Section 404(b)(1)

Alternatives Analysis

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# Purpose of the analysis & regulatory need

In compliance with the National Environmental Policy Act (NEPA) and Section 404(b)(1) of the Clean Water Act (CWA), the US Army Corps of Engineers (Corps) must evaluate all reasonable alternatives for projects that require an Individual Section 404 permit.

This analysis supports the proposed project’s selection of a preferred alternative and determination that there is no practicable alternative which would have:

* Less impacts on the aquatic ecosystems.
* No other significant adverse environmental consequences.

*This template is intended as a stand-alone report in support of the NEPA document and permit applications. You may integrate the analysis into the NEPA Environmental Assessment (EA) or Environmental Impact Statement (EIS). See the* [*Practitioner’s handbook #14*](https://environment.transportation.org/resources/practitioners-handbooks/applying-the-section-404b1-guidelines-in-transportation-project-decision-making/) *for guidance on how to integrate the 404(b)(1) into the NEPA process and documents. If you integrated the analysis into NEPA, use the logic of this template during permitting to:*

* *Summarize the conclusion of the analysis.*
* *Tell the Corps where in the EA or EIS the supporting information can be found.*
* *Update the information from the EA or EIS. For example, if the scope of the preferred alternative, impacts to aquatic resources, or impacts to other environmental resources have changed.*

*As you prepare this report, keep in mind that it is a preliminary design document. All the details and impact estimates are based on the limited information available at preliminary design. The Corps liaisons will use this report and the final impact information from the permit application to make their permit decision.*

# Project description

## Purpose & need

*Use the purpose & need for NEPA. Purpose = what the project will accomplish, how it will meet the need. Need = deficiency or issue to resolve.*

## Project area

*Provide general site information such as:*

* *Location of work – city, county, etc.*
* *Zoning designations and land use.*
* *General hydrology, vegetation, and soil.*
* *Presence of protected species, habitats, or resources.*
* *Site infrastructure.*

## Alternatives

Multiple alternatives were initially considered for the proposed project, including the no-build (or no action) alternative. Alternatives that would not meet the purpose and need were not carried forward for this analysis.

*Make sure to include alternatives that:*

* *Would not discharge dredged or fill material into Waters of the US (WOTUS).*
* *Are offsite or not in the immediate area that may have less adverse impacts to WOTUS.*
* *Are onsite with variations to the alignments, layouts, design, or operation that reduce the amount of impacts to WOTUS.*

*Add sections for additional build alternatives besides the preferred that you considered in this analysis as needed.*

### Preferred alternative

### No-build alternative

### 2.3.3 Alternatives not carried forward

# Evaluation criteria

The analysis uses the following criteria to determine if the alternatives are practicable (in order from most to least influence on the selection):

* Impacts to waters of the US (WOTUS)
* Logistics & constructability
* Existing technologies
* Cost

*In the subsections below, for each criterion, provide:*

* *A definition of the criteria.*
* *Discussion of the constraints or limiting factors are the basis for the criteria.*
* *Thresholds at which those constraints or factors are not practicable.*

## Impacts to waters of the US

*Provide brief statements on how aquatic resources were delineated and the results. Refer to the Wetland & Stream Report for additional details. Briefly describe who has jurisdiction over the aquatic resources in the project area.*

Impacts to WOTUS were quantified using the preliminary work limits and the definitions of impacts from the Wetland Mitigation in Washington State – Part 1 (Ecology, Corps, EPA 2021). For each alternative, the project design team looked for ways to avoid and minimize impacts to WOTUS. Any unavoidable impacts will be compensated for in accordance with the Compensatory Mitigation for Losses of Aquatic Resources (Federal Register 2008).

For each alternative, this report will compare:

* Quantified area of direct permanent and temporary impacts on aquatic resources.
* The rating, functions, and values of impacted aquatic resources.
* Qualitative indirect impacts on aquatic resource functions.
* Availability of compensatory mitigation.

*In the analysis (Part 4), for each alternative, provide the impact information from the list above. Explain how the alternative would avoid and minimize impacts. If the preferred does not have the least amount of impacts, focus on how the preferred alternative will avoid and minimize impacts, how it is practicable even with more impacts than another alternatives, and if other alternatives may also be practicable.*

## Impacts to protected species, habitats, and other resources

To determine if each alternative would have other significant adverse environmental consequences, the impacts to the following resources will be considered:

* **Endangered species & their habitats** – How will the alternative affect federally listed threatened or endangered species and proposed or designated Critical Habitats? Would it put any species or their habitats in jeopardy?
* **Historic properties (Section 106)** - How will the alternative affect properties on or eligible for listing in the National Register of Historic Places? Would it result in an adverse effect that could not be mitigated?
* **Floodplains** – Will the alternative result in a rise to the base flood elevation? What impact would the rise have on flood risks to upstream and downstream property owners and the biologic functions of the aquatic resource(s)?

*Add additional sensitive resources in the project area (Section 4(f) properties, HazMat, EJ, Climate, subsistence resources, etc.) especially if you know the alternatives’ impacts vary substantially or if there are public, tribal, or other stakeholder concerns about the preferred alternative.*

*Consider looking at water quality related concerns or risks (turbidity, pH, site contamination) to support the application for a Section 401 Water Quality Certification.*

*For the analysis (Part 4), describe the impacts and consultation efforts. Explain whether the adverse impacts to other resources would be considered “significant”. This should be consistent with your NEPA documents and can refer (attach by reference, do not append to this report) heavily to the other discipline reports and consultations.*

## Logistics & constructability

*Design and viability logistics. Ask pass fail questions like:*

* *Will the project maintain access to and from the interstate?*
* *Will the project meet current design and safety standards?*
* *Is WSDOT able to or do we have condemnation authority to acquire the property? Note, not owning the property does not make an alternative impracticable.*

*For the analysis (Part 4), answer the questions.*

## Existing technologies

*Describe general limitations and how they will be considered for each alternative. This could include soil stabilizing techniques, cantilevered roadways, and retaining walls; these would more likely increase cost (Part 3.5).*

*For the analysis (Part 4), discuss the limitations of existing technology such as construction equipment, methods, and materials needed to build the alternatives.*

## Cost

*Briefly describe how you will compare the construction and operation costs for each alternative.*

*For the analysis (Part 4), compare the cost totals in dollars.*

# Alternative analysis

*An alternative only needs to fail one of the evaluation criteria to be eliminated from consideration as practicable. For some projects that have only a couple alternatives and straight-forward criteria, consider only using the comparison table below or integrating the analysis in Part 4 into Part 3. Add additional alternative columns and criteria rows to the table as needed.*

See Table X for a summary of the alternatives analysis.

|  |  |  |
| --- | --- | --- |
| **Table X. Summary of alternatives analysis** | | |
| **Criteria** | **Preferred Alternative** | **No-build alternative** |
| **Impacts to WOTUS** | | |
| Permanent impacts |  |  |
| Temporary impacts |  |  |
| Indirect impacts |  |  |
| Rating & values |  |  |
| Compensatory mitigation |  |  |
| **Impacts to other protected resources** | | |
| Endangered species & habitats |  |  |
| Historic properties |  |  |
| Floodplains |  |  |
|  |  |  |
| **Logistics & constructability** | | |
| Available for acquisition? |  |  |
|  |  |  |
| **Existing technologies** | | |
| Equipment available? |  |  |
| Materials available? |  |  |
| **Cost** | | |
| To construct |  |  |
| To operate |  |  |
|  |  |  |
| Is the alternative practicable? |  |  |

*If two or more alternatives are determined practicable from the analysis, consider adding additional comparison matrices below or descriptions of the impacted resources or significance of the impacts. For example, if two alternatives would result in bout the same amount of wetland impacts put more details on the ratings, functions, and values of those wetlands in a separate comparison matrix.*

## Preferred alternative

### Impacts to waters of the US

### Logistics & constructability

### Existing technologies

### Cost

## No-build alternative

### Impacts to waters of the US

### Logistics & constructability

### Existing technologies

### Cost

# Least environmentally damaging practicable alternative

Based on this analysis, the preferred alternative is the proposed least environmentally damaging practicable alternative.

*Explain if the other alternatives are practicable. if there is more than one practicable alternative, explain why they are more damaging to aquatic resources or have significant impacts than the preferred. If the other practicable alternatives have similar impacts, the preferred alternative may be considered the least damaging.*

# References

[Ecology, Corps, EPA] Washington State Department of Ecology, U.S. Army Corps of Engineers Seattle District, and U.S. Environmental Protection Agency Region 10. 2021. *Wetland Mitigation in Washington State–Part 1: Agency Policies and Guidance (Version 2)*. Washington State Department of Ecology Publication #21-06-003.

Federal Register. 2008. *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule*. Federal Register Vol. 73, No. 70, Date April 10, 2008, Pages 19593-19705.

# Appendices