USDA Natural Resources
Conservation Service

# Ecological site DX035X03E002
# Sandy

Accessed: 05/12/2025

## 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.

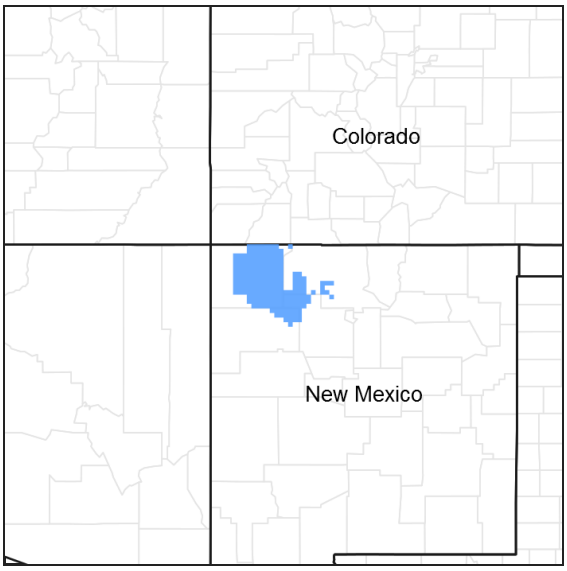


**Figure 1. Mapped extent**

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.

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |
| Shrub | Not specified |
| Herbaceous | Not specified |

## Legacy ID

R035XB002NM

## Physiographic features

This site occurs on mesas, plateaus, and valley side slopes. Slopes are generally from 0 to 8 percent, however, the Fruitland soil will occur on slopes as steep as 30 percent. Elevations range from 4,800 to 6,400 feet above sea level.

**Table 2. Representative physiographic features**

| | |
|---|---|
| Landforms | (1) Mesa<br>(2) Plateau<br>(3) Valley side |

| | |
|---|---|
| Flooding duration | Very brief (4 to 48 hours) to brief (2 to 7 days) |
| Flooding frequency | Rare to occasional |
| Elevation | 4,800–6,400 ft |
| Slope | 0–30% |
| Water table depth | 72 in |
| Aspect | Aspect is not a significant factor |

## Climatic features

This site has an arid, mild, dry climate with distinct seasonal temperature variations and large annual and diurnal temperature changes.

Mean annual precipitation varies from 7 to 10 inches. Deviations of 4 inches or more are quite common. Distribution is 65% during the native-plant growth period, which is from April through September. May and June are the dry months. During July, August, and September, 3.5 inches of precipitation influences the presence and production of warm-season plants. Late-fall and winter moisture is conducive to the production of cool-season plants, which usually begin growth in March and end with plant maturity and seed dissemination. This usually takes place in the early part of June when the moisture deficiency and warmer temperatures occur. The Gulf of Mexico is the principal source of moisture for summer precipitation, which is characterized by brief afternoon thunderstorms. Winter moisture occurs as light rain or snow.

Temperatures vary from a monthly mean of 75 degrees F in July to 27 degrees F in January, and from an annual maximum of 106 degrees F to an annual minimum of -35 degrees F. The average last killing frost in the spring is May 8, and the average first killing frost in the fall is October 10. The frost-free season is approximately 160 days. Temperatures are conducive for native grass and forb growth from April through September. Maximum shrub growth occurs in the spring months.

The wind blows most frequently from an easterly direction; however, a majority of the stronger winds (10 – 25 miles per hour) are from a westerly quadrant. Spring is the windiest season. Average hourly wind velocities are near 6 miles per hour. Spring and summer winds increase transpiration rates of native plants and rapidly dry the surface soil. Small soil particles are often displaced by the wind near the soil surface and often results in structural damage to native plants, especially young seedlings.

Climate data were obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F, respectively.

**Table 3. Representative climatic features**

| | |
|---|---|
| Frost-free period (average) | 151 days |
| Freeze-free period (average) | 177 days |
| Precipitation total (average) | 10 in |

## Influencing water features

This site is not influenced by water from a wetland or stream.

## Soil features

The soils on this site are deep and well-drained. The surface layer is a pale brown sandy loam, sandy clay loam, or fine sandy loam about 5 inches thick. The subsoil and substratum or underlying layer is a pale brown sandy loam, fine sandy loam, or sandy clay loam about 55 inches or more thick.

They formed in eolian and alluvial material derived from sandstone and shale. Water intake rate is moderately rapid to rapid. Available water-holding capacity ranges from 4.8 to 6.8 inches in a 5-foot profile.

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Sandy loam<br>(2) Loam<br>(3) Fine sandy loam |
| Family particle size | (1) Sandy |
| Drainage class | Well drained to excessively drained |
| Permeability class | Moderately slow to very rapid |
| Soil depth | 60–72 in |
| Available water capacity (0-40in) | 3–6 in |
| Electrical conductivity (0-40in) | 0–4 mmhos/cm |
| Sodium adsorption ratio (0-40in) | 0–10 |
| Soil reaction (1:1 water) (0-40in) | 6.6–9.4 |
| Subsurface fragment volume <=3" (Depth not specified) | 15–35% |

## Ecological dynamics

The aspect of vegetation on this site is dominantly grassland characterized by short- and mid-grasses. Shrubs and perennial forbs are a minor component of the plant community. Annual forbs occur in relative abundance during the spring and summer months in years of above-average growing conditions.

Additional plants which usually grow on this site in varying amounts dependent on current growing season conditions are: foxtail barley, verbena, sixweeks fescue, sixweeks grama, annual bromes, silverleaf nightshade, ring muhly, Russian thistle, western wheatgrass, Indianwheat, and cactus spp.

## State and transition model

**Ecosystem states**

1. Historic Climax Plant Community

**State 1 submodel, plant communities**

1.1. Historic Climax Plant Community

## State 1
## Historic Climax Plant Community

## Community 1.1
## Historic Climax Plant Community

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

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|---|---|---|---|
| Grass/Grasslike | 210 | 420 | 630 |
| Forb | 30 | 60 | 90 |
| **Total** | **240** | **480** | **720** |

**Table 6. Ground cover**

| | |
|---|---|
| Tree foliar cover | 0% |
| Shrub/vine/liana foliar cover | 0% |
| Grass/grasslike foliar cover | 0% |
| Forb foliar cover | 0% |
| Non-vascular plants | 0% |
| Biological crusts | 0% |
| Litter | 15% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 65% |

**Figure 5. Plant community growth curve (percent production by month). NM0902, R035XB002NM-Sandy-HCPC. Mixed short/mid-grassland with a minor component of shrubs and forbs..**

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 7 | 10 | 10 | 25 | 30 | 10 | 3 | 0 | 0 |

## Additional community tables

**Table 7. Community 1.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production (Lb/Acre) | Foliar Cover (%) |
|---|---|---|---|---|---|
| **Grass/Grasslike** | | | | | |
| 1 | | | | 120–150 | |
| | Indian ricegrass | ACHY | *Achnatherum hymenoides* | 120–150 | – |
| 2 | | | | 30–60 | |
| | needle and thread | HECO26 | *Hesperostipa comata* | 30–60 | – |
| | New Mexico feathergrass | HENE5 | *Hesperostipa neomexicana* | 30–60 | – |
| 3 | | | | 60–90 | |
| | spike dropseed | SPCO4 | *Sporobolus contractus* | 60–90 | – |
| | sand dropseed | SPCR | *Sporobolus cryptandrus* | 60–90 | – |

| | | | | | |
|---|---|---|---|---|---|
| | mesa dropseed | SPFL2 | *Sporobolus flexuosus* | 60–90 | – |
| | giant dropseed | SPGI | *Sporobolus giganteus* | 60–90 | – |
| 4 | | | | 30–60 | |
| | blue grama | BOGR2 | *Bouteloua gracilis* | 30–60 | – |
| 5 | | | | 18–30 | |
| | purple threeawn | ARPUP6 | *Aristida purpurea var. purpurea* | 18–30 | – |
| 6 | | | | 18–30 | |
| | squirreltail | ELEL5 | *Elymus elymoides* | 18–30 | – |
| 7 | | | | 18–30 | |
| | James' galleta | PLJA | *Pleuraphis jamesii* | 18–30 | – |
| 8 | | | | 30–60 | |
| | alkali sacaton | SPAI | *Sporobolus airoides* | 30–60 | – |
| **Forb** | | | | | |
| 9 | | | | 18–30 | |
| | fiddleneck | AMSIN | *Amsinckia* | 18–30 | – |
| | milkweed | ASCLE | *Asclepias* | 18–30 | – |
| | lambsquarters | CHAL7 | *Chenopodium album* | 18–30 | – |
| | Rocky Mountain beeplant | CLSE | *Cleome serrulata* | 18–30 | – |
| | herb sophia | DESO2 | *Descurainia sophia* | 18–30 | – |
| | buckwheat | ERIOG | *Eriogonum* | 18–30 | – |
| | locoweed | OXYTR | *Oxytropis* | 18–30 | – |
| | beardtongue | PENST | *Penstemon* | 18–30 | – |
| **Shrub/Vine** | | | | | |
| 10 | | | | 18–48 | |
| | winterfat | KRLA2 | *Krascheninnikovia lanata* | 18–48 | – |
| | winterfat | KRLA2 | *Krascheninnikovia lanata* | 18–48 | – |
| 11 | | | | 18–48 | |
| | big sagebrush | ARTR2 | *Artemisia tridentata* | 18–48 | – |
| 12 | | | | 30–60 | |
| | fourwing saltbush | ATCA2 | *Atriplex canescens* | 30–60 | – |
| 13 | | | | 12–30 | |
| | Cutler's jointfir | EPCU | *Ephedra cutleri* | 12–30 | – |
| | tetraclea | TETRA | *Tetraclea* | 12–30 | – |
| 14 | | | | 18–30 | |
| | broom snakeweed | GUSA2 | *Gutierrezia sarothrae* | 18–30 | – |
| | soapweed yucca | YUGL | *Yucca glauca* | 18–30 | – |

## Animal community

Habitat for Wildlife:
This ecological site provides habitats which support a resident animal community that is characterized by pronghorn antelope, badger, kit fox, black-tailed jackrabbit, Ord’s kangaroo rat, northern grasshopper mouse, kestrel, raven, horned lark, Woodhouse’s toad, lesser earless lizard, and striped whipsnake.

The rock wren is a summer resident. While not resident, mule deer will move out of adjacent habitats to feed in these ecological sites.

## Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series----------Hydrologic Group
Betonnie----------B
Councelor----------B
Fruitland----------B
Kwakina----------A
Pinavetes----------A
Shiprock----------B
Shipeesi----------B

## Recreational uses

No data

## Wood products

No data

## Other products

Grazing:
This site is suitable for grazing use by cattle, sheep, horses, antelope, deer, and burros.

Under the pressure of uncontrolled grazing, the potential plant community deteriorates, and there is a marked increase in amounts of shrubs, forbs, and cacti; shrubs and half- shrubs dominate the site.

## Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index----------Ac/AUM
100 - 76----------5.0 – 9.0
75 – 51----------6.0 – 11.0
50 – 26----------8.0 – 18.0
25 – 0----------18.0+

## Type locality

| Location 1: San Juan County, NM | |
|---|---|
| Township/Range/Section | T27 N R11 W S16 |
| General legal description | A typical pedon of Shiprock fine sandy loam in San Juan County, New Mexico, 975 feet east, 175 feet north of the southwest corner of Section 16, T27N, R11W. |

## Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the San Juan River Valley, Mesas and Plateaus, Major Land Resource Area 35 of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: San Juan, McKinley.

Characteristic soils are:
Shiprock, Shipeesi, Fruitland

Other soils included are:
Betonnie, Councelor, Kwakina, Pinavetes

## 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):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth ( in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**

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