



MAGNATREAT M, HCL program sustained peak disposal injectivity

Water quality for disposal systems is critical for asset integrity including, protecting the tubing, casing, and near wellbore formation from plugging and damage due to iron sulfide and scale deposition, total suspended solids, oil, and biomass.

Remediation requires a robust treatment program that will not only remove scale and dissolve iron sulfides (which results in decreased injection pressure) but will establish and/or restore as well as sustain optimal injection rates. This results in reduced operational costs and increased revenue for the operator.

Baker Hughes, a GE company (BHGE) worked with an operator in Wyoming that was experiencing oil-wet iron sulfide and calcium carbonate scale deposition in its water disposal well, which resulted in increased injection pressures and decreased injectivity.

Injection rate on the well was at approximately 1,500 BWPD. However, the plant was shutting down due to reaching the maximum psi, allowing only 800 to 1,100 BWPD injection due to pressure issues.

BHGE recommended a three-stage chemical treatment approach utilizing a mutual solvent spearhead (preflush) and HCL acid, followed by **MAGNATREAT™ M sulfide scavenger** (acrolein). This treatment was designed to provide approximately 5.4 feet of radial penetration based on the well data and even distribution of the chemical solution across the perforated intervals.

Shortly after the MAGNATREAT M sulfide scavenger and HCL treatment program was implemented, the operator realized a 90% average increase in injectivity and a 40% reduction in injection pressure.

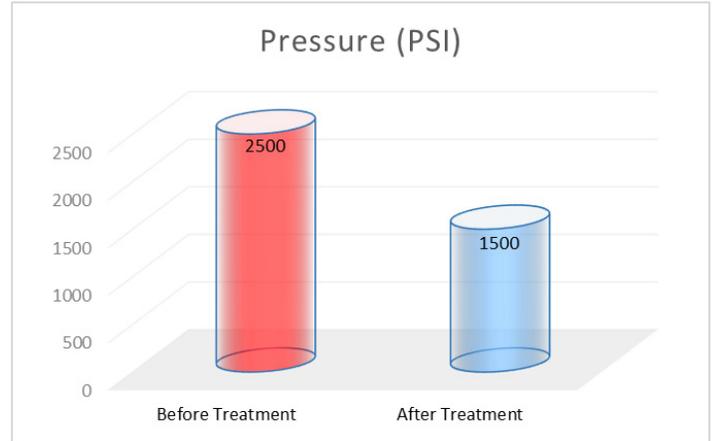
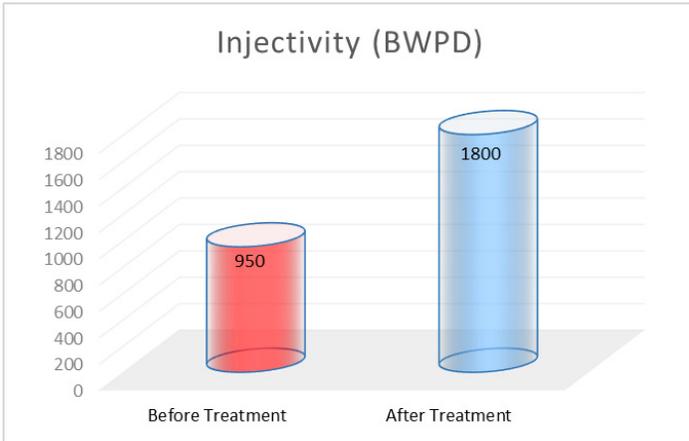
Plant run time increased from approximately 12 hours per day to up to 24 hours per day, while remediation of the deposition has been sustained for more than a year.

Challenges

- Finding the most economical chemical combination to establish optimum saltwater disposal injectivity
- Establishing sufficient radial penetration and even distribution of chemical solution
- Achieving maximum injection rate while reducing pressure

Results

- Dissolved out oil-wet iron sulfide and calcium carbonate scale deposition
- Increased injectivity from an average of 950 BWPD to 1,800 BWPD
- Decreased injection pressure from maximum 2,500 psi to 1,500 psi
- Established maximum operational capacity
- Increased plant run time from approximately 12 hrs/day to 24 hrs/day because of pressure relief
- Prevented iron sulfide reprecipitation



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