

# Major Land Resource Area 024X Humboldt Basin and Range Area

Accessed: 04/03/2026

---

## Ecological site keys

### Key to the LRUs of MLRA 24

---

**I. landscape dominated by volcanic tablelands, plateaus and dissected plateaus = Dissected High Lava Plateau (DX02406X).**

**II. landscape dominated by basin and range topography (Lahonton area)**

**A. Soils formed in lacustrine influenced alluvium. Dominant landforms include basin floor, alluvial plain and alluvial flat = Lacustrine influenced basins and playas (DX02402X).**

**B. Soils formed in alluvium. Dominant landforms include piedmont slope, fan remnants, alluvial plain, and pediment = Piedmont slopes (DX02403X).**

**C. Soils formed in residuum/colluvium. Dominant landforms include hills & mountains = Residuum/colluvium hills and mountains (DX02405X).**

---

## Lacustrine influenced basins and playas

---

**I. Soil characterized by a typic aridic soil moisture regime. These soils have physical and chemical properties that keep them dry throughout the year. There is little to no leaching and salts accumulate in the soil profile.**

**A. Soil characterized by water table within 100cm of surface (somewhat poorly or poorly drained soils).**

**1 Soils are poorly drained.**

**i. Soils, relative to RXY024XY002OR, have more of an ability to provide water to plants (higher available water capacity). ...**

R024XY009NV – SALINE MEADOW

**ii. Soils, relative to RXY024XY009NV, have less of an ability to provide water to plants (lower available water capacity). ...**

R024XY002OR – SODIC MEADOW 6-10 PZ

**iii. Salt-affected near the surface of floodplains ... R024XY063NV – SALINE FLOODPLAIN**

**2 Soils are typically somewhat poorly drained.**

**i. Site is typically in elevations greater than or equal to 5000 feet. ... R024XY008NV – SODIC FLAT 8-10 P.Z.**

**ii. Site is typically in elevations below 5000 feet.**

**a. Compared with R025XY015NV, this site typically has a longer duration of flooding. More study on soil moisture is needed. ... R024XY011NV – SODIC FLAT 6-8 P.Z.**

**b. Compared with R024XY011NV this site has a briefer duration of flooding. More study on soil moisture is needed. ... R024XY015NV – DEEP SODIC FAN**

c. Compared with R024XY011NV and R024XY015NV the soil profile is potentially wetter longer, higher in the profile to make the site unfavorable for Basin wildrye. ... R024XY1140R – SODIC LAKE TERRACE

**B. Soils are well, somewhat excessive, or excessively drained (no water table within 150cm of soil surface).**

**1 Soil sandy throughout, water removed from soil rapidly**

i. Sodium adsorption ratio (SAR) below 100cm greater than 13 ... R024XY055NV – SANDY 5-8 P.Z.

ii. Sodium adsorption ratio (SAR) less than 13 throughout ... R024XY066NV – SODIC DUNES

iii. SAR over 45, thin layer of loess ... R024XY041NV – GRAVELLY FAN

**2 Soil not sandy throughout, water removed from the soil readily but NOT rapidly**

iv. Soil typically has a fine-silty or fine particle size class (have a small percentage of fine sands or coarser including fragments up to 7.5 cm in diameter).

a. Primary shrub is sickle saltbush. An abiotic factor determining why the dominance of sickle saltbush is pending. ...

R024XY012NV – SALINE TERRACE 6-8 P.Z.

b. Dominant shrub is Shadscale saltbush followed by greasewood as a second dominant shrub. Abiotic factor to differentiate the dominance compared to R024XY013OR is pending. ... R024XY003NV – SODIC TERRACE 6-8 P.Z.

c. Dominant shrub is greasewood. Second dominant shrub is Shadscale saltbush. Abiotic factor to differentiate the dominance compared to R024XY003NV is pending. ... R024XY013OR – LOW SODIC TERRACE 6-10 PZ

d. Dominant shrub is greasewood. Second dominant shrub is Shadscale saltbush. Abiotic factor to differentiate the dominance compared to R024XY003NV is pending. This site is very similar (if not the same as) R024XY013OR ...

R024XY1200R – SILTY LOW SODIC TERRACE 6-10 PZ

v. Soils at site typically have less than 18 percent clay in the subsoil and greater than 15 percent fine sand or coarser including fragments up to 7.5 cm in diameter (coarse-loamy or coarse-silty). ... R024XY067NV – SHALLOW SILTY 5-8 P.Z.

**II. Soil characterized by an aridic bordering on xeric soil moisture regime. These soils experience brief periods of moisture in the soil profile typically when plants are dormant. Leaching is minimal and salts may accumulate in the soil profile.**

**A. Soils are moderately well to excessively drained.**

**1 Soil sandy throughout, water removed from soil rapidly ... R024XY001NV – DUNES 6-10 P.Z.**

**2 Soil not sandy throughout, water removed from the soil readily but NOT rapidly**

i. Soil sodium effected in surface expressed by supporting greasewood and other salt tolerant species and high pH in the 9s.

a. Soils at this site are mesic (warmer compared to R024XY625OR and R024XY645OR). ... R024XY022NV – SODIC TERRACE 8-10 P.Z.

b. Soils at this site are mesic (warmer compared to R024XY625OR and R024XY645OR). ... R024XY014OR – SODIC TERRACE 6-10 PZ

c. Temperature regime of the soils at this site are frigidcolder compared to R024XY022NV and R024XY014OR. ... R024XY625OR – ALKALINE BASIN 8-10 PZ

d. Temperature regime of the soils at this site are frigid (colder compared to R024XY022NV and R024XY014OR). Soils at this site may experience brief periods of ponding and are more productive relative to the other sites that drop out at the same spot in the key. ... R024XY645OR – SILTY ALKALINE BOTTOM 8-10 PZ

ii. Soil not strongly sodium effected (can support Wyoming and basin sagebrush).

a. Soil typically has greater than 35 percent clay in the subsoil (is fine textured or ashy). ... R024XY008OR – CLAYEY PLAYETTE

b. Soil typically has less than 35 percent clay in the subsoil (has a fine-loamy or coarse-loamy particle size).

1) Site is typically at elevations below 4000 feet. ... R024XY010OR – ARID BASIN 6-10 PZ

2) Site is typically at elevations above 4000 feet.

a) Soil at this site typically does not have a clay layer (argillic horizon).

(1) pHs typically do not go above 8.8 in the soils at this site.

(a) Soils at this site are typically on inset fans. ... R024XY004OR – DRY FLOODPLAIN 6-10 PZ

(b) Soils at this site are typically on lake terrace landforms. ... R024XY121OR – SILTY SODIC TERRACE 6-10 PZ

(c) Soils at this site are typically on lakebed landforms. ... R024XY609OR – DROUGHTY BOTTOM 6-10 PZ

(2) pH typically ranges into the 9's at depth for the soil at this site. ... R024XY113OR – SODIC FAN 6-10 PZ

b) Soil at this site typically has a clay layer (argillic horizon). ... R024XY019OR – SILT LOAM TERRACE 8-11 PZ

3 Soils may have brief or occasional ponding. ... R024XY007OR – DRY PONDED CLAY 6-10 PZ

B. Soils are somewhat poorly or poorly drained

1 Soil is characterized by periodic saturation (moisture regime not aquic). See also R024XY608OR.

i. Site is typically on depressional lake beds. ... R024XY006OR – LAKE TERRACE

ii. Site is typically on floodplains and inset fans. ... R024XY006NV – DRY FLOODPLAIN

iii. Site is typically on terraces of floodplains and alluvial fans. ... R024XY608OR – ARID BOTTOM 6-10 PZ

2 Soil characterized by continuous saturation (aquic soil moisture regime).

i. Soil characterized by a mollic epipedon

a. Seasonal water table less than 30cm from soil surface ... R024XY043NV – WET MEADOW 6-8 P.Z.

b. Seasonal high water table greater than 30cm from soil surface ... R024XY064NV – SODIC BOTTOM

ii. Soil characterized by an ochric epipedon

a. Soil characterized by greater than 35 percent clay in the particle size control section (clayey, fine, smectitic classification).

See also R024XY044NV. ... R024XY010NV – SODIC FLOODPLAIN

b. Soil characterized by less than 35 percent clay in the particle size control section (soil not clayey or fine)

1) water table 71 to 100cm from the soil surface ... R024XY007NV – SALINE BOTTOM

2) water table 36 to 100cm, soil characterized by longer duration saturation above 50cm ... R024XY009NV – SALINE MEADOW

iii. Soil has a histic epipedon. Soil saturated at or near the surface year round. ... R024XY127NV – Lakeshore Marsh

III. Soils at these sites have an aquic moisture regime (typically too moist to support most desert shrubs). ... R024XY127NV – Lakeshore Marsh

## **Peidmont Slope**

---

I. Sites receive less than 8 inches annual precipitation. Soil characterized by a typic aridic soil moisture regime.

A. Soil characterized by a silty texture at surface and throughout the profile.

1 Soils at this site are typically on basin floors and inset fans. ... R024XY004NV – SILTY 4-8 P.Z.

2 Soils at this site have a root restrictive layer (duripan) at a depth of 50 cm or shallower. ... R024XY059NV – SILTY 8-10 P.Z.

3 soils at this site are typically on fan skirts and fan aprons. ... R024XY014NV – COARSE SILTY 4-8 P.Z.

B. Soil not silty, typically gravelly fine sandy loam ... R024XY002NV – LOAMY 5-8 P.Z.

II. Site receives 8 inches or more annual precipitation. Soils characterized by a aridic bordering on xeric soil moisture regime.

A. Soil less than 50cm deep (shallow)

1 Soil shallow to a subsurface horizon weakly to strongly cemented by silica (duripan) and non-effervescent above the duripan. ... R024XY017OR – SHALLOW LOAM 8-10 PZ

2 Shallow to a subsurface horizon weakly to strongly cemented by silica (duripan) and violently effervescent throughout. ... R024XY030NV – SHALLOW CALCAREOUS LOAM 8-10 P.Z.

B. Soil greater than 50cm deep (moderately deep, deep, or very deep)

1 subsurface accumulation of clay (argillic horizon) present

i. Mapped in Nevada. Likely the same site as R024XY016OR. ... R024XY005NV – LOAMY 8-10 P.Z.

ii. Mapped in Oregon. Likely the same site as R024XY005NV. ... R024XY016OR – LOAMY 8-10 PZ

iii. This site is within coppice mound and playette features. The Wyoming big sagebrush is on mounds. The soils at this site may experience brief to occasional periods of ponding. ... R024XY123OR – LOW CLAYEY TERRACE 8-10 PZ

2 subsurface accumulation of clay (argillic horizon) typically absent.

i. Typically greater than 35 percent rock fragments by volume exist throughout the profile. ... R024XY020NV – DROUGHTY LOAM 8-10 P.Z.

iii. Soils at this site typically have a dark colored surface horizon (mollic epipedon) or are close to achieving the mollic epipedon criteria (10YR 3/2 moist, 10YR 5/2 dry). ... R024XY653OR – ARID FAN 8-10 PZ

iv. Soils at this site typically have a silica cemented layer or other restrictive feature (paralithic contact) within 100 cm of the soils surface. ... R024XY058NV – SANDY LOAM 8-10 P.Z.

v. Soils at this site typically are on sand sheet landforms and have a coarse surface texture (loamy sand or sandy loam). ...  
R024XY017NV – SANDY 8-10 P.Z.

## High elevation hills and mountains

---

### I. Soil characterized by a mollic epipedon

A. soil characterized by a mesic soil temperature regime (mean annual soil temperature is between 8 and 15 degree C) and aridic bordering on xeric or xeric bordering on aridic soil temperature regime. Site represents the transition between landforms dominated by Wyoming big sagebrush and landforms dominated by mountain big sagebrush.

1 This site is typically at elevations less than 6,000 feet.

i. The soils at this site have a clay layer but it is more gradual clay layer at deeper depths compared to R024XY013NV. ...  
R024XY027NV – CLAYPAN 12-16 P.Z.

ii. Soils at this site typically do not have a significant clay layer. ... R024XY020OR – SHRUBBY LOAM 8-10  
PZ

2 This site is typically at elevations greater than 6,000 feet. Soils at this site have an abrupt clay layer (argillic horizon) near the surface supporting low sagebrush. ... R024XY013NV – LOAMY 10-12 P.Z.

B. soil characterized by a frigid or cryic soil temperature regime (mean annual soil temperature between 0 to 8 degree C)

1 accumulation of clay (argillic horizon) present

i. soil depth 50cm or less (shallow or very shallow)

a. Less than 35 percent rock fragments by volume throughout the soil profile. Smooth to slightly convex-linear landform shape. ... R024XY027NV – CLAYPAN 12-16 P.Z.

b. Greater than 35 percent rock fragments (skeletal) by volume throughout the soil profile.

1) Landform shape convex-convex, found on ridges and shoulders of mountains. ... R024XY016NV –  
Mountain Ridge

2) Landform shape linear-linear, found on backslopes of mountains. ... F024XY054NV – Pinus  
monophylla/Artemisia tridentata subsp. vaseyana/Pseudoroegneria spicata

ii. Soil 50 to 100cm deep (moderately deep). Less than 35 percent rock fragments by volume throughout the soil profile (fine loamy) ... R024XY021NV – Loamy Slope 12-14 P.Z.

iii. Soil 50 to 100cm deep (moderately deep). Greater than 35 percent rock fragments by volume throughout the soil profile (loamy-skeletal) ... R024XY029NV – SOUTH SLOPE 12-16 P.Z.

iv. Ochric epipedon ... R024XY018NV – Claypan 10-12 P.Z.

2 accumulation of clay (argillic horizon) absent

i. Soil depth greater than 150cm (very deep)

a. Greater than 35 percent rock fragments (skeletal) by volume throughout the soil profile. Site dominated by threetip sagebrush. ... R024XY046NV – GRAVELLY NORTH SLOPE

b. Less than 35 percent rock fragments by volume throughout the soil profile ... R024XY023NV – NORTH SLOPE 14+ P.Z.

iii. Soil depth 100 to 150cm (deep) ... R024XY032NV – LOAMY SLOPE 14+ P.Z.

iv. Soil depth 50 to 100cm (moderately deep) ... R024XY042NV – STEEP GRAVELLY LOAM 14+ P.Z.

v. Soil depth less than 50cm (shallow) ... F024XY049NV – Pinus monophylla-Juniperus osteosperma/Artemisia tridentata subsp. vaseyana/Pseudoroegneria spicata

## II. Soil characterized by an ochric epipedon

A. Soil characterized by a mesic soil temperature regime (mean annual soil temperature is between 8 and 15 degree C) and typic aridic soil moisture regime.

1 The soils at this site have high pH's (in the 9's) close to the surface. ... R024XY025NV – LOAMY SLOPE 5-8 P.Z.

2 The pH does not typically go beyond 8.8 or 9. The soils are skeletal which means 35 percent rock fragments in the particle size control section (subsoil) are common. ... R024XY6400R – STONY ALKALINE SLOPES 6-10 PZ

B. Soil characterized by a mesic soil temperature regime (mean annual soil temperature is between 8 and 15 degree C) and aridic bordering on xeric or xeric bordering on aridic soil moisture regime.

1 Soil depth 50cm or less (shallow or very shallow)

i. accumulation of clay (argillic horizon) present

a. Depth to bedrock ranges from 13 to 38cm (very shallow or shallow), but is typically less than 25cm.

1) Soils at this site typically have a low amount of calcium carbonates relative to R024XY021OR. ... R024XY057NV – CHANNERY HILL

2) Soils at this site typically have a high amount of calcium carbonates relative to R024XY057NV. ... R024XY021OR – THIN SURFACE 8-14 PZ

b. Depth to bedrock ranges from 36 to 50cm (shallow).

1) Site is typically on slopes ranging from 15 to 50 percent.

a) This site is typically at elevations ranging from 5,000 to 6,000 feet. ... R024XY035NV – SHALLOW LOAM 10-14 P.Z.

b) This site is typically at elevations ranging from 4,000 to 5,000 feet. ... R024XY031NV – SHALLOW CALCAREOUS LOAM 10-14 P.Z.

2) This site typically is on maximum slopes of 15 percent.

a) This site is typically on mountains and hills and has hard bedrock within 50 to 100 cm of the soil surface. ... R024XY047NV – SHALLOW LOAM 8-10 P.Z.

b) This site is typically on terraces and fan remnants and typically has a silica cemented layer (duripan) or soft bedrock within 50 to 100 cm of the soil surface. ... R024XY017OR – SHALLOW LOAM 8-10 PZ

c) Stony ... R024XY026NV – STONY SLOPE 8-10 P.Z.

5) Soils at this site typically have a dark surface horizon (mollic epipedon; moist color value and chroma 2/3 moist, and 5/2 dry). ... R024XY0200R – SHRUBBY LOAM 8-10 PZ

4) Northerly aspects on slopes over 30% ... R024XY033NV – STEEP NORTH SLOPE 10-12 P.Z.

**ii. accumulation of clay (argillic horizon) typically absent**

**a. Depth to hard bedrock ranges from 18 to 36cm (very shallow and shallow), but typically less than 25cm. ...**

R024XY030NV – SHALLOW CALCAREOUS LOAM 8-10 P.Z.

**b. Depth to hard bedrock 36 to 50cm (shallow).**

1) This site is typically at elevations 5500 feet or greater. ... F024XY053NV – Juniperus osteosperma/Artemisia nova/Achnatherum thurberianum-Achnatherum hymenoides

2) This site is typically at elevations below 5500 feet. ... R024XY032OR – ARID SOUTH SLOPES 6-10 PZ

**c. Depth to soft, highly weathered, bedrock 36 to 50cm (shallow). ... R024XY045NV – ERODED SLOPE 6-10 P.Z.**

**2 Soil depth greater than 50cm.**

**i. Site is on south aspects and slopes range from 15 to 50 percent. ... R024XY028NV – SOUTH SLOPE 8-12 P.Z.**

**ii. Site is on north aspects and slopes are typically greater than 50 percent. ... R024XY033OR – ARID NORTH SLOPES 6-10 PZ**

**iii. Site is on north aspects typically on slopes greater than 50 percent. ... R024XY602OR – NORTH SLOPES 8-10 PZ**

**iv. Site typically has access to a water table a deep, depths indicated by the presence of greasewood (may be near a hot spring). Soil may have high pHs (in the 9s at depth) The surface pH is typically 8.8 or less indicated by the presence of Wyoming sagebrush. ... R024XY634OR – SODIC SOUTH SLOPES 8-10 PZ**

**v. This site is on north aspects typically below 4,000 feet. ... R024XY680OR – SHRUBBY ARID NORTH SLOPES 8-10 PZ**