

# Major Land Resource Area 052X

## Brown Glaciated Plains

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### Ecological site keys

### Key Determination Key

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#### I. LRU level climatic group ESDs

- A. Site occurs in a Typic moisture regime (13-17"MAP)
- B. Site occurs in an Aridic Ustic moisture regime (10-14" MAP)
  - 1 Sagebrush component is predominantly silver sagebrush
  - 2 Sagebrush component is predominantly Wyoming big sagebrush

#### II. 2005 era RRU Legacy ESDs with plant tables and reference worksheets

- A. MLRA 52X Hill County and west, Central RRU
- B. MLRA 52X Blaine County and east, North RRU

### MLRA 52X Dry Grassland LRU Key - Version 8.2

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#### A. Site Receives additional moisture either from groundwater (endosaturation) or from surface water (episaturation)

- 1a. Soil Saline (EC ? 4 ) and/or Sodic (SAR ? 13) within surface 4" (10 cm)
  - 2a. Water table < 24" (60 cm) soil poorly drained with long duration ponding, seasonal lake beds, depressions, & flats, vegetation sparse ... FX052X99X003 – Alkali Flat (Af)
  - 2b. Water table > 24" (60 cm); soil somewhat well drained to well drained
    - 3a. Seasonal high water table 24-40" (60-102 cm) from surface, soil somewhat well drained, usually endosaturation ... FX052X99X092 – Saline Subirrigated (Ssb)
    - 3b. Seasonal high water table > 40" (102 cm), soil well drained, usually episaturation ... FX052X99X091 – Saline Overflow (Sov)
- 1b. Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 4" (10 cm)]
  - 4a. Site is a closed depression with run in
    - 5a. Site receives water from groundwater discharge - accumulated salts moderate to high ... FX052X99X705 – Discharge Closed Depression (Cdr)
    - 5b. Site does not receive water from groundwater discharge - accumulated salts low ... FX052X99X071 – Recharge Closed Depression (Cdr)
  - 4b. Site is a swale, coulee, or riparian area

**6a. Site is located outside of the floodplain**

**7a. Upland swales and coulees; herbaceous species and/or sagebrush dominate site ... FX052X01X062 – Swale (Se) Dry Grassland**

**7b. Upland swales & coulees; woody species (chokecherry, serviceberry, green ash) dominate site ... FX052X02X756 – Woody Draw (Wd) Moist Grassland**

**6b. Site is located inside the floodplain**

**8a. Site Dominated by woody vegetation ... FX052X99X061 – Riparian Woodland (RW)**

**8b. Site dominated by herbaceous vegetation**

**9a. Receives additional moisture from surface water (episaturation) ... FX052X99X060 – Overflow (Ov)**

**9b. Receives additional moisture from groundwater (endosaturation), water table ? 40" (102 cm)**

**10a. Seasonal high water table 24" to 40" (60-102 cm) ... FX052X99X150 – Subirrigated (Sb)**

**10b. Seasonal high water table < 24" (60 cm) ... FX052X99X084 – Slough (Sl)**

**B. Site does not receive additional effective moisture**

**1a. Soil saline and/or sodic within surface 20" (50 cm) or soils with natric or relic natric horizons.**

**2a. Massive, subangular blocky, or prismatic structure; effective rooting depth > 10" (25 cm)**

**3a. Clay content < 35% in surface mineral 4" (10 cm) [able to make a ribbon < 2" long] ... FX052X01X094 – Loamy Sodic (Losd) Dry Grassland**

**3b. Clay content > 35% in surface mineral 4" (10 cm) [able to make a ribbon > 2" long] ... FX052X01X012 – Dense Clay Sodic (Dcsd) Dry Grassland**

**2b. Columnar structure, abrupt root or water restrictive clay layer present within 10" (25 cm) of soil surface**

**4a. 0" - 4" (0-10 cm) of surface over clay layer (evidenced by columnar structure)**

**5a. 1" (2.5 cm) or less of surface over clay layer (evidenced by columnar structure) ... FX052X01X145 – Panspot (Pn) Dry Grassland**

**5b. Greater than 1" (2.5 cm) of surface over clay layer (evidenced by columnar structure) ... FX052X01X165 – Thin Claypan (Tcp) Dry Grassland**

**4b. Greater than 4" (10 cm) of surface over clay layer (evidenced by columnar structure) ... FX052X01X006 – Claypan (Cp) Dry Grassland**

**1b. Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 20" (50 cm)]**

**6a. Coarse granular clay, site dominated by sandy vegetation (e.g. Prairie sandreed) ... FX052X01X007 – Coarse Clay (Coc) Dry Grassland**

**6b. Site not as above**

**7a. Soil pH < 5.6 in all parts below surface horizon, derived from acid shale parent material**

**8a. Soil moderately deep [20"-40" (50-102 cm)] > 35% clay - Future site concept Acid Clay (AcC) - go to 18**

**18aa. Slope ? 15% ... FX052X01X005 – Clayey-Steep (Cystp) Dry Grassland**

**18bb. Slope < 15%**

**19aa. Clay content > 35% to 45% in surface mineral 4" (10 cm) ... FX052X01X001 – Clayey (Cy) Dry Grassland**

- 19bb. Clay content > 45% in surface mineral 4" (10 cm) ... FX052X01X010 – Dense Clay (DC) Dry Grassland**
- 8b. Soil shallow or very shallow [less than 20" (50 cm)] > 35% clay - Future site concept Shallow Acid Clay (SwAcC) - see 11a Shallow Clay ... FX052X01X131 – Shallow Clay (Swc) Dry Grassland**
- 7b. Soil pH ? 5.6 in all parts below surface horizon, derived from non-acid parent material**
- 9a. Soils moderately deep or shallower [< 40" (100 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**
- 10a. Clay content is > 35% in surface mineral 4" (10 cm) [ribbon > 2" long]**
- 11a. Soils shallow or very shallow [< 20" (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer] ... FX052X01X131 – Shallow Clay (Swc) Dry Grassland**
- 11b. Soils moderately deep [ ? 20" (50cm) to < 40" (100cm) deep to bedrock, lithic, or paralithic root restrictive layer] - go to 18**
- 18aaa. Slope ? 15% ... FX052X01X005 – Clayey-Steep (Cystp) Dry Grassland**
- 18bbb. Slope < 15%**
- 19aaa. Clay content > 35% to 45% in surface mineral 4" (10 cm) ... FX052X01X001 – Clayey (Cy) Dry Grassland**
- 19bbb. Clay content > 45% in surface mineral 4" (10 cm) ... FX052X01X010 – Dense Clay (DC) Dry Grassland**
- 10b. Clay content ? 35% in surface mineral 4" (10 cm) [ribbon < 2" long]**
- 12a. Soils weakly developed, typically lacking a mollic epipedon and argillic horzion ... FX052X01X160 – Thin Breaks (TB) Dry Grassland**
- 12b. Soils well developed, evidenced by features such as argillic horizons and/or a mollic epipedon - go to 20**
- 20aa. Strongly or violently effervescent in surface mineral 5" (12 cm), lime conc. increasing with depth.**
- 21aa. Slope < 15% ... FX052X01X030 – Limy (Ly) Dry Grassland**
- 21bb. Slope ? 15% ... FX052X01X029 – Limy-Steep (Lystp) Dry Grassland**
- 20bb. Not strongly or violently effervescent within surface mineral 5" (12 cm)**
- 22aa. Slope < 15% ... FX052X01X032 – Loamy (Lo) Dry Grassland**
- 22bb. Slope ? 15% ... FX052X01X040 – Loamy-Steep (Lostp) Dry Grassland**
- 9b. Soils deep to very deep [ ? 40" (100 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**
- 13a. Soil skeletal in surface 20" (50 cm) [ ? 35% rock fragments in most of the surface 20"]**
- 14a. Soil sandy-skeletal within 10 inches of the surface ... FX052X01X021 – Sandy Gravel (Sygr) Dry Grassland**
- 14b. Soil loamy-skeletal within 10 inches of the surface ... FX052X01X022 – Loamy Gravel (Logr) Dry Grassland**
- 13b. Soil not skeletal in surface 20" (50 cm) [< 35% rock fragments in most of the surface 20"]**
- 15a. Sandy textural family in surface mineral 4" (10 cm) - Future Site Concept Sands (Sa) - see 16a Sandy ... FX052X01X110 – Sandy (Sy) Dry Grassland**
- 15b. Coarse loamy or finer textural family in surface mineral 4" (10 cm)**

- 16a. Coarse loamy or coarse silty textural family in surface mineral 4" (10 cm) ... FX052X01X110 – Sandy (Sy) Dry Grassland
- 16b. Fine loamy, fine silty or finer textural family in surface mineral 4" (10 cm)
  - 17a. Clay content is > 35% in surface mineral 4" (10 cm) [ribbon > 2" long]
    - 18a. Slope ? 15% ... FX052X01X005 – Clayey-Steep (Cystp) Dry Grassland
    - 18b. Slope < 15%
      - 19a. Clay content > 35% to 45% in surface mineral 4" (10 cm) ... FX052X01X001 – Clayey (Cy) Dry Grassland
      - 19b. Clay content > 45% in surface mineral 4" (10 cm) ... FX052X01X010 – Dense Clay (DC) Dry Grassland
  - 17b. Clay content ? 35% in surface mineral 4" (10 cm) [ribbon < 2" long]
    - 20a. Strongly or violently effervescent in surface mineral 5" (12 cm), lime conc. increasing with depth.
      - 21a. Slope < 15% ... FX052X01X030 – Limy (Ly) Dry Grassland
      - 21b. Slope ? 15% ... FX052X01X029 – Limy-Steep (Lystp) Dry Grassland
    - 20b. Not strongly or violently effervescent within surface mineral 5" (12 cm)
      - 22a. Slope < 15% ... FX052X01X032 – Loamy (Lo) Dry Grassland
      - 22b. Slope ? 15% ... FX052X01X040 – Loamy-Steep (Lostp) Dry Grassland

## MLRA 52X Dry Shrubland LRU Key - Version 8.2

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### A. Site Receives additional moisture either from groundwater (endosaturation) or from surface water (episaturation)

- 1a. Soil Saline (EC ? 4 ) and/or Sodic (SAR ? 13) within surface 4" (10 cm)
  - 2a. Water table < 24" (60 cm) soil poorly drained with long duration ponding, seasonal lake beds, depressions, & flats, vegetation sparse ... FX052X99X003 – Alkali Flat (Af)
  - 2b. Water table > 24" (60 cm); soil somewhat well drained to well drained
    - 3a. Seasonal high water table 24-40" (60-102 cm) from surface, soil somewhat well drained, usually endosaturation ... FX052X99X092 – Saline Subirrigated (Ssb)
    - 3b. Seasonal high water table > 40" (102 cm), soil well drained, usually episaturation ... FX052X99X091 – Saline Overflow (Sov)
- 1b. Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 4" (10 cm)]
  - 4a. Site is a closed depression with run in

**5a. Site receives water from groundwater discharge - accumulated salts moderate to high ... FX052X99X705 – Discharge Closed Depression (Cdr)**

**5b. Site does not receive water from groundwater discharge - accumulated salts low ... FX052X99X071 – Recharge Closed Depression (Cdr)**

**4b. Site is a swale, coulee, or riparian area**

**6a. Site is located outside of the floodplain**

**7a. Upland swales and coulees; herbaceous species and/or sagebrush dominate site ... FX052X03X062 – Swale (Se) Dry Shrubland**

**7b. Upland swales & coulees; woody species (chokecherry, serviceberry, green ash) dominate site ... FX052X02X756 – Woody Draw (Wd) Moist Grassland**

**6b. Site is located inside the floodplain**

**8a. Site Dominated by woody vegetation ... FX052X99X061 – Riparian Woodland (RW)**

**8b. Site dominated by herbaceous vegetation**

**9a. Receives additional moisture from surface water (episaturation) ... FX052X99X060 – Overflow (Ov)**

**9b. Receives additional moisture from groundwater (endosaturation), water table < 40" (102 cm)**

**10a. Seasonal high water table 24" to 40" (60-102 cm) ... FX052X99X150 – Subirrigated (Sb)**

**10b. Seasonal high water table < 24" (60 cm) ... FX052X99X084 – Slough (Sl)**

**B. Site does not receive additional effective moisture**

**1a. Soil saline and/or sodic within surface 20" (50 cm) or soils with natric or relic natric horizons.**

**2a. Massive, subangular blocky, or prismatic structure; effective rooting depth > 10" (25 cm)**

**3a. Clay content < 35% in surface mineral 4" (10 cm) [able to make a ribbon < 2" long] ... FX052X03X094 – Loamy Sodic (Losd) Dry Shrubland**

**3b. Clay content > 35% in surface mineral 4" (10 cm) [able to make a ribbon > 2" long] ... FX052X03X012 – Dense Clay Sodic (Dcsd) Dry Shrubland**

**2b. Columnar structure, abrupt root or water restrictive clay layer present within 10" (25 cm) of soil surface**

**4a. 0" - 4" (0-10 cm) of surface over clay layer (evidenced by columnar structure)**

**5a. 1" (2.5 cm) or less of surface over clay layer (evidenced by columnar structure) ... FX052X03X145 – Panspot (Pn) Dry Shrubland**

**5b. Greater than 1" (2.5 cm) of surface over clay layer (evidenced by columnar structure) ... FX052X03X165 – Thin Claypan (Tcp) Dry Shrubland**

**4b. Greater than 4" (10 cm) of surface over clay layer (evidenced by columnar structure) ... FX052X03X006 – Claypan (Cp) Dry Shrubland**

**1b. Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 20" (50 cm)]**

**6a. Coarse granular clay, site dominated by sandy vegetation (e.g. Prairie sandreed) ... FX052X03X007 – Coarse Clay (Coc) Dry Shrubland**

**6b. Site not as above**

**7a. Soil pH < 5.6 in all parts below surface horizon, derived from acid shale parent material**

**8a. Soil moderately deep [20"-40" (50-102 cm)] > 35% clay - Future site concept Acid Clay (AcC) - go to 18**

**18aa. Slope ? 15% ... FX052X03X005 – Clayey-Steep (Cystp) Dry Shrubland**

**18bb. Slope < 15%**

**19aa. Clay content > 35% to 45% in surface mineral 4" (10 cm) ... FX052X03X001 – Clayey (Cy) Dry Shrubland**

**19bb. Clay content > 45% in surface mineral 4" (10 cm) ... FX052X03X010 – Dense Clay (DC) Dry Shrubland**

**8b. Soil shallow or very shallow [less than 20" (50 cm)] > 35% clay - Future site concept Shallow Acid Clay (SwAcC) - see**

**11a Shallow Clay ... FX052X03X131 – Shallow Clay (Swc) Dry Shrubland**

**7b. Soil pH ? 5.6 in all parts below surface horizon, derived from non-acid parent material**

**9a. Soils moderately deep or shallower [< 40" (100 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**10a. Clay content is > 35% in surface mineral 4" (10 cm) [ribbon > 2" long]**

**11a. Soils shallow or very shallow [< 20" (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer] ... FX052X03X131 – Shallow Clay (Swc) Dry Shrubland**

**11b. Soils moderately deep [? 20" (50cm) to < 40" (100cm) deep to bedrock, lithic, or paralithic root restrictive layer] - go to 18**

**18aaa. Slope ? 15% ... FX052X03X005 – Clayey-Steep (Cystp) Dry Shrubland**

**18bbb. Slope < 15%**

**19aaa. Clay content > 35% to 45% in surface mineral 4" (10 cm) ... FX052X03X001 – Clayey (Cy) Dry Shrubland**

**19bbb. Clay content > 45% in surface mineral 4" (10 cm) ... FX052X03X010 – Dense Clay (DC) Dry Shrubland**

**10b. Clay content ? 35% in surface mineral 4" (10 cm) [ribbon < 2" long]**

**12a. Soils weakly developed, typically lacking a mollic epipedon and argillic horzion ... FX052X03X160 – Thin Breaks (TB) Dry Shrubland**

**12b. Soils well developed, evidenced by features such as argillic horizons and/or a mollic epipedon - go to 20**

**20aa. Strongly or violently effervescent in surface mineral 5" (12 cm), lime conc. increasing with depth.**

**21aa. Slope < 15% ... FX052X03X030 – Limy (Ly) Dry Shrubland**

**21bb. Slope ? 15% ... FX052X03X029 – Limy-Steep (Lystp) Dry Shrubland**

**20bb. Not strongly or violently effervescent within surface mineral 5" (12 cm)**

**22aa. Slope < 15% ... FX052X03X032 – Loamy (Lo) Dry Shrubland**

**22bb. Slope ? 15% ... FX052X03X040 – Loamy-Steep (Lostp) Dry Shrubland**

**9b. Soils deep to very deep [? 40" (100 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**13a. Soil skeletal in surface 20" (50 cm) [ ? 35% rock fragments in most of the surface 20"]**

**14a. Soil sandy-skeletal within 10 inches of the surface ... FX052X03X021 – Sandy Gravel (Sygr) Dry Shrubland**

14b. Soil loamy-skeletal within 10 inches of the surface ... FX052X03X022 – Loamy Gravel  
(Logr) Dry Shrubland

13b. Soil not skeletal in surface 20" (50 cm) [< 35% rock fragments in most of the surface 20"]

15a. Sandy textural family in surface mineral 4" (10 cm) - Future Site Concept Sands (Sa) - see 16a Sandy ...  
FX052X03X110 – Sandy (Sy) Dry Shrubland

15b. Coarse loamy or finer textural family in surface mineral 4" (10 cm)

16a. Coarse loamy or coarse silty textural family in surface mineral 4" (10 cm) ... FX052X03X110 –  
Sandy (Sy) Dry Shrubland

16b. Fine loamy, fine silty or finer textural family in surface mineral 4" (10 cm)

17a. Clay content is > 35% in surface mineral 4" (10 cm) [ribbon > 2" long]

18a. Slope ? 15% ... FX052X03X005 – Clayey-Steep (Cystp) Dry  
Shrubland

18b. Slope < 15%

19a. Clay content > 35% to 45% in surface mineral 4" (10 cm) ... FX052X03X001 –  
Clayey (Cy) Dry Shrubland

19b. Clay content > 45% in surface mineral 4" (10 cm) ... FX052X03X010 – Dense  
Clay (DC) Dry Shrubland

17b. Clay content ? 35% in surface mineral 4" (10 cm) [ribbon < 2" long]

20a. Strongly or violently effervescent in surface mineral 5" (12 cm), lime conc. increasing with depth.

21a. Slope < 15% ... FX052X03X030 – Limy (Ly) Dry Shrubland

21b. Slope ? 15% ... FX052X03X029 – Limy-Steep (Lystp) Dry  
Shrubland

20b. Not strongly or violently effervescent within surface mineral 5" (12 cm)

22a. Slope < 15% ... FX052X03X032 – Loamy (Lo) Dry Shrubland

22b. Slope ? 15% ... FX052X03X040 – Loamy-Steep (Lostp) Dry  
Shrubland

## MLRA 52X Moist Grassland LRU Key - Version 8.2

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A. Site Receives additional moisture either from groundwater (endosaturation) or from surface water (episaturation)

1a. Soil Saline (EC ? 4) and/or Sodic (SAR ? 13) within surface 4" (10 cm)

2a. Water table < 24" (60 cm) soil poorly drained with long duration ponding, seasonal lake beds, depressions, & flats, vegetation  
sparse ... FX052X99X003 – Alkali Flat (Af)

2b. Water table > 24" (60 cm); soil somewhat well drained to well drained

**3a. Seasonal high water table 24-40" (60-102 cm) from surface, soil somewhat well drained, usually endosaturation ...**

FX052X99X092 – Saline Subirrigated (Ssb)

**3b. Seasonal high water table > 40" (102 cm), soil well drained, usually episaturation ...** FX052X99X091 – Saline Overflow (Sov)

**1b. Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 4" (10 cm)]**

**4a. Site is a closed depression with run in**

**5a. Site receives water from groundwater discharge - accumulated salts moderate to high ...** FX052X99X705 – Discharge Closed Depression (Cdr)

**5b. Site does not receive water from groundwater discharge - accumulated salts low ...** FX052X99X071 – Recharge Closed Depression (Cdr)

**4b. Site is a swale, coulee, or riparian area**

**6a. Site is located outside of the floodplain**

**7a. Upland swales and coulees; herbaceous species and/or sagebrush dominate site ...** FX052X02X062 – Swale (Se) Moist Grassland

**7b. Upland swales & coulees; woody species (chokecherry, serviceberry, green ash) dominate site ...** FX052X02X756 – Woody Draw (Wd) Moist Grassland

**6b. Site is located inside the floodplain**

**8a. Site Dominated by woody vegetation ...** FX052X99X061 – Riparian Woodland (RW)

**8b. Site dominated by herbaceous vegetation**

**9a. Receives additional moisture from surface water (episaturation) ...** FX052X99X060 – Overflow (Ov)

**9b. Receives additional moisture from groundwater (endosaturation), water table ? 40" (102 cm)**

**10a. Seasonal high water table 24" to 40" (60-102 cm) ...** FX052X99X150 – Subirrigated (Sb)

**10b. Seasonal high water table < 24" (60 cm) ...** FX052X99X084 – Slough (Sl)

**B. Site does not receive additional effective moisture**

**1a. Soil saline and/or sodic within surface 20" (50 cm) or soils with natric or relic natric horizons.**

**2a. Abrupt root or water restrictive clay layer (evidenced by columnar structure), present within 4" (10 cm) of soil surface**

**3a. 1" (2.5 cm) or less of surface over clay layer (evidenced by columnar structure) ...** FX052X02X145 – Panspot (Pn) Moist Grassland

**3b. Greater than 1" (2.5 cm) of surface over clay layer (evidenced by columnar structure) ...** FX052X02X165 – Thin Claypan (Tcp) Moist Grassland

**2b. Abrupt root or water restrictive clay layer (evidenced by columnar structure), present between 4" and 10" (10-25 cm) of soil surface ...** FX052X02X006 – Claypan (Cp) Moist Grassland

**1b. Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 20" (50 cm)]**

**4a. Soil skeletal in surface 20" (50 cm) [ ? 35% rock fragments in most of the surface 20" ]**

**5a. Soil sandy-skeletal within 10 inches of the surface ...** FX052X02X021 – Sandy Gravel (Sygr) Moist Grassland

**5b. Soil loamy-skeletal within 10 inches of the surface ...** FX052X02X022 – Loamy Gravel (Logr) Moist Grassland

**4b. Soil not skeletal in surface 20" (50 cm) [< 35% rock fragments in most of the surface 20"]**

**6a. Sandy textural family in surface mineral 4" (10 cm) - Future Site Concept Sands (Sa)\* - use 16a Sandy ...**

FX052X02X110 – Sandy (Sy) Moist Grassland

**6b. Coarse loamy or finer textural family in surface mineral 4" (10 cm)**

**7a Coarse loamy or coarse silty textural family in surface mineral 4" (10 cm) ...** FX052X02X110 – Sandy (Sy) Moist Grassland

**7b. Fine loamy, fine silty or finer textural family in surface mineral 4" (10 cm)**

**8a. Clay content is > 35% in surface mineral 4" (10 cm) [ribbon > 2" long]**

**9a. Soils shallow or very shallow [< 20" (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer] ...**

FX052X02X131 – Shallow Clay (Swc) Moist Grassland

**9b. Soils moderately deep [? 20" (50cm) to < 40" (100cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**(1) Slope > 15% ...** FX052X02X005 – Clayey-Steep (Cystp) Moist Grassland

**(2) Slope ? 15% ...** FX052X02X001 – Clayey (Cy) Moist Grassland

**8b. Clay content ? 35% in surface mineral 4" (10 cm) [ribbon < 2" long]**

**10a. Soils weakly developed, typically lacking both a mollic epipedon and an argillic horizon ...**

FX052X02Y160 – Thin Breaks (TB) Moist Grassland

**10b. Soils well developed, evidenced by features such as a mollic epipedon and/or an argillic horizons**

**12a. Strongly or violently effervescent in surface mineral 5" (12 cm), lime conc. increasing with depth.**

**(a) Slope < 15% ...** FX052X02X030 – Limy (Ly) Moist Grassland

**(b) Slope ? 15% ...** FX052X02X029 – Limy-Steep (Lystp) Moist Grassland

**12b. Not strongly or violently effervescent within surface mineral 5" (12 cm)**

**(a) 22a. Slope < 15% ...** FX052X02X032 – Loamy (Lo) Moist Grassland

**(b) 22b. Slope ? 15% ...** FX052X02X040 – Loamy-Steep (Lostp) Moist

Grassland

## MLRA 52X Legacy RRU Central Key

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### I. Site receives additional effective moisture<sup>1</sup>

#### A. Soil saline (EC > 4 within surface 4")

**1 Seasonal high water table? 40" from ground surface; salt tolerant plants dominate site; site regularly receives more than normal soil moisture because of run-in or stream overflow ...** R052XC209MT – Saline Overflow (SOv) 10-14" p.z.

#### B. Site not as above

**1 Seasonal high water table ? 40" from ground surface; site regularly receives more than normal soil moisture because of run-in or stream overflow ...** R052XC207MT – Overflow (Ov) 10-14" p.z.

2 Seasonal high water table < 40" from ground surface ... R052XC218MT – Subirrigated (Sb) 10-14" p.z.

**II. Site does not receive additional effective moisture<sup>1</sup>**

**A. Soil saline or saline-sodic within surface 20" or soils with natric or relic natric horizons.**

1 No columnar structure; site dominated by salt tolerant plants – Saline Upland (SU) ... R052XC210MT – Saline Upland (SU) 10-14" p.z.

2 Columnar structure present, abrupt root or water restrictive clay layer present within 8" of soil surface ... R052XC204MT – Claypan (Cp) 10-14" p.z.

**B. Site not as above**

2 Soils moderately deep, deep, or very deep (? 20" deep to bedrock, lithic, or paralithic root restrictive layer)

i. Soil not skeletal within 20" of soil surface (averages < 35% rock fragments in the 10"-20" layer)

a. Slope < 15%

2) Clay content is < 32% in surface mineral 4"

a) Coarse sandy loam to fine sandy loam texture within surface mineral 4" ... R052XC212MT – Sandy (Sy) 10-14" p.z.

b) Site not as above ... R052XC217MT – Silty (Si) 10-14" p.z.

3) Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long)

a) Soil 32% to 45% clay within surface mineral 4" ... R052XC205MT – Clayey (Cy) 10-14" p.z.

b) Soil > 45% clay within surface mineral 2" ... R052XC206MT – Dense Clay (DC) 10-14" p.z.

b. Slope ?15%

2) Clay content is < 32% (ribbon < 2" long) in surface mineral 4" ... R052XC223MT – Silty-Steep (SiStp) 10-14" p.z.

ii. Soil skeletal to within 20" of soil surface (averages > 35% rock fragments in the 10"-20" layer)

a. Sandy-skeletal within 10-20" of soil surface & typically consists of gravels and/or cobbles ... R052XC216MT – Shallow to Gravel (SwGr) 10-14" p.z.

1 Soils shallow to very shallow (< 20" deep to bedrock, lithic, or paralithic root restrictive layer)

i. Clay content < 32% in surface mineral 4" (able to make a ribbon < 2" long) ... R052XC214MT – Shallow (Sw) 10-14" p.z.

ii. Clay content > 32% in surface mineral 4" (ribbon length > 2" long) ... R052XC215MT – Shallow Clay (SwC) 10-14" p.z.

**MLRA 52X Legacy RRU North Key**

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**I. Site receives additional effective moisture<sup>1</sup>**

**A. Soil saline (EC > 4 within surface 4")**

**1 Seasonal high water table? 40" from ground surface; salt tolerant plants dominate site; site regularly receives more than normal soil moisture because of run-in or stream overflow ... R052XN171MT – Saline Overflow (SOv) 10-14" p.z.**

**B. Site not as above**

**1 Seasonal high water table ? 40" from ground surface; site regularly receives more than normal soil moisture because of run-in or stream overflow ... R052XN166MT – Overflow (Ov) 10-14" p.z.**

**2 Seasonal high water table < 40" from ground surface ... R052XN169MT – Subirrigated (Sb) 10-14" p.z.**

**II. Site does not receive additional effective moisture<sup>1</sup>**

**A. Soil saline or saline-sodic within surface 20" or soils with natric or relic natric horizons.**

**1 No columnar structure; site dominated by salt tolerant plants – Saline Upland (SU) ... R052XN170MT – Saline Upland (SU) 10-14" p.z.**

**2 Columnar structure present, abrupt root or water restrictive clay layer present within 8" of soil surface ... R052XN086MT – Claypan (Cp) 10-14" p.z.**

**B. Site not as above**

**2 Soils moderately deep, deep, or very deep (? 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**i. Soil not skeletal within 20" of soil surface (averages < 35% rock fragments in the 10"-20" layer)**

**a. Slope < 15%**

**2) Clay content is < 32% in surface mineral 4" ... R052XN161MT – Silty (Si) 10-14" p.z.**

**3) Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long)**

**a) Soil 32% to 45% clay within surface mineral 4" ... R052XN162MT – Clayey (Cy) 10-14" p.z.**

**b) Soil > 45% clay within surface mineral 2" ... R052XN172MT – Dense Clay (DC) 10-14" p.z.**

**b. Slope ?15%**

**1) Clay content is > 32% (ribbon > 2" long) in surface mineral 4" ... R052XN164MT – Clayey-Steep (CyStp) 10-14" p.z.**

**2) Clay content is < 32% (ribbon < 2" long) in surface mineral 4" ... R052XN168MT – Silty-Steep (SiStp) 10-14" p.z.**

**ii. Soil skeletal to within 20" of soil surface (averages > 35% rock fragments in the 10"-20" layer)**

**a. Sandy-skeletal within 10-20" of soil surface & typically consists of gravels and/or cobbles ... R052XN176MT – Shallow to Gravel (SwGr) 10-14" p.z.**

**1 Soils shallow to very shallow (< 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**i. Clay content < 32% in surface mineral 4" (able to make a ribbon < 2" long) ... R052XN178MT – Shallow (Sw) 10-14" p.z.**

**ii. Clay content > 32% in surface mineral 4" (ribbon length > 2" long) ... R052XN179MT – Shallow Clay (SwC) 10-14" p.z.**