

# **Ecological site F224XY204AK**

## **Mixed Forest/Meadow Flood Plains Provisional Ecological Site Group**

Last updated: 6/13/2025  
Accessed: 04/11/2026

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### **General information**

**Provisional.** A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

### **MLRA notes**

Major Land Resource Area (MLRA): 224X–Cook Inlet Lowlands

Major Land Resource Area (MLRA) 224X consists of lowlands and lower mountain slopes of the Susitna and Matanuska Valleys, western Kenai Peninsula, and west side of Cook Inlet. It makes up about 10,965 square miles (28,400 square kilometers). The terrain is a broad expanse of braided flood plains, high gradient rivers, rolling plains, terraces and hills bordered by the surrounding mountains. This MLRA contains a large percentage of Alaska's total population and includes the most extensive road systems in the state. Major rivers include the Susitna, Yentna, Little Susitna, Matanuska, Kenai, and Deep Creek that all drain into Cook Inlet. Large lakes include Tustumena and Skilak.

Climate is highly variable ranging from temperate maritime to continental subarctic. Winter arctic weather systems are common in the northern portion of the MLRA. The average annual precipitation ranges from 15 to 60 inches (380 to 1,525 millimeters). The average annual snowfall is about 60 to 120 inches (150 to 305 centimeters). The average annual temperature is about 27 to 36 degrees F (-3 to 2 degrees C). The freeze-free period averages 65 to 160 days, decreasing with elevation.

Vegetation ranges from spruce/birch forests in the lowlands to subalpine scrubland at high elevations. Saltwater meadows along the coast and wetlands and extensive marsh occur throughout the lowlands across the valley. In most years precipitation is adequate for crops, with limited irrigation. Major rivers are affected by high sediment-laden glacial meltwater and ice dam damage and flooding is a risk during spring thaw. Water is hard or very hard, with high potential levels of iron, but is otherwise of excellent quality. Alpine vegetation is associated with the adjacent Cook Inlet Mountains MLRA (223X).

The dominant soil orders in this MLRA are Spodosols, Histosols, Entisols, and Inceptisols. Water, riverwash, beaches, and other miscellaneous (non-soil) areas are 15 percent of this MLRA. Glacial and volcanic ash wind-blown deposits influence much of area, while fluvial deposits are common in riparian areas.

The MLRA is visited by a great number of migrating birds and supports large populations of waterfowl. Most of the rivers and streams are important spawning grounds for salmon (Chinook, coho, and red salmon). Peonies, hay, potatoes, and hardy vegetables are important agriculture with a few dairy and beef cattle farms present. Commercial logging and subsistence firewood gathering are locally important, as is subsistence gathering. Other major industries in the area include commercial fishing, fish processing, and oil and gas extraction. Tourism and wildland recreation are becoming increasingly important.

The major resource concerns are water erosion and water quality. Aquifers are highly susceptible to contamination from runoff. The intrusion of seawater can be a problem along Cook Inlet. Rapid development and off-road recreation are creating significant damage to the wildlands.

## **LRU notes**

This MLRA is a transitional zone between temperate maritime and continental subarctic climatic zones. Arctic winter weather patterns are present in northern areas. With this transition, there are major variations in climatic influences and vegetative responses. With further soil survey and vegetative surveys, this MLRA will be evaluated for potential Land Resource Unit (LRU) development.

## **Classification relationships**

Coastal Trough Province of the Pacific Mountain System

USFS Description of Ecoregions of the United States

100 Polar Domain

130 Subarctic Division

M135 Alaska Range Humid Tayga--Meadow Province

United States National Vegetation Classification

C01. Forest & Woodland Class

S15. Temperate & Boreal Forest & Woodland Subclass

F001. Boreal Forest & Woodland Formation

D014. North American Boreal Forest and Woodland Division

M156. White Spruce - Black Spruce Boreal Montane Woodland Group

LandFire BpS Model/Description Version: Nov. 2024

- 16160 Western North American Boreal Riparian Stinger Forest and Shrubland

- 16150 Western North American Boreal Lowland Large River Floodplain Forest and Shrubland
- Western North American Boreal Montane Floodplain Forest and Shrubland - Boreal Transition
- 16760 Alaskan Pacific Maritime Alpine Floodplain
- 16550 Alaskan Pacific Maritime Floodplain Forest and Shrubland (Landfire, 2024)

## Ecological site concept

- Describes flood plains, flood plain steps, and some low terraces and alluvial fans that flood.
- Soils may have a thin organic cap that commonly occur on flat, hummocky sites.
- Soils are otherwise non-organic.
- Soils formed in alluvium, with stratified layers of sands, silts, and gravels.
- Distinct areas of increased gravels throughout the upper portions of the profile, with a distinct sandy gravel layer, are also present.
- Cover includes Forested zones and shrub/meadow zones along major and minor streams and rivers.
- Frequently to rarely flooded.

## Associated sites

R224XY202AK	<p><b>Drainage Complex Provisional Ecological Site Group</b></p> <p>The Drainage Complexes provisional ecological site is hydrologically linked to floodplains and are the influencing driver for the floodplain ecological sites.</p>
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## Similar sites

F224XY302AK	<p><b>Alluvial Uplands Provisional Ecological Site Group</b></p> <p>The Alluvial Uplands will have a dominant gravelly substrate with a silty cap. They may have a deeper layer of gravels lower in the profile.</p>
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**Table 1. Dominant plant species**

Tree	(1) <i>Betula papyrifera</i> (2) <i>Picea glauca</i>
Shrub	(1) <i>Alnus</i> (2) <i>Salix</i>
Herbaceous	(1) <i>Calamagrostis canadensis</i> (2) <i>Festuca rubra</i>

## Physiographic features

This ecological site is on nearly level to gently sloping alluvial, flooded landforms. This

includes floodplains, low stream terraces, and alluvial fans. Flooding is rare to frequent, and brief. A water table is generally not present. However, one may be present for part or all of the growing season in abandon channels and oxbows. Elevations range from 20 to 1,850 feet above sea level. This ecological site is on all aspects. Slopes are nearly level to gentle (zero to three percent).

**Table 2. Representative physiographic features**

Landforms	(1) Plains > Flood plain (2) Alluvial fan (3) Stream terrace (4) Mountains > Flood plain
Runoff class	Low to medium
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding frequency	None
Elevation	6–564 m
Slope	0–3%
Water table depth	152 cm
Aspect	W, NW, N, NE, E, SE, S, SW

**Table 3. Representative physiographic features (actual ranges)**

Runoff class	Not specified
Flooding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Flooding frequency	Very rare to frequent
Ponding frequency	Not specified
Elevation	0–750 m
Slope	0–12%
Water table depth	30–152 cm

## Climatic features

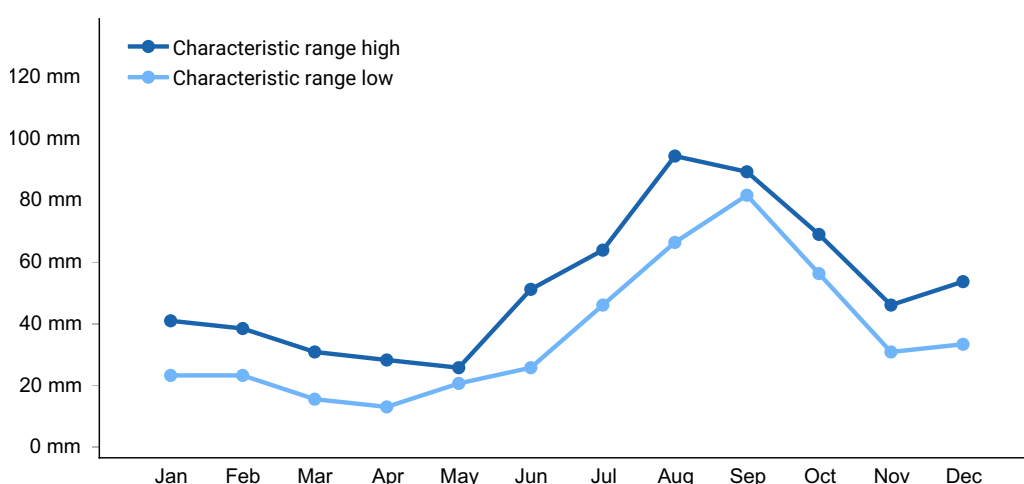
Climate is highly variable, generally ranging from temperate maritime to continental subarctic. Most weather systems originate in the North Pacific and the Gulf of Alaska. In winter, particularly in the northern part of the area, arctic weather systems are more common. In the Matanuska Valley, seasonal winds pick up fine-earth material from unvegetated flood plains and create extensive dust clouds that can reach an altitude of 5,000 feet (1,525 meters) or more. The average annual precipitation ranges from 15 to 60 inches (380 to 1,525 millimeters). It generally is higher on the southern Kenai Peninsula, in

the northern Susitna Valley, and at the higher elevations along the mountains. The average annual snowfall is about 60 to 120 inches (150 to 305 centimeters). The average annual temperature is about 27 to 36 degrees F (-3 to 2 degrees C). The freeze-free period averages 65 to 160 days, decreasing in length with elevation. (USDA-NRCS 2022).

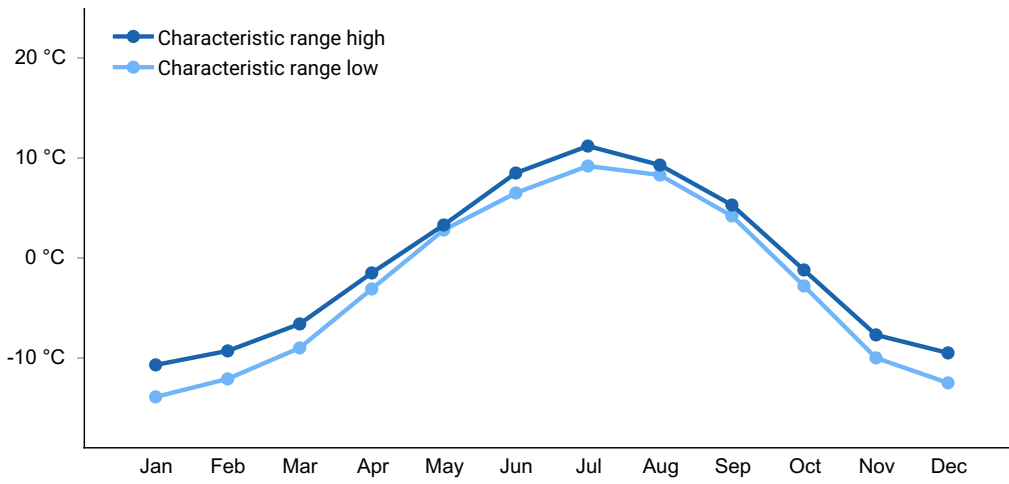
For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/>. Point Mackenzie, Anchorage INTL AP, Talkeetna AP, Homer AP, and Kenai Muni AP are the representative climate stations. The following graphs and charts are a collective sample representing the averaged normals and 30-year annual rainfall data for the selected weather stations from 1981 to 2010.

**Table 4. Representative climatic features**

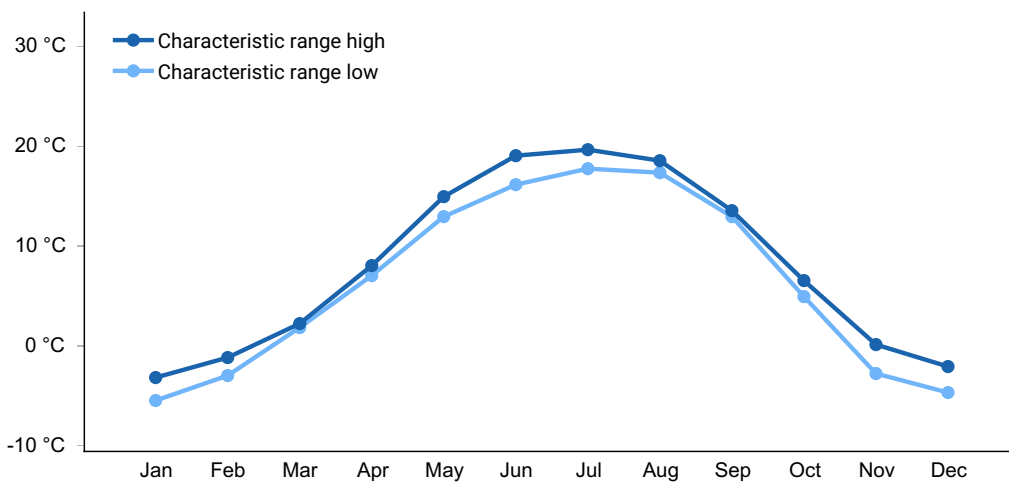
Frost-free period (characteristic range)	84-115 days
Freeze-free period (characteristic range)	118-142 days
Precipitation total (characteristic range)	457-635 mm
Frost-free period (actual range)	81-117 days
Freeze-free period (actual range)	112-144 days
Precipitation total (actual range)	432-686 mm
Frost-free period (average)	100 days
Freeze-free period (average)	130 days
Precipitation total (average)	533 mm



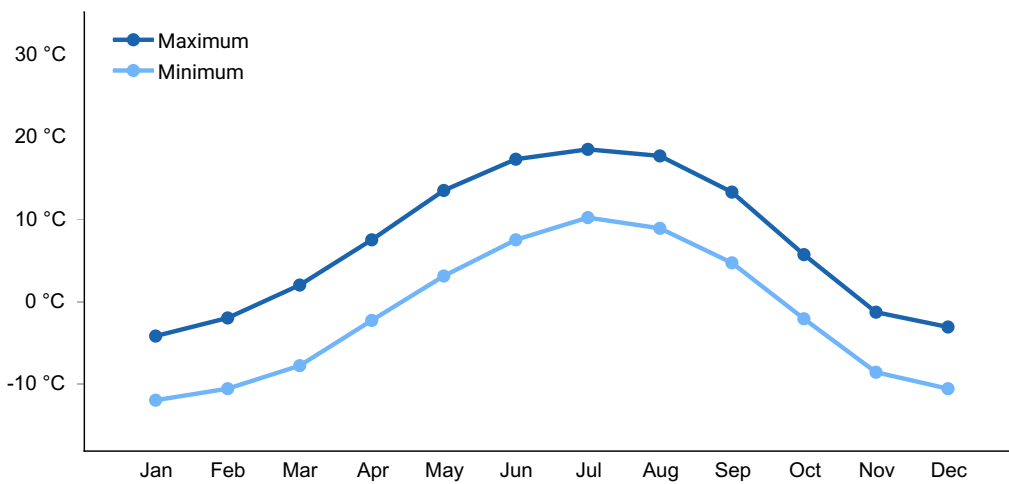
**Figure 1. Monthly precipitation range**



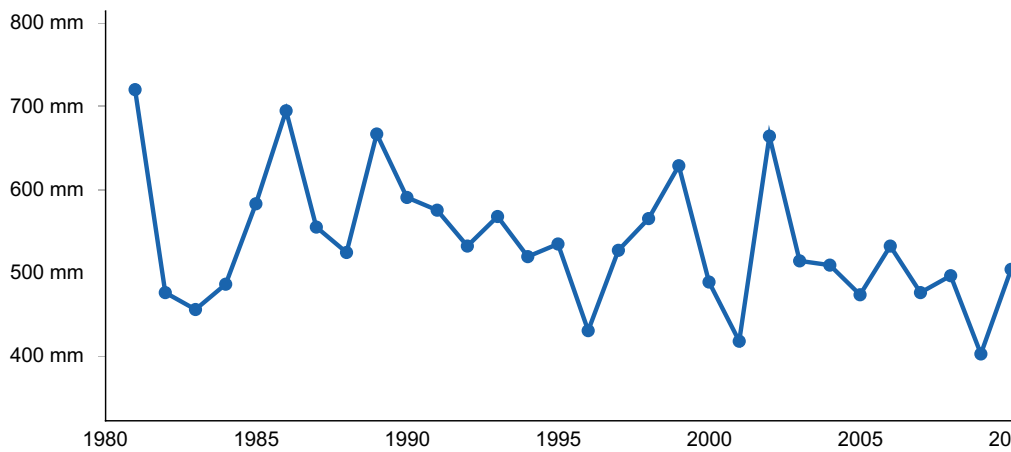
**Figure 2. Monthly minimum temperature range**



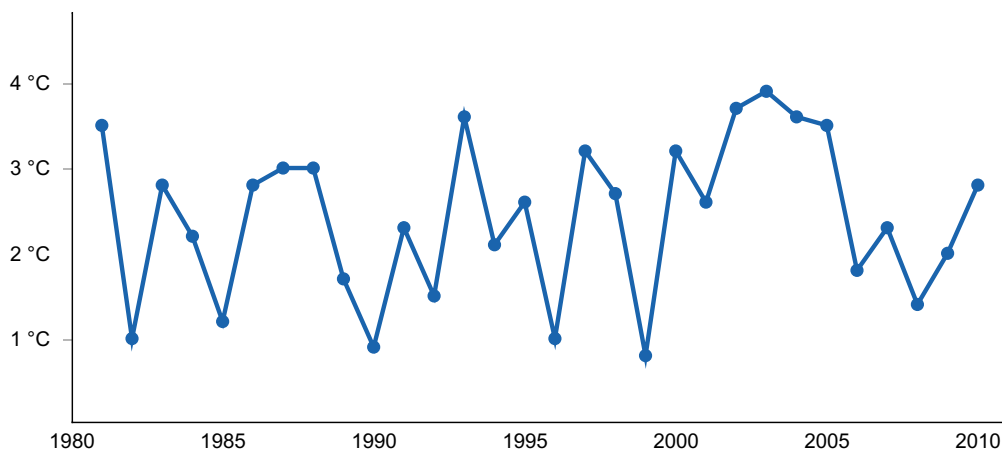
**Figure 3. Monthly maximum temperature range**



**Figure 4. Monthly average minimum and maximum temperature**



**Figure 5. Annual precipitation pattern**



**Figure 6. Annual average temperature pattern**

## Climate stations used

- (1) TALKEETNA AP [USW00026528], Talkeetna, AK
- (2) POINT MACKENZIE [USC00507444], Wasilla, AK
- (3) ANCHORAGE INTL AP [USW00026451], Anchorage, AK
- (4) KENAI MUNI AP [USW00026523], Kenai, AK
- (5) HOMER AP [USW00025507], Homer, AK

## Influencing water features

This ecological site is classified as a riverine wetland under the Hydrogeomorphic (HGM) classification system (Smith et al. 1995). In the associated flood plains, overbank flow from the channel and subsurface hydraulic connections between the stream and adjacent wetlands are the main sources of water (Smith et al. 1995).

Depth to the water table may decrease following summer storm events or spring snowmelt and increase during extended dry periods.

## Wetland description

This site is classified as a riverine wetland under the Hydrogeomorphic (HGM) classification system (Smith et al. 1995; USDA-NRCS 2008).

## Soil features

- Soils formed in alluvium.
- Soils are very deep, but may have shallow, strongly contrasting textural stratification
- Surface fragments are absent.
- Flooding is likely a low energy, depositional event that does not scour the surface.
- Subsurface rock fragment volume is highly variable ranging from 0 to 40 percent, which is common in alluvial systems
- Drainage classification ranges from poorly to well drained.
- Soil acidity is strongly acidic to neutral
- The organic cap is thin (one to five inches) when present

The dominant component is Susitna:

This component is on flood plains. The parent material consists of loamy alluvium over sandy and gravelly alluvium. The runoff class is negligible. The depth to restrictive layer is 41 to 60 inches to strongly contrasting textural stratification. It is well drained. The slowest permeability of the soil material is moderately slow. Available water capacity is high and shrink swell potential is low. This soil is rarely flooded and is not ponded. The water table is deeper than 6 feet. There are no saline horizons within 30 inches of the soil surface. There are no sodic horizons within 30 inches of the soil surface. It is in non-irrigated land capability class 3c.

**Table 5. Representative soil features**

Parent material	(1) Alluvium (2) Organic material
Surface texture	(1) Silt loam (2) Fine sandy loam (3) Loamy very fine sand (4) Silt (5) Coarse sand
Family particle size	(1) Coarse-loamy (2) Sandy or sandy-skeletal
Drainage class	Poorly drained to well drained
Permeability class	Moderately slow to rapid
Depth to restrictive layer	152 cm
Soil depth	152 cm
Surface fragment cover <=3"	0%

Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	9.14–17.78 cm
Soil reaction (1:1 water) (0-101.6cm)	4.5–6.5
Subsurface fragment volume <=3" (0-101.6cm)	0–30%
Subsurface fragment volume >3" (0-101.6cm)	0–5%

**Table 6. Representative soil features (actual values)**

Drainage class	Very poorly drained to well drained
Permeability class	Not specified
Depth to restrictive layer	13–152 cm
Soil depth	Not specified
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	0–29%
Available water capacity (0-101.6cm)	7.62–20.83 cm
Soil reaction (1:1 water) (0-101.6cm)	Not specified
Subsurface fragment volume <=3" (0-101.6cm)	0–55%
Subsurface fragment volume >3" (0-101.6cm)	0–15%

## Ecological dynamics

This ecological site is a riparian community containing areas of Cottonwood and Paper birch with scattered areas of black spruce, and open shrub or herbaceous communities dominated by Barclay willow (*Salix barclayi*) with an understory of fescue (*Festuca* spp.), bluejoint (*Calamagrostis canadensis*), and a variety of forbs.

The dominant species to come back after a flood and/or withstand flooding are alder (*Alnus* spp.) and bluejoint grass (*Calamagrostis canadensis*). Or often, the dominant species to come back and withstand flooding are the willow and bluejoint. In areas where aggradation has occurred, the plant community may see an increase in cottonwood. The flood regime in high flow areas restricts the woody component to primarily willows.

In areas where aggradation has occurred, the plant community may be dominated by

paper birch (*Betula papyrifera*) and devils club (*Oplopanax horridus*) before developing into a white spruce (*Picea glauca*) and paper birch (*Betula papyrifera*) forest.

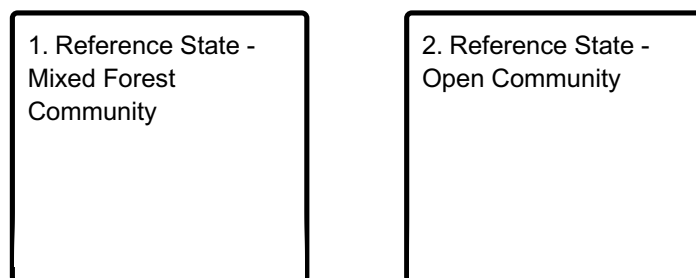
If the site is still prone to occasional flooding with limited to no aggradation, the community can go from an alder shrub site to a cottonwood (*Populus balsamifera* spp. *trichocarpa*) forested site. With time, the overstory is replaced with a mixed white spruce and paper birch forest.

Overgrazing initiates an increase in fireweed (*Chamerion angustifolium*) and other forbs at the expense of bluejoint and fescue. Under continuous over-browsing, the willow will become stunted and woody, severely decreasing the forage value. Its value as winter range will be decreased as snow will cover the stunted plants.

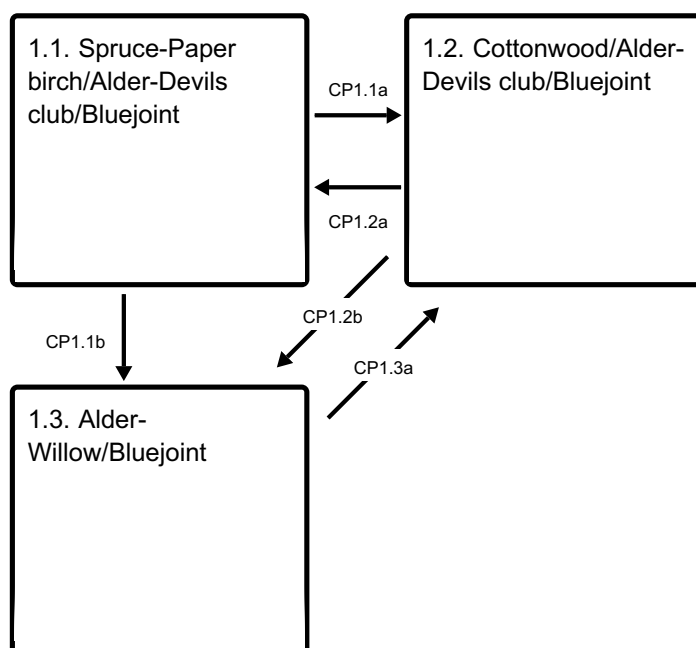
This ecological site would be considered as marginal for domestic livestock especially in light of its great importance as moose habitat. The low production and the rough (hummocky) nature of the terrain limits its desirability for cattle and sheep.

## State and transition model

### Ecosystem states



### State 1 submodel, plant communities



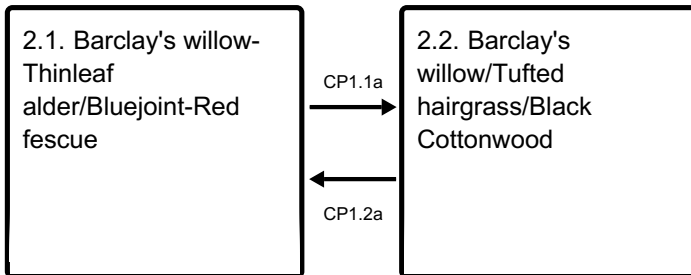
CP1.1a - Flooding

**CP1.1b** - Aggradation caused by flooding  
**CP1.2a** - Time with no or minor flooding

**CP1.2b** - Severe to extreme flooding, frequent flooding, and/ or ice bulldozing events

**CP1.3a** - Time with no flooding

**State 2 submodel, plant communities**



**CP1.1a** - Increase in flood frequency, duration, and aggradation

**CP1.2a** - Time without flooding

**State 1**  
**Reference State - Mixed Forest Community**

Flooding is the major factor of succession along the riparian system. After an extreme or catastrophic flood, the first dominant species to re-establish are the alder and bluejoint. In areas where aggradation has occurred, the plant community may be dominated by paper birch and devils club. With time and little disturbance, white spruce will begin to re-establish.

**Community 1.1**  
**Spruce-Paper birch/Alder-Devils club/Bluejoint**

The most stable plant community on this floodplain site is the mixed white spruce forest.

**Dominant plant species**

- white spruce (*Picea glauca*), tree
- black spruce (*Picea mariana*), tree
- paper birch (*Betula papyrifera*), tree
- alder (*Alnus*), shrub
- devilsclub (*Oplopanax horridus*), shrub
- bluejoint (*Calamagrostis canadensis*), grass

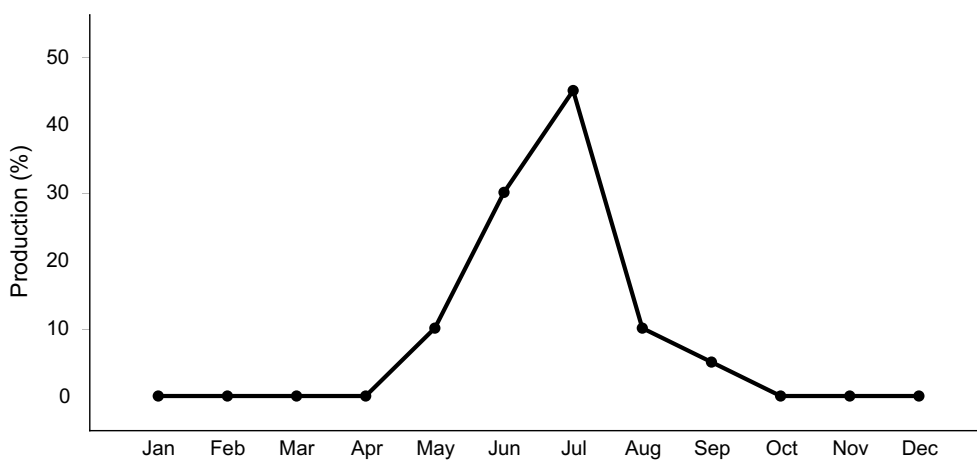
**Table 7. Ground cover**

Tree foliar cover	20-75%
Shrub/vine/liana foliar cover	15-50%
Grass/grasslike foliar cover	1-45%

Forb foliar cover	5-40%
Non-vascular plants	5-60%
Biological crusts	0%
Litter	10-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0-5%
Bare ground	0-1%

**Table 8. Canopy structure (% cover)**

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	–	–	–	–
>0.15 <= 0.3	–	–	1-45%	–
>0.3 <= 0.6	–	15-50%	–	1-20%
>0.6 <= 1.4	–	–	–	–
>1.4 <= 4	–	–	–	–
>4 <= 12	0-5%	–	–	–
>12 <= 24	10-75%	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–



**Figure 7. Plant community growth curve (percent production by month). AK0022, Southern. 60-200 days.**

## Community 1.2

## Cottonwood/Alder-Devils club/Bluejoint

In areas of low relief or where aggradation has not taken place, cottonwood is a mid to late seral plant community. In some cases, this plant community can exist for a very long time depending on the flooding regime of the river.

### Dominant plant species

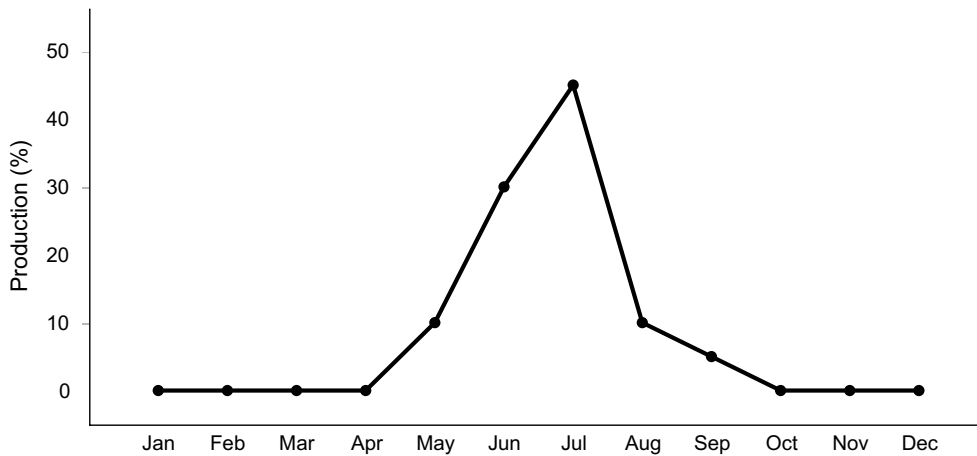
- black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), tree
- alder (*Alnus*), shrub
- devilsclub (*Oplopanax horridus*), shrub
- bluejoint (*Calamagrostis canadensis*), grass

Table 9. Ground cover

Tree foliar cover	1-60%
Shrub/vine/liana foliar cover	5-80%
Grass/grasslike foliar cover	1-25%
Forb foliar cover	5-20%
Non-vascular plants	1-6%
Biological crusts	0%
Litter	25-95%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0-40%

Table 10. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	–	–	–	–
>0.15 <= 0.3	–	1-30%	–	1-5%
>0.3 <= 0.6	–	1-80%	1-25%	1-10%
>0.6 <= 1.4	–	1-65%	–	–
>1.4 <= 4	–	–	–	–
>4 <= 12	–	–	–	–
>12 <= 24	1-60%	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–



**Figure 8. Plant community growth curve (percent production by month). AK0022, Southern. 60-200 days.**

## Community 1.3 Alder-Willow/Bluejoint

The dominant species to come back following an intense flood are the alder and bluejoint grass. These species are great at withstand flooding events once they are established as well, persisting in the floodplain.

### Dominant plant species

- alder (*Alnus*), shrub
- willow (*Salix*), shrub
- bluejoint (*Calamagrostis canadensis*), grass

## Pathway CP1.1a Community 1.1 to 1.2

Flooding provides the sediment deposition and inundation required to allow cottonwood to germinate. Following flood, many other species suited to dryer locations will weaken and cottonwood is able to become dominant in the community.

### **Pathway CP1.1b** **Community 1.1 to 1.3**

Aggradation caused by flooding events. Flooding events deposit sediment and debris loads that will affect the hydrology and disturb species, such as the White spruce, that do not tolerate wet or saturated soils. With the decrease in spruce, and added moisture and resources, ferns will increase in the understory as well as Devils club and bluejoint.

### **Pathway CP1.2a** **Community 1.2 to 1.1**

Over time and no flooding, the community can recover. Spruce and birch can sprout quickly although growth is slower, the transition can happen relatively quickly barring any further disturbance.

### **Pathway CP1.2b** **Community 1.2 to 1.3**

Severe to extreme flooding, frequent flooding, and/ or ice bulldozing events. In cases of extreme events, high frequency, and action of ice scraping the surface, uprooting trees, and tearing the site up, Alder and bluejoint are able to quickly recover and stabilize the site, while it will take more time for the trees and more upland shrub species to re-establish.

### **Pathway CP1.3a** **Community 1.3 to 1.2**

Over time and no flooding, the community can recover. Cottonwood have an opportunity to sprout quickly following a major event, as will alder and bluejoint. Allowing the recovery of this site to Community 1.2 barring any further disturbance.

## **State 2** **Reference State - Open Community**

Within the Mixed Forest/Meadow Flood Plains ecological site, there are areas characterized by hummocks. These hummocky soils support willows (*Salix* spp.) and bluejoint grass (*Calamagrostis canadensis*) predominantly. Barclay's willow (*Salix barclayi*) is the primary willow noted on this site, but other willows and woody species do occur in the community. Grasses and forbs provide major cover in the understory. Low spaces between hummocks are commonly dominated by bryophytes (*Drepanocladus* and

Calliergon). Black spruce (*Picea mariana*) and cottonwood (*Populus balsamifera*) are scattered across the ecological site but are not a component in this community.

**Dominant plant species**

- black cottonwood (*Populus balsamifera ssp. trichocarpa*), tree
- black spruce (*Picea mariana*), tree
- Barclay's willow (*Salix barclayi*), shrub
- thinleaf alder (*Alnus incana ssp. tenuifolia*), shrub
- littletree willow (*Salix arbusculoides*), shrub
- bluejoint (*Calamagrostis canadensis*), grass
- tufted hairgrass (*Deschampsia cespitosa*), grass
- red fescue (*Festuca rubra*), grass
- Nootka lupine (*Lupinus nootkatensis*), other herbaceous
- boreal yarrow (*Achillea millefolium var. borealis*), other herbaceous
- drepanocladus moss (*Drepanocladus*), other herbaceous

**Community 2.1**

**Barclay's willow- Thinleaf alder/Bluejoint-Red fescue**

This community is a combination of willows (*Salix* spp.) and bluejoint (*Calamagrostis canadensis*) cover on hummocks and mosses on interspaces between the hummocks. Communities in areas unaffected by heavy browse or grazing will have uniform coverage in shrub height. The shrub overstory is primarily willow. Barclay's willow, bluejoint, Nootka lupine (*Lupinus nootkatensis*), and boreal yarrow (*Achillea millifolium var. borealis*) are common vascular species. The common bryophytes (mosses and lichens) include Drepanocladus moss and Calliergon moss. Small black spruce trees (*Picea mariana*) and black cottonwood (*Populus balsamifera ssp. trichocarpa*) are randomly scattered throughout. The historical plant community will produce approximately 1,100 to 3,000 pounds per acre of air-dry forage depending on year.

**Dominant plant species**

- Barclay's willow (*Salix barclayi*), shrub
- thinleaf alder (*Alnus incana ssp. tenuifolia*), shrub
- littletree willow (*Salix arbusculoides*), shrub
- bluejoint (*Calamagrostis canadensis*), grass
- tufted hairgrass (*Deschampsia cespitosa*), grass
- Bering's tufted hairgrass (*Deschampsia beringensis*), grass
- red fescue (*Festuca rubra*), grass
- Nootka lupine (*Lupinus nootkatensis*), other herbaceous
- boreal yarrow (*Achillea millefolium var. borealis*), other herbaceous
- drepanocladus moss (*Drepanocladus*), other herbaceous

**Table 11. Ground cover**

Tree foliar cover	0-15%
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Shrub/vine/liana foliar cover	40-90%
Grass/grasslike foliar cover	15-40%
Forb foliar cover	5-20%
Non-vascular plants	0%
Biological crusts	0-10%
Litter	5-10%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

## Community 2.2

### Barclay's willow/Tufted hairgrass/Black Cottonwood

This community develops in response to increased flooding or aggradation of the site. The willows will increase, but will be short and woody, forbs will increase, and the grasses will shift. The additional aggradation and flooding will encourage cottonwood (*Populus balsamifera* ssp. *trichocarpa*) to increase on the ecological site. This same community may develop in areas of overgrazing and over-browsing.

#### Dominant plant species

- black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), tree
- Barclay's willow (*Salix barclayi*), shrub
- littletree willow (*Salix arbusculoides*), shrub
- thinleaf alder (*Alnus incana* ssp. *tenuifolia*), shrub
- Bering's tufted hairgrass (*Deschampsia beringensis*), grass
- tufted hairgrass (*Deschampsia cespitosa*), grass
- red fescue (*Festuca rubra*), grass
- yellow marsh marigold (*Caltha palustris*), other herbaceous
- variegated scouringrush (*Equisetum variegatum*), other herbaceous
- drepanocladus moss (*Drepanocladus*), other herbaceous

## Pathway CP1.1a

### Community 2.1 to 2.2

The increase in frequency and/or duration of flooding with a correlating increase in aggradation will encourage cottonwood to increase and grasses and forbs to decrease.

## Pathway CP1.2a Community 2.2 to 2.1

Time without flooding allows the grasses to recover and trees are thinned by typical successional phases, browse, and drying of the site.

### Additional community tables

Table 12. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)	Diameter (Cm)	Basal Area (Square M/Hectare)
<b>Tree</b>							
white spruce	PIGL	<i>Picea glauca</i>	Native	–	10–45	–	–
paper birch	BEPA	<i>Betula papyrifera</i>	Native	–	10–40	–	–

Table 13. Community 1.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
<b>Grass/grass-like (Graminoids)</b>					
bluejoint	CACA4	<i>Calamagrostis canadensis</i>	Native	–	1–45
<b>Shrub/Subshrub</b>					
devilsclub	OPHO	<i>Oplopanax horridus</i>	Native	–	15–50
thinleaf alder	ALINT	<i>Alnus incana ssp. tenuifolia</i>	Native	–	3–40
prickly rose	ROAC	<i>Rosa acicularis</i>	Native	–	1–20

Table 14. Community 1.2 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)	Diameter (Cm)	Basal Area (Square M/Hectare)
<b>Tree</b>							
balsam poplar	POBAB2	<i>Populus balsamifera ssp. balsamifera</i>	Native	–	16–60	–	–
paper birch	BEPA	<i>Betula papyrifera</i>	Native	–	1–20	–	–
white spruce	PIGL	<i>Picea glauca</i>	Native	–	1–10	–	–

Table 15. Community 1.2 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (M)	Canopy Cover (%)
<b>Grass/grass-like (Graminoids)</b>					
bluejoint	CACA4	<i>Calamagrostis canadensis</i>	Native	–	1–25
<b>Shrub/Subshrub</b>					
devilsclub	OPHO	<i>Oplopanax horridus</i>	Native	–	1–80
thinleaf alder	ALINT	<i>Alnus incana ssp. tenuifolia</i>	Native	–	1–65

Table 16. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1				–	
	bluejoint	CACA4	<i>Calamagrostis canadensis</i>	–	30–50
	red fescue	FERU2	<i>Festuca rubra</i>	–	0–5
	Altai fescue	FEAL	<i>Festuca altaica</i>	–	0–5
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	–	0–5
	Bering's tufted hairgrass	DEBE2	<i>Deschampsia beringensis</i>	–	0–5
	common woodrush	LUMU2	<i>Luzula multiflora</i>	–	0–1
	sedge	CAREX	<i>Carex</i>	–	0–1
	rush	JUNCU	<i>Juncus</i>	–	0–1
<b>Forb</b>					
2				–	
	Nootka lupine	LUNO	<i>Lupinus nootkatensis</i>	–	10–20
	boreal yarrow	ACMIB	<i>Achillea millefolium var. borealis</i>	–	5–10
	tall Jacob's-ladder	POAC	<i>Polemonium acutiflorum</i>	–	0–5
	arctic dock	RUAR6	<i>Rumex arcticus</i>	–	0–5
	variegated scouringrush	EQVA	<i>Equisetum variegatum</i>	–	1–5
	field horsetail	EQAR	<i>Equisetum arvense</i>	–	2–5
	fireweed	CHAN9	<i>Chamerion angustifolium</i>	–	0–1
	tall bluebells	MEPA	<i>Mertensia paniculata</i>	–	0–1
	Canadian burnet	SACA14	<i>Sanguisorba canadensis</i>	–	0–1

	roseroot stonecrop	RHRO3	<i>Rhodiola rosea</i>	–	0–1
	larkspurleaf monkshood	ACDEC	<i>Aconitum delphiniifolium</i> ssp. <i>chamissonianum</i>	–	0–1
	wintergreen	PYROL	<i>Pyrola</i>	–	0–1
	captiate valerian	VACA3	<i>Valeriana capitata</i>	–	0–1
	boreal sagebrush	ARAR9	<i>Artemisia arctica</i>	–	0–1
	meadow-rue	THALI2	<i>Thalictrum</i>	–	0–1
	bedstraw	GALIU	<i>Galium</i>	–	0–1
	ragwort	SENEC	<i>Senecio</i>	–	0–1
	water arum	CAPA	<i>Calla palustris</i>	–	0–1
	purple marshlocks	COPA28	<i>Comarum palustre</i>	–	0–1
	largeleaf avens	GEMA4	<i>Geum macrophyllum</i>	–	0–1
	lousewort	PEDIC	<i>Pedicularis</i>	–	0–1
	alpine bistort	POVI3	<i>Polygonum viviparum</i>	–	0–1
	little yellow rattle	RHMI13	<i>Rhinanthus minor</i>	–	0–1
	longstalk starwort	STLO2	<i>Stellaria longipes</i>	–	0–1
	fewflower meadow-rue	THSP	<i>Thalictrum sparsiflorum</i>	–	0–1
	marsh arrowgrass	TRPA28	<i>Triglochin palustris</i>	–	0–1

### Shrub/Vine

3				–	
	Barclay's willow	SABA3	<i>Salix barclayi</i>	–	20–40
	thinleaf alder	ALINT	<i>Alnus incana</i> ssp. <i>tenuifolia</i>	–	5–10
	littletree willow	SAAR3	<i>Salix arbusculoides</i>	–	5–10
	undergreen willow	SACO2	<i>Salix commutata</i>	–	5–10
	bog blueberry	VAUL	<i>Vaccinium uliginosum</i>	–	0–5
	dwarf birch	BENA	<i>Betula nana</i>	–	0–5
	green alder	ALVI5	<i>Alnus viridis</i>	–	0–5
	strawberryleaf raspberry	RUPE	<i>Rubus pedatus</i>	–	0–5

	arctic raspberry	RUAR	<i>Rubus arcticus</i>	–	0–5
	willow	SALIX	<i>Salix</i>	–	0–5
<b>Tree</b>					
4				–	
	black cottonwood	POBAT	<i>Populus balsamifera ssp. trichocarpa</i>	–	0–5
	black spruce	PIMA	<i>Picea mariana</i>	–	0–5
<b>Moss</b>					
5				–	
	drepanocladus moss	DREPA3	<i>Drepanocladus</i>	–	5–10
	calliergon moss	CALLI10	<i>Calliergon</i>	–	5–10
	aulacomnium moss	AULAC2	<i>Aulacomnium</i>	–	5–10

## Animal community

Mammals common to the area include moose, brown bear, black bear, wolf, coyote, fox, beaver, and lynx. Caribou are common in a few places. Tundra swans, Canada geese, sandhill cranes, and a wide variety of ducks nest and stop over during migration. Spruce grouse and bald eagles are common throughout much of the year.

Most of the rivers and streams are important spawning grounds for salmon (Chinook, coho, and red salmon). Anadromous steelhead fisheries occur in Kenai and rainbow trout are stocked in many streams and lakes. Introduced northern pike are in most of the lakes and are a major predator of small fish and waterfowl.

## Recreational uses

Hunting, bird watching, and recreational activities are major activities in these areas.

## Wood products

Commercial timber harvest is common in localized areas. Firewood cutting for personal use is common across the Major Land Resource Area.

## Inventory data references

No field plots were available for this ecological site. A review of the scientific literature and professional experience were used to approximate the plant communities for this provisional ecological site. Information for the state-and-transition model was obtained from the same sources. All community phases are considered provisional based on these

plots and the sources identified in ecological site description.

## References

- Smith, R.D., A.P. Ammann, C.C. Bartoldus, and M.M. Brinson. 1995. An approach for assessing wetland functions using hydrogeomorphic classification, reference wetlands, and functional indices.
- Viereck, L.A., C. T. Dyrness, A. R. Batten, and K. J. Wenzlick. 1992. The Alaska vegetation classification. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station General Technical Report PNW-GTR-286..

## Other references

- Bailey, R.G. 1995. Ecoregions of North America. U.S. Department of Agriculture, Forest Service, Washington, DC, map scale 1: 15,000,000. Available at <https://www.fs.fed.us/rm/ecoregions/products/map-ecoregions-north-america/>.
- Boggs, K.W., S.C. Klein, J.E. Grunblatt, G.P. Streveler, and B. Koltun. 2008. Landcover Classes and Plant Associations of Glacier Bay National Park and Preserve. Natural Resource Technical Report NPR/GLBA/NRTR-2008/093. National Park Service, Fort Collins, CO. 254 pps.
- Boggs, K., S.C. Klein, J. Grunblatt, T. Boucher, B. Koltun, M. Sturdy, and G.P. Streveler. 2010. Alpine and subalpine vegetation chronosequences following deglaciation in coastal Alaska. *Arctic, Antarctic, and Alpine Research* 42: 385-395.
- Boggs, K., L. Flagstad, T. Boucher, T. Kuo, M. Aisu, J. Tande, and J. Michaelson. 2016. Vegetation Map and Classification: Southern Alaska and Aleutian Islands. Alaska Natural Heritage Program, Alaska Center for Conservation Science, University of Alaska Anchorage. 90 pps.
- Carsten, R. 2007. Chapter 5.2 Terrestrial habitats of Southeast Alaska. In: Schoen, J.W. and E. Dovichin (eds). *The Coastal Forests and Mountains Ecoregion of Southeastern Alaska and the Tongass National Forest: A Conservation Assessment and Resource Synthesis*. Audubon Alaska and The Nature Conservancy, Anchorage, AK.
- Gallant, A.L., E.F. Binnian, J.M. Omernick, and M.B. Shasby. 2010. Level III Ecoregions of Alaska. Corvallis, OR, U.S. EPA, National Health and Environmental Effects Research Laboratory, map scale 1: 5,000,000. Available at <http://http://www.epa.gov/eco-research/ecoregion-download-files-state-region-10>. (Accessed 11 September 2018).

Kauffman, D.S., N.E. young, J.P. Briner, and W.F. Manley. 2011. Alaska Palaeo-Glacier Atlas (Version 2), pps. 427-445. In: Ehlers, J., P.L. Gibbard, and P.D. Hughes (eds.). Developments in Quaternary Science, Volume 15. Amsterdam, The Netherlands.

LANDFIRE. 2024. Biophysical Setting 16160 Western North American Boreal Riparian Stinger Forest and Shrubland. In: LANDFIRE National Vegetation Dynamics Models. USDA Forest Service and US Department of Interior. Washington, DC.

LANDFIRE. 2024. Biophysical Setting 16150 Western North American Boreal Lowland Large River Floodplain Forest and Shrubland. In: LANDFIRE National Vegetation Dynamics Models. USDA Forest Service and US Department of Interior. Washington, DC.

LANDFIRE. 2024. Biophysical Setting 16142 Western North American Boreal Montane Floodplain Forest and Shrubland - Boreal Transition. In: LANDFIRE National Vegetation Dynamics Models. USDA Forest Service and US Department of Interior. Washington, DC.

LANDFIRE. 2024. Biophysical Setting 16760 Alaskan Pacific Maritime Alpine Floodplain. In: LANDFIRE National Vegetation Dynamics Models. USDA Forest Service and US Department of Interior. Washington, DC.

LANDFIRE. 2024. Biophysical Setting 16550 Alaskan Pacific Maritime Floodplain Forest and Shrubland. In: LANDFIRE National Vegetation Dynamics Models. USDA Forest Service and US Department of Interior. Washington, DC.

NatureServe. 2018. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1 NatureServe, Arlington, VA. Available at <http://explorer.natureserve.org>. (Accessed 10 September 2018).

Peel, M.C., B.L. Finlayson, and T.A. McMahon. 2007. Updated world map of the Köppen-Geiger climate classification. *Hydrology and Earth System Sciences* 11: 1633-1644.

United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. 682 pps.

Wahrhaftig, C. 1965. Physiographic Divisions of Alaska. Geological Survey Professional paper 482. U.S. Department of the Interior, Geological Survey, U.S. Government Printing Office, Washington, DC. 52 pps.

United States Department of Agriculture Staff. Hydrogeomorphic Wetland Classification System: An Overview and Modification to Better Meet the Needs of the Natural Resources Conservation Service. 2008

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## Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	04/11/2026
Approved by	Blaine Spellman
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

---

5. **Number of gullies and erosion associated with gullies:**

---

6. **Extent of wind scoured, blowouts and/or depositional areas:**

---

7. **Amount of litter movement (describe size and distance expected to travel):**

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

---

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
- 

14. **Average percent litter cover (%) and depth ( in):**
- 

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
- 

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**
- 

17. **Perennial plant reproductive capability:**
-