

Wetlands Finding
Only Practicable Alternative Finding
A finding by the Federal Highway Administration

Executive Order (E.O.) 11990, “Protection of Wetlands,” mandates that federally funded projects are to avoid construction in wetlands unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands. In compliance with E.O. 11990, the FHWA has determined that the Northern Access – Erickson Alternative (with the Southern Alignment, 8,200-foot bridge length, cut-and-cover tunnel under Erickson Street) is the only practicable alternative for the Knik Arm Crossing Project. Information about alternatives and their impacts provided in this document summarizes information provided in the Knik Arm Crossing Project Final Environmental Impact Statement.

Need for project. The purpose of the Knik Arm Crossing Project is to improve vehicular access and surface transportation connectivity between the Municipality of Anchorage (Anchorage) and the Matanuska-Susitna Borough (Mat-Su) with a financially feasible and efficient crossing of Knik Arm, including adequate connections to the committed roadway network on both sides of the Arm.

Recommended Alternative. FHWA evaluated several alternatives to link Anchorage and the Mat-Su through a bridge across Knik Arm. From these alternatives, FHWA selected the Northern Access – Erickson Alternative (with the Southern Alignment, 8,200-foot bridge length, cut-and-cover tunnel under Erickson Street). On the Mat-Su side, this route includes Point MacKenzie Road, from the intersection with Burma Road south to Port MacKenzie, and the Northern Access Alternative through the Port District to the proposed Knik Arm Bridge. The route then crosses Knik Arm on the Southern Alignment 8,200-foot-long, pier-supported bridge and its accompanying Below-the-Bluff Roadway. On the Anchorage side, the route includes a cut-and-cover tunnel under Government Hill below Erickson Street connecting to the A-C Couplet and, when traffic demand warrants, to the Ingra-Gambell Couplet and the Highway-to-Highway project.

Wetlands Involvement. The Recommended Alternative would result in approximately 39.6 acres of total direct impacts to wetlands. This includes 28.5 acres of wetland impacts on the Mat-Su side and approximately 11.1 acres of wetland impacts on the Anchorage side. Construction of the roadway would include disturbance in wetlands outside the project footprint. Ground disturbance outside the project footprint would permanently alter approximately 6 acres of wetlands; 4 additional acres of forested, scrub-shrub, and emergent wetlands on the Mat-Su side and approximately 2 acres of forested, shrub, and sedge or grass wetlands on the Anchorage side. The wetlands outside the footprint but within the permitted disturbance limits would be adversely affected by soil disturbance and receipt of sediments and other pollutants during construction, and the vegetation would be permanently altered by this disturbance.

Alternatives Considered. A wide range of possible alternatives (reflecting multiple transportation modes, crossing methods, and corridors) was considered during the EIS process. Section 2.0 of the Draft EIS provides an overview of the alternatives development and screening process, and the results of that process, the reasonable alternatives carried forward for detailed analysis in the Draft EIS. The alternatives evaluated in the Draft EIS are:

- No-Action Alternative

*Appendix M:
Wetlands Finding and Floodplains Finding*

- Point MacKenzie Road – Degan Alternative (with the Southern Alignment, 8,200-foot and 14,000-foot bridge lengths, cut-and-cover tunnel under Degan Street)
- Point MacKenzie Road – Erickson Alternative (with the Southern Alignment, 8,200-foot and 14,000-foot bridge lengths, cut-and-cover tunnel under Erickson Street)
- Northern Access – Degan Alternative (with the Southern Alignment, 8,200-foot and 14,000-foot bridge lengths, cut-and-cover tunnel under Degan Street)
- Northern Access – Erickson Alternative (with the Southern Alignment, 8,200-foot and 14,000-foot bridge lengths, cut-and-cover tunnel under Erickson Street)

Under any alternative, the KAC project would be phase-constructed as travel demand warrants, with an initial minimum two-lane bridge and a connection to the A/C Couplet in Phase 1, with the potential by the design year 2030 to expand the bridge to four lanes and to connect to the Ingra/Gambell Couplet facility by the year 2030 (Phase 2).

Phase 1 construction would include improvements to existing roadway and development of connectors in the Mat-Su; construction of the bridge structure and approaches; construction of a road below the bluff, around Cairn Point, and behind the Port of Anchorage; and construction of a cut-and-cover tunnel under Government Hill. A toll plaza and lanes are also included in the initial construction. The southeast end of the project in Phase 1 would connect to the A-C Couplet by way of Loop Road. Traffic studies have shown that the A-C Couplet currently has capacity available for additional traffic until about 2020. After that time, or when traffic increases to the point that another connection is required, Phase 2 would be constructed in coordination with the Highway-to-Highway Project.

Phase 2 construction would include the full build-out to four lanes on the Mat-Su, expansion of the bridge structure to four-lanes, and extension of the project to the Ingra-Gambell Couplet by way of a bridge structure (the Ingra-Gambell Viaduct) across the Ship Creek rail yard.

The FHWA has determined that the Northern Access – Erickson Alternative (with the Southern Alignment, 8,200-foot bridge length, cut-and-cover tunnel under Erickson Street) is the only practicable alternative.

FHWA based its finding on maximizing constructability, minimizing technical and environmental issues, lowering construction costs, and minimizing impacts on the communities and stakeholders in the Study Area. Table 1 provides a comparative summary of the project alternatives.

Table 1. Summary of direct impacts—complete project

	No-Action Alternative	Point MacKenzie Road – Degan Alternative (with Southern Alignment 8,200-foot or 14,000-foot bridge, cut-and-cover tunnel under Degan Street)	Point MacKenzie Road – Erickson Alternative (with Southern Alignment 8,200-foot or 14,000-foot, cut-and-cover tunnel under Erickson Street)	Northern Access – Degan Alternative (with Southern Alignment 8,200-foot or 14,000-foot bridge, cut-and-cover tunnel under Degan Street)	Northern Access – Erickson Alternative (with Southern Alignment 8,200-foot or 14,000-foot bridge, cut-and-cover tunnel under Erickson Street)				
Costs^a									
		8,200-foot bridge	14,000-foot bridge ^b	8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge
Construction	--	Phase 1: \$391.9M	Phase 1: \$551.4M	Phase 1: \$396.5M	Phase 1: \$556.0M	Phase 1: \$392.4M	Phase 1: \$551.9M	Phase 1: \$397.0M	Phase 1: \$556.5M
		Phase 2: \$261.8M	Phase 2: \$350.2M	Phase 2: \$272.4M	Phase 2: \$360.8M	Phase 2: \$259.3M	Phase 2: \$347.7M	Phase 2: \$269.9M	Phase 2: \$358.3M
Design, engineering, construction administration	--	Phase 1: \$56.8M	Phase 1: \$79.9M	Phase 1: \$57.5M	Phase 1: \$80.6M	Phase 1: \$56.9M	Phase 1: \$80.0M	Phase 1: \$57.6M	Phase 1: \$80.7M
		Phase 2: \$38M	Phase 2: \$50.8M	Phase 2: \$39.5M	Phase 2: \$52.3M	Phase 2: \$37.7M	Phase 2: \$50.5M	Phase 2: \$39.2M	Phase 2: \$52.0M
Contingency	--	Phase 1: \$80.4M	Phase 1: \$112.4M	Phase 1: \$81.5M	Phase 1: \$113.5M	Phase 1: \$80.6M	Phase 1: \$112.6M	Phase 1: \$81.7M	Phase 1: \$113.7M
		Phase 2: \$94.7M	Phase 2: \$126.7M	Phase 2: \$99.0M	Phase 2: \$131.0M	Phase 2: \$93.7M	Phase 2: \$125.7M	Phase 2: \$98.0M	Phase 2: \$130.0M
Total (by phase)^c	--	Phase 1: \$529.1M	Phase 1: \$743.7M ^c	Phase 1: \$535.5M	Phase 1: \$750.1M ^c	Phase 1: \$529.9M	Phase 1: \$744.5M ^c	Phase 1: \$536.3M	Phase 1: \$750.9M ^c
		Phase 2: \$394.5M	Phase 2: \$527.7M	Phase 2: \$410.9M	Phase 2: \$544.1M	Phase 2: \$390.7M	Phase 2: \$523.9M	Phase 2: \$407.1M	Phase 2: \$540.3M
(Note that Phase 2 includes future build-out of project through 2030 and would be funded through toll revenues.)									

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Appendix M:
Wetlands Finding and Floodplains Finding

	No-Action Alternative	Point MacKenzie Road – Degan Alternative (with Southern Alignment 8,200-foot or 14,000-foot bridge, cut-and-cover tunnel under Degan Street)	Point MacKenzie Road – Erickson Alternative (with Southern Alignment 8,200-foot or 14,000-foot, cut-and-cover tunnel under Erickson Street)	Northern Access – Degan Alternative (with Southern Alignment 8,200-foot or 14,000-foot bridge, cut-and-cover tunnel under Degan Street)	Northern Access – Erickson Alternative (with Southern Alignment 8,200-foot or 14,000-foot bridge, cut-and-cover tunnel under Erickson Street)
Right-of-way (ROW)					
ROW costs	--	\$ 18.8M	\$ 12.3M	\$ 18.6M	\$ 12.1M
ROW acquisitions/relocations (number of structures, with the number of relocations in parentheses) ^d	No impact	8 Residential (14) 2 Temp residential (3) 2 Commercial (2) 2 Non-profit (2) 1 Temp. nonprofit (1) 5 Industrial (6) Affected parcels: 72 Relocations: 28	9 Residential (16) 4 Commercial (4) 1 Temp. commercial (1) 5 Industrial (6) Affected parcels: 70 Relocations: 27	8 Residential (14) 2 Temp residential (3) 2 Commercial (2) 2 Nonprofit (2) 1 Temp. nonprofit (1) 5 Industrial (6) Affected parcels: 70 Relocations: 28	9 Residential (16) 4 Commercial (4) 1 Temp. commercial (1) 5 Industrial (6) Affected parcels: 68 Relocations: 27
Hazardous materials and contaminated sites	No impact	Elevated ordnance and explosives risk 4 High-risk sites 6 Medium-risk sites 10 Low-risk sites	Elevated ordnance and explosives risk 5 High-risk sites 7 Medium-risk sites 10 Low-risk sites	Elevated ordnance and explosives risk 4 High-risk sites 6 Medium-risk sites 10 Low-risk sites	Elevated ordnance and explosives risk 5 High risk-sites 7 Medium-risk sites 10 Low-risk sites

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Section 106 and Section 4(f) Historic Properties	POA expansion impacts <i>Tak'at</i> historic native fish camp	Impact on <i>Tak'at</i> historic native fish camp Square & Round Dance Club	Impact on <i>Tak'at</i> historic native fish camp Urban Renewal Historic District crosses 3 residences	Impact on <i>Tak'at</i> historic native fish camp Impacts Anchorage Square & Round Dance Club	Impact on <i>Tak'at</i> historic native fish camp Impacts Government Hill Urban Renewal Historic District crosses 3 residences including 3 contributing structures
Section 4(f) recreational properties					
Point MacKenzie Recreational Trailhead	No impact	0.55 acre of park used	0.55 acre of park used	No impact	No impact
Harvard Park	No impact	3.7 acres of ROW 79% of park used 1.0 acres remaining	0.1 acre of ROW 2% of park used 4.6 acres remaining	3.7 acres of ROW 79% of park used 1.0 acres remaining	0.1 acre of ROW 2% of park used 4.6 acres remaining
Sunset Park	No impact	3.2 acres of ROW 59% of park used 2.2 acres remaining	1.7 acres of ROW 31% of park used 3.8 acres remaining	3.2 acres of ROW 59% of park used 2.2 acres remaining	1.7 acres of ROW 31% of park used 3.8 acres remaining
Wetlands					
Forested	No impact	15.8 acres	15.5 acres	11.3 acres	11.0 acres
Sedge and grass	No impact	18.4 acres	19.5 acres	16.6 acres	17.7 acres
Scrub/shrub	No impact	13.8 acres	13.5 acres	11.2 acres	10.9 acres
Floodplains	No impact	No impact	No impact	No impact	No impact

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		8,200-foot ridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge
Marine habitat	No impact	Subtidal waters: 8.0 acres Estuarine shores and mudflats: 80.4 to 82 acres	Subtidal waters: 0 acres Estuarine shores and mud flats: 45 acres	Subtidal waters: 8.0 acres Estuarine shores and mudflats: 80.4 to 82 acres	Subtidal waters: 0 acres Estuarine shores and mud flats: 45 acres	Subtidal waters: 8.0 acres Estuarine shores and mudflats: 80.4 to 82 acres	Subtidal waters: 0 acres Estuarine shores and mud flats: 43.2 to 46.1 acres	Subtidal waters: 8.0 acres Estuarine shores and mudflats: 80.4 to 82 acres	Subtidal waters: 0 acres Estuarine shores and mud flats: 45 acres
Beluga whale	Increased marine traffic from Port MacKenzie and POA expansion plans	Limited loss in habitat Embankment and pier obstacles Construction noise from installation of 33 piers over 2 const. seasons Narrower opening into Knik Arm has the potential to result in loss of important feeding and rearing habitat	Limited loss in habitat Pier obstacles Construction noise from installation of 66-76 piers over 3 or more const. seasons	Limited loss in habitat Embankment and pier obstacles Construction noise from installation of 33 piers over 2 const. seasons Narrower opening into Knik Arm has the potential to result in loss of important feeding and rearing habitat	Limited loss in habitat Pier obstacles Construction noise from installation of 66-76 piers over 3 or more const. seasons	Limited loss in habitat Embankment and pier obstacles Construction noise from installation of 33 piers over 2 const. seasons Narrower opening into Knik Arm has the potential to result in loss of important feeding and rearing habitat	Limited loss in habitat Pier obstacles Construction noise from installation of 66-76 piers over 3 or more const. seasons	Limited loss in habitat Embankment and pier obstacles Construction noise from installation of 33 piers over 2 const. seasons Narrower opening into Knik Arm has the potential to result in loss of important feeding and rearing habitat	Limited loss in habitat Pier obstacles Construction noise from installation of 66-76 piers over 3 or more const. seasons

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		8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge	8,200-foot bridge	14,000-foot bridge
Essential fish habitat	No impact	Subtidal waters: 8.0 acres	Subtidal waters: 0 acres	Subtidal waters: 8.0 acres	Subtidal waters: 0 acres	Subtidal waters: 8.0 acres	Subtidal waters: 0 acres	Subtidal waters: 8.0 acres	Subtidal waters: 0 acres
		Estuarine shores and mud flats: 80.4 to 82 acres	Estuarine shores and mud flats: 45 acres	Estuarine shores and mud flats: 80.4 to 82 acres	Estuarine shores and mud flats: 45 acres	Estuarine shores and mud flats: 80.4 to 82 acres	Estuarine shores and mud flats: 45 acres	Estuarine shores and mud flats: 80.4 to 82 acres	Estuarine shores and mud flats: 45 acres
		Construction noise from installation of 33 piers over 2 const. seasons	Construction noise (> 8,200-foot bridge) from installation of 66-76 piers over 3 or more const. seasons	Construction noise from installation of 33 piers over 2 const. seasons	Construction noise (> 8,200-foot bridge) from installation of 66-76 piers over 3 or more const. seasons	Construction noise from installation of 33 piers over 2 const. seasons	Construction noise (> 8,200-foot bridge) from installation of 66-76 piers over 3 or more const. seasons	Construction noise from installation of 33 piers over 2 const. seasons	Construction noise (> 8,200-foot bridge) from installation of 66-76 piers over 3 or more const. seasons

^a As part of the Scoping process, initial Rough-Order-of-Magnitude (ROM) construction cost estimates were prepared as a basis for preliminary corridor and corridor variant evaluations. Once reasonable alternatives were identified, additional refinement and cost and impact evaluations were performed, including cost estimates for controlled access right-of-way, preliminary engineering, construction administration, and contingencies. Due to the evolving process of alternatives development, early construction cost estimates prepared as part of the Scoping process are not readily comparable to later phase comprehensive cost evaluations.

^b The 14,000-foot bridge length was found to not be financially feasible and did not meet Purpose and Need criteria, however, this alternative was carried forward solely for comparative evaluation based on requests from environment resource and permitting agencies.

^c Phase 1 construction would include improvements to existing roadway and development of connectors in the Mat-Su; construction of the bridge structure and approaches; construction of a road below the bluff, around Cairn Point, and behind the POA; and construction of a cut-and-cover tunnel under Government Hill. A toll plaza and lanes would also be included in the initial construction. The southeast end of the project in Phase 1 would connect to the A-C Couplet by way of Loop Road. The A-C Couplet currently has capacity available for additional traffic until about 2020. After that time, or when traffic increases to the point that another connection is required, Phase 2 would be constructed in coordination with the Highway-to-Highway Connection project.

Phase 2 construction would include the full build-out to four lanes on the Mat-Su, expansion of the bridge structure to four lanes, and extension of the project to the Ingra-Gambell Couplet by way of a bridge structure across the Ship Creek rail yard. This would be funded through toll revenues.

^d Number of relocations may be greater than the number of structures affected because of the number of multifamily units such as duplexes or more than one business per lessee per unit.

FHWA selected the Northern Alignment on the Mat-Su side because it would avoid wetlands, would not affect Port MacKenzie operations, and would be favored by Mat-Su Borough and Port MacKenzie officials.

The Southern Alignment with an 8,200-foot-bridge was selected because it would be the most technically reasonable alignment, would avoid the Cairn Point Trench, would not adversely affect military mission and operations, and would limit impacts to beluga whales. An 8,200-foot-long pier-supported bridge is preferred because, in addition to lower construction costs, a shorter bridge would involve more favorable constructability issues—chiefly, having to drive fewer piers—resulting in less construction noise and shorter in-water construction time. Less noise and shorter construction time would mean less potential to disrupt beluga whale behavior and movement patterns.

FHWA identified the cut-and-cover tunnel through Government Hill below Erickson Street to connect the A-C Couplet and, when traffic demand warrants, to the Ingra-Gambell Couplet and the Highway-to-Highway project for its ability to maximize constructability, minimize technical and environmental issues, and minimize impacts on communities and stakeholders. FHWA identified the Erickson Alternative as the least disruptive to Government Hill neighborhood of the two proposed alternatives.

Measures to minimize harm. Impacts to wetlands were avoided wherever practicable in the preliminary design phase. The following steps would be adhered to during project planning. Each step would be implemented to the extent feasible before moving on to the next step, in an effort to avoid and minimize the overall adverse effects of implementation of the proposed project.

The following actions would be taken to avoid and minimize potential impacts to wetlands in the project corridor:

1. Design the project to avoid impacts

The preliminary design of the proposed KAC project largely avoids impacts to wetlands by:

- incorporating the existing road prism throughout the entire Port MacKenzie Road alignment
- locating the northernmost wetland crossing at the wetland's narrowest point.

2. Incorporate measures to minimize adverse impacts

Minimization of adverse impacts would be achieved by:

- using properly sized and designed culverts in appropriate locations to maintain natural flow patterns for surface water to ensure that timing and amounts of inflow to adjacent wetlands and waters would be retained.
- incorporating into the Government Hill drainage design all feasible measures to detain water on-site or in other designated areas and to avoid direct routing of stormwater to creeks.

3. Restore sites that must be temporarily affected by the project

To protect hydrologic and water quality functions that would be temporarily disturbed but not destroyed by implementation of the proposed project, affected wetland areas would be recontoured and revegetated with plant species indigenous to the Cook Inlet area.

4. *Compensate for unavoidable impacts through preservation, restoration, or creation of wetlands*

In areas where wetlands would be filled or fragmented and functions lost, the Anchorage Debit/Credit Methodology would be used to determine the appropriate level of compensation needed to offset the wetland loss. As design would progress, KABATA and FHWA would work with the U.S. Army Corps of Engineers to determine the area of wetlands adversely affected, the appropriate relative ecological value (REV) of affected wetlands, and compensation to be provided to Great Land Trust.

All necessary permits and agency approvals would be obtained prior to construction and any permit stipulations would be incorporated into the contract specifications.

Only Practicable Alternatives Finding. Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. Based on these considerations, the proposed action (Northern Access – Erickson Alternative) is determined to be in compliance with E.O. 11990.

Floodplains Finding

No floodplains mapped by the Federal Emergency Management Agency (FEMA) will be affected by the project. As stated in the EIS, the project will be designed to FHWA standards regarding flood elevations. The finding is that no FEMA floodplains will be affected. This satisfies the need for a floodplain finding under Executive Order 11988, Floodplain Management.

Floodplains in the Mat-Su portion of the Study Area would be unlikely to be directly affected by either the Northern Alignment Alternative, because there are no mapped or expected unmapped floodplains or streams in the area.

The recommended Southern Alignment 8,200-foot-long, pier-supported bridge and its accompanying Below-the-Bluff Roadway will not have a measurable impact on Knik Arm tidal flooding. While this alternative could cause a 0.3-inch decrease in the extreme high-tide level, it will occur only during extreme high-tide events. No increase in base flood elevation will occur (Draft EIS Section 4.8.1.3).

In Anchorage, the Erickson Alternative would pass along the east side of the POA and over Government Hill and would be outside of the FEMA-mapped base floodplains. The alternative would cross Ship Creek by way of the existing A-C Viaduct and eventually by way of the proposed new Ingra-Gambell Viaduct. Existing viaducts are elevated by piers placed in the valley floor and are sufficiently above the base floodplain to avoid conflicts with other existing uses. The proposed Ingra-Gambell Viaduct for the Erickson Alternative would be similarly elevated on piers to avoid conflicts with existing uses. Preliminary designs have these piers placed outside the Ship Creek floodway and outside of the mapped base floodplain. Piers could be placed in the regulatory base floodplain without affecting the regulatory base flood elevation for Ship Creek. Therefore, the project should have no impact on Ship Creek floods.

All roads would be designed to maintain existing surface watercourses and would incorporate swales or a stormwater treatment system, where appropriate, to minimize the effects of runoff. Additionally, alterations to surface drainage and hydrology that could adversely affect nearby water bodies would be avoided or minimized through incorporation of appropriately sized and placed culverts in the roadway design, as described in the *Hydrology and Hydraulic Environment of Knik Arm* Technical Report (KABATA 2006c).