

# Major Land Resource Area 034A

## Cool Central Desertic Basins and Plateaus

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### Ecological site keys

#### High Plains Southeast

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- I. Site in a lowland position (bottom) that receives significant additional moisture from runoff of adjacent slopes or intermittent/perennial streams or a water table (high productivity potential)
  - A. Sites that are saline and/or alkaline, dominated by salt tolerant species (greasewood, inland saltgrass, alkali sacaton)
    - 1 Site is somewhat poorly drained with moderately saline and/or alkaline water table within rooting depth of herbaceous species (20-40") during most of the growing season, dominated by grasses such as alkali sacaton, basin wildrye, alkali/sandberg bluegrass, (typically no shrubs present) ... R034AY342WY – Saline Subirrigated High Plains Southeast (SS)
    - 2 Site not as above
      - i. Site is usually on gently sloping land along perennial or intermittent streams with moderately good drainage and moderately saline and/or alkaline water table >3' (within rooting depth of woody plants, but not within rooting depth of herbaceous plants), dominated by alkali sacaton, basin wildrye, western wheatgrass, greasewood, inland saltgrass, (no big sage on this site) ... R034AY338WY – Saline Lowland High Plains Southeast (SL)
      - ii. Site may receive periodic overflow from adjacent slopes, may be in a lowland position but water is typically channeled into gullies so that plants are not receiving a lot of benefit from additional moisture, greasewood and Gardner's saltbush common species, big sage (Basin and/or Wyoming) may be present ... R034AY336WY – Saline Loamy High Plains Southeast (SnLy)
  - B. Sites that are not saline and/or alkaline
    - 1 Site poorly drained with fluctuating water table above surface part of growing season, Nebraska sedge, northern reedgrass, tufted hairgrass, and willows ... R034AY378WY – Wetland High Plains Southeast (WL)
    - 2 Site not as above
      - i. Site is somewhat poorly drained with water tables within rooting depth of herbaceous species (2-3 feet) during most of the growing season, basin wildrye, tufted hairgrass, western wheatgrass, slender wheatgrass, shrubby cinquefoil, some sedges, rushes, and willows may be present ... R034AY374WY – Subirrigated High Plains Southeast (Sb)
      - ii. Site not as above
        - a. Site is usually on gently sloping land along perennial or intermittent streams. Site is moderately good drainage water table within rooting depth of woody plants (>3 feet), but not within rooting depth of herbaceous plants during most of the growing season, cottonwoods or remnants thereof may be present, (gravel bars and pockets of bare gravel often present, basin wildrye, needleandthread, western wheatgrass, woods rose and other woody species ... R034AY328WY – Lowland High Plains Southeast (LL)
        - b. Site not as above
          - 1) Surface textures range from sandy loam to light silty clay loam. Site receives more than normal moisture from overflow of intermittent streams running from adjacent slopes, but without a water table within rooting depth of woody plants, basin big sagebrush, silver sage, slender wheatgrass, western wheatgrass, and/or canby/sandberg bluegrass common ... R034AY326WY – Loamy Overflow High Plains Southeast (LyO)

2) Site similar to above with heavy textured soils (well-drained clay loams, silty clay loams and silty clays), Site occurs on gently sloping lands along intermittent streams and draws. Heavy presence of western wheatgrass, slender wheatgrass, basin wildrye ... R034AY306WY – Clayey Overflow High Plains Southeast (CyO)

II. Upland site that does not receive additional moisture as above

A. Soil depth very shallow (<10"), shallow (10-20") OR moderately deep to deep (>20") reacting like shallow soils due to root restrictive layer (ex. heavy calcic (~30%+), heavy argillic, and/or rocks) or on south and west facing slopes (LOW productivity potential)

1 Soils very shallow (<10"), but may include areas of exposed bedrock and pockets of deep soil, often on steep (up to 55%) south and west facing slopes with VERY LOW productivity potential

i. Bedrock igneous or volcanic, black sage may be present (Igneous not currently in 10-14 SE ESD Legend)

ii. Bedrock not igneous or volcanic

a. Bedrock is soft or hard clay shale bedrock that may be saline and/or alkaline in various degrees, occurs in upland position on moderately to steeply sloping land. Gardner's saltbush, western cheatgrass, is common, productivity very low ... R034AY354WY – Shale High Plains Southeast (Sh)

b. Site not as above, commonly on windswept ridges, fractured bedrock of various types, and Juniper occasionally found on at higher elevations, common plants bluebunch wheatgrass, squirreltail, western wheatgrass, may have shrubs present (black sage, big sage) productivity very low (if productivity is high and coarse fragments are present, go to Gravelly) ... R034AY376WY – Very Shallow High Plains Southeast (VS)

2 Soils shallow (10-20"), but may include moderately deep to deep gravelly or cobbly soils, soils with a root restrictive layer, and/or south and west facing slopes that react like shallow soils, productivity potential is LOW

i. Site with a highly calcareous subsoil OR underlain by soft calcareous materials

a. Moderately deep to deep soil (>20") with highly calcareous (violent effervescence) subsoil at 10 to 20", black sagebrush common shrub species. (Shallow Loamy, Calcareous not currently in 10-14 SE ESD Legend)

b. Shallow sandy and loamy soils (10-20") underlain by soft calcareous materials with many outcrops of sedimentary rock, mountain mahogany, bluebunch wheatgrass needleandthread, and western wheatgrass common ... R034AY334WY – Rocky Hills High Plains Southeast (RH)

ii. Site without calcareous subsoil or bedrock, OR if lime horizon present, accompanied by high volume of coarse fragments

a. Coarse fragments common on surface and throughout profile (>35% by volume in top 20")

1) Site occurs along terrace breaks, steep slopes, or stream terraces with coarse fragments up to 10" diameter covering 50-75% of surface and making up 40-50% volume in top 20", may have lime horizon below 12", soils are excessively well drained loamy sands, sandy loams and fine sandy loams, common plants are bluebunch wheatgrass, Indian ricegrass, needleandthread with a variety of woody plants may be present, productivity potential VERY LOW ... R034AY312WY – Gravelly High Plains Southeast (Gr)

2) Fractured sedimentary bedrock at 10-20" with gravel, cobble, stone, and angular fragments on the surface and throughout soil profile, inclusions of very shallow to deep pockets of soil, loamy well drained soils commonly on south & west facing slopes, juniper common with bluebunch wheatgrass, needleandthread, squirreltail (productivity potential higher than Very Shallow (VS) site) ... R034AY356WY – Shallow Breaks High Plains Southeast (SwBr)

b. Soils without high amount of coarse fragments

1) Medium to fine textured soils over igneous or volcanic bedrock, bitterbrush common (Shallow Igneous not currently in 10-14 SE ESD Legend)

2) Soils not as above

a) Well drained sandy clay loams, clay loams or silty clay loams or heavier textured soils OR root restricting clay subsoil layer with coarse to fine textures above, soil may develop large

cracks when dry, winterfat dominant with western wheatgrass, Bluebunch wheatgrass and squirreltail ... R034AY358WY – Shallow Clayey High Plains Southeast (SwCy)

b) Soils not as above

(1) Well drained loamy sand, sandy loams, or fine sandy loams over sedimentary bedrock or calcium carbonate or similar layer that restricts rooting depth; common plant Indian ricegrass, threadleaf sedge, & needleandthread with fringed sagebrush, stemless mock goldenweed and/or Wyoming big sage ... R034AY366WY – Shallow Sandy High Plains Southeast (SwSy)

(2) Well-drained fine sandy loam and silty loams over sedimentary bedrock or loams with root restricting layer (calcium carbonate, rock layer and/or similar layer); with Wyoming big sagebrush or possibly Wyoming big sage intermixed with low sage/early sagebrush, dominant grasses are bluebunch wheatgrass, western wheatgrass, and sandberg bluegrass; a good mixed of different grass species ... R034AY362WY – Shallow Loamy High Plains Southeast (SwLy)

B. Soil depth moderately deep to deep (>20") without root restricting layer that inhibits the productivity potential

1 Sites that are saline and/or alkaline

i. Permeability is moderately slow to slow due to excess sodium in the substratum. Depth to horizons with excessive amounts of sodium and strongly alkaline reactions ranges from 10 to 20" . These horizons restrict deep root penetration by all but alkali-tolerant species. These soils are typically calcareous throughout and have salts which, although low at the surface and upper subsoil, increase with depth. Common grasses are western wheatgrass, bluebunch ... R034AY336WY – Saline Loamy High Plains Southeast (SnLy)

ii. Gardner's saltbush, winterfat, bud sage common with western wheatgrass, Indian ricegrass, squirreltail common grass species(if root restrictive layer present and productivity very low consider Shale site ... R034AY344WY – Saline Upland High Plains Southeast (SU)

iii. Site may receive periodic overflow from adjacent slopes, may be in a lowland position but water is typically channeled into gullies so that plants are not receiving a lot of benefit from additional moisture, greasewood and Gardner's saltbush common species, big sage (Basin and/or Wyoming) may be present (Saline Lowland Drained not currently in 10-14 SE ESD Legend)

2 Sites that are not saline and/or alkaline

i. Sites with a high volume of coarse fragments in top 20" (>35% by volume)

a. Site occurs along terrace breaks, steep slopes, or stream terraces with coarse fragments up to 10" diameter covering 50-75% of surface and making up 40-50% volume in top 20", may have lime horizon below 12", soils are excessively well drained loamy sands, sandy loams and fine sandy loams, common plants are bluebunch wheatgrass, Indian ricegrass, needleandthread with a variety of woody plants may be present, productivity potential VERY LOW ... R034AY312WY – Gravelly High Plains Southeast (Gr)

b. Site occurs in a variety of upland positions, soils are well drained very sandy loam, loam, silt loam, and clay loam with 35% or more coarse fragments (gravel, cobble, stone, and flagstone) within 8" of the surface and generally increasing with depth, bluebunch wheatgrass, little bluestem, bitterbrush, and black sagebrush, productivity high ... R034AY308WY – Coarse Upland High Plains Southeast (CU)

ii. Sites without high volume of coarse fragments

a. Soil textures are heavy, slight to severe soil cracking in dry conditions

1) Well drained sandy clay loam, silty clay loam and clay loams soil cracking common during dry summer months, though not severe, birdfoot sagebrush common, but sparse, with a lot of western wheatgrass, green needlegrass ... R034AY304WY – Clayey High Plains Southeast (Cy)

2) Heavy clay soils (silty clays or clays), low or early sage common

a) Well drained sandy clay loams, clay loams or silty clay loams or heavier textured soils OR root restricting clay subsoil layer with coarse to fine textures above, soil may develop large cracks when dry, winterfat dominant with western wheatgrass, bluebunch wheatgrass and

squirreltail ... R034AY358WY – Shallow Clayey High Plains Southeast (SwCy)

b) Heavy clay soils with severe soil cracking in dry conditions, very sticky when wet, (slick spot), western wheatgrass, squirreltail, low sagebrush ... R034AY310WY – Dense Clay High Plains Southeast (DC)

c) These clay soils have a high alkaline reaction from the surface down. Some salinity may be present. Permeability is very low. Common grasses are western wheatgrass, squirreltail, Indian ricegrass with shrubs being birdfoot sagebrush and gardener's saltbush ... R034AY318WY – Impervious Clay High Plains Southeast (IC)

b. Soil textures not as above

1) Excessively drained soils that are very coarse (loamy sand to sand), on nearly level to rolling uplands or dunes, dark or light colored, needleandthread Indian ricegrass, and thickspike wheatgrass are dominant species, basin big sagebrush/Wyoming big sagebrush may occur ... R034AY346WY – Sands High Plains Southeast (Sa)

2) Soil textures range from very fine sandy loam to clay loam

a) Soils fine sandy loam, sandy loam, and loamy sand, needleandthread & Indian ricegrass are dominant

(1) Productivity potential is low; well drained loamy sand, sandy loams, or fine sandy loams with root restricting layer (calcium carbonate, rock layer and/or similar layer); common plants are Indian ricegrass, threadleaf sedge, needleandthread, with fringed sagebrush, stemless mock goldenweed and/or Wyoming big sagebrush ...

R034AY366WY – Shallow Sandy High Plains Southeast (SwSy)

(2) Productivity potential is high; well drained loamy fine sand, sandy loam, or fine sandy loam. Soils with fine sandy loam surface (<6") thick with loam or clay loam subsoils are excluded (if excluded subsoils are present consider Loamy site, Group III, 12). needleandthread, Indian ricegrass, threadleaf sedge, and thickspike wheatgrass, with Wyoming big sagebrush and spineless horsebrush are dominant ... R034AY350WY – Sandy High Plains Southeast (Sy)

b) Soils very fine sandy loams to clay loams, a good variety and even mix of grass species

(1) Productivity potential is low; well-drained fine sandy loam & silty loams with root restricting layer (calcium carbonate, rock layer and/or similar layer);with Wyoming big sage or possibly Wyoming big sage intermixed with low sage/early sage, dominant grasses bluebunch wheatgrass, western wheatgrass, and sandberg bluegrass; a good mixed of different grass species ... R034AY362WY – Shallow Loamy High Plains Southeast (SwLy)

(2) Productivity potential is high, well-drained with very fine sandy loam, loam or silt loam surfaces. Soils with fine sandy loam surface layers, (<6" thick), and loam or clay loam subsoils are included. Wyoming big sagebrush is dominant with western wheatgrass, sandberg bluegrass, Junegrass, Bluebunch wheatgrass, and needleandthread ...

R034AY322WY – Loamy High Plains Southeast (Ly)

(3) Well-drained soil with very fine sandy loam, loam, and silt loam with >15% slopes; common grasses are western wheatgrass, bluebunch wheatgrass, needleandthread, sandberg bluegrass, and shrubs Wyoming big sagebrush, and/or black sagebrush ...

R034AY368WY – Steep Loamy High Plains Southeast (SLy)