Remediation of Brine Impacted Soils

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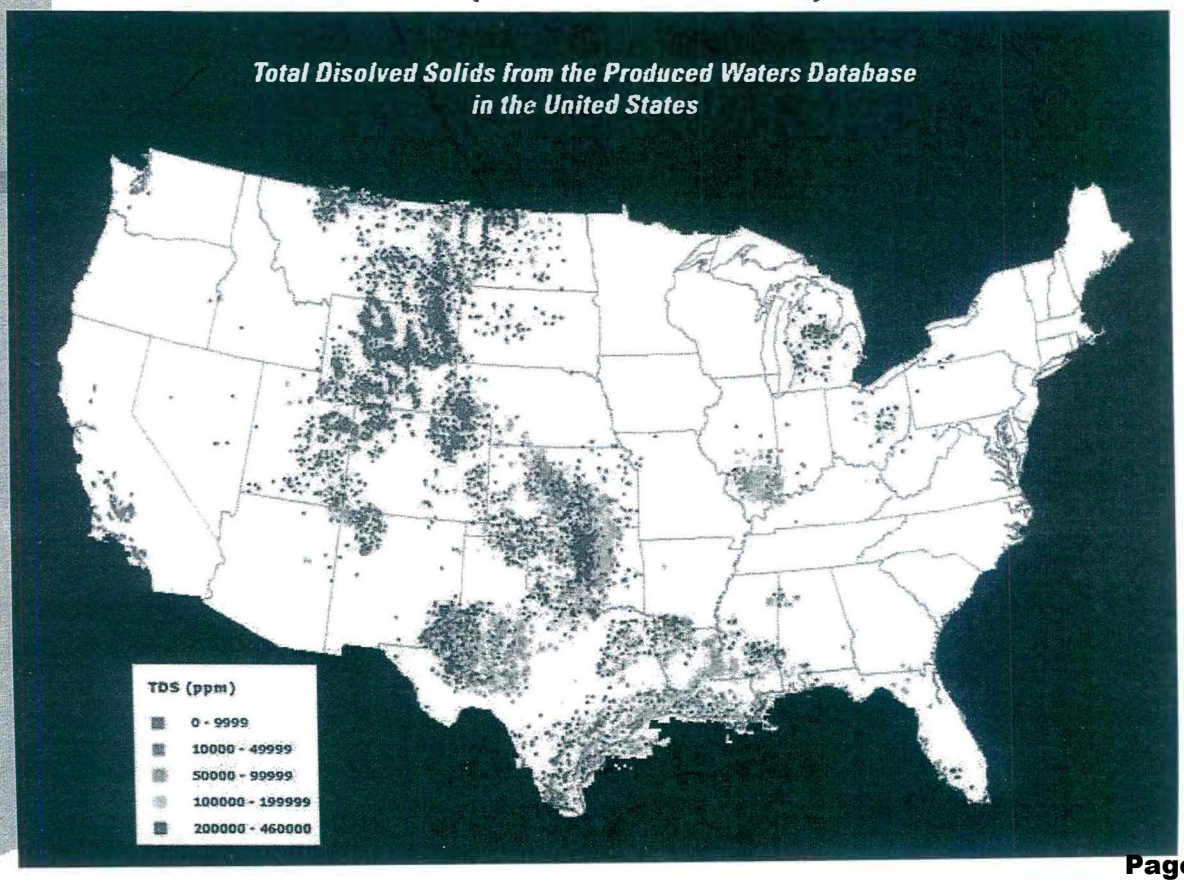
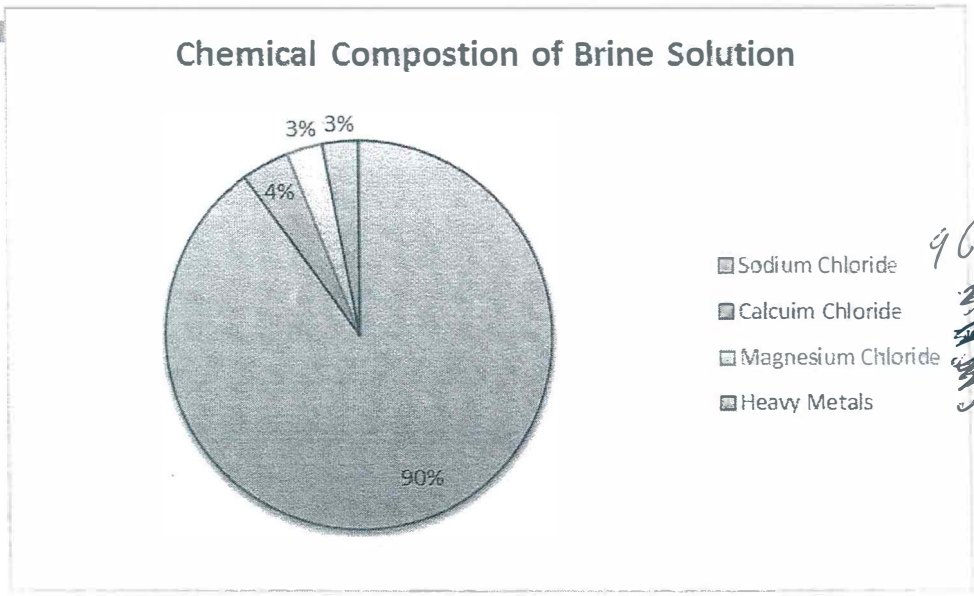
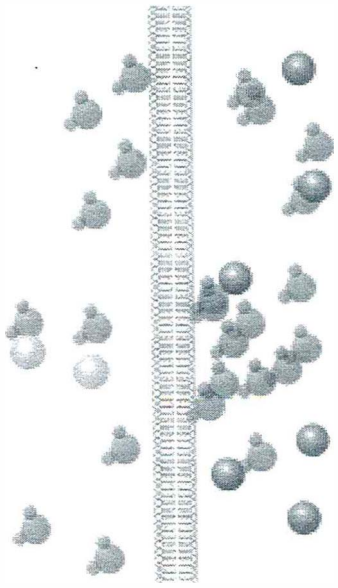
Most of the TDS (total dissolved solids) are salts



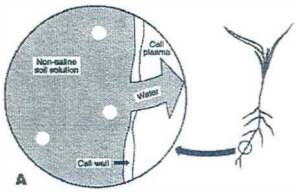
ND Bakken Produced Water

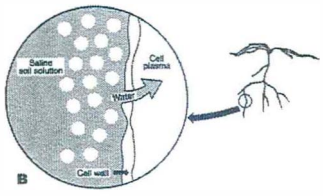


Spills of produced water or brine on soil result in two types of damage:

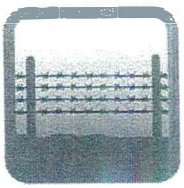


- Excess salinity
  - Creates an osmotic imbalance that reduces water uptake by plant roots. Plants can go into drought stress even though there is plenty of water in the soil.





Management of revegetation sites



- Light mulch
  - Protects seeds from wind and water erosion, conserves moisture, moderates soil temperature
  - Use local hay, weed free
  - Tackifiers help in windy climates (guar gum, polyacrylamides)
- Protect from grazing until roots have firmly established (usually 2-3 years)
- Watch for signs of foraging by wildlife
- Hand pull weeds or spot herbicide
  - Most grass seedlings can tolerate herbicide application after reaching the 4 leaf stage

Management of revegetation sites

- Watch for
  - Foraging by wildlife
  - Erosion
  - Areas of revegetation failure
- **Nutrient management is especially important when gypsum has been used in remediation of brine spills!**