CASCADE CASE STUDY

Annual ISCO Program for Groundwater Remediation

Safe, Consistent Execution at a High-Security Industrial Site

PROJECT: Jacobs Midland Annual ISCO Injections

LOCATION: Midland, Texas

CLIENT: Jacobs

SERVICE: In-Situ Chemical Oxidation (ISCO)

Cascade was selected for the fifth consecutive year by Jacobs to carry out a full-scale ISCO injection program targeting 1,4-dioxane and VOCs in groundwater at an operational manufacturing facility in Midland, Texas.

CHALLENGE

This high-security site posed several logistical, environmental, and safety challenges:

- Extreme summer heat (up to 110°F) in Tychem® suits over flame-resistant clothing
- Active operations at a manufacturing site
- No onsite water source—potable water had to be transported in
- Safe handling of 172 supersacks of sodium persulfate (Klozur SP®)
- Coordinating bulk delivery, staging, and storage of injection materials

SOLUTION

A robust, mobile mixing and injection system was designed to meet the site's high-volume requirements under demanding conditions. The solution was centered around two 7,000-gallon tanks and one 1,100-gallon mixing tank, feeding into a 15-point injection manifold and high-flow centrifugal pump. This setup supported and exceeded the daily target of 18,000 gallons of 5.2% sodium persulfate solution while minimizing operational risk.

The field team consisted of a 4-person HAZWOPER-trained crew working rotating shifts, 10 days on, 4 days off, for optimal continuity. Many of the crew members had supported the project in prior years, bringing experience and cohesion to the execution.

Key components of the approach included:

- Mobilization from Houston, TX with all required injection and safety equipment
- Setup of exclusion zones, temporary fencing, and traffic controls
- Daily safety briefings and a site-specific heat safety protocol
- Rapid troubleshooting and adjustment, including quick replacement of incompatible equipment discovered during pre-checks

PROJECT EXECUTION

The project team successfully managed logistics, safety, and fieldwork in parallel:

- Amendment handling was optimized with a 6,000-lb reach, all-terrain forklift
- Material inspection and storage protocols ensured reagent quality
- The upgraded mixing system reduced the rate of supersack rejection, minimized waste and reagent exposure to the crew
- Work was conducted without interrupting active facility operations
- Coordination with Jacobs ensured transparent communication and effective problem-solving

RESULTS

All injection work was completed safely, within budget, and on schedule within 50 working days with zero safety incidents or environmental issues.

Key Achievements:

- Five years of successful project execution at the Midland site.
- Consistent high safety standards and technical performance.
- Improved reagent mixing system with reduced waste.
- Strong client relationships built on reliability, adaptability, and communication.

CONCLUSION

This five-year track record at the Midland site demonstrates a commitment to safe, high-quality remediation execution. The upgraded mixing and injection system, paired with an experienced field crew and proactive communication, helped ensure successful project delivery yet again.

This project reinforces Cascade's role as a trusted partner for complex ISCO applications at secure and operationally sensitive sites.