

# **Addendum to Appendix Q**

## **Wildlife Technical Report**

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## 1.0 INTRODUCTION

*Appendix Q, Wildlife Technical Report* was completed in October 2004 and released for public review as part of the Supplemental Draft EIS in January 2005. Since then, the preferred alternative has been changed from Alternative 2 to Alternative 2B, and the highway alignment for Alternative 2B has been adjusted.

This addendum describes the changes to the project alternatives and presents changes to analyses of impacts to wildlife and wildlife habitat based on these revisions, public comments, and coordination with cooperating agencies. This addendum incorporates requested information from the Alaska Department of Natural Resources (ADNR) Office of Habitat Management and Permitting (OHMP) regarding old growth forest reserves and analysis of additional information regarding habitat fragmentation of terrestrial mammals, avalanche control measure impacts to mountain goats, discussion on impacts to wolverines, martens, wolves, moose, and amphibians, and an update to the habitat ranges of moose, wolverine, and Sitka black tailed deer. Additional clarification regarding the role of the Federal Subsistence Board, Board of Fisheries, and Board of Game authorities has also been included.

A clarification regarding Executive Order 13786 regarding the Migratory Bird Treaty Act and construction avoidance actions are included in Section 4.1.3 of this addendum and replace discussion included in the October 2004 *Appendix Q Wildlife Technical Report*

The information and alternatives analyses presented in the October 2004 *Appendix Q Wildlife Technical Report* remain valid unless new information is presented in this addendum.

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## **2.0 STUDIES AND COORDINATION**

Agency comments requested clarification of the Federal Subsistence Board, Board of Fisheries and Board of Game authority over the fishery and wildlife resources in the project area. The following is a description of their role in regulating subsistence, and commercial, sport and personal use fishing and hunting.

A number of federal, state, and local agencies have jurisdiction over land management and resource development activities that may affect wildlife habitat. Since most of the project areas are on federal lands, the Federal Subsistence Board would regulate and monitor the harvest of fish and wildlife for subsistence purposes. The Federal Subsistence Board determines which subsistence wildlife species are open to harvest, the areas and communities that are eligible to hunt, as well as harvest limits and seasons, the harvest methods and other harvest regulations. The Board consists of the Alaska Regional Directors from the National Park Service, U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management, Bureau of Indian Affairs and the U.S. Forest Service (USFS).

The Board of Fisheries and the Board of Game are Alaska's regulatory authorities that pass regulations to conserve and develop the fishery and wildlife resources of Alaska. This involves setting seasons, bag limits, methods and means for the state's subsistence, commercial, sport, guided sport and personal use fishing, hunting and trapping. The Alaska Department of Fish and Game (ADF&G) monitors the resources along Lynn Canal and makes recommendations to the Board of Fisheries and Board of Game to adjust fish and game regulations, as necessary, to protect those resources from over-utilization. ADF&G has the authority to limit harvest by issuing emergency orders closing seasons.

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## 3.0 AFFECTED ENVIRONMENT

The following subsections are additional discussion to be included Sections 3.1.1 and 3.3.3 of the *Appendix Q Wildlife Technical Report* included in the Supplemental Draft EIS.

### 3.1 Wildlife Habitats

Although the alternative alignments have changed, the general descriptions of old-growth forest, beach fringe, estuary fringe, alpine and subalpine, and wetland habitats presented in the 1997 and the 2004 *Appendix Q Wildlife Technical Report* remain valid. Wetland impacts have been reduced due to alignment changes in Alternative 2B (Figures 1 through 5). Agency comments requested information regarding old-growth forest reserves within the project study area. Section 2.1.1 describes the large, medium, and small old-growth reserves according to the Tongass National Forest Land and Resource Management Plan (TLMP) criteria, as well as the old-growth forest within the alignments for Alternative 2B and Alternative 3.

#### 3.1.1 Old-Growth Forest

The land on both sides of Lynn Canal in the vicinity of project alternatives supports some large areas of high volume old-growth forest, as well as intermittent small areas of high and low volume old-growth forest (See TLMP for further delineation). Old-growth forest in the project area was defined as forest over 150 years old with an average diameter-at-breast-height greater than 9 inches, and timber volume greater than 8,000 board feet (BF) per acre. Old-growth and other forests consist of the following coniferous forest plant series: western hemlock, western hemlock-yellow cedar, Sitka spruce, mixed conifer, mountain hemlock, and Sitka spruce-black cottonwood. The TLMP contains a conservation strategy to maintain a forest-wide system of old-growth forest habitat, identifying a forest-wide system of large, medium, and small old-growth reserves. According to the TLMP criteria, the old-growth reserve system must meet minimum size, spacing, and composition requirements, as follows:

- **Large old-growth reserves** – A large reserve must be 40,000 acres; 20,000 of those acres must be productive old-growth forest (over 8,000 BF per acre). At least 10,000 acres of the productive old-growth forest should be in the high volume class (over 20,000 BF per acre).
- **Medium old-growth reserves** – A medium reserve is 10,000 acres; 5,000 of those acres must be productive old-growth forest. At least 2,500 acres should be in the high volume class.
- **Small old-growth reserves** – Small reserves are required in all value comparison units (VCUs) of the Tongass National Forest. Small reserves must be at least 16 percent of the VCU area, and at least 50 percent of that area must be productive old-growth forest. Each reserve should contain at least 800 acres of old-growth forest, but must contain a minimum of 400 acres of productive old-growth forest.

Evaluating any modification of mapped reserves must include consideration of Non-Development Land Use Designations (LUDs) that maintain the integrity of the old-growth forest ecosystem and contribute to a forest-wide system of reserves. Where the Non-Development LUDs do not fulfill size, spacing, and composition criteria of old-growth habitat reserves, it would be necessary to add or modify old-growth reserves to meet the criteria. The Tongass National Forest LUDs are shown in Figure 6.

There are six intermittent small blocks of high volume old-growth forest at or near the shore between Point Saint Mary and the Katzeihin River (Alternative 2B). Two of the small intermittent blocks of high volume old-growth forest are within one mapped small old-growth reserve in the areas of Comet to Met Point (VCU 190), and four intermittent blocks of high volume old-growth are in the mapped small old-growth reserve in VCU 200. There are also several intermittent small blocks of low volume old-growth forest near the shoreline.

There are six small intermittent blocks of high volume old-growth forest on the west side of Lynn Canal in the vicinity of Alternative 3: one between William Henry Bay and Endicott River, four south of Sullivan River delta, and one opposite the middle of Sullivan Island. There are also several intermittent small and large blocks of low volume old-growth near the shoreline.

### **3.2 Species Accounts**

Although the alternative alignments have changed, the general descriptions of the 27 species analyzed as presented in the 1997 and 2004 *Wildlife Technical Reports* remain valid. However, habitat figures for the following terrestrial mammals were updated to include habitat down to high-tide line: Alexander Archipelago Wolf and black bear (Figure 7); mountain goat, brown bear, and marten (Figure 8). Additionally, agency comments requested data regarding marten density in the project area. The information in Section 3.2.1.1 is used to supplement the October 2004 *Appendix Q Wildlife Technical Report*.

#### **3.2.1 Mammals**

##### **3.2.1.1 Marten (*Martes americana*)**

In the project study area, marten primarily occur in high volume old-growth forest habitat (Figure 8). On the east side of the Lynn Canal, this habitat is limited to the old-growth stands in the Berners Bay and Katzeihin River areas (Schumacher, personal communication, 2005) and extends from the upper elevation extent of the forest to tidewater (N. Barten, personal communication, 2005). The narrow bands of forest habitat between Berners Bay and the Katzeihin River and the Katzeihin River and Skagway may be used as travel corridors by marten (N. Barten, personal communication, 2005). The west side of the Lynn Canal has a greater density of old-growth forest habitat, and is likely to have a greater abundance of marten (Schumacher, personal communication, 2005). A marten trapping survey conducted on the Homeshore Road system on the northern side of Icy Strait, in an area having similar old-growth habitat to that of the west side of the Lynn Canal, yielded 34 marten per 40,000 acres (Schumacher, personal communication, 2005), which suggests marten population densities are generally low in southeast Alaska.

## **4.0 ENVIRONMENTAL IMPACTS**

Most of the discussions of impacts to wildlife and wildlife habitat presented in the October 2004 *Appendix Q Wildlife Technical Report* for Alternatives 2B, 3, 4B and 4D remain valid. However, because of the changes in alignments there are revisions to the number of acres of impacted wildlife habitat from these alignments. The revised acres of impacted wildlife habitat are presented in Table 1.

As requested from public and agency comments, impacts to old-growth reserves, as well the use of beach and estuary habitats by wolves, and how the build alternatives could impact the use of this habitat by wolves are discussed in Section 4.1. Additional information regarding the impacts of habitat fragmentation on bear, mountain goat, and marten is included in Section 4.2 (Alternative 2B). This information updates that presented in Sections 4.2.1 and 4.2.2 of the October 2004 *Appendix Q Wildlife Technical Report* presented in the Supplemental Draft EIS.

### **4.1 Impacts Common to All Build Alternatives**

#### **4.1.1 Overall Habitat Loss**

The direct loss of different habitat types within the cut and fill limits of the highway alignment and the footprint of new ferry terminals were calculated using USFS Geographic Information System (GIS) data. These numbers have been updated based on the current alternative alignments. The results for all alternatives and all habitat types are presented in Table 1.

#### **4.1.2 Terrestrial Mammals**

##### **Habitat Loss and Effects of Maintenance and Vehicle Traffic**

The proposed highway would fragment wolf habitat; however, habitat fragmentation by itself is not likely to impact the regional wolf population (Person, personal communication, 2005). Wolves will move to beach and estuary habitats to prey on fish and marine mammals, and therefore would cross the highway or use it as a pathway to access these areas (Person, personal communication, 2005). There is no data to suggest that the highway would impact this movement (Person, personal communication, 2005). Hunting pressure as a result of increased access is more likely to impact wolves than fragmentation of habitat (Person, personal communication, 2005).

#### **4.1.3 Terrestrial and Marine Birds**

The Supplemental Draft EIS incorrectly stated that clearing activities would be avoided during nesting season in areas used by migratory birds to comply with the Migratory Bird Treaty Act (MTBA) (Section 4.1.2.5 of October 2004 *Wildlife Technical Report*). Clearing constraints are revised to be consistent with Executive Order (EO) 13186, which directs federal agencies to avoid or minimize to the extent practicable, adverse impacts to migratory bird resources. In keeping with this EO, preconstruction nest surveys would be conducted for the Queen Charlotte goshawk and trumpeter swans; this is consistent with USFS TLMP management policies. This clarification applies to Sections 4.2.2.3, 4.2.2.5, 4.2.3.3, 4.2.3.5, 4.2.4.3, 4.2.4.5, 4.2.5.3, 4.2.5.5, 4.2.6.3, and 4.2.6.5 of the 2004 *Wildlife Technical Report*.

**Table 1**  
**Wildlife Habitat Lost by Alternative (Acres<sup>1,2</sup>)**

Habitat Type	Alternative 2B	Alternative 3	Alternatives 4A & 4C	Alternatives 4B & 4D
<b>Coastal Fringe Habitat<sup>2,3</sup></b>				
<b>Beach Fringe</b>	304	219	0	9
<b>Estuary Fringe</b>	71	110	0	32
<b>SUBTOTAL</b>	<b>375</b>	<b>329</b>	<b>0</b>	<b>41</b>
<b>Terrestrial Habitat<sup>2</sup></b>				
<b>Old-Growth Forest</b>	286	286	0	25
<b>Other Forest</b>	128	95	0	0
<b>Meadow/Muskeg and Shrub</b>	13	14	0	2
<b>Rock</b>	1	0	0	0
<b>SUBTOTAL</b>	<b>428</b>	<b>395</b>	<b>0</b>	<b>27</b>
<b>Wetlands<sup>2</sup></b>				
<b>Forested</b>	69	22	0	1
<b>Scrub-shrub</b>	1	1	0	1
<b>Emergent</b>	<1	2	0	0
<b>Salt Marsh</b>	0	2	0	0
<b>SUBTOTAL</b>	<b>70</b>	<b>27</b>	<b>0</b>	<b>2</b>
<b>Marine Areas</b>				
<b>Beach Bars</b>	2	5	0	0
<b>Rocky Shores</b>	30	7	0	2
<b>Intertidal/ Subtidal<sup>4</sup></b>	36	13	1	2
<b>SUBTOTAL</b>	<b>68</b>	<b>25</b>	<b>1</b>	<b>4</b>

Notes: <sup>1</sup>Rounded to nearest acre

<sup>2</sup>There is overlap between categories. Terrestrial habitat provides the total for all habitat classifications. The other classifications are subtotals with some overlap.

<sup>3</sup>This area consists of project facilities located with approximately 500 feet of saltwater and include all types of terrestrial and wetland habitats as well as rocky shores and beach bars.

<sup>4</sup>Includes fill and dredge for ferry terminals and highway construction but not sidecasted shot rock.

## 4.2 Alternative 2B – East Lynn Canal Highway to Katzeihin, Shuttles to Haines and Skagway

### 4.2.1 Overall Habitat Loss

As described in Table 1, Alternative 2B would result in a loss of 304 acres of beachfront habitat and 71 acres of estuary fringe. This change from the 2005 *Supplemental Draft EIS* is due to alignment changes. These changes were implemented to reduce impacts to wetland habitats.

Alternative 2B would result in the permanent loss of 428 acres of terrestrial habitat (Table 1). Of this total, approximately 286 acres is classified as old-growth forest. A total of 128 acres of other forest, consisting of small trees or lower tree density, would be lost with Alternative 2B.

Loss of non-forested habitat includes 13 acres of shrub, open meadow, and muskeg communities along major rivers.

Approximately 70 acres of wetlands would also be lost, 69.4 acres of which would be forested wetlands and are included in the old-growth forest category totals (Table 1). Other wetlands filled under Alternative 2B would include 0.7 acre of palustrine scrub-shrub wetlands and 0.2 acre of estuarine emergent wetlands. Wetlands lost as a result of Alternative 2B would occur primarily between Slate Creek and Sherman Point on the east side of Lynn Canal (Figures 2 and 3).

A total of 32 acres of intertidal/subtidal areas would be lost with Alternative 2B, including approximately 2 acres of beach bar and 30 acres of rocky shore habitat. This loss would occur at the Katzeihin ferry terminal and locations where the highway comes to the shoreline north of Sherman Point.

#### **4.2.2 Old-Growth Forest**

Alternative 2B would result in the loss of 286 acres of old-growth forest, most of which is in the Tongass National Forest. As discussed in Section 3.1.1, the TLMP establishes an old-growth reserve system to manage this important habitat for many terrestrial species. Alternative 2B would impact three mapped small old-growth reserves established under the reserve system:

- **VCU 160** – Alternative 2B would run through a mapped small old-growth reserve in VCU 160 in the Slate Cove area. There is a concentration of blocks of high volume old-growth and a larger amount of low volume old-growth. Within the reserve, Alternative 2B would run through the high volume old-growth forest. The reserve covers 1,454 acres. Alternative 2B would reduce the entire small mapped reserve by about 29.8 acres, and the highway corridor would separate the reserve into two areas. The remaining inland reserve area would be 930.6 acres, and the remaining reserve area on the shoreward side would be 493.6 acres. Alternative 2B would reduce the VCU 160 mapped small old-growth reserve by 2 percent.
- **VCU 200** – Alternative 2B would intersect one mapped small old-growth reserve in VCU 200, located at the south end of Point Saint Mary peninsula adjacent to VCU 160. This reserve consists of much land that is not old-growth, and most of the old-growth forest is medium volume forest. The reserve contains four intermittent small blocks of high volume old-growth near the south tip of the peninsula. Within the VCU 200 reserve, Alternative 2B would run through low volume old-growth and does not affect the high volume old-growth forest blocks in the reserve. The reserve contains 3,306.2 acres. Alternative 2B would reduce the entire small reserve mapped by about 18 acres, and the highway corridor would separate the reserve into two areas. The remaining inland area would be 456.0 acres; the remaining shoreward area would be 2,832.2 acres. Alternative 2B would reduce the VCU 200 mapped small old-growth reserve by 0.5 percent.
- **VCU 190** – Alternative 2B would cross this mapped small old-growth reserve from north of Comet to approximately Met Point. This reserve consists of much land that is not old-growth, and some medium volume old-growth forest. There are two intermittent blocks of high volume old-growth located inland. In the reserve, Alternative 2B would run through medium volume old-growth forest. The reserve covers 1,462.0 acres. Alternative 2B would reduce the size of the reserve by about 20.4 acres, and the highway corridor would separate the reserve into two areas. The remaining inland reserve area would be 1,408.4 acres; the shoreward reserve would be 33.2 acres.

Alternative 2B would reduce the VCU 190 mapped small old-growth reserve by 1.4 percent.

In addition to the mapped old-growth reserves, Alternative 2B would go through old-growth forested areas within lands designated as Non-Development LUDs that are presumed to function as medium and/or large old-growth reserves. The lands within all of these LUDs contain stands of old-growth forest, some of which are high volume, and others are low volume. Alternative 2B would reduce the size of the old-growth forest stands in all VCUs, as well as create a separation of some old-growth forest areas into downslope and upslope areas. Alternative 2B would remove approximately 286 of 76,279 acres of old-growth forest along the east side of Lynn Canal (USFS, 2003). The USFS in consultation with ADF&G and USFWS would adjust the boundaries of affected old-growth reserves if Alternative 2B were implemented.

### **4.2.3 Terrestrial Mammals**

#### **Habitat Loss and Effects of Maintenance and Vehicle Traffic**

Salmon spawning is limited to the lower reaches of Sawmill Creek because of a waterfall near the mouth. The proposed highway would be located above this waterfall and avoid the salmon spawning habitat; however, the highway as a potential barrier could prevent bear from feeding on the spawning salmon. Black bears are known to feed on salmon at the Sawmill Creek estuary, below the highway alignment. The 110-foot-long crossing of Sawmill Creek would be in an area where the stream is 15 feet wide, thereby maintaining a terrestrial corridor along the stream bank for bears to cross under the highway.

In the project study area, mountain goats occur throughout the steep mountain habitat and upper forested slopes on both sides of Lynn Canal (Figure 8). Although goats seldom wander far from steep slopes or cliffs, they are often forced into old-growth forests at low elevations during the winter. Goats may use lower elevations along the proposed highway alignment (Alternative 2B) between Comet and Slate Cove to avoid deep snow conditions (ABR Inc., 2000). However, this is not high quality winter habitat for goats because it lacks forest cover. Using GIS, fragmentation of winter goat habitat was calculated as that from the cut and fill limit to the coastline. Roughly 448 acres of winter goat habitat from Katzechin River to Independence Creek would be fragmented and 693 acres from Antler River to Echo Cove. Fragmentation of this habitat is not likely to impact the areas mountain goat population.

The mature forest habitat along the shoreline potentially serves as a movement corridor for marten between high-density forest areas in Berners Bay, to the Katzechin River drainage. A highway would reduce the size of this corridor of fringe habitat that may potentially reduce movement of marten between these areas (N. Barten and T. Schumacher, personal communication, 2005).

### **4.3 Alternative 3 – West Lynn Canal Highway**

#### **4.3.1 Overall Habitat Loss**

Under Alternative 3, approximately 395 acres of terrestrial habitat would be lost, including 286 acres of old-growth forest and 95 acres of other forest. A total of 14 acres of non-forest habitat would be lost in the vicinity of the major rivers crossed by Alternative 3, including shrub-scrub, meadows, and muskeg. The loss of this terrestrial habitat represents about 0.5 percent of the 74,470 acres of old-growth forest in the Wildlife Analysis Areas (WAAs) affected by the West Lynn Canal Highway alignment.

Approximately 27 acres of wetlands would also be lost, 22 acres of which would be forested wetlands and are included in the old-growth forest category totals (Table 1). Other wetlands filled under Alternative 3 would include 2.3 acres of palustrine emergent wetlands, 0.7 acre of palustrine scrub-shrub wetlands, and 1.5 acres of estuarine emergent wetlands. Of the total wetland impact resulting from Alternative 3, 1.2 acres of forested wetlands and 0.7 acre of palustrine scrub-shrub wetlands would be on the east side of Lynn Canal between Echo Cove and the Sawmill Cove terminal. Of the 21 acres of wetlands lost with Alternative 3 between William Henry Bay and Davidson Glacier, most are located just north of the Sullivan River (Figures 1 through 5).

Alternative 3 would result in the loss of 5 acres of beach bar and 7 acres of rocky shore habitat. This loss would occur at the Sawmill Cove and William Henry Bay ferry terminals and at locations where the highway comes to the shoreline between William Henry Bay and Haines.

#### **4.3.2 Old-Growth Forest**

Alternative 3 would result in the loss of 286 acres of old-growth forest, much of which is in the Tongass National Forest. As discussed in Section 2.1.1, the TMLP establishes an old-growth reserve system to manage this important habitat for many terrestrial species. Alternative 3 would not impact any mapped old-growth reserves (Figure 6). Alternative 3 would go through old-growth forested areas within lands designated as Non-Development LUDs that are presumed to function as medium and/or large old-growth reserves. The lands within all of these LUDs contain stands of old-growth forest, some of which are high volume, and others are low volume. Alternative 3 would reduce the size of the old-growth forest stands in all VCUs, as well as create a separation of some old-growth forest areas into downslope and upslope areas. Continued coordination with USFS will be necessary to determine impacts to old-growth reserves.

#### **4.3.3 Terrestrial mammals**

##### **Habitat loss and effects of maintenance vehicle traffic**

As stated in Section 3.2.3, goats, periodically, wander into old-growth forest at low elevations during winter. Goats may use areas along the Alternative 3 alignment to avoid deep snow conditions. Figure 8 depicts predicted areas where goats may forage. Using GIS, fragmentation of winter goat habitat was calculated as that from the cut and fill limit to the coastline. Roughly 1,750 acres of winter goat habitat from Pyramid Harbor to William Henry Bay would be fragmented. Fragmentation of this habitat is not likely to impact the area's mountain goat population.

#### **4.4 Alternatives 4B and 4D**

##### **4.4.1 Overall Habitat Loss**

Alternatives 4B and 4D would result in the loss of 27 acres of terrestrial habitat including 25 acres of old-growth forest habitat and 2 acres of grassland/meadow habitat. Approximately 91 percent of this habitat is located in the coastal fringe. Approximately 2 acres of wetlands would also be lost.

##### **4.4.2 Old-Growth Forest**

Alternatives 4B and 4D would result in the loss of 25 acres of old-growth forest, much of which is in the Tongass National Forest. As discussed in Section 2.1.1, the TMLP establishes an old-

growth reserve system to manage this important habitat for many terrestrial species. Alternatives 4B and 4D would not impact any mapped old-growth reserves. The highway segment for these alternatives would go through old-growth forested areas within lands designated as Non-Development LUDs that are presumed to function as medium and/or large old-growth reserves. The lands within all of these LUDs contain stands of old-growth forest, some of which are high volume, and others are low volume. Alternatives 4B and 4D would reduce the size of the old-growth forest stands in all VCUs, as well as create a separation of some old-growth forest areas into downslope and upslope areas. These alternatives would remove approximately 25 of 76,279 acres of old-growth forest along the east side of Lynn Canal (USFS, 2003). Continued coordination with USFS will be necessary to determine impacts to old-growth reserves.

## **5.0 MITIGATION MEASURES**

The Department of Transportation and Public Facilities (DOT&PF) has committed to implementing the following revised wildlife mitigation measures as part of the Juneau Access Improvements Project:

### **5.1 Amphibians**

1. The East Lynn Canal Highway alignment has been moved completely out of palustrine emergent wetlands to avoid potential impacts to amphibian breeding areas. Preconstruction survey of the alignment in wetland areas would be conducted to confirm that no amphibian ponds were missed during wetland mapping.
2. The potential for habitat damage from unauthorized off road vehicles (ORVs) could also impact amphibians in wetland areas. DOT&PF has revised the East Lynn Canal Highway alignment in the Berners Bay area to make access to estuarine emergent wetlands more difficult. The alignment has been moved completely out of palustrine emergent wetlands to avoid potential impacts to amphibians. These changes would also reduce access to easily ORV-traversed wetlands used by amphibians.

### **5.2 Birds**

1. Nesting surveys for trumpeter swan and Queen Charlotte goshawk would be conducted prior to construction in appropriate habitats to avoid disturbing nesting activities during this period.
2. Refer to the Addendum to *Appendix R, Bald Eagle Technical Report* for detail regarding bald eagle mitigation measures.

### **5.3 Marine Mammals**

1. Pile driving at the Katzeihin Ferry Terminal and multi-span bridge construction sites would be done with vibratory hammers to reduce the intensity of the sound generated.
2. Trained observers would monitor for the presence of marine mammals and construction would be halted if any animals come within 200 meters of the activity.
3. Refer to the Addendum to *Appendix S, Steller Sea Lion Technical Report*, for details regarding Steller sea lion mitigation measures.

### **5.4 Terrestrial Mammals**

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. Bridges across streams would be designed to also function as wildlife underpasses; wildlife underpasses would be located at the two identified major brown bear migration corridors in the isthmus between the Antler and Lace rivers.
3. DOT&PF would coordinate with ADF&G to avoid construction during the months of January through April to the extent practicable at locations that goat monitoring identifies as important for pregnant nannies.
4. DOT&PF recognizes the need for detailed wildlife population and habitat use data in order to revise management of these populations to reflect habitat loss and change in use, loss due to vehicle collisions, and hunting, both legal and illegal. DOT&PF commits to funding detailed population studies, with animal collaring, for goats, moose, brown bears, and

wolverine, as mitigation for indirect impacts to wildlife. In order to coordinate with goat studies conducted under the Kensington Gold Project, the goat study commenced in 2005.

5. Pre-construction wolf den surveys would be conducted within 600 feet of the project construction limits in any areas that consultation with the resource agencies identify as having high potential for wolf dens. Further agency consultation would occur if wolf dens were identified to determine appropriate measures to minimize impacts.

## **5.5 Terrestrial Habitat**

1. Only certified seed mixtures would be used to seed exposed soils.
2. Soil from outside the project boundaries would not be imported to the project site. Any soil within the project boundaries identified as containing invasive species would not be transported to other areas of the project.
3. Construction equipment would be steam cleaned prior to use on the project.

## 6.0 LIST OF PREPARERS

David Erikson	Senior Biologist URS Corporation B.S. Wildlife Biology, M.S. Biology Senior review
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## 7.0 REFERENCES

- ABR, Inc. 2000. A Review of Selected Wildlife Species, Jualin Mine Project, Alaska. Prepared for Coeur Alaska, Inc., by B.A. Anderson, ABR, Inc. – Environmental Research and Services.
- Barten, Neil. 2005. Personal communications regarding information from ADF&G species management reports. Alaska Department of Fish and Game. August.
- Person, David. 2005. Personal communications regarding information from ADF&G species management reports. Alaska Department of Fish and Game. August.
- Schumacher, Tom. 2005. Personal communications regarding information from ADF&G species management reports. Alaska Department of Fish and Game. August.
- USDA Forest Service (USFS). 2003. Tongass Land Management Plan Revision Final Supplementary Environmental Impact Statement, Roadless Area Evaluation for Wilderness Recommendations. R-10-MB-481a. U.S. Department of Agriculture, Forest Service, Alaska Region. Available on-line: <http://www.tongass-seis.net/seis/index.html>. Accessed September 26, 2003.

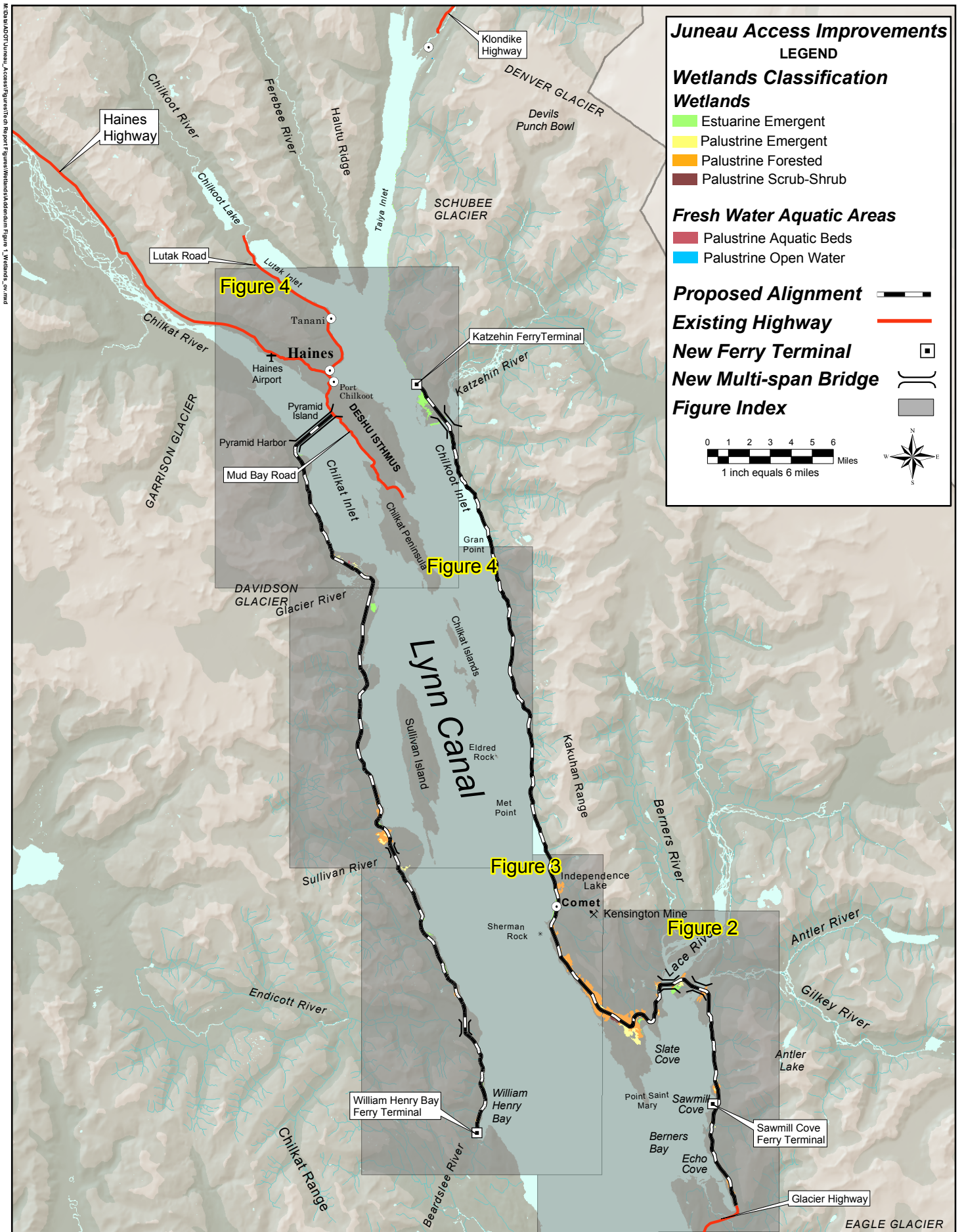
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## FIGURES

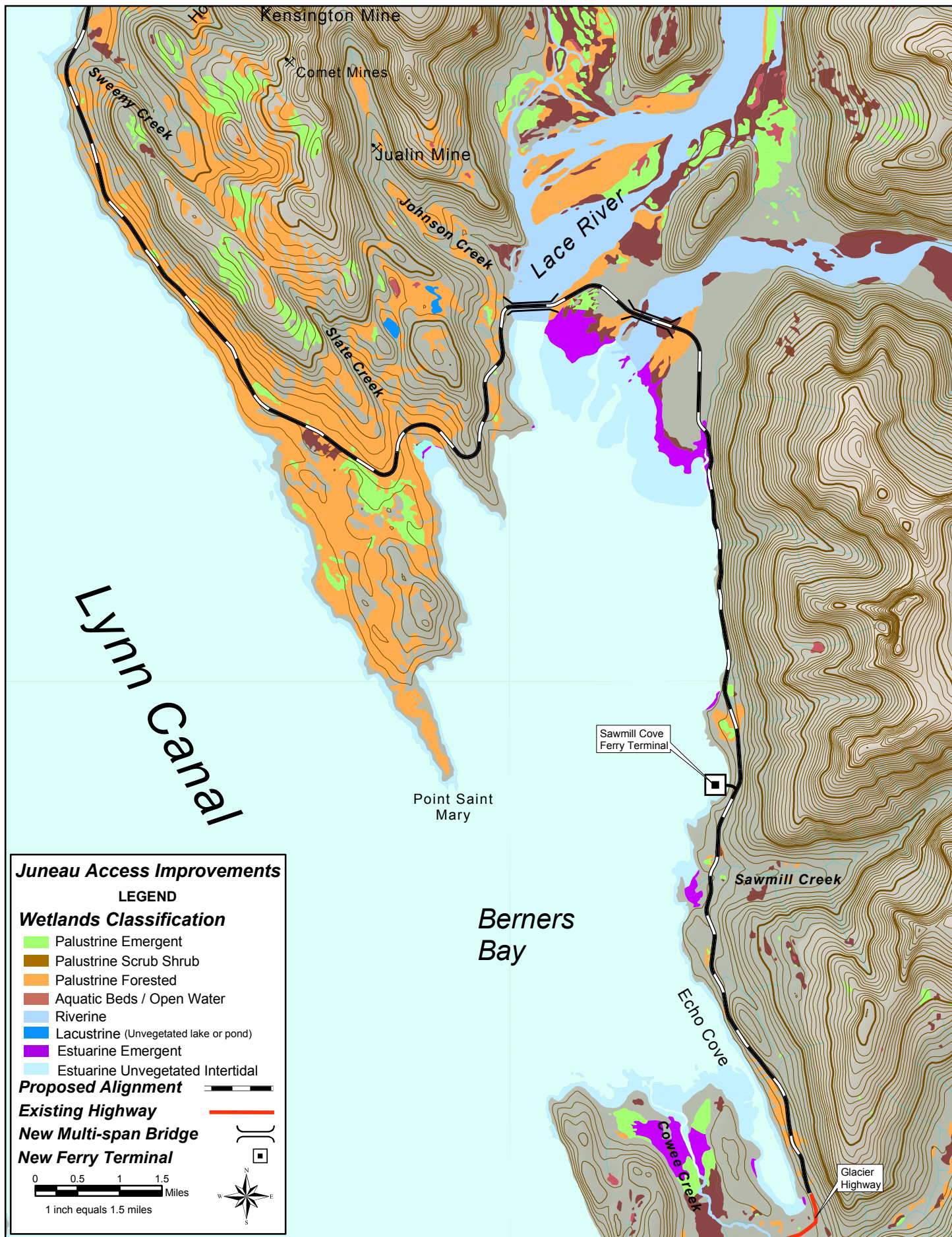
Eight figures, listed below, are provided in this addendum to clarify or illustrate information regarding wetlands classifications, LUDs, wildlife habitat, and habitat fragmentation beyond what was provided in Appendix O, the 2004 *Wildlife Technical Report*. Many of these figures are updated versions of figures originally presented in the 2004 technical report. Figures 1 through 5 are replacement figures for Figures 4-1 through 4-5. Figures 7 and 8 are updated versions of Figures 3-2 and 3-1.

Figure 1	Wetlands Classifications Figure Index
Figure 2	Wetlands Classifications for Berners Bay Area
Figure 3	Wetlands Classifications for William Henry Bay Area and Comet Area
Figure 4	Wetlands Classifications for Sullivan River Area
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Figure 6	Tongass Land Management Plan Land Use Designations
Figure 7	Wolf and Black Bear Habitat in Lynn Canal
Figure 8	Mountain Goat, Brown Bear and Marten Habitat in Lynn Canal

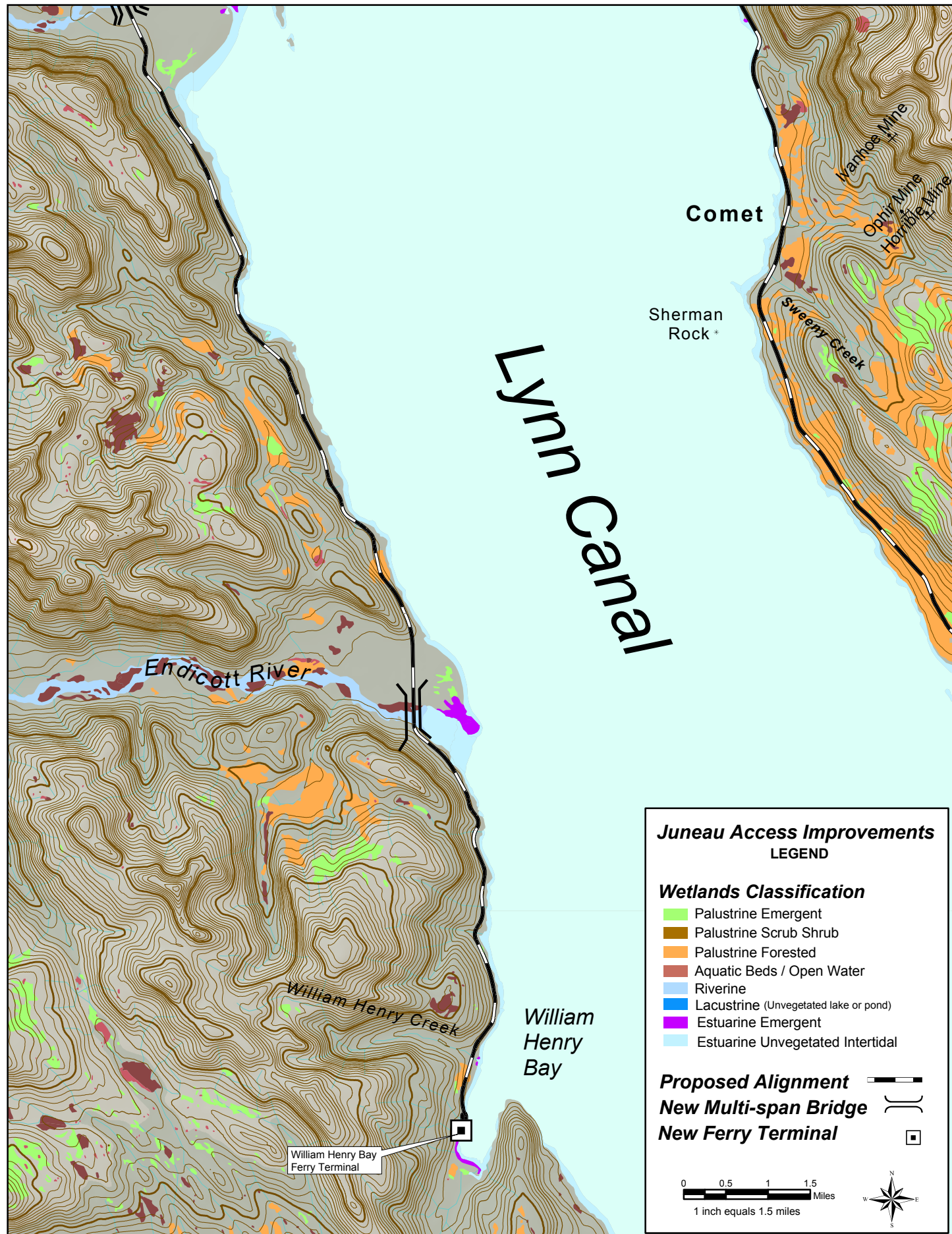
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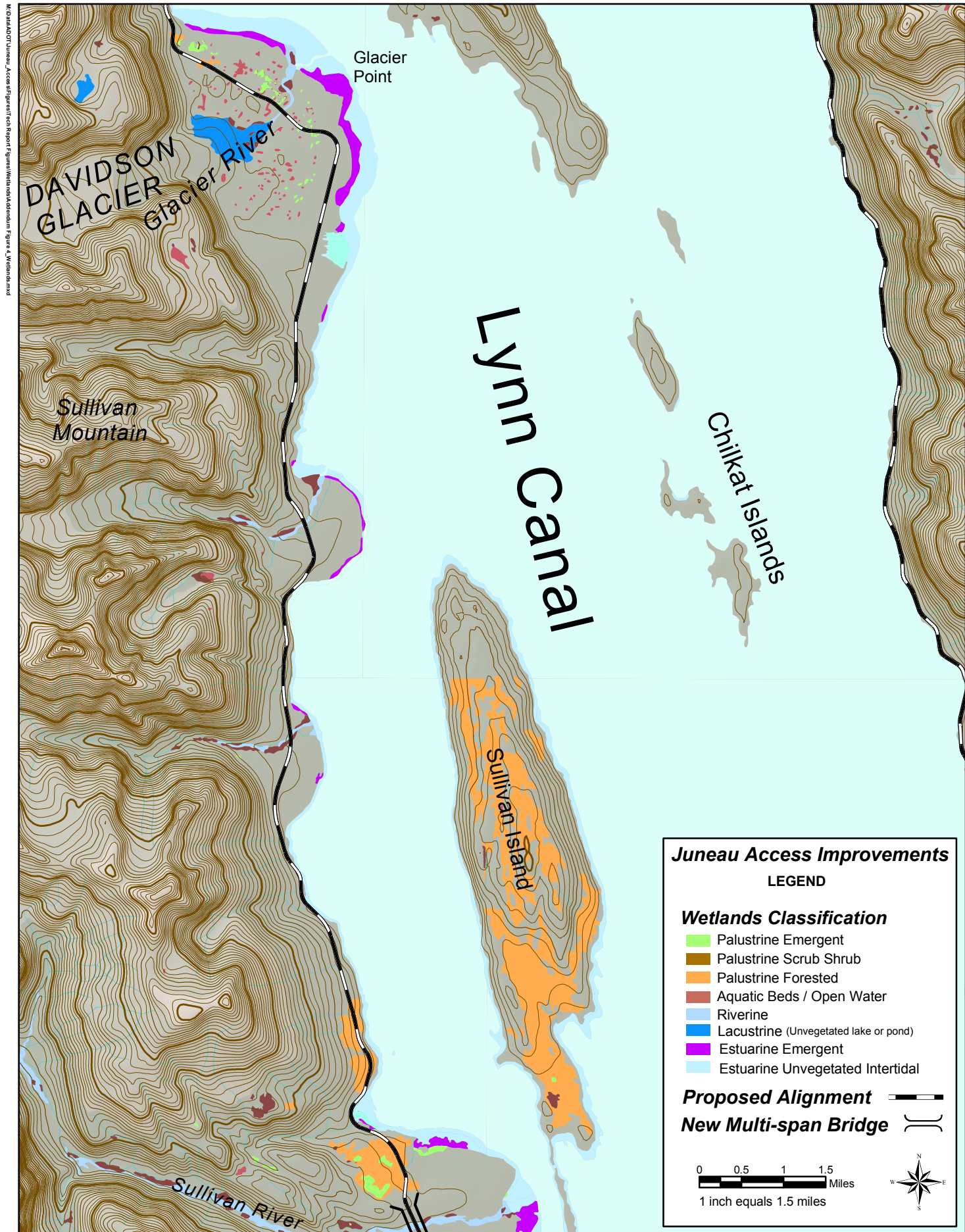
**Figure 1**  
**Wetlands Classifications Figure Index**



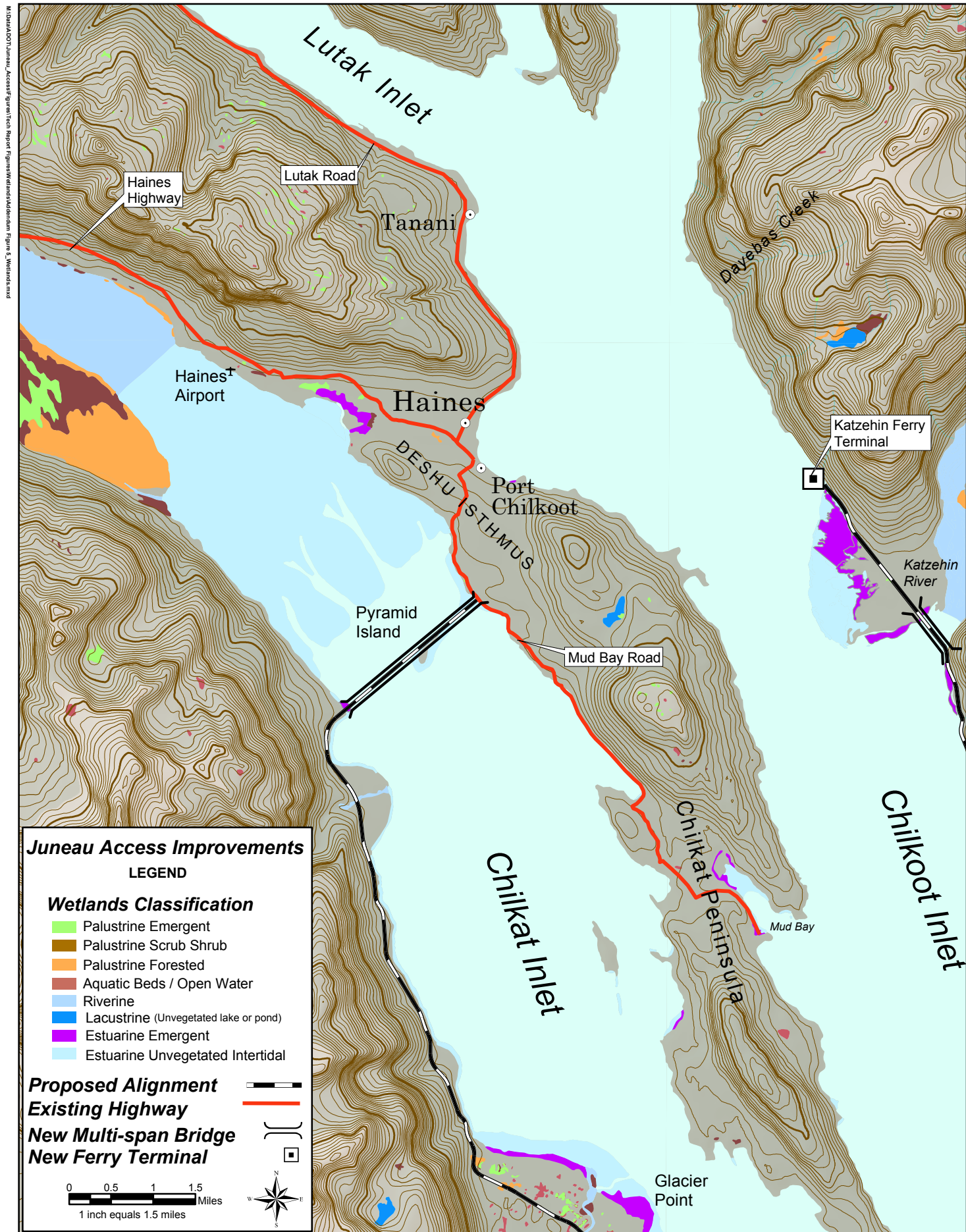
**Figure 2**  
**Wetlands Classifications for Berners Bay Area**



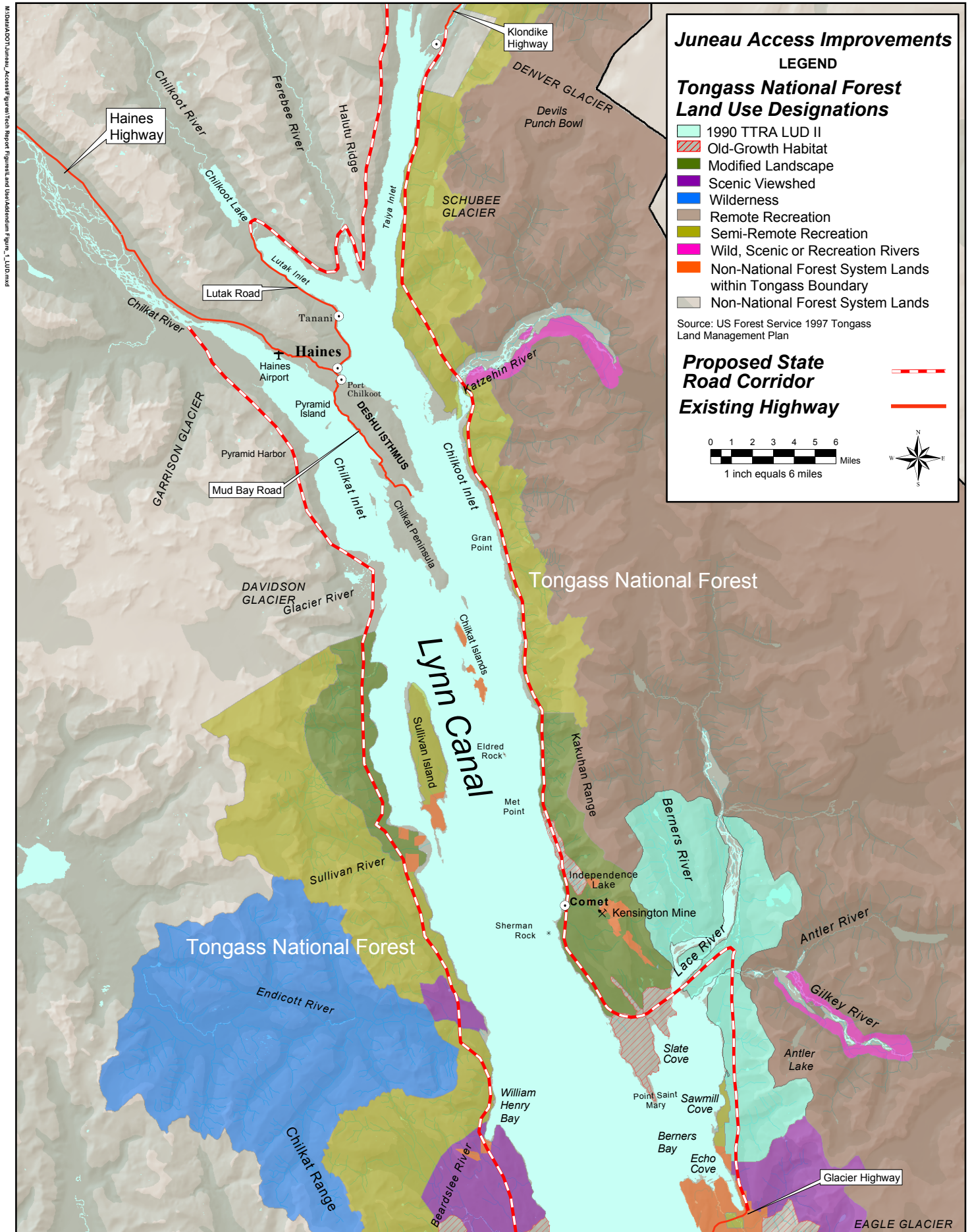
**Figure 3**  
**Wetlands Classifications for William Henry Bay Area and Comet Area**



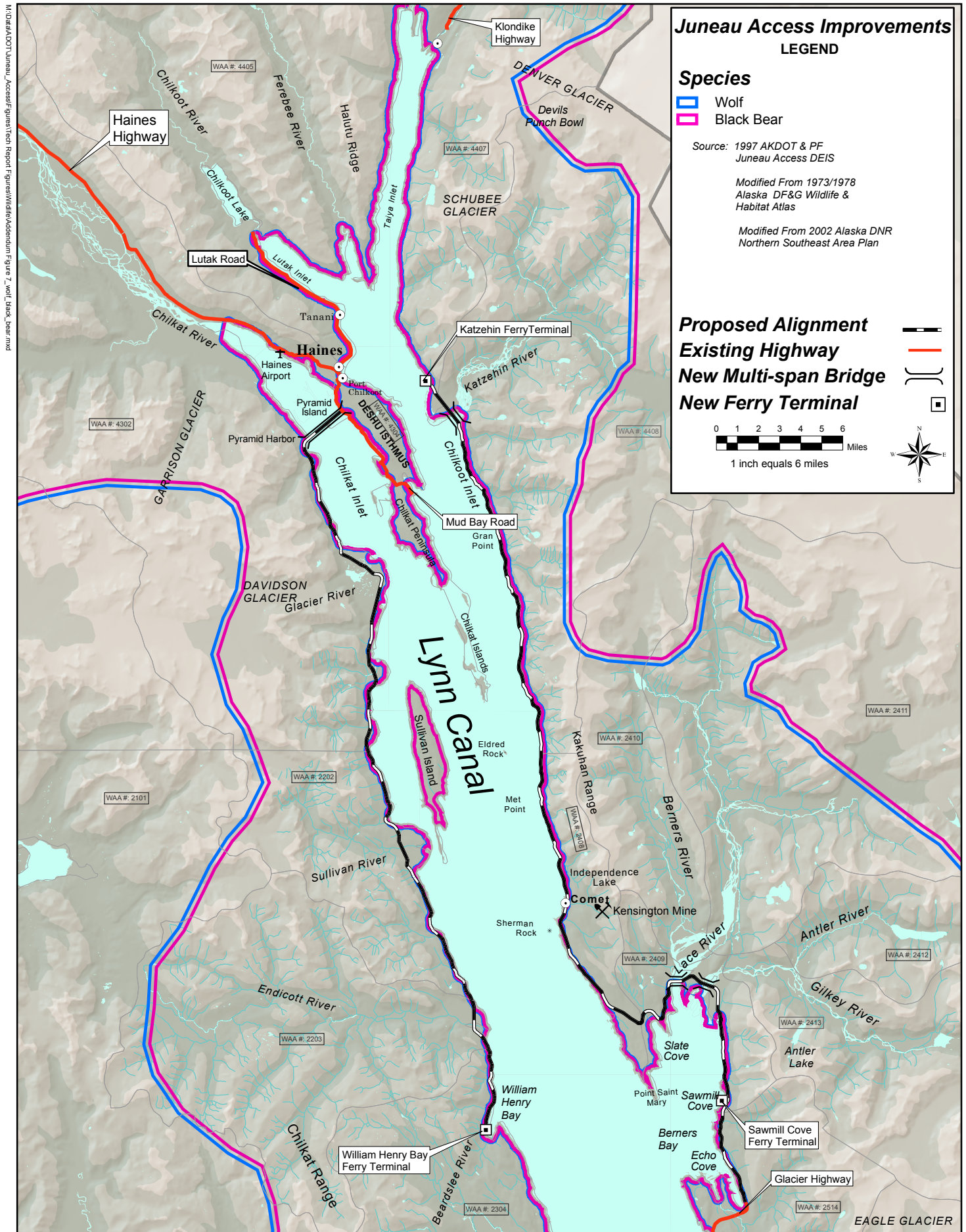
**Figure 4**  
**Wetlands Classifications for Sullivan River Area**



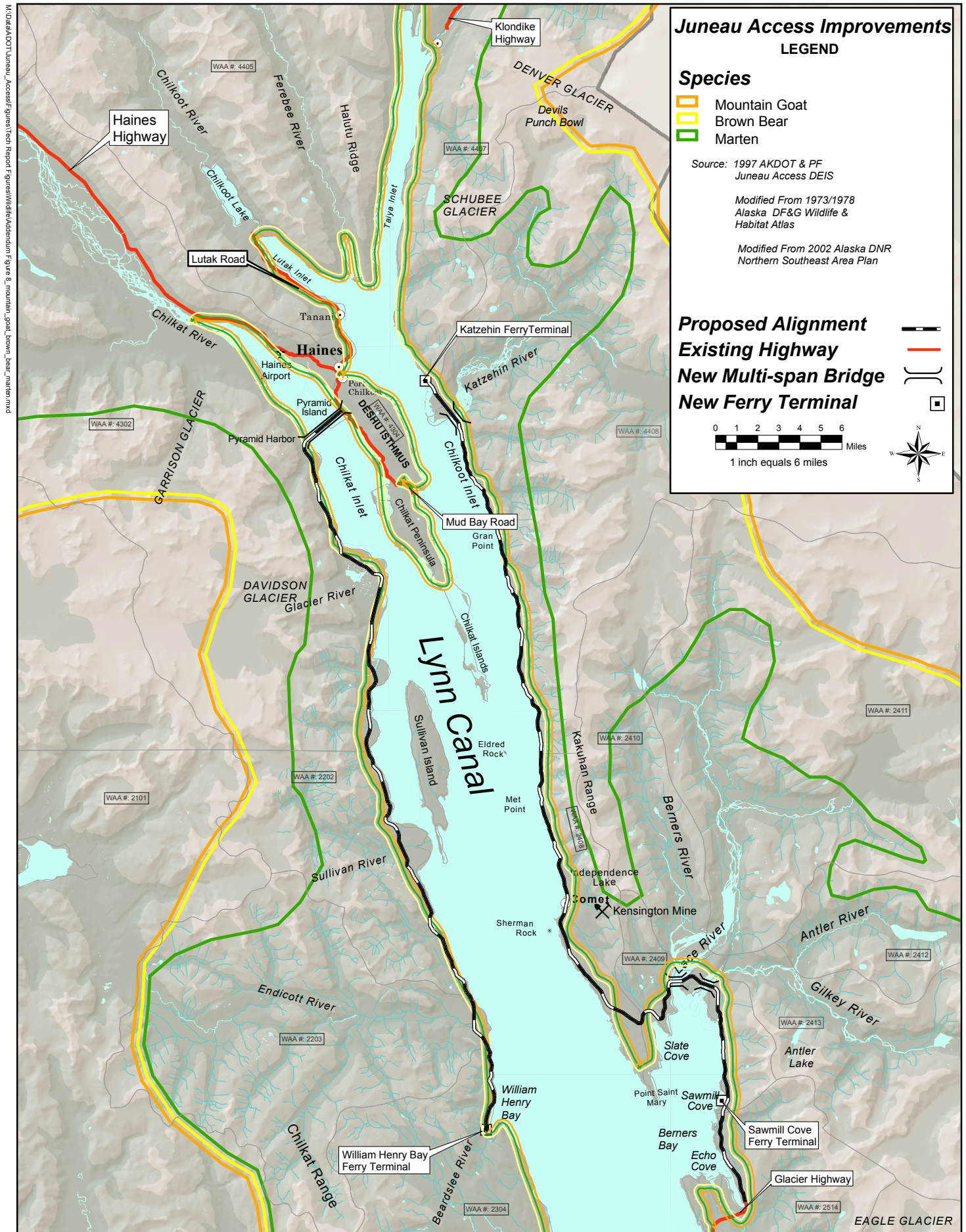
**Figure 5**  
**Wetlands Classifications for Haines Area**



**Figure 6**  
**Tongass Land Management Plan Land Use Designations**



**Figure 7**  
**Wolf and Black Bear Habitat in Lynn Canal**



**Figure 8**  
**Mountain Goat, Brown Bear and Marten Habitat in Lynn Canal**