Information for Preparing an Alternatives Analysis Under Section 404

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In its evaluation of permit applications to discharge dredged or fill material into waters of the U.S. (WOTUS), including wetlands, the U.S. Army Corps of Engineers (Corps) is required to analyze alternatives to the proposed project that could achieve its purpose and need. The Corps conducts this analysis pursuant to two main requirements - the 404(b)(1) Guidelines (Guidelines)[i] and the National Environmental Policy Act (NEPA)[ii]. The Corps must evaluate alternatives that accomplish the overall project purpose, and that are reasonable and practicable. A permit cannot be issued if a practicable alternative exists that would have less adverse impact on the aquatic ecosystem, provided that alternative does not have other significant adverse environmental impacts.

The Guidelines include two rebuttable presumptions. The first presumption states that if a project does not need to be in a special aquatic site, such as a wetland, to meet its basic purpose (i.e., the project is not "water-dependent"), it is presumed that alternatives that do not affect special aquatic sites are available. The second presumption states that if a project involves a discharge of dredged or fill material into a special aquatic site, a practicable alternative located in uplands is presumed to have less adverse impact on the aquatic ecosystem. **It is the applicant's responsibility to clearly demonstrate to the Corps that both of these presumptions have been rebutted in order to pass the alternatives portion of the Guidelines.** This document will assist a permit applicant in formatting this information into an “Alternatives Analysis” that includes the key items that must be addressed. The level of detail in an alternatives analysis should be commensurate with the scale of the adverse environmental effects of the project. Analysis of projects proposing greater adverse environmental effects should be more detailed and explore a wider range of alternatives than projects proposing lesser effects.

Below are suggested steps to follow in providing the necessary information for the Corps to consider in the alternatives analysis:

Step 1: Define Purpose and Need

At the beginning of an alternatives analysis, the applicant should clearly state the overall project purpose and need (examples are below). Significant thought should be applied when developing the project purpose as it will drive much of the alternatives analysis. The overall project purpose must be specific enough to define a permit applicant’s needs, but not so restrictive to preclude other alternatives. It should also not be too wide-ranging without consideration for the applicant’s real needs, as the geographic boundaries in the purpose define the scope of the analysis. For example:

a. *To develop a 225-lot single-family residential development at the southeast intersection of Interstate 10 and Toledo Blade Boulevard.*

   This example is too restrictive because there are no alternative sites to consider. It also unnecessarily details the exact number of lots, which can reduce the number of reasonable or practicable alternatives.

b. *To develop a residential development in Northwest Florida.*

   This example is too wide in scope if the applicant is actually focusing on a certain portion of a certain city or county to locate the project. This would also create an unmanageable number of alternatives.

c. *To develop a single-family residential subdivision near Interstate 10 in Crestview, Florida, to meet local demand for this type of housing.*

   This is an appropriate overall project purpose as it narrows the geographic scope to a reasonable and manageable size. It clearly defines what the project involves (single-family residences rather than "housing" that could also mean townhouses or apartments), the actual target market area (near Interstate 10 in Crestview), and the need for the project (local demand).

The applicant's proposed overall project purpose will be carefully considered, but if the Corps cannot concur with it as submitted, the Corps is required to modify it. Once the Corps has placed the project on public notice, the applicant must use the overall project purpose as stated in that public notice or the overall project purpose as provided back to the applicant if the Corps has modified their original project purpose. If the applicant has already performed an alternative analysis using a project purpose the Corps cannot concur with, (e.g., it is too restrictive or too broad in geographic scope), the analysis may need to be revised to accurately include reasonable and practicable alternatives.

Additional information about the proposed overall project purpose should also be provided, including details about the relevant market conditions and area, location, history, and other factors that influence or constrain the intended nature, size, level of quality, price class, or other characteristics of the project. Information that further describes why particular geographic boundaries were chosen also will assist the Corps in its review.

Step 2: Identify Alternatives

The applicant must list and briefly describe alternatives that could meet the overall project purpose. This list, at a minimum, must include the information noted below.

a. the applicant's preferred alternative (the project proposed in the permit application)

b. alternatives that would involve no discharges of dredged or fill material into WOTUS (The "No-Action" alternative comprises one or more alternatives that would not involve a discharge of dredged or fill material into WOTUS, which could involve reconfiguring the project to avoid all wetlands on the site, siting the project entirely in uplands offsite, or no-action, i.e. not implementing the project. Although the "No-Action" alternative might not seem reasonable initially, it must always be included in the analysis. The no-action alternative can serve several purposes. First, it may be a reasonable alternative, especially for situations where the impacts are great and the need is relatively minor. Second, it can serve as a benchmark, enabling decision makers to compare the magnitude of the environmental effects of the action alternatives.)

c. alternative offsite locations, including those that might involve less adverse impact to WOTUS

d. onsite alternatives that would involve less adverse impact to WOTUS (These include modifications to the alignments, site layouts, or design options in the physical layout and operation of the project to reduce the amount of impacts to WOTUS.)

e. alternatives that would involve greater adverse impact to WOTUS but avoid or minimize other significant adverse environmental consequences including offsite and onsite options (Alternatives that meet these criteria are uncommon.)

Alternatives that are clearly unreasonable should be identified and eliminated (not evaluated further). For example, alternative sites that are far too small to accommodate the project or that lie outside the geographic boundaries identified in the overall project purpose can be eliminated. This step of the analysis is not intended to rule out alternatives that are "unreasonable" according to the applicant, but those that would be considered "unreasonable" to an objective third-party. The Corps will verify that the criteria used for screening alternatives are objective and not so restrictive that they eliminate actual reasonable alternatives. The applicant must list the alternatives that were initially considered then eliminated from further study because the applicant feels they failed to pass this first round of screening. The Corps will review this list and determine if elimination of these alternatives is appropriate.

The maximum number of reasonable alternatives to study further will vary and depends on the nature and scope of the proposed project; however, there typically should be multiple alternatives to consider. The number of alternatives listed should be greater for

projects involving greater impacts. This is the preliminary list of reasonable alternatives; alternatives that are not practicable will be eliminated from further consideration in the later stages of the analysis.

In many instances, there will be alternatives determined to be both unreasonable and impracticable, as these terms can be nearly synonymous when used in these analyses. Regardless of whether the applicant identifies an alternative as unreasonable or as impracticable, it is imperative the applicant describe, in the context of the overall project purpose and need for the project, why each alternative should be eliminated from further analysis. The Corps must be able to independently review and verify this information and each step in the applicant's alternative analysis.

Step 3: Describe and Analyze Alternatives for Practicability

This step also addresses onsite and offsite alternatives and determines which are practicable and which are not. Practicable is defined here as meaning the alternative is available, is able to achieve the overall project purpose, and is feasible considering cost, existing technology, and/or logistics in light of the overall project purpose.

Alternatives should be clearly listed and numbered for ease of reference and comparison. *At a minimum,* the following information for each alternative site examined should be provided:

1. *General site information:*
    a. specific parcel information including, but not limited to; parcel ID numbers, aerial photos, location maps , FLUCCS codes and GPS coordinates;
    b. presence, quantity and quality of wetlands or other WOTUS;
    c. County/City zoning designation;
    d. the presence of any federally-listed threatened or endangered species or their critical habitat, and/or the presence of any historical properties or resources; and,
    e. site infrastructure (Will the site require new access roads/infrastructure? What are the potential impacts associated with these improvements?).

2. *The practicability of each alternative:*
    a. Practicability: alternatives that are practicable are those that are available and capable of being done by the applicant after considering the following (in light of the project purpose):

        - Cost (For example, the costs associated with various infrastructure components such as roadways or utilities, including upgrades to existing infrastructure components or the need to establish new infrastructure components, may affect the viability of a particular alternative. A location far from all existing infrastructure (roads, water,

sewer, and/or electricity) might not be practicable considering the costs associated with upgrading/establishing the infrastructure necessary to use that site. However, just because one alternative costs more than another, this does not mean that the more expensive alternative is entirely impracticable. Cost is analyzed in the context of the overall cost of the project and whether it is unreasonably expensive or exorbitant. In addition, cost is an objective, industry-neutral inquiry that does not consider an individual applicant's financial standing. The data used for any cost or financial feasibility analysis must be current with respect to the time of the alternatives analysis.);

- Existing Technology (The alternatives examined should consider the limitations of existing technology yet incorporate the most efficient/least-impacting construction methods currently available. For example, alternatives to mining limestone or other minerals may not be practicable considering a lack of technology to allow replacement of that mineral resource in the mass-production of concrete; however, engineered retaining walls can be incorporated into an alternative that substantially minimizes wetland impacts by eliminating fill slopes.); and,

- Logistics (The alternatives examined may incorporate an examination of various logistics associated with the project, i.e., placement of facilities within a required distance, utilization of existing storage or staging areas, and/or safety concerns. Examples of alternatives that may not be practicable considering logistics are a land-locked parcel that cannot be accessed by public roads or a site that is too small to meet the overall project purpose.

b. Availability: The Guidelines state that if it is otherwise a practicable alternative, an area not presently owned by the applicant that could reasonably be obtained, utilized, expanded, or managed in order to fulfill the overall purpose of the proposed activity can still be considered a practicable alternative. In other words, if an applicant does not own an alternative parcel, that does not rule that parcel out as a practicable alternative. **The applicant should consider and anticipate alternatives available during the timeframe that the Corps conducts its alternatives analysis.** An evaluation of availability for purchase and projected cost of such a purchase may be incorporated into this discussion.

c. Other information: any other information that conveys the practicability of the alternatives reviewed in consideration of the overall project purpose should be included.

An alternatives comparison matrix (example on next page) is an effective way to present and compare the main parameters that were considered during the evaluation.

To allow for an objective evaluation, the comparison of the plan(s) for the proposed and alternative sites should be framed for "yes" or "no" answers. A narrative should accompany the matrix defining the practicability factors chosen and further explaining any "no" answers with objective and verifiable data. Practicability of the "no-action" alternative also must be addressed in this narrative and, if applicable, also included in the matrix. The information should explain the consequences on the applicant and the public if the project is not implemented. Any remaining alternatives that are found to be practicable will move on to the next and final step.

If an alternative can be easily documented to be a more environmentally damaging alternative and this can be clearly described within the narrative and matrix, then this step and the following step can be combined. This will save the applicant time and expense; however, it is only appropriate for alternatives where this distinction is clear.

Example Alternative Comparison Matrix for Practicability

Category	Practicability Factor	Alternative 1 Applicant's Preferred Alternative	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Availability	Existing Zoning Appropriate or Potential for Zoning Change?	YES Zoned for this project type	YES Zoned for this project type	YES Zoned for this project type	YES Zoned for agriculture but County has expressed support for the project	YES Zoned for this project type
	Available for Acquisition?	YES Applicant owns the parcel	YES	YES	YES	YES
Cost	Reasonable Acquisition Costs?	YES Applicant owns the parcel	YES	YES	YES	NO Seller will only sell all 350 acres without subdividing
	Costs feasible for mitigating impacts to historic and cultural resources found onsite?	YES No historic or cultural resources found onsite	YES No historic or cultural resources found onsite	YES No historic or cultural resources found onsite	NO If impacts to historic resources onsite allowed, costs to mitigate those impacts will increase project costs from $xxxx to $xxxx	YES No historical or cultural resources found onsite

	Other Costs Feasible?	YES	YES Additional costs for extensive retaining walls	YES	NO Costs to connect to utilities will increase project costs from $xxxx to $xxxx	NO Extensive use of retaining walls, and construction of two bridges increase project costs from $xxxx to $xxxx
Existing Technology	Topography and other Site Conditions Feasible for Construction of Project?	YES	YES With extensive use of engineered retaining walls and drainage systems	YES	YES	YES With extensive use of retaining walls, and bridges over Clear Creek
Logistics	Sufficient Parcel Size?	YES 40 acres	YES 48 acres	NO 21 acres	NO 17 acres	YES 350 acres
	Availability of Utilities?	YES	YES	YES	NO 6 miles to existing water, sewer and power	YES
	Availability for Access?	YES County right-of-way on east property boundary	YES County right-of-way to northwest property corner	NO Landlocked by private parcels and request for an easement was denied	NO Landlocked by private parcels and request for an easement was denied	YES County right-of-way to west side of property

Step 4: Identify the Least Environmentally Damaging Practicable Alternative

1. The Guidelines require that the Least Environmentally Damaging Practicable Alternative (LEDPA) be selected. Therefore, using the same numbering system from the step above, identify the environmental impacts for each remaining practicable alternate site. For each remaining site:

    a. describe the impacts (beneficial or adverse) to the aquatic ecosystem associated with each of the remaining alternatives
    b. describe the overall (beneficial or adverse) environmental impacts associated with each of the remaining alternatives
    c. be specific and quantitative in the identification of impacts (Rather than "Alternative A would result in a large impact to low quality wetlands and ditches that are sparsely vegetated and impact some wildlife." use "Alternative A would result in the discharge of fill material over 2.1 acres of fire-suppressed wet pine flatwoods wetland and 1.2 acres of wet ditches that contain scattered emergent wetland vegetation. Using the Uniform Mitigation Assessment Method, the function and value of the flatwoods wetland and ditch system have been calculated at 0.6 and 0.2,

respectively. Work affecting 0.7-acre of potential flatwoods salamander habitat would also result from siting the project at this location."

2. If multiple practicable alternatives remain, and/or many environmental/relevant factors are involved, another matrix that contains only environmental/relevant parameters (e.g., wetland functional units, listed species, high value upland habitat, historic properties) can be used to assist in illustrating the proposed LEDPA. Emphasis should be placed on impacts to the aquatic environment through functional unit loss of wetlands or other WOTUS that would be affected or eliminated by each alternative. An example matrix is below.

Example Environmental Factor Matrix

Environmental Factors	Alternative 1 Applicant's Preferred Alternative	Alternative 2
Wetland Impacts (Acres)	2.0	6.0
Loss in Wetland Function (UMAM Functional Units)	1.4	3.9
Impacts to Federally Listed Threatened or Endangered Species	No	No
LEDPA	Yes	No

3. Conclude the alternatives analysis with a description of the alternative proposed to be the LEDPA, reiterating the rationale for this determination.

[i] The 404(b)(1) Guidelines (Guidelines) are associated with the Clean Water Act of 1972, and are found in the Federal Register under 40 CFR Part 230

[ii] The Corps' Implementation Procedures for the National Environmental Policy Act (NEPA) of 1969 are found in the Federal Register under 33 CFR Part 325, Appendix B