Marcellus Shale Water Group, LLC

In-Situ Remediation of Salinity-Impacted Soils

Salt may be easy to clean up on a table top, but it’s not so easy at an oil and gas site...
Salt Facts...

All sites can be remediated and restored using our proprietary in-situ reagents + water...

Salt Facts...

This site can be excavated. Or, it can be restored using in-situ methods at 25 - 50% of the excavation cost...
Salt Facts...

With adequate rain, this site can be remediated and restored in as little as a few months using in-situ reagents...

Salt Facts...

The sooner you remediate the site, the easier and cheaper it is...
MSWG offers proven, cutting edge solutions for the remediation and restoration of salinity-impacted sites:

- Regulatory compliance
- Sampling and analysis
- Soil and groundwater site assessment
- Risk assessment and mitigation
- Engineering feasibility studies
- In-situ remediation of salinity-impacts
- Site restoration and closure

Compare Your Options

- Excavation and Removal:
  $100 - 200 per cubic yard
  Transfers liability to distant landfill
  Truck traffic, dust, and hazards
- In-Situ Chemical Treatment:
  $25 - 50 per cubic yard
  On-site activities
  Simple logistics
Sodic Soils...

Salt contamination is a serious environmental issue facing the oil and gas industry. Salt water releases can completely devastate vegetation.

Salt water releases result in “sodic soils” which are essentially dead, having poor physical and chemical properties, including crusted or powdery surfaces which prevent water percolation, with resultant runoff and erosion.

The severity and depth of the damaged soil formation will increase sharply with increased sodium concentrations in the soil. Remediation of sodium damaged soils in a timely manner necessitates stripping the exchangeable sodium from the soil and replacing it with favorable cations to restore the soil and support vegetation.

How Our Reagents Work...

Gypsum and calcium nitrate have been used on many sites. However, due to the low solubility of the gypsum and the negative environmental impact of calcium nitrate, these tend to be poor, costly choices.

Our proprietary reagents have been developed through joint efforts of the agricultural and petroleum industries. The reagents contain stabilized calcium, ammonium, and potassium ions with other amendments to improve hydraulic conductivity to enhance percolation through the soil, and feed new plant growth with 100% cationic availability.

The result – our reagents can quickly and effectively remove sodium damage and restore the site, at a fraction of the cost of excavation and removal.
Typical Salt-Impacted Soils at Oil & Gas Field Site

Following a release of salt water onto the ground surface, the solution begins to penetrate the soil column. Over time, the release changes the soil chemistry and texture, forming “sodic soils” which damage vegetation and result in visible “surface scarring.” Impacts may exist for many decades.

Our proprietary reagents “reverse” the soil chemistry, allowing nature to restore the site to pre-release conditions. Other than the reagents, all you need is rain.
Project Examples

Before and After Remediation Using In-Situ Treatment Reagents
80-Acre Oil & Gas Site
Louisiana

Drilling Mud and
Saltwater Release

EC: 2.8 - 19.1
SAR: 20 - 48.7
ESP: 18 - 71.7
CEC: 15 - 59.7

Plow and Bulk Soil
Install Drainage Ditches
Apply Reagents
Irrigate
Seed with Native Vegetation

Remediated in 24 Months
Legacy Oil & Gas Site
Texas
Saltwater Release
EC: 77
SAR: 125
ESP: 93
CEC: 40
Plow and Bulk Soil
Install Drainage Ditches
Apply Reagents
Irrigate
Seed with Native Vegetation
Remediated in 18 Months

Oil & Gas Site
Texas
Saltwater Release
EC: 84
SAR: 38
ESP: 35
CEC: 17
Apply Reagents
Flush and Irrigate
Seed with Native Vegetation
Remediated in 9 Months
Legacy Oil & Gas Site
Arkansas
Saltwater Disposal Pit
EC: 17 - 49
SAR: 12 - 64
ESP: 17 - 52
CEC: 6 - 15
Plow and Bulk Soil
Install Drainage System
Apply Reagents
Flush and Irrigate
Seed with Native Vegetation
Remediated in 24 Months

Legacy Oil & Gas Site
Texas
Saltwater Disposal Pit
EC: 12
SAR: 27
ESP: 50
CEC: 5
Plow and Bulk Soil
Install Drainage Ditches
Apply Reagents
Irrigate
Seed with Native Vegetation
Remediated in 12 Months
Electromagnetic Imaging

Delineation of the Nature and Extent of Salinity Impact Based on Differential Electrical Conductivity and Magnetic Anomalies in the Subsurface Environment

Mapping of Salinity-Impacted Soils Using Electromagnetic Imaging
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