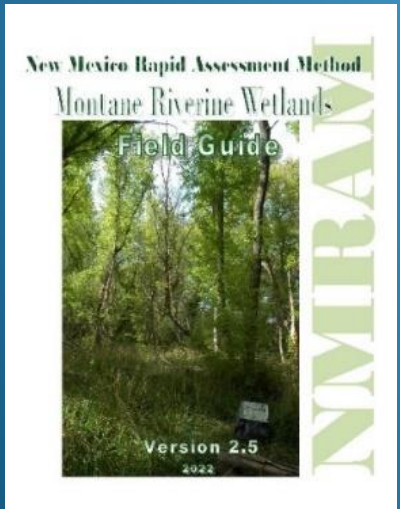
New Mexico Environment Department

New Mexico Rapid Assessment Method (NMRAM)

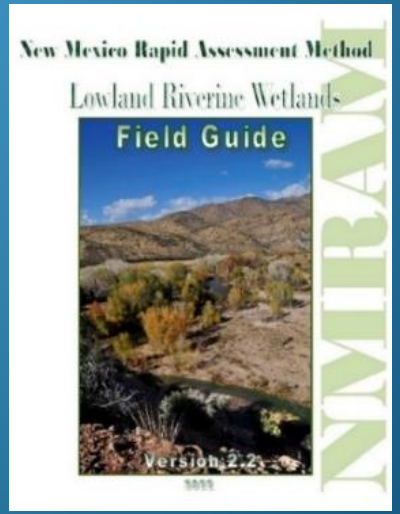
Riverine Wetlands

Soil Surface Condition



New Mexico Environment Department
Surface Water Quality Bureau
Wetlands Program

Natural Heritage New Mexico
University of New Mexico



Soil Surface Condition (Montane and Lowland)

Definition: The soil surface condition metric is an indirect measure of disturbance to wetland and riparian soils that results in modification of soil characteristics.

Rationale: This metric evaluates disturbance to the soil and surface substrates that affects biological, physical, and chemical processes that ultimately define broader wetland ecological condition, such as plant establishment and vegetation communities. Examples of soil surface disturbance include filling and grading, plowing, livestock disturbance, vehicle use, dredging and other mechanical disturbances.

Soil Surface Condition

Based on visual assessment of anthropogenic soil disturbance

- Check-off disturbances on Worksheet 14 as walk through SA for segment survey and cross-section establishment
- Use SA map to delineate large disturbance areas
- Estimate total % soil disturbance by segment and then for entire SA
  - Remember to include major historical alterations such as former grading of surfaces

A5 - Soil Surface Condition

Worksheet 14. Soil Surface Condition. Check all that apply in the upper , middle and lower SA segments during the field reconnaissance. The absence of these indicators would signify that disturbances are naturally occurring (e.g., flood deposition or low-density wildlife trails). Estimate the percent soil disturbance by segment area and referring to the SA abiotic map. Rate using Table A5 and enter on the SA Rank Summary Worksheet.

Upper Segment	Middle Segment	Lower Segment	Field Indicators (Check all existing conditions)
☐	☐	☐	Active erosion features due to anthropogenic disturbance (eg. rills, gullies, plant pedestals).
☐	☐	☐	Multiple livestock and other (fishing,hiking) trails,
☐	☐	☐	Vehicle tracks including off-road and construction, etc.
☐	☐	☐	Impervious compacted surfaces or pavement
☐	☐	☐	Grading or plowing
☐	☐	☐	Fill
☐	☐	☐	Gravel pits
☐	☐	☐	Anthropogenic levees and berms
☐	☐	☐	Irrigation-driven salinity and mineral crusts
☐	☐	☐	Fire pits
☐	☐	☐	Other:
			Estimate % soil disturbance by segment area

calculate

Average % Soil Disturbance:

Soil Surface Condition

A5 - Soil Surface Condition

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☐	☐	☐	Anthropogenic levees and berms
☐	☐	☐	Irrigation-driven salinity and mineral crusts
☐	☐	☐	Fire pits
☐	☒	☐	Other:
1	1	0	**Estimate % soil disturbance by segment area**

calculate

Average % Soil Disturbance: 0.66666667

Rating for example SA:

- Hiking and fishing trails
- Other
- Total – less than 1% for SA
- Rating = "4"

Table A5. Soil Surface Condition Rating

Rating	Description
◉ 4	Bare soil areas due to anthropogenic disturbance absent or very limited. No human-caused impervious surfaces or gravel pits are found within the SA. Total disturbance, including erosion, impervious surfaces, fill, or other anthropogenic degradation to the soil surface is less than 1% of the SA.
○ 3	Some amount of bare soil from human causes is present but the extent is limited. Area of impervious surfaces are minimal in extent. Total disturbance, including erosion, impervious surfaces, fill, gravel pits, vehicle tracks or other anthropogenic degradation to the soil surface is between 1% and 5% of the sampling area.
○ 2	Bare soils from human causes are common. These may include dense livestock trails, vehicle tracks, trails, construction staging areas, mechanical rutting, or irrigation-driven salinity. Soil disturbance, while apparent, is limited to specific areas and not found across the majority of the SA. Total disturbance, including erosion, impervious surfaces, fill, gravel mining, or other anthropogenic degradation to the soil surface is greater than 5% or less than 10% of the SA.
○ 1	Bare soil areas degrade portions of the site because of altered hydrology or other long-lasting impacts. Deep ruts from off-road vehicles or machinery are present. Livestock disturbance or trails are widespread and several inches deep. Water is channeled into rills or ponded. Additional human-caused impervious surfaces or soil compaction are present. Total disturbance, including erosion, impervious surfaces, fill,gravel mining or other anthropogenic degradation to the soil surface is equal to or greater than 10% of the SA.