

# Ecological site F035XF610AZ

## Cinder Upland

### 13-17" p.z. (PIED, JUOS)

Last updated: 5/20/2025  
Accessed: 05/11/2026

#### 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

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.

Table 1. Dominant plant species

Tree	(1) <i>Pinus edulis</i> (2) <i>Juniperus osteosperma</i>
Shrub	(1) <i>Artemisia tridentata ssp. wyomingensis</i> (2) <i>Eriogonum umbellatum</i>
Herbaceous	(1) <i>Penstemon palmeri</i> (2) <i>Cordylanthus ramosus</i>

#### Physiographic features

Site appears on fan terraces, toe slopes and footslopes of cinder cones.

Table 2. Representative physiographic features

Landforms	(1) Cinder cone
Flooding frequency	None
Ponding frequency	None
Elevation	1,770 – 2,040 m

Slope	0 – 20 %
Aspect	Aspect is not a significant factor

### 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)	140 days
Freeze-free period (average)	160 days
Precipitation total (average)	430 mm

### Influencing water features

#### Soil features

Soils are very deep (shallow to moderately deep to cinders). Surface textures are extremely cindery loam, extremely gravelly loam and stony loam. Subsoil textures are extremely cindery loam, extremely gravelly loam and cinders. Parent material is alluvium and colluvium from scoriaceous basalt and pyroclastics. Geologic formation is basalt. Available water capacity is very low. Water erosion hazard potential is moderate; wind erosion hazard potential is very slight. Soils are non-saline, non-sodic with pH range of 7.4-8.4 (slightly to moderately alkaline).

Typical taxonomic units include:

SSA-625 Mohave county NE part MU's 27, 68 Lozinta, 68, 70 Wutoma.

**Table 4. Representative soil features**

Parent material	(1) Alluvium – pyroclastic rock
Surface texture	(1) Extremely channery loam (2) Extremely gravelly loam (3) Channery
Family particle size	(1) Loamy

Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Moderate
Soil depth	150 – 200 cm
Surface fragment cover <=3"	10 – 20 %
Available water capacity (0-101.6cm)	0 – 6.35 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 10 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	50 – 70 %

### Ecological dynamics

For state and transition model see ecological group DX035X02DESG11, Grand Canyon - Aridic Ustic - Volcanic or Clayey Uplands.

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 fire, grazing, 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 amount shown for each group. Divide the resulting total by the total normal year production shown in the plant community description. If the 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

### Additional community tables

Table 5. Community 1.1 plant community composition

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

Table 6. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height M	Canopy Cover (%)	Diameter Cm	Basal Area (square M/hectare)
<b>Tree</b>							
twoneedle pinyon	PIED	<i>Pinus edulis</i>	Native	0.9-7.6	20-40	10.2-30.5	–
Utah juniper	JUOS	<i>Juniperus osteosperma</i>	Native	0.6-4.6	15-30	5.1-30.5	–

Table 7. Community 1.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (m)	Canopy Cover (%)
<b>Grass/grass-like (Graminoids)</b>					
Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	Native	0.1-0.5	5-10
threeawn	ARIST	<i>Aristida</i>	Native	0.1-0.5	1-5
blue grama	BOGR2	<i>Bouteloua gracilis</i>	Native	0-0.3	2-5
squirreltail	ELELE	<i>Elymus elymoides ssp. elymoides</i>	Native	0.1-0.5	2-5
western wheatgrass	PASM	<i>Pascopyrum smithii</i>	Native	0-0.5	3-5
<b>Forb/Herb</b>					
beardtongue	PENST	<i>Penstemon</i>	Native	0-0.3	1-2
<b>Shrub/Subshrub</b>					
Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata ssp. wyomingensis</i>	Native	0.3-1.8	10-35
rubber rabbitbrush	ERNAG	<i>Ericameria nauseosa ssp. nauseosa var. glabrata</i>	Native	0.2-1.8	5-15
Mexican cliffrose	PUME	<i>Purshia mexicana</i>	Native	0.6-2.4	5-10
Sonoran scrub oak	QUTU2	<i>Quercus turbinella</i>	Native	0.6-2.1	5-10
broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	Native	0-0.3	4-9
Gambel oak	QUGA	<i>Quercus gambelii</i>	Native	0.6-4.6	3-8
mormon tea	EPVI	<i>Ephedra viridis</i>	Native	0.2-0.9	3-8
bushy bird's beak	CORA5	<i>Cordylanthus ramosus</i>	Native	0.2-1.2	3-7
sulphur-flower buckwheat	ERUM	<i>Eriogonum umbellatum</i>	Native	0-0.3	2-5
plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	Native	0-1.2	1-3
banana yucca	YUBA	<i>Yucca baccata</i>	–	0-0.8	1-3
rubberweed	HYMEN7	<i>Hymenoxys</i>	Native	0-0.3	1-3
<b>Tree</b>					
Utah juniper	JUOS	<i>Juniperus osteosperma</i>	Native	0.6-3.7	10-20
twoneedle pinyon	PIED	<i>Pinus edulis</i>	Native	0.9-6.1	5-20

## Animal community

Site is poorly suited to grazing by cattle, sheep or horses. Management considerations include that this is not a suitable site for tree removal and seeding. Site is very poor for grasses. Big sagebrush will increase. Water is scarce except for man-man watering facilities. Mule deer find cover on site in the winter. Food diversity is poor.

## Recreational uses

Recreational activities include hunting, hiking, horseback riding and wildlife observations. Landscape quality is fair to good.

## Wood products

Occasional stony areas may limit equipment use for harvesting, site preparation, tree planting and pre-commercial thinning. Erosion potential is moderate on cutover areas/bare ground, roads/trails and landings. Soil compaction potential is fair. Rutting will occur when wet. Revegetation potential is good. Harvest mature trees when canopy exceeds 30%. Cut posts and Christmas trees to improve remaining trees. Prescribed burning is not recommended. Larger gravels may present problems for mechanical tree removal. Control pests to prevent tree damage and loss. Fire hazard is minimal because of low understory fuel load. Soils have fair suitability to replanting. Seedling mortality rate is moderate due to low available water. Natural regeneration potential is moderate as this site tends toward trees. Seedlings should be protected from grazing. Plant competition is moderate from shrub increase. Windthrow hazard is slight.

## Type locality

Location 1: Mohave County, AZ	
Township/Range/Section	T34N R8W S11
General legal description	Mt. Trumbull SE Quas, 60 mi SW of Fredonia, 5 mi N of Arkansas Ranch

## Contributors

ASM, SEC  
Karlynn Huling  
Larry D. Ellicott  
Steve Barker

## Approval

Kendra Moseley, 5/20/2025

## 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	05/11/2026
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 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:**

---