

**172Xy201AK - Loamy Flood Plains, Moderately Wet**  
**Low willow/herb scrub**

**Part A: Description of Site**

*1.c. Landscape Narrative:* This site consists of level to occasionally strongly sloping flood plains formed in stratified silty alluvium over very gravelly and cobbly alluvium along clear water rivers and streams. The site is found on point bars and outer margins of meanders. Terrace height above mean summer channel level is typically from 2 to 8 feet (0.6 to 2.4 m) and the site is frequently to occasionally flooded. Elevation is generally from 2350 to 2900 feet (716 to 884 m).

In the Gulkana River area, this site occurs along the Middle Fork, the upper North and South Branches, and the Main Stem from the confluence of the Middle Fork to canyon rapids. It also occurs in small, scattered locations along the other reaches of the Gulkana. This site undoubtedly occurs along low to moderate gradient reaches of other non-glacial streams and rivers elsewhere in the Gulkana River basin.

MLRA (USDA 1981): 172X - Copper River Plateau

Ecological Unit (Nowacki and Brock 1995): 135A - Copper River Basin Section

*1.d.(3). Associated Water Features Narrative:* (BLM)

*2.j. Climate Narrative:* The subarctic continental climate of this site is characterized by long cold winters and short warm summers. Mean January temperature is 1 °F.; mean July temperature is 54 °F. Mean annual precipitation ranges from 18 to 21 inches. Annual snowfall ranges from 54 to 102 inches. The frost-free season is about 60 to 80 days (28 °F. base temperature). The growing season varies greatly from year to year and frosts can occur during any summer month.

*3.s. Soils Narrative:* The weakly developed soils on this site typically have a mantle of stratified sandy and silty alluvium 10 to 37 inches (25 to 94 cm) thick over very gravelly and cobbly alluvium. Depth to seasonal high water table ranges from 14 to 48 inches (36 to 122 cm) and the soils are poorly to moderately well drained. During most years, the water table is at or near the surface during periods of snowmelt and peak runoff. Aquic conditions including redox depletions and/or a reduced matrix are present within 20 inches (51 cm) of the soil surface.

*4.e. Vegetation Narrative:* The correlated Potential Natural Plant Community on the site is Low willow scrub. Within the Gulkana River Area, two vegetation type are included in the PNC — Low willow/herb scrub and Low willow/herb2 scrub (on Sankluna soils). These vegetation types are best characterized as riparian associations, which persist under a regime of intermittent fluvial disturbance. The upper elevational limit of this site in the Gulkana River Area may be above tree line. In this situation, Low willow/herb scrub probably represents the long term vegetative potential.

*5.b. Wildlife Narrative:* This site provides excellent winter habitat for moose. Willow browse is moderately dense to dense and most stands exhibit moderate to severe hedging. Beaver use of the willow is evident in many stands also. Uses include forage and dam building materials.

*6. Community Dynamics (Fire, etc.):* Tall feltleaf willow scrub is an early and apparently short lived seral stage on this site. Most stands of this type are of small extent and generally restricted to bars within and along the margins of the channel. On higher terrace positions, *Picea glauca* seedlings and small saplings are common within the

willow scrub along the edges with adjacent forest vegetation. In a few places, small stands of White spruce/willow open forest occur also.

This site is susceptible to wild fire, however, fire impacts are likely not severe or long lived. *Salix* spp. and many herbs will sprout following burning, allowing the vegetation to recover to a pre-burn conditions within a relatively short number of years.

7. *List of Commonly Associated Sites (number and names):*

a. Upland:

172Xy101AK - Loamy Stream Terraces, Frozen

b. Riparian or Wetland:

172Xy101AK - Loamy High Flood Plains

172Xy500AK - Loamy Riverbanks

8. *List of Competing Sites (number and names):*

172Xy200AK - Gravelly Flood Plains, Moderately Wet: similar to slightly lower flood plain position; moderate to steep gradient channel; soils very gravelly and cobbly to the surface or occasionally with thin surface layer of stratified sandy and silty alluvium; similar vegetative potential.

172Za205AK - Loamy Flood Plains, Wet: similar to slightly lower floor plain positions; similar channel gradients; soils with about 8 to 37 inches (20 to 94 cm) or more stratified fine textured alluvium over sandy and gravelly alluvium; water table at 0 to 18 inches ( 0 to 46 cm) and poorly to very poorly drained soils; Low willow/water sedge scrub vegetative potential.

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**Part B: Interpretations for Use and Management of the Site**

*1.a. Plant Community Characteristics:* see attached summary tables and diagrams for seral stages and stand characteristics.

*1.b. Riparian or Wetland Site Progression:*

*(1) Aggradation:* Based on observations and data collected in the Gulkana River area, this site is best described as an early stage of site progression and vegetation succession on flood plains along low to moderate gradient stream channels. Down-cutting by the channel and continued surface deposition of alluvium will over time raise the terrace height, increase the thickness of the fine textured alluvium on the soil surface, and cause other changes in site and soil properties. Site progression appears to lead to 172Xy101AK - Loamy High Flood Plains and White spruce/willow open forest vegetation. Near the upper elevational limit of 172Xy201AK - Loamy Flood Plains, Moderately Wet, the potential for trees is probably limited to occasional scattered trees and clumps of trees on favorable microsites. In these areas, this site is probably relatively stable.

*1.e. Insects and Disease Pests and Animal Damage:* In many places, insect gall are common on willows. The insect(s) associated with these galls is not known. Most stands experience seasonally heavy browsing by moose and the willow is usually moderately to occasionally severely hedged. Beaver cut willow stems are common throughout many stands.

*1.k. Applicable Field Offices:* BLM, Glennallen District Office

**NOTES:**

As currently defined, site 201 is generally below treeline; site progression from low flood plains toward high flood plains is accompanied by vegetation succession toward White spruce/willow woodland. Treeline, however, appears to occur at about 2500 feet elevation, just below the elevation of Dickey Lake on the upper Middle Fork.

During initial field work in the Tangle Lakes portion of the Delta River Area, loamy flood plains with Low willow/herb scrub were found in number of places. These site/stands are probably entirely above the elevation of tree growth and woodland potential. These sites/stands also are similar to ones found immediately below Dickey Lake in the Gulkana River Area.

In conjunction with the Delta River Area project, a new site will have to be defined to include loamy flood plains above treeline. On this new site, Low willow/herb scrub would still be the potential during site progression toward higher flood plains. Dickey Lake area sites/stands currently included in site 201 would be correlated to the new site.

172Xy201AK - Loamy Flood Plains, Moderately Wet (201tech.doc)

Ecological Site: 172Xy201AK - Loamy Flood Plains, Moderately Wet

Cover type: Low willow/herb scrub

Seral status: PNC

Number of stands: 8

Source of data: Gulkana River Area

Key: Con = % constancy; Avg = average % canopy cover;

Min = minimum % canopy cover; Max = maximum % canopy cover; Imp = importance value

Note: Avg, Min, and Max based only on stands in which a taxon occurred; Imp = sq root of (Con \* Avg)

: Only taxa with >10% constancy included.

Common name	Stratum	Con	Avg	Min	Max	Imp
white spruce	T2	38	4	1	10	12
balsam poplar	T3	13	20	20	20	16
white spruce	T3	38	1	1	3	7
bog blueberry	SS	38	4	1	10	12
feltleaf willow	SS	38	17	5	35	25
net vein willow	SS	13	2	2	2	5
prickly rose	SS	13	1	1	1	3
russet buffalo-berry	SS	13	1	1	1	3
shrub birch	SS	13	3	3	3	6
shrubby cinquefoil	SS	75	3	1	7	16
willow	SS	100	77	40	95	88
Canadian bunchberry	F	13	1	1	1	4
Sitka burnet	F	38	1	1	2	6
Tilesius' wormwood	F	38	2	1	5	9
alpine sweet-vetch	F	63	5	1	20	18
anemone	F	13	1	1	1	4
arctic aster	F	25	2	1	3	7
arctic dock	F	13	1	1	1	3
arctic sweet coltsfoot	F	13	1	1	1	3
cloudberry	F	13	5	5	5	8
common fireweed	F	88	10	1	45	30
felwort	F	13	1	1	1	4
horsetail	F	50	4	1	15	14
larkspur-leaf monkshood	F	38	1	1	1	4
marsh cinquefoil	F	13	1	1	1	3
marsh grass-of-parnassus	F	38	1	1	2	6
milk-vetch	F	13	10	10	10	11
northern bedstraw	F	38	2	1	5	9
northern blackberry	F	75	3	1	7	14
prickly rose	F	13	1	1	1	3
ragwort	F	13	1	1	1	3
serpent-grass	F	13	1	1	1	3
single delight	F	13	1	1	1	3
starwort	F	25	1	1	1	4
tall Jacob`s-ladder	F	38	2	1	4	9
tall bluebells	F	25	3	3	3	9
valerian	F	25	1	1	2	6
violet	F	38	1	1	2	6
Unknown grass	G	13	1	1	1	3
alpine sweet grass	G	13	1	1	1	3
blue grass	G	25	4	2	5	9
bluejoint reedgrass	G	75	12	4	20	30
polar grass	G	50	4	1	10	13
rough bent	G	25	3	2	3	8
sedge	G	38	1	1	3	7
water sedge	G	13	1	1	1	3
Moss layer	M	100	14	1	45	38
Lichen layer	L	75	2	1	10	13
Bare soil	B	50	18	1	70	30
Litter and mulch	B	100	20	1	70	44
Rock fragments	B	13	1	1	1	3
Woody litter (>1" dia.)	B	13	2	2	2	5

Salix spp. includes: SABA3 SALIX SAMO2 SANO2 SAPL2

172Xy201AK - Loamy Flood Plains, Moderately Wet (201tech.doc)

Ecological Site: 172Xy201AK - Loamy Flood Plains, Moderately Wet

Cover type: Low willow/herb2 scrub

Seral status: PNC (Sankluna soils)

Number of stands: 5

Source of data: Gulkana River Area

Key: Con = % constancy; Avg = average % canopy cover;

Min = minimum % canopy cover; Max = maximum %

canopy cover; Imp = importance value

Note: Avg, Min, and Max based only on stands in which a  
taxon occurred; Imp = sq root of (Con \* Avg)

: Only taxa with >10% constancy included.

Common name	Stratum	Con	Avg	Min	Max	Imp
white spruce	T3	80	1	1	1	6
feltleaf willow	SS	100	38	25	60	62
shrubby cinquefoil	SS	20	1	1	1	3
willow	SS	80	6	1	17	23
Sitka burnet	F	20	1	1	1	4
Tilesius' wormwood	F	100	2	1	5	13
alpine sweet-vetch	F	40	2	1	2	8
anemone	F	20	1	1	1	3
arctic aster	F	100	3	1	7	16
arctic dock	F	20	1	1	1	3
bog yellowcress	F	40	1	1	1	4
common fireweed	F	100	5	2	15	23
few-flower meadowrue	F	20	1	1	1	3
horsetail	F	100	12	3	20	34
larkspur-leaf monkshood	F	60	1	1	1	6
marsh grass-of-parnassus	F	60	1	1	1	5
marsh willowherb	F	20	1	1	1	3
northern bedstraw	F	60	1	1	1	7
northern blackberry	F	60	2	1	5	11
speedwell	F	20	1	1	1	3
starwort	F	40	1	1	1	4
tall Jacob`s-ladder	F	60	3	1	7	13
tall bluebells	F	100	16	4	40	40
tall larkspur	F	20	1	1	1	3
water horsetail	F	20	1	1	1	3
blue grass	G	80	15	3	50	34
bluejoint reedgrass	G	80	39	15	60	56
melic grass	G	20	5	5	5	10
narrow false oat	G	40	1	1	1	5
polar grass	G	60	5	1	10	18
rough bent	G	80	2	1	4	11
rush	G	20	1	1	1	3
sedge	G	80	1	1	3	10
short-awn foxtail	G	20	1	1	1	4
slender wheatgrass	G	20	7	7	7	12
vanilla grass	G	80	6	2	10	22
water sedge	G	40	2	1	3	9
wheatgrass	G	80	11	1	20	30
Moss layer	M	60	4	1	5	14
Litter and mulch	B	100	50	5	85	71
Woody litter (>1" dia.)	B	20	2	2	2	6

Salix spp. includes: SABA3 SAMO2 SAPL2

Ecological Site: 172Xy201AK - Loamy Flood Plains, Moderately Wet

Cover type: Tall feltleaf willow scrub

Seral status: early

Number of stands: 4

Source of data: Gulkana River Area

Key: Con = % constancy; Avg = average % canopy cover;

Min = minimum % canopy cover; Max = maximum %

canopy cover; Imp = importance value

Note: Avg, Min, and Max based only on stands in which a

taxon occurred; Imp = sq root of (Con \* Avg)

: Only taxa with >10% constancy included.

Common_name	Stratum	Con	Avg	Min	Max	Imp
white spruce	T3	50	1	1	2	8
bog blueberry	SS	50	2	2	2	10
feltleaf willow	SS	100	30	20	50	55
shrubby cinquefoil	SS	50	8	1	15	20
willow	SS	100	50	20	70	71
Bodin's milkvetch	F	25	10	10	10	16
Sitka burnet	F	50	5	5	5	16
Tilesius' wormwood	F	50	1	1	1	6
alpine sweet-vetch	F	75	2	1	3	11
arctic aster	F	75	1	1	1	8
cloudberry	F	25	1	1	1	5
common fireweed	F	50	5	1	10	16
felwort	F	50	7	3	10	18
few-flower meadowrue	F	25	1	1	1	4
fleabane	F	25	1	1	1	4
gentian	F	25	1	1	1	4
horsetail	F	100	8	2	20	28
larkspur-leaf monkshood	F	25	2	2	2	7
marsh cinquefoil	F	25	10	10	10	16
marsh grass-of-parnassus	F	50	5	3	7	16
milk-vetch	F	25	2	2	2	7
northern bedstraw	F	25	1	1	1	4
northern blackberry	F	75	7	2	15	22
tall Jacob`s-ladder	F	50	4	3	5	14
tall bluebells	F	25	5	5	5	11
valerian	F	25	1	1	1	5
wintergreen	F	75	1	1	1	6
blue grass	G	25	2	2	2	7
bluejoint reedgrass	G	100	23	10	40	47
polar grass	G	50	5	5	5	16
rough bent	G	25	1	1	1	4
sedge	G	50	3	1	5	12
vanilla grass	G	25	1	1	1	4
water sedge	G	25	3	3	3	9
Moss layer	M	100	18	1	50	42
Lichen layer	L	25	1	1	1	4
Bare soil	B	50	1	1	1	5
Litter and mulch	B	100	49	1	80	70
Rock fragments	B	25	1	1	1	4
Surface water	B	25	1	1	1	4
Woody litter (>1" dia.)	B	75	5	5	5	19

Salix spp. includes: SABA3 SALIX SAPL2

Ecological Site: 172Xy201AK - Loamy Flood Plains, Moderately Wet

Cover type: White spruce/willow open forest

Serial status: post-PNC

Number of stands: 2

Source of data: Gulkana River Area

Key: Con = % constancy; Avg = average % canopy cover;

Min = minimum % canopy cover; Max = maximum %

canopy cover; Imp = importance value

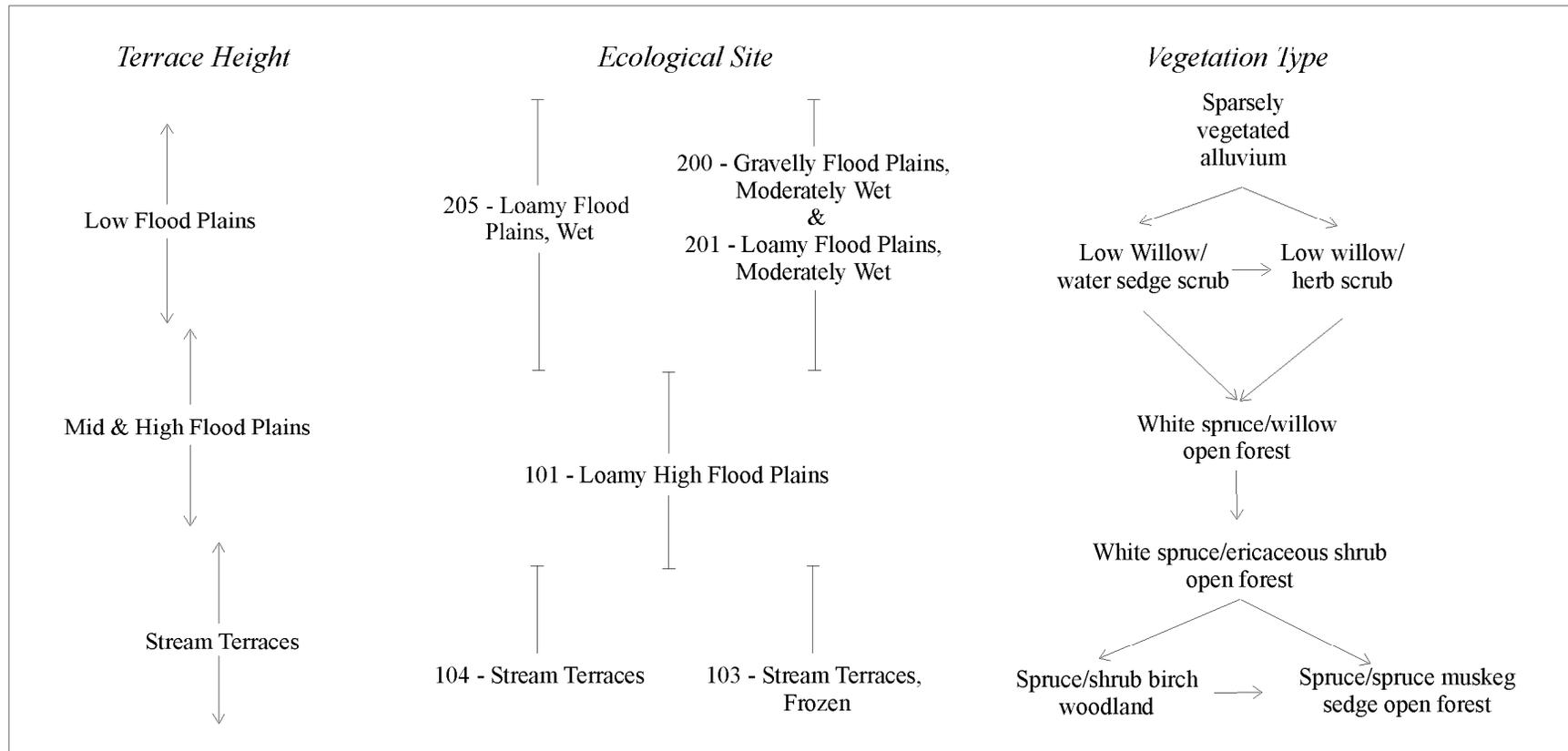
Note: Avg, Min, and Max based only on stands in which a

taxon occurred; Imp = sq root of (Con \* Avg)

: Only taxa with >10% constancy included.

Common_name	Stratum	Con	Avg	Min	Max	Imp
white spruce	T1	50	40	40	40	45
white spruce	T2	50	20	20	20	32
bog blueberry	SS	50	1	1	1	7
feltleaf willow	SS	100	15	10	20	39
red bearberry	SS	50	1	1	1	7
russet buffalo-berry	SS	100	4	3	4	19
shrubby cinquefoil	SS	50	5	5	5	16
willow	SS	100	26	6	45	50
Tilesius' wormwood	F	100	1	1	2	11
alpine sweet-vetch	F	100	4	3	4	19
cloudberry	F	50	2	2	2	10
common fireweed	F	50	1	1	1	7
horsetail	F	50	85	85	85	65
marsh grass-of-parnassus	F	50	1	1	1	5
northern bedstraw	F	50	1	1	1	5
single delight	F	50	1	1	1	5
tall bluebells	F	100	2	1	2	12
violet	F	50	1	1	1	5
bluejoint reedgrass	G	50	45	45	45	47
Moss layer	M	100	22	3	40	46
Lichen layer	L	100	3	1	5	17
Bare soil	B	50	1	1	1	5
Litter and mulch	B	100	6	2	10	24

Salix spp. includes: SABA3 SAPL2



General relationships between terrace height, ecological sites, and vegetation types in the willow zone, Gulkana River Area, Alaska.

172Xy201AK - Loamy Flood Plains, Moderately Wet (201tech.doc)

Selected physical properties for typical stages of site progression on flood plains and stream terraces in the willow zone, Gulkana River Area, Alaska.

Ecological Site (stage)	Cover Type(s)	Terrace Height avg(rge)	Flooding Frequency	Depth to SSK avg(rge)	Thickness of OM avg(rge)	Depth to Water Table Pedons w/ <60"	Depth when <60" avg(rge)	Depth to Permafrost Pedons w/ <60"	Permafrost Depth when <60" avg(rge)
		-- ft --		-- in --	-- in --	-- % --	-- in --	-- % --	-- in --
205 - Loamy Flood Plains, Wet	SALIX/CAAQ	2 (1-5)	freq-occas	17 (0-42)	4 (1-10)	100	13 (0-30)	0	-
200 - Gravelly Flood Plains, Moderately Wet	SALIX/herb	3 (2-4)	occas-freq	28 (3-60)	1 (0-3)	100	28 (12-44)	0	-
201 - Loamy Flood Plains, Moderately Wet	SALIX/herb	3 (1-8)	occas-freq	25 (9-50)	1 (0-6)	79	36 (32-45)	0	-
	SALIX/herb2	7 (4-12)	occas	60 (58-60)	1 (0-1)	12	46 (46-60)	0	-
101 - Loamy High Flood Plains (PNC)	PIGL/SALIX	6 (3-15)	occas-rare	27 (3-60)	2 (0-7)	39	40 (31-58)	24	33 (17-49)
101 - Loamy High Flood Plains (post-PNC)	PIGL/erica	9 (4-25)	rare-none	30 (12-60)	4 (0-10)	21	35 (8-50)	54	29 (6-52)
104 - Stream Terraces (mid to late seral)	PICEA/BEGL	11(6-25)	rare-none	30 (18-60)	4 (1-9)	9	31 (16-40)	27	36 (18-55)
103 - Stream Terraces, Frozen (PNC)	PICEA/CALU2	9 (4-20)	rare-none	30 (18-60)	7 (2-12)	100	8 (0-23)	100	15 (0-25)

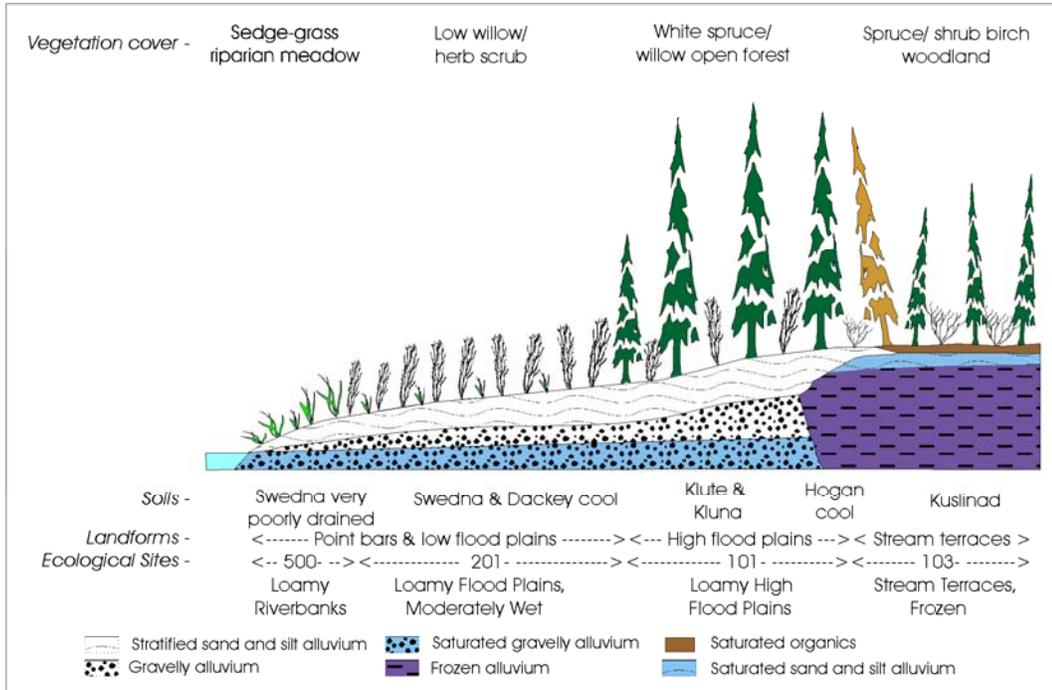
Notes:

Terrace height - estimated height of flood plain or stream terrace surface above the mid summer channel level.

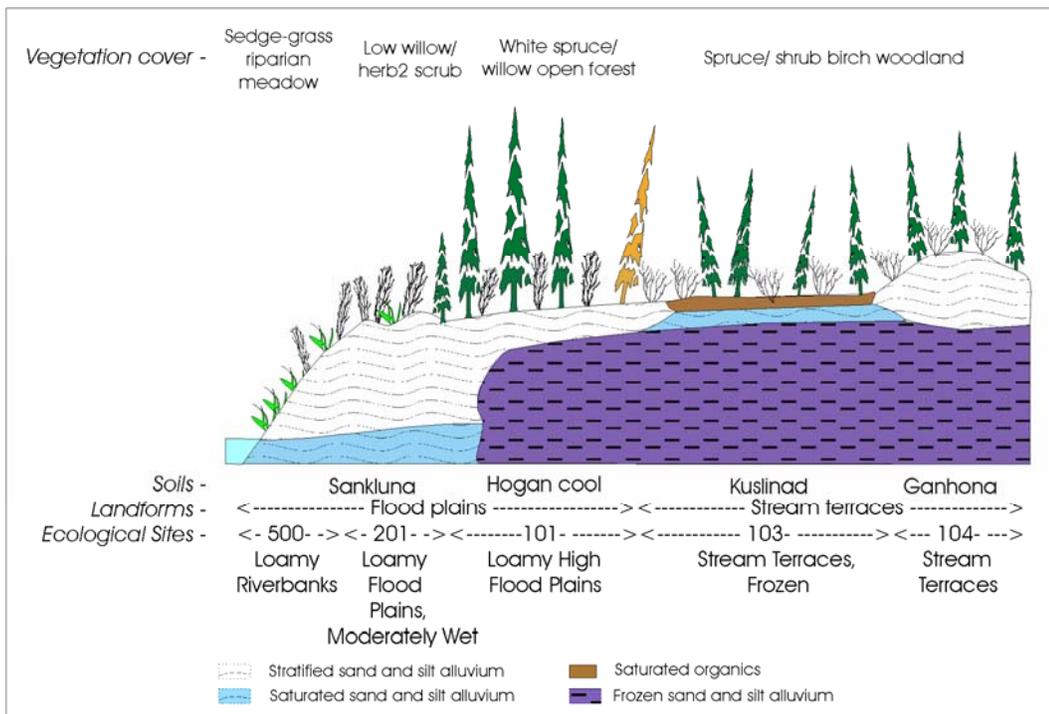
Depth to SSK - depth to sandy skeletal alluvium below the mineral soil surface in pedons without permafrost or in which the permafrost level was below the SSK contact; measured in the soil pit.

Thickness of OM - thickness of the surface organic mat; measured in the soil pit.

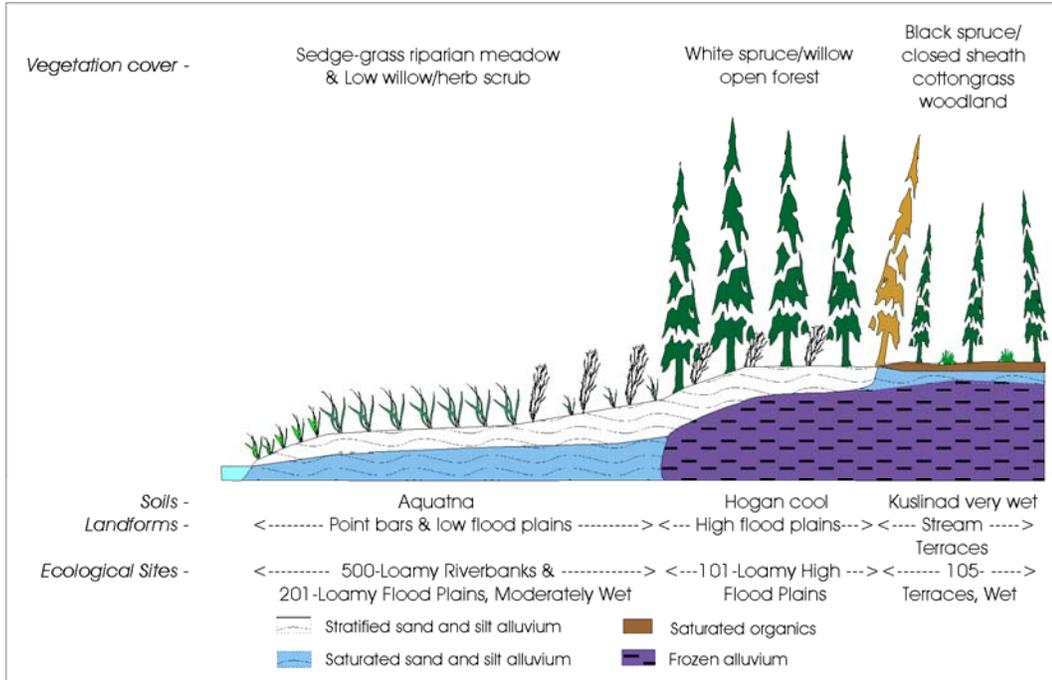
Depth to Water Table and Permafrost - Pedons w/ <60": pedons in which a water table or permafrost was present within 60 inches below the mineral surface. Depth when <60": depth below the mineral surface when present; measured in the soil pit.



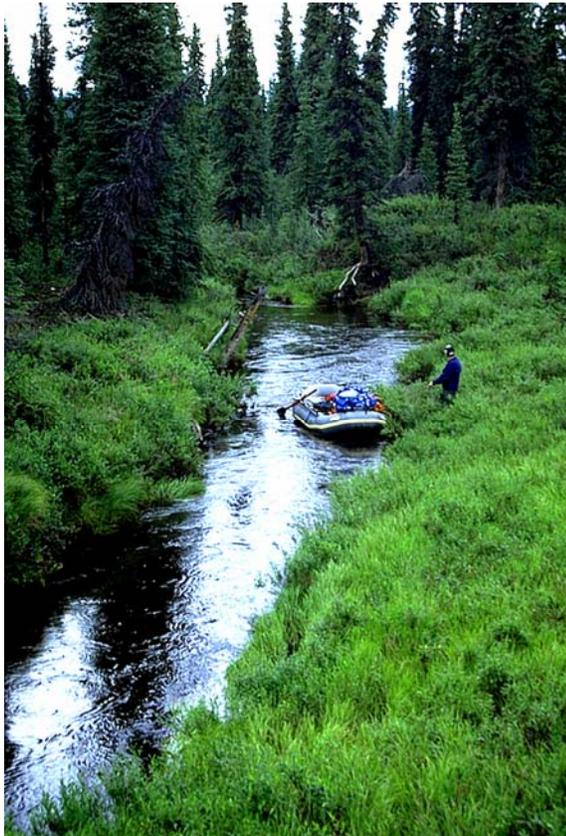
Representative cross section in the willow zone along the upper Main Stem.



Representative cross section in the willow zone along the lower Middle Fork.



Representative cross section in the willow zone along the upper South Branch.



Representative setting of ecological site 172Xy201AK - Loamy Flood Plains, Moderately Wet on low to high flood plains adjacent to the stream channel. The Dackey cool soils on this site support Low willow/herb scrub vegetation. Ecological site 172Xy103AK - Stream Terraces, Frozen occurs on stream terraces back from the channel.