

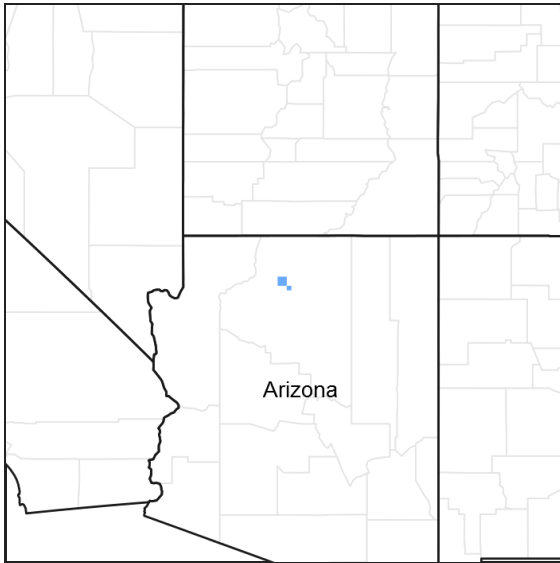
# Ecological site R035XI905AZ

## Loamy Upland 25-33" p.z.

Accessed: 04/30/2024

### 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.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

### MLRA notes

Major Land Resource Area (MLRA): 035X–Colorado Plateau

AZ CRA 35.9 - Colorado Plateau Coniferous Forests

Elevations range from 8000 to 9700 feet and precipitation averages 25 to 33 inches per year. Vegetation includes white fir, ponderosa pine, quaking aspen, Engelmann spruce, subalpine fir, Douglas fir, Blue spruce, muttongrass, upland sedge, big wildrye, redroot buckwheat, creeping mahonia, dwarf juniper, mat muhly, mountain muhly, needlegrasses, and alpine timothy. The soil temperature regime is frigid and the soil moisture regime is udic ustic. This unit occurs within the Colorado Plateau Physiographic Province and is characterized by a sequence of flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Sedimentary rock classes dominate the plateau with volcanic fields occurring for the most part near its margin.

### Associated sites

F035XI902AZ	<b>Loamy Hills 25-33" p.z. (ABCO, PIPO, POTR5)</b>
F035XI903AZ	<b>Loamy Hills 25-33" p.z. Cold (ABLA, PIEN)</b>

### Similar sites

R035XI904AZ	<b>Loamy Bottom 25-33" p.z. Subirrigated</b>
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**Table 1. Dominant plant species**

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Muhlenbergia montana</i> (2) <i>Blepharoneuron tricholepis</i>

## Physiographic features

This site occurs on the deep and very deep soils of the valleys and fan terraces along the wider drainageways that separate the plateaus and hills. Surface soil textures are sandy loam and loam, sometimes gravelly. Slope range is typically 1 to 8 percent, but can be as high as 15 percent. The site occurs on all aspects, and it may contain small inclusions of shallow soils and rock outcrop.

**Table 2. Representative physiographic features**

Landforms	(1) Plateau (2) Valley (3) Fan
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	None to very rare
Ponding frequency	None
Elevation	2,195–2,865 m
Slope	1–15%
Aspect	Aspect is not a significant factor

## Climatic features

Winter-Summer moisture ratios are typically 70:30. Late spring and summer is usually the driest periods and early fall moisture can be sporadic. Summer rains fall from June through September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture from October through May tends to be frontal; it originates in the Pacific and the Gulf of California and falls in widespread storms with longer duration and lower intensity. Precipitation generally comes as snow from October into April. Snow pack can persist for 3-4 months, although it may disappear in exposed areas during prolonged dry weather. Summer daytime temperatures are typically 60-70 F but rarely exceed 80 F. Winter temperatures around 10 F are common and can reach -10 F.

**Table 3. Representative climatic features**

Frost-free period (average)	90 days
Freeze-free period (average)	0 days
Precipitation total (average)	838 mm

## Influencing water features

### Soil features

The soils on this site are typically deep and very deep, with occasional inclusions of moderate depth. Surface gravel content usually ranges from 2 to 5 percent and is occasionally as high as 20 percent. Most soils have a mollic epipedon that is 16 or more inches thick. Surface soil textures are sandy loam and loam; subsurface textures are mainly loam or sandy loam throughout the profile but may become clay loam to clayey below about 30 inches.

**Table 4. Representative soil features**

Surface texture	(1) Gravelly loam (2) Gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderate to moderately rapid
Soil depth	102–152 cm
Surface fragment cover <=3"	10–20%
Available water capacity (0-101.6cm)	12.7–25.4 cm
Calcium carbonate equivalent (0-101.6cm)	0–2%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Soil reaction (1:1 water) (0-101.6cm)	5.8–7.1

## Ecological dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as grazing, fire, or drought.

Production data provided in this site description is standardized to air-dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine Similarity Index, compare the production (air-dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum shown for the group. Divide the resulting total by the total normal year production shown in the plant community description. If rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of the year production before comparing it to the site description. The growth curve can be used as a guide for estimating production at the end of the summer growing season.

## State and transition model



**State 1  
Historic Climax Plant Community**

**Community 1.1  
Historic Climax Plant Community**

This is a draft site. This site developed under historic Colorado Plateau conditions, and reflects the natural influences of herbivores, climate fluctuations, and occasional fire. This state includes the native plant communities that occurred on the site prior to European immigration and settlement. This community is a grass/forb site with a great deal of species diversity, especially with regard to perennial and annual forbs. Shrubs and sub-shrubs are infrequent. In the prolonged absence of fire, trees will encroach on this site around the edges, especially quaking aspen and blue and Engelmann spruce. terraces along the narrower drainageways between the forested hills, which were historically open, may become forested themselves.

**Table 5. Annual production by plant type**

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	555	681	807
Forb	202	278	353
<b>Total</b>	<b>757</b>	<b>959</b>	<b>1160</b>

**Table 6. Ground cover**

Tree foliar cover	0%
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Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	30-40%
Forb foliar cover	10-20%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Figure 5. Plant community growth curve (percent production by month). AZ3591, 35.9 25-33" p.z. all sites. Growth begins in late spring and continues into the fall..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	15	15	20	25	20	5	0	0

## Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Perennial Dominant Native</b>			151–303	
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	151–303	–
2	<b>Common Native Mid Grasses</b>			101–252	
	pine dropseed	BLTR	<i>Blepharoneuron tricholepis</i>	50–151	–
	sedge	CAREX	<i>Carex</i>	50–151	–
3	<b>Occasional Native Summer Perennial</b>			11–50	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–22	–
	rough bentgrass	AGSC5	<i>Agrostis scabra</i>	0–11	–
	timber oatgrass	DAIN	<i>Danthonia intermedia</i>	0–11	–
	slimstem muhly	MUFI	<i>Muhlenbergia filiculmis</i>	0–11	–
	creeping muhly	MURE	<i>Muhlenbergia repens</i>	0–11	–
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	0–11	–
	spike muhly	MUWR	<i>Muhlenbergia wrightii</i>	0–11	–
4	<b>Occasional Native Spring Perennial</b>			50–252	
	Porter brome	BRPO2	<i>Bromus porteri</i>	0–50	–
	squirreltail	ELELE	<i>Elymus elymoides ssp. elymoides</i>	0–50	–
	big squirreltail	ELMU3	<i>Elymus multisetus</i>	0–50	–
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	0–50	–
	sheep fescue	FEOV	<i>Festuca ovina</i>	0–50	–
	muttongrass	POFE	<i>Poa fendleriana</i>	0–50	–
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	0–34	–

	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–34	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–22	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–11	–
	Canada bluegrass	POCO	<i>Poa compressa</i>	0–11	–
	blue wildrye	ELGL	<i>Elymus glaucus</i>	0–11	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0–11	–
<b>Forb</b>					
5	<b>Common Native Perennial Short Forbs</b>			50–101	
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	6–50	–
	redroot buckwheat	ERRA3	<i>Eriogonum racemosum</i>	6–50	–
	aspen fleabane	ERSPM	<i>Erigeron speciosus var. macranthus</i>	6–50	–
6	<b>Occasional Native Perennial Short Forbs</b>			50–151	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–34	–
	western yarrow	ACMIO	<i>Achillea millefolium var. occidentalis</i>	0–34	–
	pussytoes	ANTEN	<i>Antennaria</i>	0–34	–
	Fendler's sandwort	ARFE3	<i>Arenaria fendleri</i>	0–34	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–34	–
	Wheeler's thistle	CIWH	<i>Cirsium wheeleri</i>	0–34	–
	chaparral fleabane	EROR5	<i>Erigeron oreophilus</i>	0–34	–
	gentian	GENTI	<i>Gentiana</i>	0–34	–
	showy goldeneye	HEMU3	<i>Heliomeris multiflora</i>	0–34	–
	hairy false goldenaster	HEVIM3	<i>Heterotheca villosa var. minor</i>	0–34	–
	pygmy bluet	HOWR	<i>Houstonia wrightii</i>	0–34	–
	lupine	LUPIN	<i>Lupinus</i>	0–34	–
	cinquefoil	POTEN	<i>Potentilla</i>	0–34	–
	goldenweed	PYRRO	<i>Pyrrocoma</i>	0–34	–
	heartleaf buttercup	RACA4	<i>Ranunculus cardiophyllus</i>	0–34	–
	Macoun's buttercup	RAMA2	<i>Ranunculus macounii</i>	0–34	–
	Mt. Albert goldenrod	SOSI3	<i>Solidago simplex</i>	0–34	–
	alpine leafybract aster	SYFO2	<i>Symphyotrichum foliaceum</i>	0–34	–
7	<b>Occasional Native Annual Short Forbs</b>			11–101	
	Forb, annual	2FA	<i>Forb, annual</i>	0–20	–
	trailing fleabane	ERFL	<i>Erigeron flagellaris</i>	0–20	–
	Cooper's rubberweed	HYCO2	<i>Hymenoxys cooperi</i>	0–20	–
	fineleaf hymenopappus	HYFI	<i>Hymenopappus filifolius</i>	0–20	–
	scarlet gilia	IPAG	<i>Ipomopsis aggregata</i>	0–20	–
	yellow owl's-clover	ORLU2	<i>Orthocarpus luteus</i>	0–20	–
	purplewhite owl's-clover	ORPU2	<i>Orthocarpus purpureoalbus</i>	0–20	–
	sticky polemonium	POVI	<i>Polemonium viscosum</i>	0–20	–
	white prairie aster	SYFAC	<i>Symphyotrichum falcatum var. commutatum</i>	0–20	–

## Animal community

This site is suitable for grazing by all classes of livestock. The site is used primarily as late spring to early fall seasonal range. When grazed with sites with less accessibility and productivity it normally becomes a key management area.

This site has relatively poor habitat diversity in the native plant community. It is primarily adapted to grassland wildlife species except at the edge of timber where it is utilized by many species. Large game animals are migratory onto the site primarily for summer use.

## Recreational uses

This site has a variety of summer flowers. Its open grassland which abruptly joins the timber edge makes the site aesthetically pleasing. Summers are cool and pleasant but winters are harsh and cold.

Activities for which this site is suited include hunting, camping, wildlife observation and photography.

## Type locality

Location 1: Coconino County, AZ	
General legal description	Approximately 10 miles south of Jacobs Lake, AZ

## Contributors

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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	
Approved by	
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):

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