical, chemical, and biological processes that sustain riverine ecosystems, including their floodplains (Beechie et al. 2010). Process-based stream restoration can also reduce long-term restoration costs (Beechie et al. 2013, Hawley

2018).

Restoration of incised streams can be accomplished allowing beavers to construct dams in these streams, or by placing structures in the stream channel that mimic the effects that beaver dams have on these steams (DeVries et al. 2012). Examples of stream restoration and enhancement techniques include: dam removal and modification, culvert replacement or modification, fish passage structures when connectivity cannot be restored or improved by dam removal or culvert replacement, levee removal or setbacks, reconnecting floodplains and other riparian habitats, road removal, road modifications, reducing sediment and pollution inputs to streams, replacing impervious surfaces with pervious surfaces, restoring adequate in-stream or base flows, restoring riparian areas, fencing streams and their riparian areas to exclude livestock, improving in-stream habitat, recreating meanders, and replacing hard bank stabilization structures with bioengineering bank stabilization measures (Roni et al. 2013). Miller and Kochel (2010) recommend that stream restoration projects allow the stream channel to self-adjust in response to changing hydrologic and sediment regimes in the watershed, and include other restoration actions such as re-establishing riparian areas next to the stream channel and excluding livestock from the riparian area and stream channel. Large and medium sized rivers can be restored through various approaches, including levee setbacks, levee removal, or creating openings in levees, to restore or improve connectivity between the river and the floodplain, as well as other ecological and geomorphic processes (Wohl et al. 2015). Dam removal, as well as changes in dam operations that provide environmentally-beneficial flows of water and sediment, can also restore functions of rivers and larger streams (Wohl et al. 2015).

Hydrologic restoration can be more effective than in-stream habitat restoration projects (Hawley 2018) because they can help address alterations in watershed hydrology through land use and other watershed changes. Examples of hydrologic restoration approaches include reforestation, floodplain restoration, bankfull wetlands, detention basins, beaver reintroduction, and placement of large woody debris into the stream channel. Restoration actions outside of the stream channel, such as constructed wetlands, storm water management ponds, and revegetating riparian areas, can result in significant improvements in the biodiversity, community structure, and nutrient cycling processes of downstream waters (Smucker and Detenbeck 2014). Non-structural and structural techniques can be used to rehabilitate and enhance streams, and restore riparian areas (NRC 1992). Examples of non-structural stream restoration practices include removing disturbances to allow recovery of stream and riparian area structure and function, restoring natural stream flows by reducing or eliminating activities that have altered stream flows, preserving or restoring floodplains, and restoring and protecting riparian areas, including fencing to exclude livestock and people that can degrade riparian areas (NRC 1992).

Form based restoration efforts, such as channel reconfiguration, can cause substantial adverse impacts to riverine systems through earthmoving activities (which can cause substantial increases in sediment loads) and the removal of riparian trees and other vegetation, with little demonstrable improvements in stream functions (Palmer et al. 2014). In-stream habitat enhancement activities, such as channel reconfiguration and adding in-stream structures, have resulted in limited effectiveness in improving biodiversity in streams (Palmer et al. 2010). In an evaluation of 644 stream restoration projects, Palmer et al. (2014) concluded that stream channel reconfiguration does not promote ecological recovery of degraded streams, but actions taken within the watershed and in riparian areas to restore hydrological processes and reduce pollutant inputs to streams can improve stream functions and ecological integrity. Stream restoration activities should also include consideration of social factors, especially the people that live in the floodplain or near the river or stream (Wohl et al. 2015). These social factors may also impose constraints on what restoration actions can be taken.

Seagrass beds are dynamic ecosystems that can persist for long periods of time or change from season to season (Fonseca et al. 1998). Seagrass beds can be restored, but these restoration activities generally have lower rates of ecological success than the restoration of other wetland types, such as estuarine and freshwater marshes (Lewis et al. 1995). The restoration and natural recovery of seagrasses requires consideration of addressing impediments that occur at various scales, including larger scale problems such as water quality and land use practices (Orth et al. 2006). The ecological success of seagrass restoration can be influenced by the dynamics of coastal environments and various stressors (e.g., reduced water quality/eutrophication, construction activities, dredging, other direct impact, natural disturbances) that affect seagrasses (van Katwijk et al. 2016). Realistic expectations should be established for seagrass restoration activities because of our limited understanding of seagrasses and the challenges of controlling conditions in open coastal waters (Fonseca 2011).

Site selection is critical for successful restoration of seagrasses (Fonseca 2011, Fonseca et al. 1998). Ecologically successful seagrass restoration is dependent on finding sites where seagrass beds recently existed (Fonseca et al. 1998). The ecological outcomes of seagrass restoration activities is also affected by the size of the restoration project, with larger restoration efforts more likely to be ecologically successful and sustainable because larger projects can produce positive feedbacks that facilitate the establishment and persistence of seagrasses (van Katwijk et al. 2016). At some proposed seagrass restoration sites, it may be infeasible to change the site from a stable unvegetated state to a stable vegetated state through seagrass planting efforts (Fonseca 2011). Small scale restoration activities may be overwhelmed by natural processes that prevent seagrasses from becoming reestablished (Fonseca 2011). Another impediment to ecologically successful seagrass restoration is bioturbation, which can impede natural seagrass recruitment (Fonseca 2011) or disturb plantings. Bioturbation can be caused by animals such as shrimp, crabs, ducks, fish, and urchins, and result in stable, unvegetated benthic habitats (Fonseca 2011).

Fonseca (2011) recommends locating seagrass restoration activities in areas with water depths similar to nearby natural seagrass beds, at a sufficient size to achieve restoration goals, with characteristics that are similar to those at other ecologically successful seagrass restoration projects, and where anthropogenic disturbances can be reduced or removed. Restoration of submersed aquatic vegetation beds requires taking actions to reduce inputs of sediment, nutrients, and organic matter into estuarine waters and avoiding physical damage from boating activities and fishing gear (Waycott et al. 2009). Controlling these stressors has been more effective at restoring seagrass beds than seagrass transplantation efforts (Waycott et al. 2009). Potential restoration sites need to have sufficient light, moderate nutrient loads, suitable salinity and water temperatures, available seeds and other propagules, and an absence of mechanical disturbances that will destroy or degrade plants (Fonseca et al. 1998). Seagrass recovery is affected by numerous factors, such as the characteristics of the target seagrass species, disturbance intensity, disturbance characteristic(s), environmental conditions, disturbance history, the condition of existing seagrass beds, population structure, reproductive capacity, timing, and feedbacks between biotic and abiotic components at the site (O'Brien et al. 2018).

As discussed in section 4.0, the status of waters and wetlands in the United States as reported under the provisions of Sections 303(d) and 305(b) of the Clean Water Act exhibits considerable variation, ranging from "good" to "threatened" to "impaired." One of the criteria that district engineers consider when they evaluate proposed NWP activities is the "degree or magnitude to which the aquatic resources perform these functions" (see paragraph 2 of Section D, "District Engineer's Decision." The quality of the affected waters is considered by district engineers when making decisions on whether to require compensatory mitigation for proposed NWP activities to ensure no more than minimal adverse environmental effects (see 33 CFR 330.1(e)(3)), and amount of compensatory mitigation required (see 33 CFR 332.3(f)). The quality of the affected waters also factors into the determination of whether the required compensatory mitigation offsets the losses of aquatic functions caused by the NWP activity.

The compensatory mitigation required by district engineers in accordance with general condition 23 and through activity-specific conditions added to the NWP authorization is expected to provide aquatic resource functions and services to offset some or all of the losses of aquatic resource functions caused by the activities authorized by this NWP, and reduce the incremental contribution of those activities to the cumulative effects on the Nation's wetlands, streams, and other aquatic resources. The required compensatory mitigation must be conducted in accordance with the applicable provisions of 33 CFR part 332, which requires development and implementation of approved mitigation plans, as well as monitoring to assess ecological success in accordance with ecological performance standards established for the compensatory mitigation project. The district engineer will evaluate monitoring reports to determine if the compensatory mitigation project has fulfilled its objectives, is ecological successful, and offsets the permitted impacts. If the monitoring efforts indicate that the compensatory mitigation project is failing to meet its objectives, the district engineer may require additional measures, such as adaptive management or alternative compensatory mitigation, to address the compensatory mitigation project's deficiencies. [33 CFR 332.7(c)]

According to Dahl (2011), during the period of 2004 to 2009 approximately 489,620 acres of former upland were converted to wetlands as a result of wetland reestablishment and establishment activities. Efforts to reestablish or establish wetlands have increased wetland acreage in the United States.

The individual and cumulative adverse effects on the aquatic environment resulting from the activities authorized by this NWP, including compliance with all applicable NWP general conditions as well as regional conditions imposed by division engineers and activity-specific conditions imposed by district engineers, are expected to be no more than minimal. The Corps expects that the convenience and time savings associated with the use of this NWP will encourage applicants to design their projects within the scope of the NWP, including its limits, rather than request individual permits for projects that could result in greater adverse impacts to the aquatic environment. Division and district engineers will restrict or prohibit this NWP on a regional or case-specific basis if they determine that these activities will result in more than minimal individual and cumulative adverse effects on the aquatic environment.

<u>8.2.3 Section 404(b)(1) Guidelines Impact Analysis, Subparts C through F</u>

(a) <u>Substrate</u>: Discharges of dredged or fill material into waters of the United States may alter the substrate of those waters, usually replacing the aquatic area with dry land, and changing the physical, chemical, and biological characteristics of the substrate. The original substrate may be removed or covered by other material, such as rock, soil, gravel, etc. Temporary fills may be placed upon the substrate, but must be removed upon completion of the activity (see general condition 13). Higher rates of erosion may result during construction, but general condition 12 requires the use of appropriate measures to control soil erosion and sediment.

(b) <u>Suspended particulates/turbidity</u>: Depending on the method of construction, soil erosion and sediment control measures, equipment, composition of the bottom substrate, and wind and current conditions during construction, fill material placed in open waters may temporarily increase water turbidity. Pre-construction notification is required for all discharges of dredged or fill material into waters of the United States authorized by this NWP, which will allow the district engineer to review each activity and ensure that individual and cumulative adverse effects on the aquatic environment are no more than minimal. Particulates may be resuspended in the water column during removal of temporary fills. The turbidity plume will normally be limited to the immediate vicinity of the disturbance and should dissipate shortly after each phase of the construction activity. General condition 12 requires the permittee to stabilize exposed soils and other fills, which will reduce turbidity. In many localities, contractors are required to develop and implement sediment and erosion control plans to minimize the entry of soil into the aquatic environment. Nationwide permit activities cannot create turbidity plumes that smother important spawning areas downstream (see general condition 3).

(c) Water: Surface coal mining and reclamation activities may affect some characteristics of water, such as water clarity, chemical content, dissolved gas concentrations, pH, and temperature (Palmer et al. 2010a). These activities may change the chemical and physical characteristics of the waterbody by introducing suspended or dissolved chemical compounds or sediments into the water. Changes in water quality can affect the species and quantities of organisms inhabiting the aquatic area. Water quality certification is required for discharges of dredged or fill material into waters of the United States authorized by this NWP, which will help ensure that the activity does not violate applicable water quality requirements. Clean Water Act Section 402 permits may be are required for point source discharges of pollutants from sediment ponds and surface coal mining facilities. Permittees may be required to implement water quality management measures to ensure that the authorized discharge of dredged or fill material into waters of the United States does not result in more than minimal degradation of water quality. Impoundments may be required to prevent or reduce the input of harmful chemical compounds into the waterbody. The district engineer may require the establishment and maintenance of riparian areas next to open waters, such as streams. Riparian areas may help improve or maintain water quality, by removing nutrients, moderating water temperature changes, and trapping sediments.

(d) Current patterns and water circulation: Discharges of dredged or fill material into waters of the United States authorized by this NWP may adversely affect the movement of water in the aquatic environment. All discharges of dredged or fill material into waters of the United States authorized by this NWP require pre-construction notification to the district engineer, which will help ensure that adverse effects to current patterns and water circulation are no more than minimal. Road crossings within a surface coal mining operation or fills in waters of the United States may alter water flow patterns and circulation. General condition 9 requires the authorized activity to be designed to withstand expected high flows and to maintain the course, condition, capacity, and location of open waters to the maximum extent practicable. General condition 10 requires activities to comply with applicable FEMA-approved state or local floodplain management requirements, which will reduce adverse effects to surface water flows.

(e) Normal water level fluctuations: The discharges of dredged or fill material into waters of the United States authorized by this NWP are not likely to adversely affect normal patterns of water level fluctuations due to tides and flooding. The discharges of dredged or fill material into waters of the United States authorized by this NWP do not occur in tidal waters. To ensure that the NWP does not authorize discharges of dredged or fill material into waters of the United States that are likely to have more than minimal adverse effects on normal flooding patterns, general condition 10 requires NWP activities to comply with applicable FEMA-approved state or local floodplain management requirements. General condition 9 requires the permittee to maintain the pre-construction course, condition, capacity, and location of open waters, to the maximum extent practicable.

(f) Salinity gradients: The discharges of dredged or fill material into waters of the United States authorized by this NWP are unlikely to adversely affect salinity gradients.

(g) Threatened and endangered species: No activity is authorized by any NWP if that activity is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Endangered Species Act of 1973, as amended, or to destroy or adversely modify the critical habitat of such species. See 33 CFR 330.4(f) and paragraph (a) of general condition 18. For NWP activities, compliance with the Endangered Species Act is discussed in more detail in section 7.0 of this document.

(h) Fish, crustaceans, molluscs, and other aquatic organisms in the food web. All discharges of dredged or fill material into waters of the United States authorized by this NWP require pre-construction notification to the district engineer, which will allow review of each activity in open waters to ensure that adverse effects to fish and other aquatic organisms in the food web are no more than minimal. Fish and other motile animals will likely avoid the project site during construction. Sessile or slow-moving animals in the path of discharges, equipment, and building materials may be destroyed. Some aquatic animals may be smothered by the placement of fill material. Motile animals are likely to return to those areas that are temporarily impacted by the activity and restored or allowed to revert back to preconstruction conditions. Aquatic animals may not return to sites of permanent fills. Benthic and sessile animals are expected to recolonize sites temporarily impacted by the activity, after those areas are restored. Discharges of dredged or fill material into waters of the United States that alter the riparian zone, including floodplains, may adversely affect populations of fish and other aquatic animals, by altering stream flow, flooding patterns, and surface and groundwater hydrology. Some species of fish spawn on floodplains, which could be prevented or disrupted if the discharge of dredged or fill material into waters of the United States involves clearing or filling the floodplain. Surface coal mining activities that involve the filling of streams may alter habitat features by increasing surface water flow velocities, which can increase downstream flooding and erosion and reduce the amount of habitat for aquatic organisms and destroy spawning areas (Palmer et al. 2010a). Mitigation measures may be required by district engineers to minimize the adverse effects to hydrology and aquatic habitat caused by filling streams and wetlands.

Division and district engineers can place conditions on this NWP to prohibit discharges during important stages of the life cycles of certain aquatic organisms. Such time of year restrictions can prevent adverse effects to these aquatic organisms during reproduction and development periods. General conditions 3 and 5 address protection of spawning areas and shellfish beds, respectively. General condition 3 states that activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. In addition, general condition 3 also prohibits activities that result in the physical destruction of important spawning areas. General condition 5 prohibits activities in areas of concentrated shellfish populations. General condition 9 requires the maintenance of pre-construction course, condition, capacity, and location of open waters to the maximum extent practicable, which will help minimize adverse impacts to fish, shellfish, and other aquatic organisms in the food web.

(i) Other wildlife: Discharges of dredged or fill material into waters of the United States authorized by this NWP may result in adverse effects on other wildlife associated with aquatic ecosystems, such as resident and transient mammals, birds, reptiles, and amphibians, through the destruction of aquatic habitat, including breeding and nesting areas, escape cover, travel corridors, and preferred food sources. This NWP does not authorize activities that are likely to jeopardize the continued existence of federally-listed endangered and threatened species or result in the destruction or adverse modification of critical habitat. Compensatory mitigation, including stream rehabilitation, enhancement, or preservation activities, and the establishment and maintenance of riparian areas next to open waters, may be required for discharges of dredged or fill material into waters of the United States authorized by this NWP, which will help offset losses of aquatic habitat for wildlife. General condition 4 states that activities in breeding areas for migratory birds must be avoided to the maximum extent practicable.

(j) Special aquatic sites: The potential impacts to specific special aquatic sites are discussed below:

(1) Sanctuaries and refuges: The discharges of dredged or fill material into waters of the United States authorized by this NWP may adversely affect waters of the United States within sanctuaries or refuges designated by Federal or state laws or local ordinances. General condition 22 prohibits the use of this NWP to discharge dredged or fill material into waters of the United States in NOAA-managed marine sanctuaries and marine monuments and National Estuarine Research Reserves. District engineers will exercise discretionary authority and require individual permits for specific activities in waters of the United States in sanctuaries and refuges if those discharges of dredged or fill material into waters of the United States will result in more than minimal adverse effects on the aquatic environment.

(2) Wetlands: The discharges of dredged or fill material into waters of the United States authorized by this NWP may cause adverse effects to wetlands. District engineers will review pre-construction notifications to ensure that the adverse effects on the aquatic environment are no more than minimal. Division engineers can add regional conditions to this NWP to restrict or prohibit its use in certain high value wetlands. See paragraph (e) of section 6.1 for a more detailed

discussion of impacts to wetlands.

(3) Mud flats: The discharges of dredged or fill material into waters of the United States authorized by this NWP may have adverse effects on mud flats. District engineers will review pre-construction notifications to ensure that the adverse effects on the aquatic environment, including mud flats, are no more than minimal. Division engineers can add regional conditions to this NWP to restrict or prohibit its use in certain waterbodies.

(4) Vegetated shallows: The discharges of dredged or fill material into waters of the United States authorized by this NWP may have adverse effects on vegetated shallows. District engineers will review pre-construction notifications to ensure that the adverse effects on the aquatic environment are no more than minimal. Division engineers can add regional conditions to this NWP to restrict or prohibit its use in vegetated shallows.

(5) Coral reefs: The discharges of dredged or fill material into waters of the United States authorized by this NWP are unlikely to have direct adverse effects on coral reefs, since it is limited to surface coal mining operations, which do not occur in marine waters.

(6) Riffle and pool complexes: Discharges of dredged or fill material into waters of the United States in riffle and pool complexes may be authorized by this NWP, but district engineers will review pre-construction notifications to determine if those discharges will result in minimal adverse effects on the aquatic environment. District engineers may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to offset losses of streams caused by surface coal mining activities. If the riffle and pool complexes are high value and the proposed discharge of dredged or fill material into waters of the United States will result in more than minimal adverse effects on the aquatic environment, the district engineer will exercise discretionary authority to require the project proponent to obtain an individual permit.

(k) Municipal and private water supplies: See paragraph (n) of section 6.1 for a discussion of potential impacts to water supplies.

(l) Recreational and commercial fisheries, including essential fish habitat: The discharges of dredged or fill material into waters of the United States authorized by this NWP may adversely affect waters of the United States that act as habitat for populations of economically important fish and shellfish species. Division and district engineers can condition this NWP to prohibit discharges during important life cycle stages, such as spawning or development periods, of economically valuable fish and shellfish. All discharges of dredged or fill material into waters of the United States authorized by this NWP require pre-construction notification to the district engineer, which will allow review of each activity to ensure that adverse effects to economically important fish and shellfish are no more than minimal. Compliance with general conditions 3 and 5 will help ensure that the authorized discharge of dredged or fill material into waters of the United States does not adversely affect important spawning areas or concentrated shellfish populations. As discussed in paragraph (g) of section 6.1, there are procedures to help ensure that individual and cumulative impacts to essential fish habitat are no more than minimal. For example, division and district engineers can impose regional and special conditions to ensure that discharges of dredged or fill material into waters of the United States authorized by this NWP will result in no more than minimal adverse effects on essential fish habitat.

(m) Water-related recreation: See paragraph (m) of section 6.1 above.

(n) Aesthetics: See paragraph (c) of section 6.1 above.

(o) Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar areas: General condition 22 prohibits the use of this NWP to authorize discharges of dredged or fill material in designated critical resource waters and adjacent wetlands, which may be located in parks, national and historical monuments, national seashores, wilderness areas, and research sites. This NWP can be used to authorize discharges of dredged or fill material into waters of the United States in parks, national and historical monuments, national seashores, wilderness areas, and research sites if the manager or caretaker wants to conduct activities in waters of the United States and those discharges result in no more than minimal adverse effects on the aquatic environment. Division engineers can add regional conditions to this NWP to prohibit its use in designated areas, such as national wildlife refuges or wilderness areas.

9.0 Determinations

9.1 Finding of No Significant Impact

Based on the information in this document, the Corps has determined that the discharges of dredged or fill material into waters of the United States and work in navigable waters of the United States authorized by the reissuance of this NWP will not have a significant impact on the quality of the human environment. During the five-year period this NWP will be in effect, the activities authorized by this NWP will result in only minor changes to the affected environment described in section 4.0 of this environmental assessment. Therefore, the preparation of an environmental impact statement is not required for the issuance of this NWP.

9.2 Public Interest Determination

In accordance with the requirements of 33 CFR 320.4, the Corps has determined, based on the information in this document, that the issuance of this NWP to authorize discharges of dredged or fill material into waters of the United States and work in navigable waters of the United States for surface coal mining and reclamation operations is not contrary to the public interest.

9.3 Section 404(b)(1) Guidelines Compliance

This NWP has been evaluated for compliance with the 404(b)(1) Guidelines, including Subparts C through G. Based on the information in this document, the Corps has determined that the discharges authorized by this NWP comply with the 404(b)(1) Guidelines, with the inclusion of appropriate and practicable conditions, including mitigation measures required by the NWP general conditions, that minimize adverse effects on affected aquatic ecosystems. The discharges of dredged or fill material into waters of the United States authorized by this NWP will result in only minor changes to the current environmental setting described in section 4.0 of this document, and will have no more than minimal individual and cumulative adverse effects on the aquatic environment during the 5-year period this NWP is in effect.

9.4 Section 176(c) of the Clean Air Act General Conformity Rule Review

This issuance of this NWP has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities authorized by this permit will not exceed *de minimis* levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR 93.153. Any later indirect emissions are generally not within the Corps continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons, a conformity determination is not required for this NWP.

FOR THE COMMANDER

Dated 4 January 2021

William H. Graham Jr
Major General, U.S. Army
Deputy Commanding General for Civil and
Emergency Operations

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