Ecological site DX035X01I112
Loamy Wash
10-14" 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.

MLRA notes

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

This ecological site occurs in Common Resource Area 35.1 - the Colorado Plateau Mixed Grass Plains Elevations range from 4800 to 6300 feet and precipitation averages 10 to 14 inches per year. Vegetation includes Stipa species, Indian ricegrass, galleta, and blue grama, fourwing saltbush, winterfat, and cliffrose. The soil temperature regime is mesic and the soil moisture regime is ustic aridic. 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.

Ecological site concept

This site occurs in the bottom position of level to gently sloping flood plains, valley floors, stream terraces and drainageways. It benefits significantly from run-in moisture from adjacent areas. Slopes are always less than 5 percent. Soils are very deep and well-drained. Surface textures are typically fine sandy loam to sandy clay loam. The subsurface horizons have textures of sandy loam, gravelly sandy loam, fine sandy loam, loam, gravelly loam, sandy clay loam, silty clay loam, or clay loam. Soluble salts are low and the soil reaction ranges from neutral to moderately alkaline (pH 6.6 to 8.4).

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex canescens*
Herbaceous	(1) *Pascopyrum smithii*

Legacy ID

R035XA112AZ

Physiographic features

This site occurs in the bottom position of level to gently sloping flood plains, valley floors, stream terraces and drainageways. It benefits significantly from run-in moisture from adjacent areas. Slopes are always less than 5 percent.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Stream terrace (3) Valley floor
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Rare to occasional
Elevation	1,460 – 1,920 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

50-60% of moisture falls as rain Jul-Sep and is the most effective moisture for plant growth. The remaining moisture comes as snow during the winter.

Mean temperature for the hottest month (Jul) is 72 F; for the coldest month (Jan) is 32 F. Extreme temperatures of 105 F and -28F have been recorded. Long periods with little or no effective moisture are relatively common.

Cool season plants begin growth in early spring and mature in early summer. Warm season plants take advantage of summer rains and are growing and nutritious Jul-Sep.

Table 3 Representative climatic features

Frost-free period (average)	160 days
Freeze-free period (average)	180 days
Precipitation total (average)	330 mm

Influencing water features

The soil moisture on this ecological site comes from precipitation and run-on moisture following storm events. The site may also benefit from lateral underground water movement from the streambed for periods of time after the surface water has drained off. This additional moisture allows this site to produce significantly more vegetation than upland sites that depend entirely on rainfall.

Soil features

Soils are deep (60+ inches), well-drained and have no plant root restricting layers. The surface textures are typically fine sandy loam to sandy clay loam. The subsurface horizons have textures of sandy loam, gravelly sandy loam, fine sandy loam, loam, gravelly loam, sandy clay loam, silty clay loam, or clay loam. Soluble salts are low and the soil reaction ranges from neutral to moderately alkaline (pH 6.6 to 8.4). The soil can absorb and hold all the moisture the climate supplies.

Soil survey map unit components that have bee correlated to this ecological site include:

SSA Coconino County Central (631) Lynx MU's 55, 4, 29, 32; Paymaster MU 29;

SSA Navajo County Central (633) Radnik MU 49, Medisaprists MU 51, Manzano MU 36, Ustic torrifluvents MU 51, Escavada family MU 19;

SSA Apache County Central (635) Loamy Alluvial Land MU LO, Tours MU's TH, TL;

SSA Yavapai County Western (637) Rune MU's PnB, Rt; Cordes varient MU MsB; Tours MU To;

SSA Mohave County Central (697) Truxton MU 148;

SSA-715 Ft. Defiance Area AZ/NM MU's 104 San Mateo & Radnik.

Table 4. Representative soil features

Parent material	(1) Alluvium – shale
Surface texture	(1) Fine sandy loam (2) Gravelly loam (3) Sandy clay loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	100 – 150 cm
Surface fragment cover <=3"	0 – 20 %
Available water capacity (0-101.6cm)	15.24 – 33.02 cm
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.4

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.

The State and Transition model shows the most common occurring plant communities likely to be encountered on this ecological site. This model may not show every possible plant community, but only those that are most prevalent and observed through field inventory. As more data is collected these plant communities may be revised, removed, and some added to reflect the ecological dynamics of this site.

State and transition model

Figure 3. State and Transition Model – R035XA112AZ

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	**Dominant Grasses**			757-1345	
	western wheatgrass	PASM	*Pascopyrum smithii*	392-785	–
	blue grama	BOGR2	*Bouteloua gracilis*	224-448	–
	spike muhly	MUWR	*Muhlenbergia wrightii*	84-168	–
2	**Common Grasses**			84-252	
	squirreltail	ELELE	*Elymus elymoides ssp. elymoides*	28-106	–
	vine mesquite	PAOB	*Panicum obtusum*	28-106	–
	James' galleta	PLJA	*Pleuraphis jamesii*	28-106	–
	little bluestem	SCSC	*Schizachyrium scoparium*	6-62	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	6-62	–
3	**Other grasses**			0-84	
	tumblegrass	SCPA	*Schedonnardus paniculatus*	0-34	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0-34	–
	mesa dropseed	SPFL2	*Sporobolus flexuosus*	0-17	–
	spike dropseed	SPCO4	*Sporobolus contractus*	0-17	–
	Grass, annual	2GA	*Grass, annual*	0-17	–
	Grass, perennial	2GP	*Grass, perennial*	0-17	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	0-17	–
	ring muhly	MUTO2	*Muhlenbergia torreyi*	0-17	–
Forb					

4	**Forbs**			28-73	
	Forb, perennial	2FP	*Forb, perennial*	0-22	–
	globemallow	SPHAE	*Sphaeralcea*	0-17	–
	common sunflower	HEAN3	*Helianthus annuus*	0-17	–
	western aster	SYAS3	*Symphyotrichum ascendens*	0-11	–
	Forb, annual	2FA	*Forb, annual*	0-11	–
	rose heath	CHER2	*Chaetopappa ericoides*	0-6	–
	western tansymustard	DEPI	*Descurainia pinnata*	0-6	–
	whitestem blazingstar	MEAL6	*Mentzelia albicaulis*	0-6	–
	woolly plantain	PLPA2	*Plantago patagonica*	0-6	–
	little hogweed	POOL	*Portulaca oleracea*	0-6	–
Shrub/Vine					
5	**Dominant shrubs**			168-336	
	fourwing saltbush	ATCA2	*Atriplex canescens*	112-280	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	56-168	–
6	**Other shrubs**			50-168	
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0-56	–
	Greene's rabbitbrush	CHGR6	*Chrysothamnus greenei*	0-39	–
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	0-28	–
	Apache plume	FAPA	*Fallugia paradoxa*	0-28	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0-28	–
	pale desert-thorn	LYPA	*Lycium pallidum*	0-28	–
	Fremont's mahonia	MAFR3	*Mahonia fremontii*	0-17	–
	spineless horsebrush	TECA2	*Tetradymia canescens*	0-17	–
	Subshrub (<.5m)	2SUBS	*Subshrub (<.5m)*	0-17	–
	prairie sagewort	ARFR4	*Artemisia frigida*	0-17	–
7	**Succulents**			0-17	
	Whipple cholla	CYWH	*Cylindropuntia whipplei*	0-17	–
	pricklypear	OPUNT	*Opuntia*	0-17	–

Table 6. Community 1.2 plant community composition

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

Table 7. Community 2.1 plant community composition

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

Animal community

Site is favorable for grazing throughout most of the year except when snow cover restricts availability of forage. With continuous grazing use during winter and spring, the relatively scarce cool season mid grasses are replaced by rabbit brush, snakeweed, and lower value forbs and grasses. Planned grazing systems adapt well to use on this site. The potential plant community produced by this site provides food for those species of wildlife that utilize grass as a major portion of their diet. Some palatable shrubs are also present. When vegetative retrogression occurs, unpalatable shrubby species increase and some wildlife species may benefit.

Recreational uses

This site is found in grassy swales and flood plains characterized by open grasslands interspersed with a few flowering forbs and shrubs. Winters are cold, however, relatively mild summer months are attractive to recreationists. Activities include hunting, camping, hiking, and horseback riding.

Type locality

Location 1: Yavapai County, AZ	
General legal description	North West of Prescott, AZ along east side of Willow Creek road and on the Las Vegas Ranch Highway right-of-way.

Other references

Updates and revisions for this ESD were conducted as part of a 2007-2012 Interagency Technical Assistance Agreement between the Bureau of Indian Affairs–Navajo Region and the NRCS-Arizona.

Contributors

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Approval

Kendra Moseley, 5/02/2024

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)	Karlyn Huling, Kenneth Gishi (2012 revision)
Contact for lead author	State Rangeland Management Specialist, NRCS-Arizona State Office, Phoenix, AZ
Date	03/13/2006
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Some rill formation is possible due to loamy surface textures, moderate permeability, and occasional to very frequent flooding.

2. **Presence of water flow patterns:** Water flow patterns are common due to moderate permeability of the soils and occasional to very frequent flooding. Water flow patterns should not be connected.

3. **Number and height of erosional pedestals or terracettes:** Pedestals and terracettes may be common due to moderate permeability of the soils and the occasional to very frequent flooding.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** This site should have a relatively low percentage of bare ground because it has the potential for high plant productivity. The high available water capacity of 10 inches (average) combined with the periodic input of water from flooding contributes to this high productivity. Drought may cause an increase in bare ground. Bare ground should be less than 25 percent.

5. **Number of gullies and erosion associated with gullies:** Occasional gullies may form due to the occasional to very frequent flooding, but should be stable with vegetation and have no active signs of erosion.

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous, fine woody and coarse woody litter will be transported throughout the site during periodic flood events.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface textures range from fine sandy loams to sandy clay loam, but are mostly very fine sandy loam to loam. Coarse fragments are not common. When well vegetated and not subjected to severe flood events, soils have a low to moderate resistance to water erosion and a moderate to high resistance to wind erosion. Expected soil stability ratings without canopy should range 3-4 and ratings with canopy should range 4-5.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil structure is either platy (weak, fine to thick) or granular (weak to moderate, very fine to fine). The surface thickness ranges from 2-10 inches, but is mostly 2-6 inches. Color is variable depending upon parent materials.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is characterized by a even distribution of mostly perennial grasses, with some scattered shrubs and a few forbs. The plant distribution varies across the landscape depending upon local soil characteristics and hydrology. These characteristics are modified periodically by flood events. Both canopy and basal cover decreases during a prolonged drought. This type of plant community structure is very efficient at capturing and storing precipitation.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. Some of the soils can easily be compacted due to loamy textures, lack of rock fragments and frequent moisture from flooding and occasional high water tables. About half the soils in this site have a naturally platy surface structure.

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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: Cool season colonizing grass > warm season bunch grasses >

    Sub-dominant: cool season bunch grasses > warm season colonizing grasses > large shrubs >

    Other: Low shrubs > forbs > cacti

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plant functional groups are adapted to survival in all but the most severe droughts. Severe winter droughts affect trees and shrubs most. Severe summer droughts affect grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter with some woody litter. Litter amounts increase during the first few years of drought, then decrease in later years.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Expected production of 1500 pounds per acre in a average of year of precipitation.

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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:** Broom snakeweed, rubber rabbitbrush and opuntia (pricklypear and cholla cactus) are all native to the site, but have the potential to increase and dominate the area after unmanaged grazing. Salt cedar (tamarisk) is an non-native shrub that can invade and dominate the site, especially in areas that have a high water table or that have been channelized.

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17. **Perennial plant reproductive capability:** All plants native to this site are adapted and are capable of producing seeds, stolons and rhizomes in all but the most severe drought.
