

Ecological site R035XD421AZ Clay Loam Upland 7-11" 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.

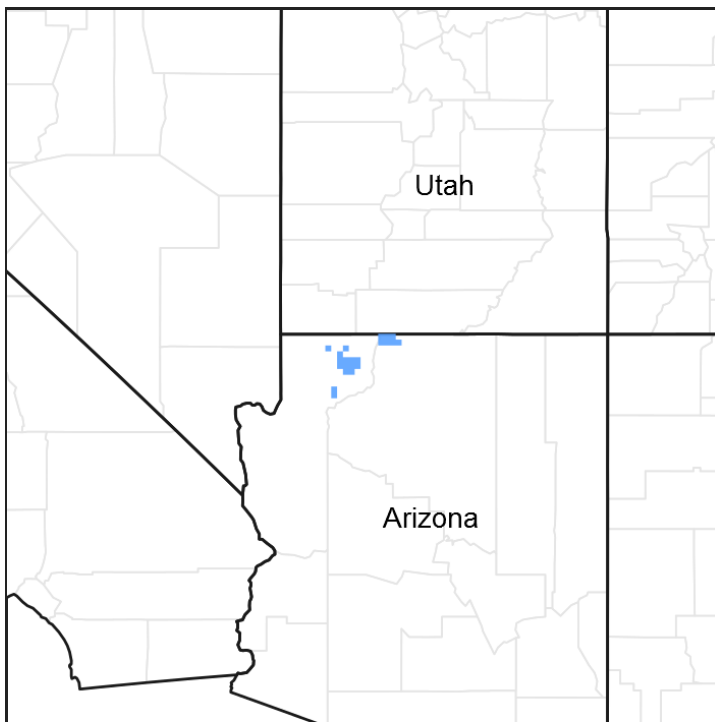


Figure 1. Mapped extent

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): 035X–Colorado Plateau

AZ CRA 35.4 – Colorado Plateau Cold Sagebrush – Grasslands

Elevations range from 4200 to 5100 feet and precipitation averages 7 to 11 inches.

Vegetation includes winterfat, fourwing saltbush, buckwheat species, needlegrass, bottlebrush squirreltail, Indian ricegrass, black grama, blue grama, sideoats grama, gyp dropseed, and galleta. The soil temperature regime is mesic and the soil moisture regime is typic 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.

Table 1. Dominant plant species

| | |
|------------|---|
| Tree | Not specified |
| Shrub | (1) <i>Chrysothamnus viscidiflorus</i> (2) <i>Atriplex canescens</i> |
| Herbaceous | (1) <i>Pleuraphis jamesii</i> (2) <i>Scleropogon brevifolius</i> |

Physiographic features

The dominant aspect is cold desert shrub grassland. Major grasses are galleta and burrograss. Landform and position are lower concave positions and gentle sideslopes of drainages.

Table 2. Representative physiographic features

| | |
|--------------------|------------------------------------|
| Landforms | (1) Fan (2) Terrace |
| Flooding frequency | None to rare |
| Ponding frequency | None to rare |
| Elevation | 4,700–5,200 ft |
| Slope | 1–5% |
| Aspect | Aspect is not a significant factor |

Climatic features

Winter-Summer moisture ratios are typically 70:30 on the west side of this LRU and shift to 60:40 on the east side. Late spring is usually the driest period, and early fall moisture can be sporadic. Summer rains fall June-September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture October-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 December-February. Accumulations above 10 inches are not common, but can occur. Snow usually lasts 3-4 days, but can persist much longer. Summer daytime temperatures are commonly 95-100 F and, on occasion, exceed

105F. Winter air temperatures can regularly go below 15 F and have been recorded below -15 F.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 220 days |
| Freeze-free period (average) | 150 days |
| Precipitation total (average) | 11 in |

Influencing water features

Soil features

Soils on this site consist of very deep, well drained soils that formed in mixed alluvium derived dominantly from sedimentary formations and mixed gravelly alluvium and colluvium.

Soils mapped on this site include:

SSA623 Shivwits Area MU 83 Twist;
 SSA625 Mohave County NE part MU's 16 & 23 Hatknoll;
 SSA629 Coconino County North Kaibab part MU 19 Jocity.

Table 4. Representative soil features

| | |
|--|---|
| Parent material | (1) Alluvium–basalt |
| Surface texture | (1) Gravelly loam (2) Loam |
| Family particle size | (1) Loamy |
| Drainage class | Moderately well drained to well drained |
| Permeability class | Moderately slow to slow |
| Soil depth | 40–60 in |
| Surface fragment cover ≤3" | 5–20% |
| Surface fragment cover >3" | 0–15% |
| Available water capacity (0-40in) | 5–7.5 in |
| Calcium carbonate equivalent (0-40in) | 1–15% |
| Electrical conductivity (0-40in) | 0–2 mmhos/cm |

| | |
|--|-------|
| Sodium adsorption ratio (0-40in) | 0-5 |
| Soil reaction (1:1 water) (0-40in) | 7.9-9 |
| Subsurface fragment volume <=3" (Depth not specified) | 5-20% |

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 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



The State and Transition Model and Accompanying Narrative Descriptions are Still To Be Developed for this Ecological Site. For More Information Contact The Arizona NRCS State Rangeland Management Specialist.

**State 1
Historic Climax Plant Community**

**Community 1.1
Historic Climax Plant Community**

The dominant aspect is cold desert shrub grassland. The major grasses are galleta and burrograss. With severe disturbance, native annuals, broom snakeweed, stickyleaf low rabbitbrush and wolf berry will increase; cheatgrass and russian thistle will invade.

Table 5. Annual production by plant type

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|---------------|--------------------------------|----------------|
| Grass/Grasslike | 300 | 338 | 375 |
| Shrub/Vine | 75 | 113 | 150 |
| Forb | 5 | 28 | 50 |
| Total | 380 | 479 | 575 |

Table 6. Ground cover

| | |
|-----------------------------------|--------|
| Tree foliar cover | 0% |
| Shrub/vine/liana foliar cover | 10-20% |
| Grass/grasslike foliar cover | 5-15% |
| Forb foliar cover | 0-1% |
| 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% |

Table 7. Canopy structure (% cover)

| Height Above Ground (Ft) | Tree | Shrub/Vine | Grass/ Grasslike | Forb |
|--------------------------|------|------------|---------------------|------|
| <0.5 | – | – | 5-15% | – |
| >0.5 <= 1 | – | 5-10% | – | 0-1% |
| >1 <= 2 | – | 10-20% | – | – |
| >2 <= 4.5 | – | – | – | – |
| >4.5 <= 13 | – | – | – | – |
| >13 <= 40 | – | – | – | – |
| >40 <= 80 | – | – | – | – |
| >80 <= 120 | – | – | – | – |
| >120 | – | – | – | – |

Figure 5. Plant community growth curve (percent production by month). AZ0004, 35.4 7-11" p.z. fourwing saltbush. Some growth in spring, most growth in summer to early fall rainy season..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 0 | 0 | 0 | 10 | 15 | 30 | 40 | 5 | 0 | 0 | 0 |

Figure 6. Plant community growth curve (percent production by month). AZ3541, 35.4 7-11" p.z. all sites. Most growth occurs in the spring and during the summer rainy season..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 1 | 9 | 20 | 15 | 5 | 16 | 25 | 6 | 2 | 1 | 0 |

Figure 7. Plant community growth curve (percent production by month). AZ3566, 35.4 7-11" p.z. winterfat. Growth occurs from spring through summer..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 0 | 5 | 30 | 30 | 10 | 10 | 10 | 5 | 0 | 0 | 0 |

Figure 8. Plant community growth curve (percent production by month). AZ0001, 35.4 7-11. 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 | 0 | 3 | 15 | 5 | 25 | 40 | 10 | 2 | 0 | 0 |

Additional community tables

Table 8. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production (Lb/Acre) | Foliar Cover (%) |
|-------------------|------------------------|--------|------------------------------------|-----------------------------|------------------|
| Shrub/Vine | | | | | |
| 0 | | | | 75–150 | |
| | winterfat | KRLA2 | <i>Krascheninnikovia lanata</i> | 25–50 | – |
| | fourwing saltbush | ATCA2 | <i>Atriplex canescens</i> | 25–50 | – |
| | yellow rabbitbrush | CHVI8 | <i>Chrysothamnus viscidiflorus</i> | 25–50 | – |
| | broom snakeweed | GUSA2 | <i>Gutierrezia sarothrae</i> | 10–25 | – |
| | water jacket | LYAN | <i>Lycium andersonii</i> | 0–10 | – |
| | pale desert-thorn | LYPA | <i>Lycium pallidum</i> | 0–10 | – |
| | Nevada jointfir | EPNE | <i>Ephedra nevadensis</i> | 0–5 | – |
| 4 | | | | 0–5 | |
| | Whipple cholla | CYWH | <i>Cylindropuntia whipplei</i> | 0–5 | – |
| | globe cactus | MAMMI | <i>Mammillaria</i> | 0–5 | – |
| | twistspine pricklypear | OPMA2 | <i>Opuntia macrorhiza</i> | 0–5 | – |
| | banana yucca | YUBA | <i>Yucca baccata</i> | 0–5 | – |

| Grass/Grasslike | | | | | |
|------------------------|-----------------------|--------|--|---------|---|
| 0 | | | | 300–350 | |
| | James' galleta | PLJA | <i>Pleuraphis jamesii</i> | 75–150 | – |
| | burrograss | SCBR2 | <i>Scleropogon brevifolius</i> | 50–75 | – |
| | squirreltail | ELELE | <i>Elymus elymoides</i> ssp. <i>elymoides</i> | 25–50 | – |
| | purple threeawn | ARPU9 | <i>Aristida purpurea</i> | 15–40 | – |
| | black grama | BOER4 | <i>Bouteloua eriopoda</i> | 10–35 | – |
| | blue grama | BOGR2 | <i>Bouteloua gracilis</i> | 10–35 | – |
| | sand dropseed | SPCR | <i>Sporobolus cryptandrus</i> | 10–35 | – |
| | needle and thread | HECOC8 | <i>Hesperostipa comata</i> ssp. <i>comata</i> | 0–15 | – |
| | Indian ricegrass | ACHY | <i>Achnatherum</i> <i>hymenoides</i> | 0–15 | – |
| 1 | | | | 0–15 | |
| | black grama | BOER4 | <i>Bouteloua eriopoda</i> | 7–27 | – |
| | blue grama | BOGR2 | <i>Bouteloua gracilis</i> | 7–27 | – |
| | Grass, perennial | 2GP | <i>Grass, perennial</i> | 0–5 | – |
| | low woollygrass | DAPU7 | <i>Dasyochloa pulchella</i> | 0–5 | – |
| | ring muhly | MUTO2 | <i>Muhlenbergia torreyi</i> | 0–5 | – |
| 2 | | | | 34–50 | |
| | squirreltail | ELELE | <i>Elymus elymoides</i> ssp. <i>elymoides</i> | 17–34 | – |
| | Grass, annual | 2GA | <i>Grass, annual</i> | 0–15 | – |
| | sixweeks fescue | VUOC | <i>Vulpia octoflora</i> | 0–15 | – |
| Forb | | | | | |
| 0 | | | | 5–40 | |
| | purple threeawn | ARPU9 | <i>Aristida purpurea</i> | 10–27 | – |
| | Forb, perennial | 2FP | <i>Forb, perennial</i> | 0–10 | – |
| | globemallow | SPHAE | <i>Sphaeralcea</i> | 0–10 | – |
| | winding mariposa lily | CAFL | <i>Calochortus flexuosus</i> | 0–5 | – |
| | desert trumpet | ERIN4 | <i>Eriogonum inflatum</i> | 0–5 | – |
| | pepperweed | LEPID | <i>Lepidium</i> | 0–5 | – |
| | phlox | PHLOX | <i>Phlox</i> | 0–5 | – |
| 3 | | | | 5–25 | |

| | | | | | |
|--|----------------------|-------|-------------------------------|------|---|
| | Forb, annual | 2FA | <i>Forb, annual</i> | 5–25 | – |
| | Indian ricegrass | ACHY | <i>Achnatherum hymenoides</i> | 0–10 | – |
| | milkvetch | ASTRA | <i>Astragalus</i> | 0–5 | – |
| | borage | BORAG | <i>Borago</i> | 0–5 | – |
| | western tansymustard | DEPI | <i>Descurainia pinnata</i> | 0–5 | – |
| | miniature woollystar | ERDI2 | <i>Eriastrum diffusum</i> | 0–5 | – |
| | desert Indianwheat | PLOV | <i>Plantago ovata</i> | 0–5 | – |

Animal community

This site is suitable for yearlong grazing by either cows and calves or stocker cattle and is easily traversed by all classes of livestock. Prescribed Grazing systems adapt very well to use on this site.

Potential wildlife on site are pronghorn antelope, black-tailed jackrabbit, coyote, badger, antelope squirrel, kangaroo rat, deer mouse, red tail hawk, raven meadowlark, gopher snake, western rattlesnake, longnose leopard lizard, short-horned lizard, western whiptail, and black-collared lizard.

Recreational uses

This site is found gently sloping valley sides, characterized by open grasslands interspersed with a few flowering forbs and shrubs.

Winters are cold and summers are quite warm. Spring and fall are the dry seasons and are typically cool and windy.

Recreational activities most likely to occur are hunting, cross-country riding, photography and wildlife observation.

Other information

Threatened and Endangered Species: Golden eagles and Prairie falcons occasionally use the site for feeding areas.

Type locality

| | |
|-------------------------------|--------------|
| Location 1: Mohave County, AZ | |
| Township/Range/Section | T38N R7W S35 |

| | |
|---------------------------|--|
| General legal description | Little Clayhole Valley 7 1/2 min. quad; 1 mi east of Black Point Reservoir |
|---------------------------|--|

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 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:**
