

State: North Dakota
Author: David Toledo

Evaluation Matrix
Ecological Site: Thin Loamy
MLRA: 53B

Site ID: R053BY015ND
Revision Date: 08/26/2015

Indicator	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	Rill formation is severe and well defined throughout most of the site	Rill formation is moderately active and well defined throughout most of the site	Active rill formation is slight at infrequent intervals; mostly in exposed areas	No recent formation of rills on slopes less than 25%; old rills have blunted or muted features. Steeper slopes have some long rills present.	None on slopes less than 25%. On slopes > 25% rills may be visible but are short (12 to 20 inches) and discontinuous.
2. Water Flow Patterns	Common throughout, unstable with active erosion and usually connected	Common, deposition and cut areas are common and are connected	Present but uncommon, occasionally connected and show some instability and deposition	Some evidence of minor erosion. Flow patterns are stable and short, sometimes connected.	None on slopes < 25%. Barely observable On steeper slopes but are relatively short and not connected.
3. Pedestals and/or Terracettes	Abundant active pedestalling, exposed plant roots are common	Moderate active pedestalling throughout site and occasional exposed roots evident	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or on exposed slopes. Exposed roots barely observable	Pedestalling barely observable but existent, no exposed roots present	Essentially non-existent on slopes < 25%. Some pedestalling evident on slopes > 25% with occasional terracettes
4. Bare Ground	Moderately higher than expected for the site (>25%). Bare areas are large and generally connected.	Moderately higher than expected for the site (>25%). Bare areas are large and occasionally connected.	Moderately higher than expected for the site (>25%). Bare areas are of moderate size and sporadically connected	Slightly to moderately higher than expected for the site (16-25%). Bare areas are small and rarely connected.	Bare ground is 10 to 15%. Bare ground will occur as small areas less than 2 inches in diameter and will not be connected. Rocks could account for 5% of the groundcover.
5. Gullies	Common with indications of active erosion and downcutting; vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active	Moderate in number to common with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active but downcutting not apparent	Gullies show signs of active erosion but are moderately stable with intermittent vegetation in slopes or beds. Occasional headcuts may be present	Active gullies should not be present. Existing gullies should be "healed" with a good vegetative cover	No gullies present

6. Wind Scoured, Blowout, and or Depositional Areas.	Common	Present	Occasionally present	None	None.
7. Litter Movement	Concentrated around obstructions. Most size classes of litter have been displaced	Loosely concentrated near obstructions. Moderate to small size classes of litter have been displaced	Moderate movement of smaller size classes in scattered concentrations around obstructions and depressions.	As N-S but small to medium sized litter moving short distances	Plant litter remains in place on slopes < 25%. Slight movement may be visible following intense thunderstorm events. On slopes >25%, short movement (< 24 inches) of fine plant litter may be visible and litter debris dams are occasionally present.
8. Soil Surface Resistance to Erosion	Stabilizing agents reduced below expected. Average stability class expected to be below 2	Significantly reduced throughout the site. Average stability class expected to be 2	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. No biological crusts present. Stability class range is expected to be 3 to 4	Soil surface is resistant to erosion. Biological crusts present. Stability class range is expected to be 4 to 5	Soil aggregate stability ratings should typically be 5 to 6, normally 6. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.
9. Soil Surface Loss and Degradation	Soil surface horizon absent. Soil structure near surface is similar to, or more degraded, than that in the subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation, especially in plant interspaces.	Depth, color and structure of A-horizon is intact. The loam to silt loam surface layer is 5 to 12 inches thick.

<p>10. Plant Community Composition and Distribution Relative to Infiltration and Runoff. In Kentucky bluegrass invaded areas, a thatch layer may develop. This thatch layer has the potential to increase runoff and intercept rainfall causing an overall reduction in infiltration.</p>	<p>Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.</p>	<p>Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.</p>	<p>Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.</p>	<p>Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.</p>	<p>Combination of shallow and deep rooted species (mid & tall rhizomatous and tufted perennial cool- and warm-season grasses) with fine and coarse roots positively influences infiltration..</p>
<p>11. Compaction Layer (below soil surface)</p>	<p>Extensive; severely restricts water movement and root penetration (roots parallel to soil surface above compaction layer).</p>	<p>Widespread; greatly restricts water movement and root penetration (roots parallel to soil surface above compaction layer).</p>	<p>Moderately widespread, moderately restrictive to water movement and root penetration (roots parallel to soil surface above compaction layer).</p>	<p>Minimal, not restrictive to water movement and root penetration</p>	<p>No compaction layer should be evident.</p>
<p>12. Functional/Structural Groups. Western wheatgrass is dominant in all transitions withing reference state but subdominants can vary between green needlegrass, annual forbs, blue grama or sedge depending on management and/or climatic factors (See S&T model). Note: Due to differing root structure and distribution, Kentucky bluegrass and smooth brome grass do not fit into reference plant community F/S groups.</p>	<p>>70% cool season invasive grasses (i.e. Kentucky bluegrass and smooth brome grass) or Blue grama and Sedge.</p>	<p>Dominant: 30-70% forbs or cool season invasive grasses (i.e. Kentucky bluegrass and smooth brome grass) or Blue grama and sedge. Subdominant: short warm-season grasses and/or shrubs => mid cool-season grasses</p>	<p>Dominant: > 30% forbs or cool season grasses. Subdominant: mid cool-season grasses (less than 40%) > short warm-season grasses and/or shrubs.</p>	<p>Dominant: mid warm-season grasses. Subdominant: short warm-season grasses, forbs, or grasslikes > short cool-season bunchgrasses and shrubs.</p>	<p>Dominant: Mid warm-season grasses > Sub-dominant: Mid cool-season bunchgrasses > Other: Forbs > grass-likes = tall warm-season grasses = mid cool-season rhizomatous > short warm-season grasses = shrubs > short cool-season grasses Additional: Due to differing root structure and distribution, Kentucky bluegrass and smooth brome grass do not fit into reference plant community.</p>
<p>13. Plant Mortality/Decadence</p>	<p>Dead and/or decadent plants are common</p>	<p>Dead plants and/or decadent plants are somewhat common</p>	<p>Some dead and/or decadent plants are present</p>	<p>Slight plant mortality and/or decadence</p>	<p>None</p>

14. Litter Amount:	Range of too little litter cover is less than 10% or too much litter is more than 90% cover. Some Kentucky bluegrass litter not in direct contact with soil surface	Range of too little litter cover is 10-20% or too much litter is 80-90% cover. Some Kentucky bluegrass litter not in direct contact with soil surface	Range of too little litter cover is 20-30% or too much litter is 70-80% cover. Some Kentucky bluegrass litter not in direct contact with soil surface	Range of too little litter cover is 30-40% or too much litter is 60-70% cover. Litter is primarily herbaceous and is in contact with soil surface.	Average litter cover is 40-60%. Litter is primarily herbaceous and is in contact with soil surface.
15. Annual Production:	Less than 550 lbs/ac for below average moisture years and 1450 lbs/ac for above average moisture years	700 lbs/ac for below average moisture years and 1800 lbs/ac for above average moisture years	900 lbs/ac for below average moisture years and 2200 lbs/ac for above average moisture years	1100 lbs/ac for below average moisture years and 2300 lbs/ac for above average moisture years	Average is 1900 lbs/ac but can range between 1400 lbs/ac to 2400 lbs/ac (air dry weight) depending on growing conditions.
16. Invasive Plants	State noxious weeds, Kentucky bluegrass and/or smooth brome grass dominate the site. Greater than 70% canopy cover.	State noxious weeds, Kentucky bluegrass and/or smooth brome grass common throughout the site patches are connected. 50-70% Canopy cover.	State noxious weeds, Kentucky bluegrass and/or smooth brome grass scattered in small unconnected patches throughout the site. 5-20% Canopy cover.	State noxious weeds, Kentucky bluegrass and/or smooth brome grass present in small patches. Less than 5% canopy foliar cover.	None
17. Reproductive Capability of Perennial Plants (native or seeded): Grazing is a natural disturbance for this site, which might obscure evidence of reproductive capability of perennial plants.	Capability to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is moderately reduced relative to recent climatic conditions	Capability to produce seed or vegetative tillers is slightly reduced relative to recent climatic conditions	All species should be capable of reproducing except for periods of prolonged drought conditions, heavy natural herbivory and intense fires. Perennial grasses should have vigorous rhizomes or tillers.