

Case Study

Solidification reagent eliminates leaching risks in HDD slurry disposal

LOCATION

São Paulo, Brazil

APPLICATION DATE

November 2025

EXECUTIVE SUMMARY

In Horizontal Directional Drilling (HDD) operations, the drilling mud must be dry before disposal due to the risk of leaching on public roads. The solution used in this case consisted of incorporating 100–200% dry soil into the material, followed by a drying period of up to one week to achieve complete drying, which made the process slow and involved high logistical costs.

RESULTS

With MetaFLO's solidification reagent, the water present in the drilling mud was absorbed in up to 30 minutes, eliminating the risk of leaching and exposure to environmental fines. The solution also significantly reduced operational time and the volume of material sent for disposal, generating efficiency gains and cost reductions in the process.

- ✓ **From 6 days to 30 minutes** - Drying time required for disposal
- ✓ **45%** - Estimated cost savings in the process

CONTEXT AND CHALLENGES

Critical waste generation

Horizontal Directional Drilling (HDD) generates slurry that must be dried to allow proper disposal.

Operational risk

Transporting wet slurry presents significant leaching risks, potentially leading to contamination of public roads, operational accidents, and environmental fines.

Impact on project schedule

The conventional drying process required approximately one week under dry weather conditions, negatively affecting operational efficiency and project timelines.

SOLUTION

The dosage of MetaFLO's solidification reagent (MF003) was adjusted according to the moisture content of the drilling mud, reaching up to 0.75% for a volume of 6.5 m³ per day. Using the excavator available on site, MF003 was incorporated into the material and, within up to **30 minutes**, promoted water absorption, eliminating the risk of leaching and enabling the safe handling and disposal of the solid waste in an environmentally appropriate manner.

TECHNICAL DETAILS OF THE SOLUTION

✓ **Applied product**
MF003 – MetaFLO solidification reagent

✓ **Application method**
Incorporation of the reagent into the slurry using the excavator available on site

✓ **Treated material characteristics**
Slurry with variable moisture content between 40% and 70%, composed of different soil and rock types

✓ **Technical performance**
Retention of free moisture and solidification of the material, enabling safe handling and disposal of the waste



Dosage

Between 0.40% and 0.75% relative to the wet mass of the slurry, adjusted according to moisture content

Treated volume

Approximately 6.5 m³ of slurry per day

Reaction time

Up to 30 minutes



Solution Impacts

Operational:

- ✓ Significant reduction in slurry drying time, from up to **6 days to approximately 30 minutes**
- ✓ Elimination of the need to add large volumes of dry soil, with reagent dosages limited to up to 0.75%

Environmental:

- ✓ Elimination of leaching risks during disposal, preventing environmental contamination and impacts on public roads

Financial:

- ✓ Estimated cost **savings of approximately 45%** in the overall process



MF003

MetaFLO Technologies

CONCLUSION

By converting liquid waste into a solid material in approximately 30 minutes, MetaFLO's solution eliminated one of the main operational bottlenecks of the project. With low reagent dosages and no significant increase in disposal volume, the process became faster, more cost-effective, and more predictable. Beyond operational gains, the solution mitigated environmental risks, avoided legal liabilities, and reinforced the project's commitment to environmentally responsible practices—resulting in a safer, more efficient, and more sustainable operation.

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MetaFLO's Industrial Solutions

MetaFLO develops solutions that combine technical efficiency, process optimization, and operational gains for a variety of projects.

Our technologies are applied to projects seeking greater performance, cost-effectiveness, and reliability, always focusing on concrete and sustainable results.

Our team is available to present you our solutions and explain how we can contribute to the success of your project.



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