



Winter Salt Spill

Get DualZorb Working for You



Did you know that brine water releases continue spreading through the winter months? The freezing point of brine water is approximately -6°F, which winter temperatures can easily rise above, even in North Dakota. *DualZorb* can be utilized to contain and capture a brine release even in the middle of winter. Applying *DualZorb* as soon as possible to a winter release can slow or even stop the migration of

salt into the soil therefore reducing your reclamation costs the following spring. *DualZorb* continues to absorb salt through its powerful cation exchange capacity every time it comes in contact with salt, until it reaches saturation. Even through the springtime *DualZorb* is absorbing salt into its non-leaching bond, so it will keep working for you while conditions are not optimal for heavy equipment or crews.



DUALZORB is listed on the EPA's National Contingency Plan (NCP)[†] product schedule as a bioremediation agent which allows the use of *DualZorb* on Federal land and to be left in the environment. LBI Renewable has teamed with an outstanding contractor to provide turn-key reclamation services.

TURN-KEY SERVICES AVAILABLE

- **QUALIFIED CONTRACTORS**
LBI Renewable has teamed up with qualified contractors to provide complete turn-key brine water reclamation.
- **NATURALLY REDUCE SALINITY**
DUALZORB can reduce soil salinity over 87%.
- **RESTORE VEGETATION IN THE SPRING**
Soil can be ready for spring seeding.
- **ACHIEVE NDIC CLEAN-UP LEVELS**
DUALZORB can reduce soil salinity below NDIC recommended threshold the first time and not leach the salt back out.

Typical Case Study on the Reverse



MADE IN WYOMING

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[†] This listing does NOT mean that EPA approves, recommends, licenses, certifies, or authorizes the use of *DualZorb* on an oil discharge. This listing means only that data have been submitted to EPA as required by subpart J of the National Contingency Plan, 40 CFR Section 300.915. The data submitted exceeds the testing criteria for the bioremediation effectiveness test and therefore qualifies to be listed on the NCP product schedule.

Production Water Release

Bakken Formation, North Dakota

LBI was contracted to treat soil impacted by a salt water release at a crude oil production tank battery in North Dakota's Bakken Formation. Soil samples were collected in the root zone, 0 to 12" below the surface, from undisturbed native soil, soil within the release and post treated soil. Samples were submitted to an independent third party laboratory for analysis. The three samples were analyzed for electrical conductivity (EC), pH and exchangeable sodium percentage (ESP%) analysis. Electrical conductivity is a typical laboratory measure of salinity.

RESULTS

The high ESP percentage and a pH less than 8.5, indicates that the native soils are saline-alkali soils, according to the United States Department of Agriculture's Handbook No. 60. After the spill, the soils were classified as a saline soil.

NDIC's Guide for Remediation of Salt/Hydrocarbon Impacted Soil established an EC clean-up objective of 4 dS/m. The DualZorb was able to treat the soil down to the NDIC recommended salt concentration.

	pH	EC	ESP %	Reduction %
Native Soil	8.0	34.5 dS/m	174	--
Spill Impacted Soil	7.7	24.5 dS/m	<0.01	--
Treated Spill Soil	7.7	4.23 dS/m	<0.01	87.7%

At a second test site, DualZorb was shown to increase the cation exchange capacity (CEC) of soil from 13.9 meq/100g to 31.6 meq/100g or 127.3% increase. The increased capacity is due to unused ion exchange capacity still in the DualZorb. Therefore, DualZorb will continue to work long after it has been applied and continue to mitigate future salt migration in the soil.