

Ecological site F236XY165AK

Boreal Woodland Loamy Stream Terraces

Last updated: 2/13/2024
Accessed: 10/05/2026

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): 236X–Bristol Bay-Northern Alaska Peninsula Lowlands

The Bristol Bay-Northern Alaska Peninsula Lowland Major Land Resource Area (MLRA 236) is located in Western Alaska. This MLRA covers approximately 19,500 square miles and is defined by an expanse of nearly level to rolling lowlands, uplands and low to moderate hills bordered by long, mountain footslopes. Major rivers include the Egegik, Mulchatna, Naknek, Nushagak, and Wood River. MLRA 236 is in the zone of discontinuous permafrost. It is primarily in areas with finer textured soils on terraces, rolling uplands and footslopes. This MLRA was glaciated during the early to middle Pleistocene. Moraine and glaciofluvial deposits cover around sixty percent of the MLRA. Alluvium and coastal deposits make up a large portion of the remaining area (Kautz et al., 2012; USDA, 2006). Climate patterns across this MLRA shift as one moves away from the coast. A maritime climate is prominent along the coast, while continental weather, commonly associated with Interior Alaska, is more influential inland. Across the MLRA, summers are general short and warm while winters are long and cold. Mean annual precipitation is 13 to 50 inches, with increased precipitation at higher elevations and areas away from the coast. Mean annual temperatures is between 30 and 36 degrees F (USDA, 2006). The Bristol Bay-Northern Alaska Peninsula MLRA is principally undeveloped wilderness. Federally managed land includes parts of the Katmai and Aniakchak National Parks, and the Alaska Peninsula, Becharof, Togiak and Alaska Maritime National Wildlife Refuges. The MLRA is sparsely populated. Principal communities include Dillingham, Naknek, and King Salmon. Commercial fishing in Bristol Bay and the Bering Sea comprises a major part of economic activity in the MLRA. Other land uses include subsistence activities (fishing, hunting, and gathering) and sport hunting and fishing (USDA, 2006).

Ecological site concept

This boreal ecological site is on flood plain terraces. Site elevation is between 30 and 850 feet above sea level. Slopes are nearly level to gentle (0 – 4 percent). Soil hydrology, low soil acidity, and a fire regime shape the vegetation on this landform. Low soil acidity, often associated with ericaceous communities, limits soil fertility and restricts vegetation. Rare, brief ponding, particularly in concave areas, supports a deep water table that is reflected in greater amounts of hydrophytic plant species. This site is susceptible to fire, which removes the overstory and increases post-fire diversity of fast growing, herbaceous species. The reference state supports three communities. The reference plant community is characterized as a coniferous woodland (Viereck et al., 1992). It is composed of a white spruce canopy with an open understory of facultative to upland ericaceous shrubs, graminoid, mosses, and lichens. Post-fire communities are comprised of fast growing herbaceous species and extant shrubs. There is an alternate state on this site that is created by clearing and maintaining land.

Associated sites

F236XY111AK	Boreal Forest Loamy Flood Plains F236XY111AK describes high level flood plains. These areas actively flood, unlike the nearby terraces described by F236XY165AK.
R236XY144AK	Subarctic Scrub Peat Terraces R236XY144AK describes wet depressions on terraces. These are features located on the terraces described by F236XY165AK.

Similar sites

F236XY111AK	Boreal Forest Loamy Flood Plains F236XY111AK describes medium and high flood plains. They support a forest community on gravelly alluvial soils. Flood plains are susceptible to flooding and the vegetation reflects this disturbance. The forest is comprised of balsam poplar with resilient shrubs such as willow and alder in the understory. F236XY165AK is differentiated by a lack of flooding disturbance and an coniferous overstory.
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Table 1. Dominant plant species

Tree	(1) <i>Picea glauca</i>
Shrub	(1) <i>Ledum palustre subsp. decumbens</i> (2) <i>Vaccinium vitis-idaea</i>
Herbaceous	Not specified

Physiographic features

This site is on linear and concave slopes on gravelly terraces. Elevation ranges from 30 to 850 feet above sea level. Slopes are nearly level to gentle (0 – 4 percent). This site is found at all aspects. Flooding does not occur, and ponding is usually rare, though may be more frequent in low-lying concave areas.

Table 2. Representative physiographic features

Slope shape across	(1) Linear (2) Concave
Slope shape up-down	(1) Linear
Geomorphic position, terraces	(1) Tread
Landforms	(1) Plains > Terrace (2) Valley > Terrace
Runoff class	Negligible to low
Flooding frequency	None
Ponding duration	Brief (2 to 7 days)
Ponding frequency	Rare

Elevation	10 – 260 m
Slope	0 %
Water table depth	Not specified
Aspect	W, NW, N, NE, E, SE, S, SW

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to low
Flooding frequency	None
Ponding duration	Brief (2 to 7 days)
Ponding frequency	None to occasional
Elevation	0 – 300 m
Slope	0 %
Water table depth	80 – 150 cm

Climatic features

The climate of this site reflects that of the MLRA, which is described as maritime polar (EPA, 2013). Temperatures are moderated by the nearby Bristol Bay and northern Pacific bodies of water. Annual precipitation ranges from 21 – 34 inches with approximately 40 percent occurring during the June-September growing season (PRISM, 2018).

Table 4 Representative climatic features

Frost-free period (characteristic range)	80-100 days
Freeze-free period (characteristic range)	70-90 days
Precipitation total (characteristic range)	530-860 mm
Frost-free period (actual range)	80-100 days
Freeze-free period (actual range)	70-90 days

Precipitation total (actual range)	380-1,040 mm
Frost-free period (average)	90 days
Freeze-free period (average)	80 days
Precipitation total (average)	740 mm

Influencing water features

Due to its landscape position, this site is generally not influenced by wetland or riparian water features. Concave areas are typically small and may support a higher degree of facultative wet wetland species. Precipitation is the main source of water.

Soil features

Soils are young and weakly developed Inceptisols (Soil Survey Staff, 2013). Soils are very deep and well drained. They support a cryic temperature regime and an udic moisture regime. Parent material is primarily organic material over gravelly alluvium.

Soils are weakly developed, as indicated by a cambic horizon and an ochric epipedon. This affects the plant community that develops on this site. Soil is extremely to moderately acidic, which is common with ericaceous communities. Soil hydrology does not generally affect vegetation on these soils. Soils are well drained. However, concave areas have a deep water table that is reflected in greater amounts of hydrophytic plant species.

Correlated soil components in MLRA 236: Tunravig, Oxyaquic Humicryepts; D36-Boreal woodland gravelly terraces; D36-Boreal woodland loamy terraces, moist; E36-Boreal forest-gravelly terraces

Table 5. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silt loam
Drainage class	Well drained
Permeability class	Moderate
Soil depth	150 cm
Surface fragment cover ≤3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-25.4cm)	4.57 – 5.84 cm

Soil reaction (1:1 water) (0-25.4cm)	3.7 – 5.8
Subsurface fragment volume <=3" (Depth not specified)	50 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Table 6. Representative soil features (actual values)

Drainage class	Moderately well drained to well drained
Permeability class	Moderate
Soil depth	150 cm
Surface fragment cover <=3"	0 %
Surface fragment cover >3"	0 %
Available water capacity (0-25.4cm)	4.57 – 7.11 cm
Soil reaction (1:1 water) (0-25.4cm)	3.7 – 10
Subsurface fragment volume <=3" (Depth not specified)	0 – 50 %
Subsurface fragment volume >3" (Depth not specified)	0 %

Ecological dynamics

This site is on terraces with well drained alluvial soils. Local site factors including soil characteristics and a fire regime support three communities in the reference state. The reference plant community is a white spruce woodland with ericaceous shrubs, bluejoint, mosses, and lichens in the open understory.

Vegetation on this site reflects the underlying soil. These well drained soils support plants that are primarily identified as facultative to

upland species. Soil drainage and the moderately to extremely acidic soil is often associated with the ericaceous community in the understory.

Fire is the major documented disturbance regime. High-intensity and low-intensity fires differentially affect post-disturbance vegetation. The severity of a burn generally refers to the proportion of the surface organic mat and tree canopy consumed during a fire (Chapin et al., 2006). It is difficult to gauge or estimate the typical fire on this site. The site location near flood plains lends protection during wildfires. Fuel load is relatively low in this woodland. However, the organic layer on this site is thin in these weakly developed soils, so even a low-intensity fire could damage root stock and the seedbank. The fire cycle is hypothesized to be between 75 and 100 years on this site, based on tree ages and depth to charcoal in the soil.

Willows are slightly to moderately browsed by moose. This does not appear to affect the ecological processes of the site.

This site supports one alternate state. Areas cleared for agronomic or cultural purposes support a unique vegetative community. These areas are common in and around villages. The disturbed soil supports a unique community of primarily herbaceous plants, which are commonly mowed or otherwise maintained during the growing season.

The information in this Ecological Dynamics section, including the state-and-transition model (STM), was developed based on current field data, professional experience, and a review of the scientific literature. As a result, all possible scenarios or plant species may not be included. Key indicator plant species, disturbances, and ecological processes are described to inform land management decisions.

State and transition model

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Inventory data references

Modal points for Community 1.1 08SS09703 08SS09704 08LL07201 10TD09604 10SS10403 Modal points for community 1.2 08LL07202 09SS02501 Modal points for community 1.3 09SS10103 08AO06602 Modal points for community 2.1 08LL06302

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Approval

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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	10/05/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

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:
