

Ecological site R039XA108AZ
Meadow 17-22" p.z.

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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.



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): 039X–Mogollon Transition North

AZ 39.1 Mogollon Plateau Coniferous Forests

Elevations range from 7000 to 12,500 feet and precipitation averages 20 to 35 inches per year. Vegetation includes ponderosa pine, Gambel oak, Arizona walnut, sycamore, Douglas fir, blue spruce, Arizona fescue, sheep fescue, mountain muhly, muttongrass, junegrass, pine dropseed, and dryland sedges. The soil temperature regime ranges from mesic to frigid and the soil moisture regime ranges from typic ustic to 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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Rosa woodsii</i> var. <i>woodsii</i> (2) <i>Salix</i>

Herbaceous	(1) <i>Poa fendleriana</i> (2) <i>Juncus</i>
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Physiographic features

This site occurs in depressions on flood plains adjacent to live streams or springs. It benefits by run-in from adjacent areas.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Depression
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to occasional
Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	None to rare
Elevation	1,981–2,896 m
Slope	0–3%
Ponding depth	0–5 cm
Water table depth	0–51 cm
Aspect	Aspect is not a significant factor

Climatic features

About 40% of the moisture in this Common Resource Area (CRA), or Land Resource Unit (LRU) comes as rain from June to September. The remainder comes from October to May as snow or light rain. Extreme temperatures of 97 and -37 degrees Fahrenheit have been recorded. Some moisture is usually received every month.

Table 3. Representative climatic features

Frost-free period (average)	168 days
Freeze-free period (average)	120 days
Precipitation total (average)	559 mm

Influencing water features

This site receives run-on from adjacent areas.

Soil features

Soils on this site are moderately deep (20-40") and deep (40-60"). They are poorly to moderately well drained and formed in recent alluvium from limestone and sandstone. Surface textures include sandy loam to clay loam and are 2-15 inches thick. Subsurface textures include fine sandy loam to clay. The hazard of erosion is slight. The content of organic matter is high and the water table is at least seasonally high. These soils are primarily aquic integrades. Typical taxonomic units include: SSA 635 Apache County central part - MU's CE, CgB, CgC, CgD Clover Springs and MU's LuA & LuB Luth clay loam, siltloam wet variant; SSA-683 93B-Tatiyee & 21B-Cryaquolls; SSA-693 San Francisco Peaks area MU's 6-Clover Springs Loam & 7-Tatiyee Cobbly Loam.

Table 4. Representative soil features

Parent material	(1) Alluvium–limestone and sandstone
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Surface texture	(1) Sandy loam (2) Clay loam
Family particle size	(1) Clayey
Drainage class	Poorly drained to moderately well drained
Permeability class	Moderately slow to very slow
Soil depth	51–152 cm
Available water capacity (0-101.6cm)	25.4–38.1 cm
Soil reaction (1:1 water) (0-101.6cm)	6–7.5
Subsurface fragment volume <=3" (Depth not specified)	0–30%

Ecological dynamics

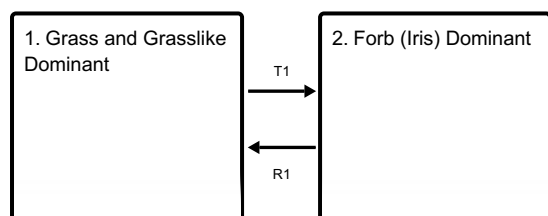
The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or 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.

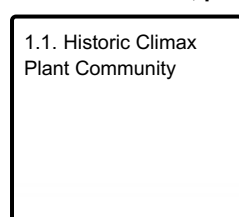
NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine 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

Ecosystem states



State 1 submodel, plant communities



State 1

Grass and Grasslike Dominant

Community 1.1

Historic Climax Plant Community

This site has a plant community made up of mid grasses and grasslike plants with a few forbs and shrubs. In the potential plant community there is a mixture of both cool season grasses and warm season grasses and grasslike plants. Plant species most likely to increase on the site following disturbances are iris, sedges and rushes. Kentucky bluegrass is an invader on the site but has become naturalized and dominates the lower ecological condition sites. Fluctuations in the water table may allow some normally upland grasses to become established on the site.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2690	2858	3026
Shrub/Vine	168	252	336
Forb	168	252	336
Total	3026	3362	3698

Figure 5. Plant community growth curve (percent production by month).
AZ3911, 39.1 17-22" p.z. all sites. Growth begins in the spring, most growth occurs during the summer rainy season..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	10	10	20	20	20	5	0	0

State 2

Forb (Iris) Dominant

Forb dominant with mostly iris plus excessive bare ground

Transition T1

State 1 to 2

Continuous heavy grazing

Restoration pathway R1

State 2 to 1

Grazing management with proper utilization and adequate rest and recovery periods.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Shrub/Vine					
0				168–336	
	willow	SALIX	<i>Salix</i>	168–269	–
	Woods' rose	ROWOW	<i>Rosa woodsii</i> var. <i>woodsii</i>	0–101	–
	shrubby cinquefoil	DAFRF	<i>Dasiphora fruticosa</i> ssp. <i>floribunda</i>	0–67	–
Grass/Grasslike					
0				2690–3026	
	sedge	CAREX	<i>Carex</i>	336–504	–
	rush	JUNCU	<i>Juncus</i>	336–504	–
	muttongrass	POFE	<i>Poa fendleriana</i>	336–504	–
	spike muhly	MUWR	<i>Muhlenbergia wrightii</i>	168–336	–
	redtop	AGGI2	<i>Agrostis gigantea</i>	168–336	–
	alpine timothy	PHAL2	<i>Phleum alpinum</i>	168–269	–
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	0–168	–
	pullup muhly	MUFI2	<i>Muhlenbergia filiformis</i>	0–168	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	34–168	–
Forb					
0				168–336	
	Rocky Mountain iris	IRMI	<i>Iris missouriensis</i>	0–67	–
	Forb, annual	2FA	<i>Forb, annual</i>	0–67	–
	yarrow	ACHIL	<i>Achillea</i>	17–50	–
	cinquefoil	POTEN	<i>Potentilla</i>	17–50	–
	thistle	CIRSI	<i>Cirsium</i>	0–34	–
	larkspur	DELPH	<i>Delphinium</i>	0–34	–
	horsetail	EQUIS	<i>Equisetum</i>	0–34	–
	sunflower	HELIA3	<i>Helianthus</i>	0–34	–
	bluebells	MERTE	<i>Mertensia</i>	0–34	–

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. Where possible this site should be fenced and managed separately. Range readiness should be evaluated not only on state of grass growth but also on surface soil moisture. Grazing this site while excessively wet will result in compacted soils, composition changes and lowered production.

This site has relatively poor habitat diversity in the native plant community. It is primarily adapted to grassland wildlife species. Large game animals are migratory onto the site primarily for summer use. Free water is commonly found on the site.

Recreational uses

The site occurs as depressions or flood plains adjacent to live streams. It has a variety of summer flowers and has excellent aesthetic appeal because of the meadow vegetation which may border both streams and timber.

Summers are cool and pleasant but winters are harsh and cold.

Hunting, camping, photography and wildlife observation are favorite activities.

Type locality

Location 1: Apache County, AZ	
Township/Range/Section	T6N R29E S36
General legal description	Williams Valley, West of Alpine, AZ.

Contributors

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Approval

Scott Woodall, 9/05/2019

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:

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:

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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:**
