

# Riparian Soils

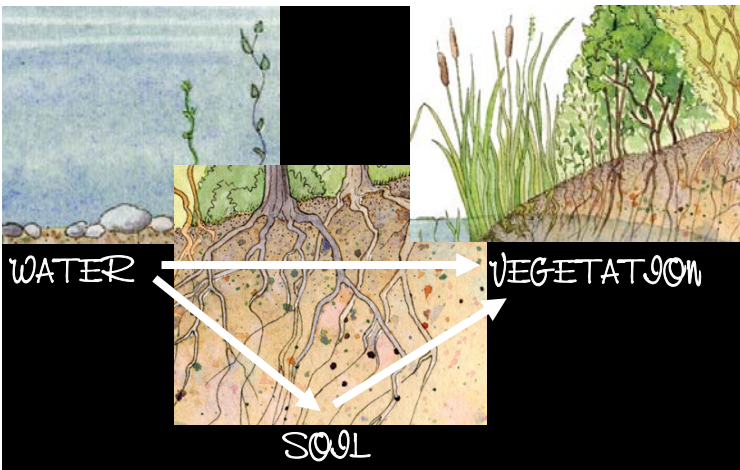


## What is Soil?

- Soil is the unconsolidated material in which plants are rooted. Soil texture is determined by the amount of sand, silt and clay in the soil.

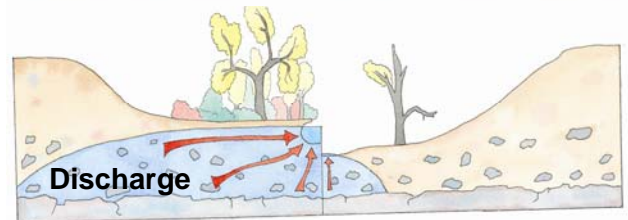
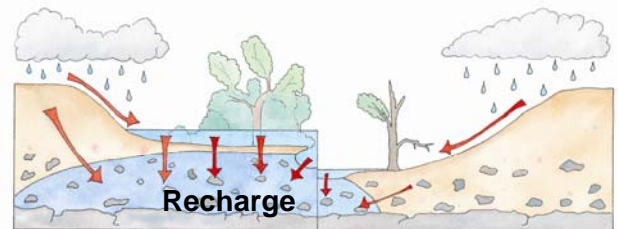
## Importance to Management

- Understanding your soils can help you to better manage your rangelands and minimize soil disturbance. This will also help to reduce infestations of invasive and disturbance-caused plant species.



## Understanding Soils and Hydrology

- Plant communities can indicate the kind of soils and hydrologic processes, such as subirrigation, beneath them and can give you clues on how to best manage your riparian areas.
- Riparian, including wetland, areas tend to be focus points for groundwater recharge and discharge.



## Some things to consider in your riparian management:

- Poorly drained sites, those with **excess moisture**, should only be disturbed when frozen, as they are susceptible to compaction.
- Areas with a dry climate and high water table are prone to **salinization**, an accumulation of salts. Areas with existing salinity are particularly susceptible and site disturbance can increase the potential for soil to become saline.



- Riparian sites with coarse texture soils (lots of sand and gravel), are more prone to **drought**.
- **Water erosion from overland flow** occurs more in areas with fine textured soils, with high amounts of silt and clay. Erosion risk increases when plant cover is sparse.
- The risk for **contamination** of subsurface soil and/or groundwater is high where recharge is promoted by sparse plant cover and coarse textured soils. In these areas, contaminated water leaches down through the soil profile.

- The susceptibility of soil to **compaction**, including rutting and pugging, is a combination of moisture regime, soil drainage, topsoil characteristics and texture. Poorly drained, fine textured soils have a high risk of compaction.



Soil puddling

- Soils that are the most susceptible to **soil puddling**, crusting of the soil surface, and **frost heave** are usually imperfectly drained and have a high silt component.
- Riparian areas that are prone to drying out throughout the year and have low plant cover and low salinity are the most susceptible to infestations of **invasive plants**.



Pugging – a form of compaction

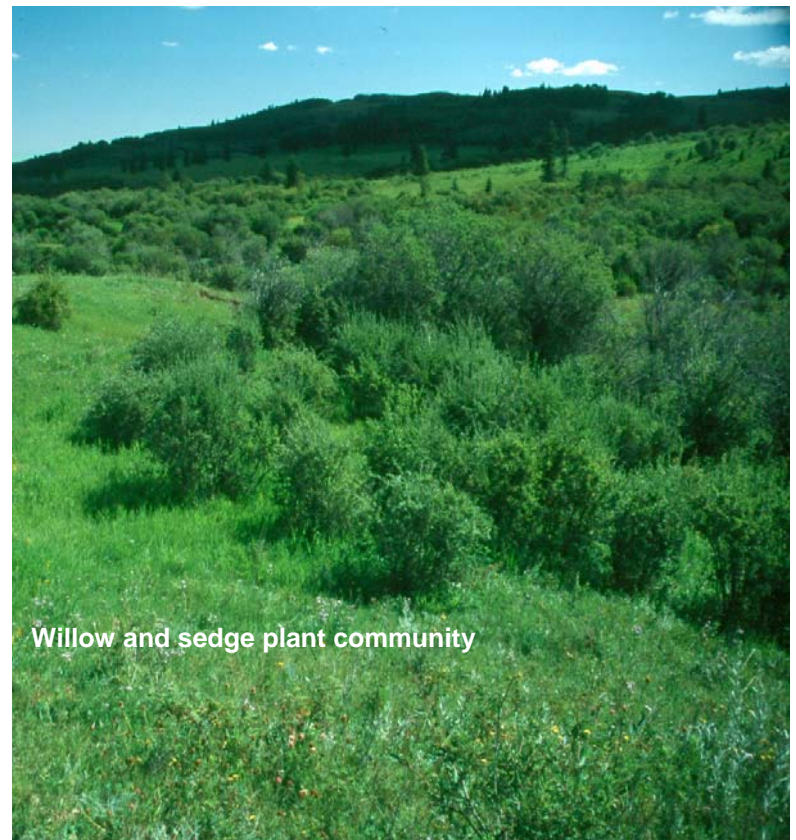


Infestation of common tansy

## A Practical Management Example:

### Willow and Sedge Plant Community:

- Often found in fine textured soils (eg. clay loam or clay), that are imperfectly to very poorly drained.
- As a result of poor drainage and frequently wet soils, they are highly susceptible to compaction.
- Generally, not suitable for winter feeding or for summer shade due to the risk of soil compaction and over-utilisation of willows and sedges.
- Development and disturbance should be avoided as these areas are sensitive to disturbance, are important wildlife habitat and are difficult to restore.
- Livestock use should be minimised to help reduce potential for nutrient loading and protect bank and shoreline habitats.
- Due to the sensitivities of willow and sedge plant communities, these areas may be best suited to short duration grazing in late summer or autumn.



Willow and sedge plant community

*Grazing riparian plant communities at any time of year requires monitoring and adaptation of grazing management as needed.*