

**UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE**

**ECOLOGICAL SITE DESCRIPTION**

**ECOLOGICAL SITE CHARACTERISTICS**

**Site Type:** Rangeland

**Site ID:** R037XA009NM

**Site Name:** Shale Hills

**Precipitation or Climate Zone:** 7 to 10 inches

**Phase:** \_\_\_\_\_

## PHYSIOGRAPHIC FEATURES

### **Narrative:**

This site occurs on gently sloping to moderately steep low hills and mesa side slopes. Often times it is associated with shale badlands and sandstone rock outcrops. Exposures are variable. Slopes range from 15 to 45 percent. Elevations range from 5,600 to 6,800 feet above sea level.

### **Land Form:**

1. Hillside

2.

3.

### **Aspect:**

1. N/A

2.

3.

|                                   |                |                |
|-----------------------------------|----------------|----------------|
|                                   | <b>Minimum</b> | <b>Maximum</b> |
| <b>Elevation (feet)</b>           | 5,600          | 6,800          |
| <b>Slope (percent)</b>            | 15             | 45             |
| <b>Water Table Depth (inches)</b> | 42             | >72            |
|                                   | <b>Minimum</b> | <b>Maximum</b> |
| <b>Flooding:</b>                  |                |                |
| <b>Frequency</b>                  | None           | Occasional     |
| <b>Duration</b>                   | None           | Brief          |
|                                   | <b>Minimum</b> | <b>Maximum</b> |
| <b>Ponding:</b>                   |                |                |
| <b>Depth (inches)</b>             | N/A            | N/A            |
| <b>Frequency</b>                  | N/A            | N/A            |
| <b>Duration</b>                   | N/A            | N/A            |

### **Runoff Class:**

Negligible to medium.

## CLIMATIC FEATURES

### **Narrative:**

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 about 7 to 10 inches. Deviations of 4 inches or more are quite common. Distribution is 65 percent 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 mean monthly of 75 degrees F in July to 27 degrees F in January. From a maximum of 106 degrees F to a minimum of 35 degrees F below zero. The average last killing frost in the spring is May 8, and the first killing frost in the fall is October 10. The frost-free season is approximately 160 days. Temperatures and conducive to 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 to 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 was 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.

|  | <b>Minimum</b> | <b>Maximum</b> |
|--|----------------|----------------|
| <b>Frost-free period (days):</b>           | 114            | 151            |
| <b>Freeze-free period (days):</b>          | 143            | 177            |
| <b>Mean annual precipitation (inches):</b> | 7              | 10             |

**Monthly moisture (inches) and temperature (°F) distribution:**

|           | Precip. Min. | Precip. Max. | Temp. Min. | Temp. Max. |
|-----------|--------------|--------------|------------|------------|
| January   | .46          | .70          | 12.7       | 43.1       |
| February  | .46          | .74          | 18.4       | 50.8       |
| March     | .54          | .70          | 22.7       | 60.4       |
| April     | .42          | .56          | 29.3       | 70.0       |
| May       | .38          | .62          | 37.6       | 79.5       |
| June      | .29          | .68          | 46.6       | 90.0       |
| July      | .68          | 1.46         | 54.8       | 94.6       |
| August    | .79          | 1.83         | 53.1       | 91.8       |
| September | .80          | 1.13         | 44.3       | 85.6       |
| October   | .78          | 1.30         | 31.7       | 72.4       |
| November  | .52          | .68          | 20.9       | 56.3       |
| December  | .54          | .64          | 12.8       | 46.6       |

**Climate Stations:**

| Station ID | Location                        | Period                      |
|------------|---------------------------------|-----------------------------|
| 291647     | Chaco Canyon Natl. Monument, NM | From: 06/01/22 To: 12/31/01 |
| 293134     | Farmington 3NE, NM              | From: 1971 To: 2000         |
| 293340     | Fruitland 2E, NM                | From: 01/01/14 To: 12/31/01 |
| 296465     | Otis, NM                        | From: 02/01/14 To: 12/31/01 |
| 298284     | Shiprock, NM                    | From: 08/01/26 To: 12/31/01 |

**INFLUENCING WATER FEATURES**

**Narrative:**

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

**Wetland description:**

| System | Subsystem | Class |
|--------|-----------|-------|
| N/A    |           |       |

**If Riverine Wetland System enter Rosgen Stream Type:**

N/A

## REPRESENTATIVE SOIL FEATURES

### **Narrative:**

The soils are moderately deep to deep and moderately well drained. Surface textures range from very fine sandy loams, loams and clay loams. Subsoils are generally fine textured.

The soils on this site are delicate and very susceptible to erosion by wind and water. Dissection of the site by gullies is common.

Water intake is slow, permeability is slow, but water-holding capacity is moderate to high.

**Parent Material Kind:** Marine deposits

**Parent Material Origin:** Shale unspecified

### **Surface Texture:**

|                          |
|--------------------------|
| 1. Very fine sandy loams |
| 2. Loams                 |
| 3. Clay loams            |

### **Surface Texture Modifier:**

|        |
|--------|
| 1. N/A |
| 2.     |
| 3.     |

**Subsurface Texture Group:** Clayey

**Surface Fragments <=3" (% Cover):** N/A

**Surface Fragments >3" (% Cover):** N/A

**Subsurface Fragments <=3" (%Volume):** 15 to 35

**Subsurface Fragments >=3" (%Volume):** 15 to 35

|  | <b>Minimum</b>  | <b>Maximum</b>  |
|--|-----------------|-----------------|
| <b>Drainage Class:</b>                         | Somewhat poorly | Moderately well |
| <b>Permeability Class:</b>                     | Slow            | Moderately slow |
| <b>Depth (inches):</b>                         | 60              | >72             |
| <b>Electrical Conductivity (mmhos/cm):</b>     | 0.00            | 8.00            |
| <b>Sodium Absorption Ratio:</b>                | N/A             | N/A             |
| <b>Soil Reaction (1:1 Water):</b>              | 7.9             | 9.0             |
| <b>Soil Reaction (0.1M CaCl2):</b>             | N/A             | N/A             |
| <b>Available Water Capacity (inches):</b>      | 3               | 6               |
| <b>Calcium Carbonate Equivalent (percent):</b> | N/A             | N/A             |

## **PLANT COMMUNITIES**

### **Ecological Dynamics of the Site:**

### **Plant Communities and Transitional Pathways (diagram)**

**Plant Community Name:** Historic Climax Plant Community

**Plant Community Sequence Number:** 1 **Narrative Label:** HCPC

**Plant Community Narrative:** Historic Climax Plant Community

The vegetation on this site presents a scrub juniper/pinyon savannah aspect understoried by a variety of shrubs, half-shrubs, grasses and forbs. North slopes support more trees than south slopes, which are fairly open.

Canopy Cover:

|   |      |
|---|------|
| Trees, shrubs and half-shrubs                   | 35 % |
| Ground Cover (Average Percent of Surface Area). |      |
| Grasses & Forbs                                 | 18   |
| Bare ground                                     | 62   |
| Surface gravel                                  | 10   |
| Surface cobble and stone                        | 0    |
| Litter (percent)                                | 10   |
| Litter (average depth in cm.)                   | 1    |

**Plant Community Annual Production (by plant type):** \_\_\_\_\_

| Plant Type         | Annual Production (lbs/ac) |     |      |
|--------------------|----------------------------|-----|------|
|                    | Low                        | RV  | High |
| Grass/Grasslike    | 210                        | 345 | 480  |
| Forb               | 21                         | 35  | 48   |
| Tree/Shrub/Vine    | 88                         | 144 | 200  |
| Lichen             |                            |     |      |
| Moss               |                            |     |      |
| Microbiotic Crusts |                            |     |      |
| <b>Total</b>       | 350                        | 575 | 800  |

**Plant Community Composition and Group Annual Production:**

**Plant Type - Grass/Grasslike**

| Group Number | Scientific Plant Symbol | Common Name  | Species Annual Production | Group Annual Production |
|--------------|-------------------------|--|---------------------------|-------------------------|
| 1            | ACHY<br>HECO26<br>HENE5 | Indian Ricegrass<br>Needleandthread<br>New Mexico Feathergrass | 86 – 115                  | 86 – 115                |
| 2            | PLJA<br>BOGR2           | Galleta<br>Blue Grama  | 86 – 115                  | 86 – 115                |
| 3            | SPAI                    | Alkali Sacaton   | 58 – 86                   | 58 – 86                 |
| 4            | POFE<br>KOMA<br>PIMI7   | Muttongrass<br>Prairie Junegrass<br>Littleseed Ricegrass       | 17 – 46                   | 17 – 46                 |
| 5            | PASM<br>ELEL5           | Western Wheatgrass<br>Bottlebrush Squirreltail                 | 17 – 40                   | 17 – 40                 |
| 6            | SPORO<br>PASCO<br>2GRAM | Dropseed spp.<br>Wheatgrass spp.<br>Other Grasses              | 17 – 40                   | 17 - 40                 |

**Plant Type - Forb**

| Group Number | Scientific Plant Symbol  | Common Name                                       | Species Annual Production | Group Annual Production |
|--------------|--------------------------|---|---------------------------|-------------------------|
| 7            | ERIOG                    | Wildbuckwheat                                     | 6 – 17                    | 6 – 17                  |
| 8            | CACO17<br>OXYTR<br>2FORB | Indian Paintbrush<br>Locoweed spp.<br>Other Forbs | 6 – 17                    | 6 - 17                  |

**Plant Type – Tree/Shrub/Vine**

| Group Number | Scientific Plant Symbol | Common Name   | Species Annual Production | Group Annual Production |
|--------------|-------------------------|---|---------------------------|-------------------------|
| 9            | JUNIP<br>PIED           | Juniper spp.<br>Pinyon Pine                                 | 29 – 86                   | 29 – 86                 |
| 10           | CEMOP<br>PUTR2<br>PUME  | Hairy Mountain Mahogany<br>Antelope Bitterbush<br>Cliffrose | 29 – 58                   | 29 – 58                 |
| 11           | CHRYYS<br>ARTR2         | Rabbitbrush spp.<br>Big Sagebrush                           | 17 – 40                   | 17 – 40                 |
| 12           | ATCA2<br>KRLA2          | Fourwing Saltbush<br>Winterfat                              | 17 – 40                   | 17 – 40                 |
| 13           | 2SD                     | Other Shrubs  | 0 – 17                    | 0 - 17                  |

**Plant Type - Lichen**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|-------------|---------------------------|-------------------------|
|              |                         |             |                           |                         |
|              |                         |             |                           |                         |

**Plant Type - Moss**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|-------------|---------------------------|-------------------------|
|              |                         |             |                           |                         |
|              |                         |             |                           |                         |

**Plant Type - Microbiotic Crusts**

| Group Number | Scientific Plant Symbol | Common Name | Species Annual Production | Group Annual Production |
|--------------|-------------------------|-------------|---------------------------|-------------------------|
|              |                         |             |                           |                         |
|              |                         |             |                           |                         |

Other species include: sandhill muhly, sixweeks fescue, mat muhly, brome grasses, Russian thistle, kochia, fleabane, cholla cactus, yucca spp., and black greasewood.

**Plant Growth Curves**

Growth Curve ID 0909NM

Growth Curve Name: HCPC

Growth Curve Description: Juniper/pinyon savannah with an understory of shrubs, grasses and forbs.

| Jan. | Feb. | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|------|------|-------|-------|-----|------|------|------|-------|------|------|------|
| 0    | 0    | 5     | 7     | 10  | 10   | 25   | 30   | 10    | 3    | 0    | 0    |

## **ECOLOGICAL SITE INTERPRETATIONS**

### **Animal Community:**

Habitat for Wildlife: No Data

### **Hydrology Functions:**

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

### **Hydrologic Interpretations**

| <b>Soil Series</b> | <b>Hydrologic Group</b> |
|--------------------|-------------------------|
| Green River        | B                       |
| Walrees            | C                       |

### **Recreational Uses:**

This site is suited to hunting, hiking, horseback riding, photography, and nature observation. It is stark but scenic due to its sometimes association with colorful soils and rock outcrops.

### **Wood Products:**

Wood products include fuelwood and fence posts. Care in harvesting these products should be taken due to the delicacy of the soils.

### **Other Products:**

Grazing:

Approximately 70 percent of the vegetative production on this site are suitable for grazing or browsing by domestic livestock and wildlife. Grazing distribution can be a problem if adequate watering, salt locations and fencing is not provided.

A decrease in cool-season grasses (Indian ricegrass, needleandthread and muttongrass) fourwing saltbush and an increase in blue grama, galleta, big sagebrush, rabbitbrush, and juniper indicate deterioration of the potential plant community. Severe deterioration is indicated by a large bare void of herbaceous species.

Due to the delicacy of the site, a planned grazing system, which would provide periodic grazings and rests, should be implemented. This would provide more cover for the soil as well as more nutritious and higher producing forage for the grazing animals.

**Other Information:**

**Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month**

| Similarity Index | Ac/AUM     |
|------------------|------------|
| 100 - 76         | 4.5 – 6.1  |
| 75 – 51          | 6.0 – 9.1  |
| 50 – 26          | 9.0 – 18.2 |
| 25 – 0           | 18.2+      |

| Plant Part        | Code | Species Preference | Code |
|-------------------|------|--------------------|------|
| Stems             | S    | None Selected      | NS   |
| Leaves            | L    | Preferred          | P    |
| Flowers           | F    | Desirable          | D    |
| Fruits/Seeds      | F/S  | Undesirable        | U    |
| Entire Plant      | EP   | Not Consumed       | NC   |
| Underground Parts | UP   | Emergency          | E    |
|                   |      | Toxic              | T    |

**Plant Preference by Animal Kind:**

**Animal Kind:** Livestock  
**Animal Type:** Cattle

| Common Name             | Scientific Name                 | Plant Part | Forage Preferences |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|---------------------------------|------------|--------------------|---|---|---|---|---|---|---|---|---|---|---|
|                         |                                 |            | J                  | F | M | A | M | J | J | A | S | O | N | D |
| Indian Ricegrass        | <i>Achnatherum hymenoides</i>   | EP         | P                  | P | P | P | P | P | P | P | P | P | P | P |
| Needleandthread         | <i>Hesperostipa comata</i>      | EP         | D                  | D | P | P | P | D | D | D | D | D | D | D |
| New Mexico Feathergrass | <i>Hesperostipa neomexicana</i> | EP         | D                  | D | P | P | P | D | D | D | D | D | D | D |
| Fourwing Saltbush       | <i>Atriplex canescens</i>       | L/S        | P                  | P | P | P | P | D | D | D | D | D | D | P |
| Winterfat               | <i>Krascheninnikovia lanata</i> | L/S        | D                  | D | P | P | P | P | P | P | D | D | D | D |
| Alkali Sacaton          | <i>Sporobolus airoides</i>      | EP         | D                  | D | D | D | D | P | P | P | U | U | U | D |

**Animal Kind:** Wildlife  
**Animal Type:** Deer

| Common Name             | Scientific Name                 | Plant Part | Forage Preferences |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|---------------------------------|------------|--------------------|---|---|---|---|---|---|---|---|---|---|---|
|                         |                                 |            | J                  | F | M | A | M | J | J | A | S | O | N | D |
| Antelope Bitterbrush    | <i>Purshia tridentata</i>       | L/S        | P                  | P | P | P | P | P | P | P | P | P | P | P |
| Hairy Mountain Mahogany | <i>Cercocarpus montanus</i>     | L/S        | P                  | P | P | P | P | P | P | P | P | P | P | P |
| Winterfat               | <i>Krascheninnikovia lanata</i> | L/S        | D                  | D | D | D | D | D | D | D | D | D | D | D |
| Fourwing Saltbush       | <i>Atriplex canescens</i>       | L/S        | P                  | P | D | D | D | D | D | D | D | D | D | P |
| Cliffrose               | <i>Purshia mexicana</i>         | L/S        | P                  | P | P | P | P | P | P | P | P | P | P | P |

**SUPPORTING INFORMATION**

**Associated sites:**

| Site Name | Site ID | Site Narrative |
|-----------|---------|----------------|
|           |         |                |

**Similar sites:**

| Site Name | Site ID | Site Narrative |
|-----------|---------|----------------|
|           |         |                |

**State Correlation:**

This site has been correlated with the following sites: \_\_\_\_\_

**Inventory Data References:**

| Data Source | # of Records | Sample Period | State | County |
|-------------|--------------|---------------|-------|--------|
|             |              |               |       |        |

**Type Locality:**

State: New Mexico

County: San Juan

Latitude: \_\_\_\_\_

Longitude: \_\_\_\_\_

Township: \_\_\_\_\_

Range: \_\_\_\_\_

Section: \_\_\_\_\_

Is the type locality sensitive?    Yes             No

General Legal Description: \_\_\_\_\_

**Relationship to Other Established Classifications:**

|  |
|--|
|  |
|--|

**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 37 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys : San Juan, McKinley.

**Characteristic Soils Are:**

|             |         |
|-------------|---------|
| Green River | Walrees |
|-------------|---------|

**Other Soils included are:**

|  |  |
|--|--|
|  |  |
|--|--|

**Site Description Approval:**

| <u>Author</u> | <u>Date</u> | <u>Approval</u> | <u>Date</u> |
|---------------|-------------|-----------------|-------------|
| Don Sylvester | 03/07/79    | Don Sylvester   | 03/07/79    |

**Site Description Revision:**

| <u>Author</u>    | <u>Date</u> | <u>Approval</u> | <u>Date</u> |
|------------------|-------------|-----------------|-------------|
| Elizabeth Wright | 07/10/02    | George Chavez   | 2/12/03     |