

# Ecological site DX035X03G618 Sandy Upland 13-17" p.z. Moderately Deep

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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): 035X–Colorado Plateau

AZ CRA 35.6 - Colorado Plateau Pinyon-Juniper-Sagebrush

Elevations range from 5500 to 7000 feet and precipitation averages 13 to 17 inches per year. Vegetation includes pinyon, juniper, big sagebrush, cliffrose, Mormon tea, muttongrass, prairie junegrass, squirreltail, western wheatgrass, and blue grama. The soil temperature regime is mesic and the soil moisture regime is aridic 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

R035XF607AZ	Sandy Upland 13-17" p.z.
	Sandy Upland, 13-17" p.z.

# Similar sites

F035XC323AZ	Sandy Upland 10-14" p.z. (JUOS)
	Sandy Upland (JUOS) 10-14" p.z.

Table 1. Dominant plant species

Tree	(1) Pinus edulis (2) Juniperus osteosperma
Shrub	(1) Purshia tridentata (2) Artemisia tridentata ssp. vaseyana
Herbaceous	<ul><li>(1) Muhlenbergia pungens</li><li>(2) Achnatherum hymenoides</li></ul>

### Legacy ID

R035XF618AZ

# Physiographic features

This site is found on plateaus and mesas of Navajo sandstone formation. The topography is generally undulating. The site may occur on either shoulders or summits. Outcrops of sandstone are normally found in association with this site.

Landforms	(1) Plateau (2) Mesa
Flooding frequency	None
Ponding frequency	None
Elevation	1,707–1,951 m
Slope	1–10%
Aspect	Aspect is not a significant factor

#### Table 2. Representative physiographic features

### **Climatic features**

The climate of this land resource unit is semiarid with warm summers and cool winters. The mean annual precipitation ranges from 13 – 17 inches, but it is very erratic, often varying substantially from year to year. The majority of the precipitation comes from October through April. This precipitation comes as gentle rain or snow from frontal storms coming out of the Pacific Ocean. Snow is common from November through February. Generally no more than a few inches of snow accumulates, melting within a few days, but may last a week or more. The remaining precipitation comes from July through September as spotty, unreliable and sometimes violent thunderstorms. The moisture for this precipitation originates in the Gulf of Mexico (and the Pacific Ocean in the fall) and flows into the area on the north end of the Mexican monsoon. Late May through late June is generally a dry period. The mean annual air temperature ranges from 47 to 49 degrees Fahrenheit (F). The frost-free period (air temperature > 32 degrees F) ranges from 113 to 144 days (@ 50 percent probability). Strong winds are common, especially in the spring.

#### Table 3. Representative climatic features

Frost-free period (average)	144 days
Freeze-free period (average)	160 days
Precipitation total (average)	432 mm

### **Soil features**

The soils characterizing this site are moderately deep over sandstone bedrock. They are well drained. The surface layer is about 8 inches thick with a texture of fine sand. The subsurface texture is also fine sand. The available water capacity is very low to low.

Typical taxonomic units include:

SSA-625 Mohave County NE part MU 53 Royosa & Tonalea; SSA-711 Navajo Mountain Area MU 4 Aridic Ustorthents and Royosa.

Parent material	(1) Eolian deposits-sandstone
Surface texture	(1) Fine sand
Family particle size	(1) Sandy
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Very rapid
Soil depth	102 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	6.35–12.7 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	7.4–7.8
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

#### Table 4. Representative soil features

### **Ecological dynamics**

This site is interspersed with the shallower Sandstone Upland, 13-17" p.z. ecological site and rock outcrop. In areas where this site is in small patches the canopy cover trees will increase. In those areas where it is comprised of larger blocks of moderately deep soil it may be more savanah-like.

### State and transition model



State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community



Figure 4. Sandy Upland 13-17" p.z. Moderately Deep

The aspect of this site is a mix of Colorado pinyon and Utah juniper with scattered Gambel oak and an occasional ponderosa pine. Common understory plants include greenleaf manzanita, Utah serviceberry sandhill muhly, blue grama and Indian ricegrass.

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

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Tree	713	-	861
Shrub/Vine	161	-	336
Grass/Grasslike	67	-	175
Forb	40	-	108
Total	981	-	1480

Figure 6. Plant community growth curve (percent production by month). AZ3561, 35.6 13-17" p.z. all sites. Growth begins in the spring and continues into the fall.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	5	16	17	15	15	15	11	5	0	0

# Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)				
Grass	rass/Grasslike								
1	Perennial Cool Seaso	n Grasses		13–67					
	Indian ricegrass	ACHY	Achnatherum hymenoides	13–27	_				
	threeawn	ARIST	Aristida	0–13	_				
	squirreltail	ELELE	Elymus elymoides ssp. elymoides	0–13	_				
	needle and thread	HECOC8	Hesperostipa comata ssp. comata	0–13	_				
	western wheatgrass	PASM	Pascopyrum smithii	0–13	_				
	muttongrass	POFE	Poa fendleriana	0–13	_				
2	Perennial Warm Sease	on Grasses	5	54–108					
	sandhill muhly	MUPU2	Muhlenbergia pungens	40–67	_				
	blue grama	BOGR2	Bouteloua gracilis	13–27	_				
	spike muhly	MUWR	Muhlenbergia wrightii	0–13	_				
	James' galleta	PLJA	Pleuraphis jamesii	0–13	_				
	sand dropseed	SPCR	Sporobolus cryptandrus	0–13	_				
Forb									
3	Perennial Forbs			40–108					
	buckwheat	ERIOG	Eriogonum	13–27	_				
	beardtongue	PENST	Penstemon	13–27	_				
	spiny phlox	PHHO	Phlox hoodii	0–13	_				
	ragwort	SENEC	Senecio	0–13	_				
	fiddleneck	AMSIN	Amsinckia	0–13	_				
	white sagebrush	ARLU	Artemisia Iudoviciana	0–13	_				
	pale bastard toadflax	COUMP	Comandra umbellata ssp. pallida	0–13	_				
	largeleaf springparsley	CYME	Cymopterus megacephalus	0–13	_				
Shrub	/Vine								
4	Shrubs			157–325					

	Gambel oak	QUGA	Quercus gambelii	40–81	—
	Utah serviceberry	AMUT	Amelanchier utahensis	40–67	_
	Wyoming big sagebrush	ARTRW8	Artemisia tridentata ssp. wyomingensis	27–54	_
	antelope bitterbrush	PUTR2	Purshia tridentata	27–54	-
	mormon tea	EPVI	Ephedra viridis	13–40	-
	greenleaf manzanita	ARPA6	Arctostaphylos patula	13–27	-
	rubber rabbitbrush	ERNA10	Ericameria nauseosa	0–13	-
	snakeweed	GUTIE	Gutierrezia	0–13	-
	Sonoran scrub oak	QUTU2	Quercus turbinella	0–13	-
	spineless horsebrush	TECA2	Tetradymia canescens	0–13	_
5	Yucca and Yucca Like	9		27–40	
	narrowleaf yucca	YUAN2	Yucca angustissima	27–40	-
	banana yuucaa		Musee hereete	0.40	
	Dallalla yucca	TUBA	YUCCA DACCATA	0=13	_
6	Cacti	TUBA	YUCCA DACCATA	0–13 13–27	_
6	Cacti beavertail pricklypear	OPBA2	Yucca baccata Opuntia basilaris	0–13 13–27 13–27	
6	Cacti beavertail pricklypear hedgehog cactus	OPBA2 ECHIN3	Yucca baccata Opuntia basilaris Echinocereus	0–13 13–27 13–27 0–13	
6 <b>Tree</b>	Cacti beavertail pricklypear hedgehog cactus	OPBA2 ECHIN3	Yucca baccata Opuntia basilaris Echinocereus	0–13 13–27 13–27 0–13	
6 <b>Tree</b> 7	Cacti beavertail pricklypear hedgehog cactus Trees	OPBA2 ECHIN3	Yucca baccata Opuntia basilaris Echinocereus	0–13 13–27 13–27 0–13 673–852	
6 <b>Tree</b> 7	Cacti beavertail pricklypear hedgehog cactus Trees Utah juniper	OPBA2 ECHIN3	Yucca baccata Opuntia basilaris Echinocereus Juniperus osteosperma	0–13 13–27 13–27 0–13 673–852 336–404	
6 <b>Tree</b> 7	Cacti beavertail pricklypear hedgehog cactus Trees Utah juniper twoneedle pinyon	OPBA2 ECHIN3 JUOS PIED	Yucca baccata Opuntia basilaris Echinocereus Juniperus osteosperma Pinus edulis	0-13 13-27 13-27 0-13 673-852 336-404 336-404	

# **Animal community**

The suitability for livestock grazing is fair. Loose sand makes travel difficult.

### **Type locality**

Location 1: Mohave County, AZ					
Township/Range/Section	T41 N. R5 W. S34				
General legal description	Arizona, Mohave County, Moccasin 7 1/2 min. quad., Sec. 34, T. 41 N., R. 5 W., about 4 miles northwest of Moccasin, Arizona.				

### **Other references**

Information and updates collected during 2009-2010 for this ESD was conducted as part of an Interagency Technical Assistance Agreement between the Bureau of Indian Affairs–Navajo Region and the NRCS-Arizona.

### 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:
- 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

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 annualproduction):
- 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: