

## 5 PROPOSED MITIGATION AND COMMITMENTS

The Alaska Department of Transportation and Public Facilities (DOT&PF) would make a number of commitments and implement a variety of mitigation measures to address the potential impacts of a build alternative if one is selected for the Juneau Access Improvements (JAI) Project. The preliminary alignments for highway segments of all alternatives have been adjusted several times over the course of environmental and preliminary engineering studies to avoid impacts to wetlands, marine areas, wildlife, and cultural resources. During design of the alternative selected for the project, DOT&PF would investigate additional measures to reduce potential impacts, including further small alignment changes and changes to reduce the roadway footprint in wetlands and other sensitive areas (such as steepened slopes and reduced embankment heights). Specific commitments and mitigation measures for the project are described below by resource area. Sections 5.1 through 5.11 contain commitments for all reasonable alternatives. Section 5.12 contains the proposed mitigation plan specifically for the Preferred Alternative. The mitigation measures contained herein are proposed measures that may be revised in the Final SEIS based on comments on the Draft SEIS.

### 5.1 Water Quality

1. An erosion and sediment control plan would be prepared to describe the Best Management Practices (BMPs) to use to avoid water quality impacts to wetlands and other water bodies. Only clean fill material (excavated rock or mineral soil) would be used for the roadway and ferry terminal embankments. Staking would be done at the planned outside limits of disturbance prior to construction to ensure that impacts are limited to that area.
2. In wetland areas, the roadway would be constructed using the minimum-width fill footprint necessary (see Figure 2-7b). In wetland and other sensitive<sup>1</sup> areas, the roadway would be constructed with a low-profile embankment to limit the fill footprint, to the extent practicable. Rock would be used to stabilize the toes of slopes at ponds and stream crossings.
3. Grass seed would be placed on any road slope containing soil. To protect the integrity of the natural plant communities, plant species indigenous to the area and to the extent certified seeds are available, would be used for vegetating road slopes, except that non-native annual grasses may be used to provide initial soil cover. No grubbing would be done outside of the fill footprint and the only clearing done beyond the 10-foot vegetation clearing limit (shown in Figure 2-7b) would be for individual trees that might pose a safety hazard to the traveling public.
4. Sediment barriers would be used to control sediment transport during construction. Sediment basins would be used, as necessary, during construction.
5. Culverts would be installed through fill slopes in appropriate locations to maintain natural flow patterns for surface water.

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<sup>1</sup> This Draft SEIS is based on the 2006 Final EIS and substantive changes have been highlighted in gray for easy identification by the reader.

## 5.2 Hazardous Materials

The Alaska Department of Environmental Conservation (ADEC) Contaminated Site at the Auke Bay Ferry Terminal (File No. 1531.38.005) requires further cleanup and is currently being monitored. Mitigation may be necessary should contaminated material be unearthed during structural modifications of the terminal with development of Alternative 4A, 4B, 4C, or 4D.

If waste rock disposal on U.S. Forest Service lands (USFS) outside the easement limits becomes necessary, DOT&PF would test the rock for acid-generating potential and total metals content to determine appropriate disposal. Hazardous materials would not be disposed of on USFS property.

## 5.3 Wetlands

1. DOT&PF has avoided wetlands to the extent practicable during development of the preliminary alignments. The roadway would be constructed using the minimum-width fill footprint necessary (see Figure 2-7b). During final engineering design of the selected alternative, DOT&PF would investigate ways to further minimize encroachment on wetlands.
2. Embankment heights and side slopes would be minimized during design to reduce wetland footprints.
3. During construction, slope limits in wetlands areas would be separately identified to ensure that workers are aware of wetlands and the need to avoid impacts beyond the slope and clearing limits.
4. Construction camps, borrow pits, and waste areas would be located in upland areas and stabilized during and after use to avoid water quality impacts to wetlands and water bodies.

For more information on wetlands, see Section 5.12.4.

## 5.4 Terrestrial Habitat

1. Only certified seed mixtures would be used to seed exposed soils.
2. No non-mineral soil from outside the project boundaries would be imported to the project site. Any soil within areas disturbed by construction of the project identified as containing invasive species would not be transported to other areas of the project.
3. Construction equipment would be pressure washed prior to use on the project.
4. To the extent practicable, shot rock slopes would be covered with overburden and seeded to reduce their visibility.

## 5.5 Intertidal and Subtidal Areas

1. During design, DOT&PF would investigate ways to further reduce intertidal fills, including alignment shifts and steepened slopes. To the extent practicable, temporary beach access points would be chosen to take advantage of existing landings, previously disturbed sites, or locations of planned fill. Additional necessary access points identified during construction would be sited to minimize impacts to habitat. These

access points would be restored after project completion to conditions similar to those that existed previously.

2. In-water work for fill placement, dredging, or pile driving would be timed to avoid impacts to spawning and migrating fish species.
3. Breakwaters at the ferry terminals would be constructed with gaps or large culverts to allow passage of juvenile fish near shore.
4. Shuttle ferries would have wastewater holding tanks to avoid discharge of waste while moored at the new terminal sites.

For more information on intertidal and subtidal areas, see Section 5.12.4.

## 5.6 Anadromous and Resident Fish Streams

1. All anadromous fish streams would be crossed by bridges. Anadromous fish streams that can be crossed with 130-foot or shorter bridges would not have any structure or fill in the stream channel. Anadromous fish streams that require pier supports would have the minimum possible piers using 130-foot spacing, placed to reduce impact to the streams.
2. Streams identified as having resident fish, or the potential to have resident fish in the future, would have culverts placed to provide fish passage, in accordance with the Memorandum of Agreement between the Alaska Department of Fish and Game (ADF&G) and DOT&PF titled “Design, Permitting, and Construction of Culverts for Fish Passage.”
3. In-water work at anadromous and resident fish streams would be timed to minimize impacts to fish species. For instance, to avoid impacts to outmigrant salmonids and spawning eulachon, construction of all river crossings with in-stream piers would not occur from March 15 through June 15.

## 5.7 Bald Eagles

1. On-the-ground nest surveys would be conducted before clearing takes place to confirm the location of trees with eagle nests. Construction activities in the vicinity of bald eagle nests would be coordinated with the U.S. Fish and Wildlife Service (USFWS) to determine the need for alignment changes, blasting plan changes, or other measures to avoid impacts to eagles.
2. In areas where clearing occurs to within 100 feet of a nest tree, DOT&PF and USFWS would jointly assess the potential for windthrow and stabilize the tree or adjacent trees, if determined necessary.
3. During construction, DOT&PF and USFWS would assess the sufficiency of natural screening between the highway and any eagle nests below the elevation of the road within the 330-foot zone. Additional screening would be developed if necessary.
4. DOT&PF would continue to fund USFWS aerial surveys for a period of 5 years after the JAI Project is open to traffic to assess the impact, if any, of the project on the Southeast Alaska bald eagle population.

DOT&PF would apply for bald eagle Disturbance Permits for nests located within 660 feet of work limits and for nests within 0.5 mile of blasting activities. Under alternatives that require the widening of 2.9 miles of the existing Glacier Highway, DOT&PF would obtain Disturbance Permits for construction activities within 660 feet of eagle nest trees as determined necessary in consultation with the USFWS.

## 5.8 Migratory Birds

In appropriate habitats, nesting surveys for Queen Charlotte goshawk would be conducted prior to construction. Clearing would be avoided in the vicinity of active nests.

## 5.9 Wildlife

1. Planning for any camps necessary during construction of the project would include BMPs for handling food, trash, and other potential wildlife attractants to reduce impacts.
2. In areas where established wildlife crossings are noted and ADF&G requests, side slopes along the road alignments would be designed to provide easier access across the road for wildlife.
3. Pile driving at ferry terminals and multi-span bridge construction sites would be done with vibratory hammers to the extent practicable to minimize impacts to marine mammals. Impact proofing<sup>2</sup> necessary for weight-bearing piles would be accomplished as quickly as practicable to reduce acoustic impact.
4. During all piling installations, a trained observer would monitor for the presence of marine mammals and pile driving would be halted if any marine mammal comes within 660 feet of the activity unless a different distance is set in a Marine Mammal Protection Act (MMPA) authorization.
5. Preconstruction wolf den surveys would be conducted in consultation with the USFWS. Identified active dens would be avoided during clearing to the extent practicable.
6. Wildlife crossing signage in areas of high brown bear, moose, and mountain goat use as determined by the ADF&G would be incorporated into the road design.
7. In areas of high moose use as identified by the ADF&G, roadside seeding would use only non-palatable species to discourage browsing near the roadways. Roadside alder growth would be cut regularly to reduce browsing by moose and mountain goats, and to maintain adequate sight distances to avoid vehicle collisions with wildlife.
8. The project would incorporate adequate sight lines in the final design to enable drivers to see moose and mountain goats that are in close proximity to the road (particularly relevant in conifer forest areas).
9. During operation and maintenance, helicopter surveys would be conducted prior to helicopter avalanche control activity to determine whether mountain goats are within the blasting area or avalanche path and if necessary to haze them in an attempt to have them depart the area.

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<sup>2</sup> Impact proofing: The number of blows necessary to move the piles a set distance to confirm piles can bear the intended load.

10. Bridges that span waterways or other geographical features likely to be used as wildlife passages would be constructed to facilitate the movement of brown bears. The distance between the proposed bridge abutments/supports and water bodies would be lengthened to provide travel corridors for brown bears and other wildlife.
11. Wildlife observers would examine the nearby area for the presence of mountain goats prior to construction blasting and if necessary haze them in an attempt to have them depart the area.
12. All construction personnel on site would be required to attend wildlife awareness training and orientation.
13. DOT&PF would develop a wildlife interaction plan prior to the start of construction for use by all personnel on site during construction. The plan would include topics such as safety measures for on-site personnel, (e.g., use of bear guards and bear spray); proposed storage and disposal of construction materials and trash; wildlife orientation training for on-site personnel; description of the handling of people/wildlife interactions, including contingencies in the event wildlife does not leave the site (e.g., hazing by trained staff); description of the layout of temporary buildings and work areas to minimize interactions between humans and bears/moose (e.g., use of electric fencing); and requirement to document and communicate the sighting of bears/moose on site or in the immediate area to all shift employees.
14. During construction, all garbage would be properly disposed of in closed bear-proof containers to avoid attracting bears and other carnivores and scavengers.
15. To the extent practicable, snow drifts or piles that could conceal bears would be kept cleared away from buildings and fences at construction camps.
16. Procedures to control sediment runoff, fugitive dust fallout, and wastewater during construction would be followed to avoid or minimize impacts on salmon-spawning streams, which provide important seasonal food for bears.

## 5.10 Cultural Resources

1. Known archaeological and historical resources in the vicinity of the project would be identified in the construction plans to ensure that the contractor is aware of the need to avoid impacts to these resources.
2. Cultural resources within the project limits would be flagged in the field to ensure that staging and construction activities do not inadvertently damage these resources.
3. In the event that a previously unknown cultural resource is discovered during construction, work in the area would cease and DOT&PF would contact the Federal Highway Administration (FHWA) and the State Historic Preservation Officer (SHPO) and develop an approved plan before proceeding.

## 5.11 Recreation and Visitor Facilities

1. Any ferry terminals constructed for the project would include Americans with Disabilities Act (ADA) accessible restrooms that would be available to highway users as well as ferry customers.

2. Provide a trail to the existing USFS-maintained Berners Bay cabin.
3. Provide a new remote cabin in coordination with USFS.

## 5.12 Proposed Mitigation Plan for the Preferred Alternative (Alternative 2B)

The following discussion of proposed mitigation for the Preferred Alternative, Alternative 2B, was developed for the 2006 Final Environmental Impact Statement (Final EIS). It is updated for actions already completed and new measures proposed since the issuance of the 2006 Record of Decision (ROD). Additional requirements for mitigation would be completed and updated in this section as needed. This discussion is divided into five sections: final design and construction, pre- and post-construction monitoring, maintenance and operations, compensatory mitigation, and estimated mitigation cost.

### 5.12.1 Final Design and Construction

A key consideration in mitigation is avoidance. The DOT&PF has made many design changes, including highway alignment and ferry terminal layout changes, to avoid or reduce impacts to habitat, including anadromous streams, wetlands, bald eagle nest trees, sea lion haulouts, and marine waters. For example, the highway alignment across the Berners/Lace and Antler rivers has been moved upstream as far as practicable in response to a conservation recommendation by the National Marine Fisheries Service (NMFS) made during the review of the 2005 Supplemental Draft EIS.

During final engineering design of Alternative 2B, DOT&PF would investigate additional measures to reduce potential impacts, including further small alignment changes and changes in the footprint of the roadway. Within wetlands and other sensitive areas, the roadway would be constructed using the minimum-width fill footprint necessary (see Figure 2-7b). The alignment would avoid palustrine emergent wetlands to minimize potential impacts to amphibian breeding areas. Culverts would be installed in appropriate locations to maintain natural flow patterns for surface water. Roadside swales would be designed to keep surface water within the natural drainage basins. The breakwater for the Katzeihin Ferry Terminal would be designed with gaps or culverts to allow near-shore fish passage.

All anadromous fish streams would be crossed by bridges. Anadromous fish streams that can be crossed with 130-foot or shorter bridges would not include any structure or fill in the stream channel. Anadromous fish streams that require pier supports would have the minimum possible number of piers using at least 130-foot spacing, placed to reduce impact to the streams. The northern channel of the Antler River would be clear-spanned to avoid impacts to fish habitat and eulachon spawning areas.

Bridges across streams would also be designed to function as wildlife underpasses where practicable. The Lace and Antler rivers would both have 50-foot bridge extensions on each side. Additional wildlife underpasses would be located at the two identified major brown bear migration corridors on the isthmus between the Antler and Lace rivers, and at a suitable location midway between the Katzeihin River and the Katzeihin ferry terminal. At the Katzeihin River, an additional 100-foot section would be added to the north side of the bridge. These bridge extensions would also reduce impacts to riparian wetlands.

Wildlife crossing signage in areas of high brown bear, moose, and mountain goat use as identified by ADF&G would be incorporated into the road design. The project would incorporate

adequate sight lines into the final design to enable drivers to see moose and mountain goats that are close to the road. Where established wildlife crossings have been identified by ADF&G, side slopes along the road alignments would be designed to provide easier access across the road for wildlife.

The Comet/Bear/Kensington Railroad would be avoided and the Jualin Mine Tram would be bridged to avoid impacts to these historic properties. Final design and routing of the alignment would avoid the Portland Mill Site.

No pullouts or parking areas would be constructed in the area between the Lace and Antler rivers to minimize habitat degradation and wildlife disturbance from pedestrians as well as to provide for public safety. Vegetative openings adjacent to the highway corridor on the Berners Valley floor would be blocked with large boulders to discourage uncontrolled access by off-road vehicles, in order to minimize wildlife disturbance.

No parking places would be provided in areas that may provide pedestrian access to the Gran Point and Met Point haulouts. As large a buffer as possible of undisturbed vegetation would be retained between the highway and the Gran Point and Met Point haulouts. Vegetation clearing limits would extend no more than 10 feet on either side of the cut or fill for the roadway. To further protect marine mammals from human disturbance, no boat launches or structures that enhance boat access points (other than the new ferry terminal north of the Katzehin River and terminal improvements at Skagway) would be constructed by DOT&PF. DOT&PF does not intend to allow private use of the Katzehin ferry docks.

**Construction Procedures** – DOT&PF and the construction contractor would both file Notices of Intent to use the Alaska Pollutant Discharge Elimination System General Permit for storm water discharge during construction. The construction contractor would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) that describes the BMPs to be used to avoid water quality impacts. The SWPPP would include procedures for locating and installing sediment barriers and sediment basins and installation of temporary erosion controls such as mulching and hydroseeding. Procedures to control sediment runoff, fugitive dust fallout, and waste water during construction would be followed to avoid or minimize impacts on salmon-spawning streams, which provide important seasonal food for bears. As required by the General Permit, DOT&PF and the contractor would monitor storm water discharge from the project and adjust the SWPPP as necessary and maintain records of inspections and any SWPPP changes.

Planning for any camps necessary during construction of the project would include BMPs for handling food, trash, and other potential wildlife attractants to reduce impacts. All construction personnel on site would be required to attend wildlife awareness training and orientation. DOT&PF would develop a wildlife interaction plan prior to the start of construction for use by all personnel on site during construction. The plan would include topics such as safety measures for on-site personnel (e.g., use of bear guards and bear spray); proposed storage and disposal of construction materials and trash; wildlife orientation training for on-site personnel; description of the handling of people/wildlife interactions, including contingencies in the event wildlife does not leave the site (e.g., hazing by trained staff); description of the layout of temporary buildings and work areas to minimize interactions between humans and bears/moose (e.g., use of electric fencing); and requirement to document and communicate the sighting of bears/moose on site or in the immediate area to all shift employees. During construction, all garbage would be properly disposed of in closed bear-proof containers to avoid attracting bears and other carnivores and

scavengers. Construction camps, borrow pits, and waste areas would be located in upland areas and stabilized during and after use to avoid water quality impacts.

Known archaeological and historical resources in the vicinity of the project would be identified on the construction plans provided to the contractor. Cultural resources within the project limits would be flagged in the field to ensure that equipment operators do not inadvertently damage these resources. Before and after photographs would be provided to the SHPO for the bridge over the Jualin Tram. As general mitigation for impacts to Berners Bay users desiring a remote, water-access experience, DOT&PF would provide for a new water-accessed cabin to be owned and managed by the U.S. Forest Service (USFS) at a location selected in consultation with the USFS.

Before clearing takes place, DOT&PF would conduct surveys of wolf dens, bald eagle, and Queen Charlotte goshawk nests in appropriate habitats. Clearing would be avoided to the extent practicable at the sites of active wolf dens, Queen Charlotte goshawk nests, or amphibian ponds. Construction in the vicinity of bald eagle nests would be coordinated with the USFWS to develop earth moving and blasting procedures and to assess the need for nest monitoring during construction. During construction, DOT&PF and USFWS would evaluate the need to provide support to any nest tree or tree in the vicinity of the nest tree against windthrow.

Staking would be done at the planned outside limits of disturbance prior to construction to ensure that impacts are limited to that area. No grubbing would be done outside of the fill footprint and the only clearing done beyond the 10-foot clearing limit would be for individual trees that might pose a safety hazard to the traveling public. During construction, slope limits in wetland areas would be separately identified to ensure that workers are aware of wetlands and the need to avoid impacts beyond the slope and clearing limits.

Only clean mineral soil or rock would be imported, if needed, for the highway and Katzehin ferry terminal construction. Any soil within the project boundaries identified as containing invasive species would not be transported to other areas of the project. Construction equipment would be pressure washed prior to use on the project to reduce the potential for introducing invasive species. Rock would be used to stabilize the toes of slopes at ponds and stream crossings. Grass seed would be placed on all slopes containing soil. To minimize the potential for flying debris at the Gran Point and Met Point haulouts during blasting activities, the contractor would be required to implement control measures during initial surface blasts and production blasting for areas within 500 feet of Gran Point or Met Point that have the potential to reach the haulout. To the extent practicable, shot rock slopes would be covered with overburden and seeded to reduce their visibility. To protect the integrity of the natural plant communities, plant species indigenous to the area and to the extent certified seeds are available, would be used for vegetating road slopes, except that non-invasive annual grasses may be used to provide initial soil cover. Only seed mixtures certified for purity would be used to seed exposed soils. In areas of high moose use identified by ADF&G, roadside seeding would use only non-palatable species to discourage browsing near the roadways, and roadside alder growth would be regularly cut to reduce browsing and maintain adequate sight distances to avoid vehicle collisions with wildlife.

To the extent practicable, beach access points would be chosen to take advantage of existing landings, previously disturbed sites, or locations of planned fill. Additional necessary access points identified during construction would be sited to minimize impacts to habitat and would be



restored to similar pre-existing conditions after project completion. No barge landings would be constructed within 1,000 feet of the Gran Point and Met Point haulouts.

Pile driving at the Katzehin ferry terminal and the Antler, Lace, and Katzehin rivers would be done with vibratory hammers to the extent practicable, to minimize impacts to marine mammals. Impact proofing<sup>3</sup> necessary for weight-bearing piles would be accomplished as quickly as practicable to reduce acoustic impact.

**Construction Timing and Monitoring** – In-water work for fill placement, dredging, or pile driving would be timed to avoid impacts to spawning and migrating fish species. In-water work at the Antler, Lace, and Katzehin rivers would not occur between March 15 and June 15 to protect out-migrating salmonids and spawning eulachon.

DOT&PF would apply for Disturbance Permits to disturb bald eagles in nests within 660 feet of the work limits of the alignment and for nests within 0.5 mile of blasting activities. For the widening of 2.9 miles of the existing Glacier Highway, DOT&PF would obtain Disturbance Permits for construction activities within 660 feet of eagle nests.

Monitoring for marine mammals would be conducted during pile driving at the Katzehin Ferry Terminal and for the Katzehin, Antler, and Lace river bridges. Pile driving would be halted if any marine mammals come within 660 feet of the activity. During all piling installations, a trained observer would monitor for the presence of marine mammals and pile driving would be halted if any marine mammal comes within 660 feet of the activity unless a different distance is set in a Marine Mammal Protection Act (MMPA) authorization.

Monitoring would occur during construction within 3,000 feet of the Gran Point and Met Point haulouts to document any disturbance of individual Steller sea lions (i.e., behavioral modification such as temporary haulout evacuation). Monitoring would include visual observations by marine mammal observers.

Blast noise (typically 126 decibels at 50 feet) would normally attenuate to the NMFS in-air disturbance threshold for hauled-out Steller sea lions (100 root mean square decibels) within 548 feet of the activity. In order to ensure no disturbance would occur at the onset of construction within the 600-foot Zone of Influence of Met Point or Gran Point haulouts (whichever comes first), DOT&PF would monitor haulouts during blasting to determine if individuals are abandoning the haulout, and to record noise levels at the haulout for 10 days of blasting. If noise levels are higher than NMFS's in-air disturbance threshold at the haulouts, DOT&PF would require the use of noise attenuation/mitigation methods to reduce acoustic impacts at the haulout. DOT&PF will provide monitoring data to all JAI Project SEIS Cooperating Agencies.

There would be no routine use of helicopters within 3,000 feet of Gran Point or Met Point. If helicopter use were infrequently required within 3,000 feet of the haulouts, a minimum altitude of 1,500 feet would be maintained, to the extent weather allows. Helicopters would not be flown directly over Gran Point or Met Point.

Wildlife observers would examine the nearby area for the presence of mountain goats prior to blasting and if necessary haze them in an attempt to have them depart the area. In the event that a previously unknown cultural resource is discovered during construction, work in the area would

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<sup>3</sup> Impact proofing: The number of blows necessary to move the piles a set distance to confirm piles can bear the intended load.

cease. DOT&PF would contact the FHWA and SHPO and develop an approved plan before proceeding.

### **5.12.2 Pre- and Post-Construction Monitoring**

To facilitate game management after construction of the highway, DOT&PF has funded bear, moose, goat, and wolverine surveys to determine population characteristics. The goat study was a 4-year study, and the brown bear, moose, and wolverine study was a 3-year study. A long term monitoring study would be developed to determine the effectiveness of the wildlife underpasses for brown bears. DOT&PF would continue to fund aerial surveys of bald eagles for a period of 5 years after the JAI Project is open to traffic. Video monitoring at the Gran Point haulout would continue during construction and for 5 years after the JAI Project is open to traffic to determine the extent of human access to the haulout and disturbance of Steller sea lions. Met Point would be routinely ground monitored by DOT&PF after construction is completed for the JAI Project to determine if human access is causing potential disturbances. If adverse impacts are identified, FHWA and DOT&PF would consult with NMFS to determine what additional mitigation measures would be necessary. Preconstruction surveys of the alignment in wetland areas were conducted from Echo Cove to Sweeney Creek to confirm that no amphibian ponds were missed during wetland mapping. Additional preconstruction surveys would be conducted north of Sweeney Creek to verify that any amphibian ponds were avoided.

### **5.12.3 Maintenance and Operations**

Ferries planned under Alternative 2B would have wastewater holding tanks that would discharge to wastewater treatment facilities or wastewater would be treated onboard before discharge. DOT&PF would maintain public restrooms at the Comet maintenance facility. The ADA restrooms at the Katzehin Ferry Terminal would be available to highway users as well as ferry travelers. DOT&PF would also maintain constructed pullouts including collection of refuse from containers supplied at those pullouts. Helicopter operations during avalanche control would minimize activity within a 3,000- foot radius of the Gran Point and Met Point haulouts. In addition, helicopter operations shall not be conducted within 1,000 feet around either haulout when occupied. Surveys would be conducted prior to helicopter avalanche control activity to determine whether mountain goats are within the blasting area or avalanche path and if necessary, haze them in an attempt to have them depart the area. Land use permits for highway alternatives would include provisions for the avalanche program, including access, explosive use, any installations in the avalanche paths, and permits for weather station sites.

### **5.12.4 Compensatory Mitigation**

The JAI Project received the USACE permit, POA-2006-597-2 Berners Bay/Lynn Canal, in 2008. The permit expired in 2013. The 2008 USACE permit evaluation for POA-2006-597-2 analyzed all the JAI Project alternatives and determined that Alternative 2B was the least environmentally damaging practicable alternative. At that time, Alternative 2B would have impacted approximately 62 acres of wetlands (including 0.2 acre of estuarine emergent wetlands) and 32 acres of unvegetated intertidal and subtidal areas, and resulted in 14.8 acres of deepwater rock disposal and 1.3 acres of stream channel work.

In the 2006 Final EIS, DOT&PF agreed to compensatory mitigation for wetland and waters impacts based on the amount and function of wetlands and marine waters of the U.S. affected

by Alternative 2B. In 2008, during USACE permitting, DOT&PF agreed to paying a sum of \$440,000 as an in-lieu fee (ILF) for wetland restoration, enhancement, preservation, or land acquisition for the unavoidable adverse impacts to fresh water aquatic resources, and \$780,000 as ILF to offset the loss of 32.0 acres of unavoidable adverse impacts to intertidal and subtidal marine waters (essential fish habitat [EFH]).

Through 2013, DOT&PF has paid \$324,000 (2006 dollars) as ILF for JAI Project impacts to intertidal and subtidal marine waters. The \$324,000 paid was used to construct two artificial reefs at Yankee Cove in conjunction with NMFS in December 2008. The goal of the Yankee Cove reef project is to enhance habitat important to spawning and rearing fish, including Pacific herring and marine invertebrates. Subsequent monitoring of the intertidal reefs by the University of Alaska has shown them to be successful, but they would take several more years of colonization to be fully functional (Eckert, 2010).

In its current design, Alternative 2B avoids all palustrine emergent wetlands and estuarine emergent wetlands, and the need for deepwater disposal has been eliminated. Potential impacts to forested wetlands and unvegetated intertidal areas have been minimized by alignment changes, extensions of bridges, and slope steepening. At present, Alternative 2B would affect approximately 61 acres of wetlands and 32 acres of unvegetated intertidal and subtidal habitat. It would require 3 acres of stream channel work, but would not require deepwater rock disposal.

A draft USACE permit application is included in the *2014 Update to Appendix X - Draft Section 404/10 Permit Application, and Section 404(b)(1) Analysis* (see Appendix Z). As part of the Section 404/10 permitting process, DOT&PF will coordinate with the USACE to develop a compensatory mitigation plan to offset impacts to waters of the U.S. in compliance with the 2008 Mitigation Rule. The Yankee Cove mitigation project would be incorporated into the compensatory mitigation plan to the extent appropriate.

### 5.12.5 Estimated Mitigation Cost

As indicated, many design changes have been made to Alternative 2B to avoid potential habitat impacts. Most of these changes have not been tracked in terms of their effect on cost estimates. One notable exception is the cost of the commitment to cross all anadromous fish streams with bridges. This commitment was made early in the development of the 1997 Draft EIS in recognition of the fact that restoration and enhancement opportunities in the project area were limited and therefore a greater emphasis should be placed on avoidance and minimization.

Bridging streams that could otherwise be crossed with large culverts would avoid direct impacts to anadromous fish streams and reduce habitat fragmentation by providing migration corridors. Bridging rather than culverting at Sawmill, Antler Slough, Slate, Sweeny, Sherman, and Independence creeks adds approximately \$4.8 million to the Alternative 2B construction estimate.

The mitigation estimate now includes the following specific mitigation item estimates:

1. Bridges instead of culverts at smaller anadromous streams: \$4,865,700
2. Three 100-foot extensions on multi-span bridges at the Antler, Lace, and Katzechin rivers to serve as wildlife underpasses: \$1,500,000
3. Two 100-foot-long wildlife underpasses at high use bear trails and surrounding land on the Antler/Lace peninsula: \$1,000,000

4. One 100-foot-long wildlife underpass midway between the Katzehin River and the ferry terminal: \$500,000
5. Completed wildlife monitoring studies to assess impacts and manage wildlife populations:
  - a. Mountain goat monitoring, Berners River to Katzehin River, 4-year collaring study: \$584,589
  - b. Moose monitoring in the Berners Bay watershed, 3-year collaring study: \$478,758
  - c. Bear monitoring, Sawmill Creek to Sherman Creek, 3-year collaring and hair snare study: \$581,291
  - d. Wolverine monitoring in Berners Bay watershed, 3-year collaring and hair snare study: \$252,468
6. Wildlife monitoring to assess impact and to determine if additional measures are needed:
  - a. Helicopter monitoring of eagle nests, for 4 years of construction and for 5 years post-construction: \$104,400
  - b. Video, aerial, and ground monitoring at Gran Point and Met Point sea lion haulouts, for 2 years of construction and for 5 years post-construction: \$462,000
7. Wetlands and marine waters ILF compensation payments to a land trust for parcel purchase or restoration project(s) would be negotiated during the Section 404/10 permitting process and would be included in the Final SEIS.
  - a. Freshwater aquatic resources: To be determined
  - b. Unvegetated intertidal/subtidal marine areas: To be determined

Current proposed mitigation items 1 through 7 under Alternative 2B total approximately \$11.0 million. Actual construction items incorporated into the design total approximately \$8.6 million. The remaining \$2.4 million would be used for monitoring.