

# Groundwater treatment



## Client

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Waste treatment and disposal

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## Facts

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Period2004

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Project CountryBrazil

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UFSP

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Combination of consolidated technologies – such as physical-chemical treatment and adsorption with activated carbon – with state-of-the-art technologies – such as chemical oxidation with UV-activated peroxide.

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**GEOKLOCK was retained to design and implement a wastewater treatment plant (WWTP) in the area of a former industrial landfill located in the region of Jaguariuna.**

This WWTP receives the wastewater generated from a hydraulic barrier that contains groundwater contaminated with metals, VOCs and SVOCs.

The industrial landfill was installed and operated in a sensitive area, near food production sites. During its operation, it received solid wastes and sludge from various chemical and petrochemical industrial sites. The primary chemicals identified were benzene, toluene, phenols, aluminum, iron and sulfur compounds, among others.

The treatment of the complex mix of organic and inorganic pollutants found in the site required an innovative approach. GEOKLOCK combined traditional treatment techniques with innovative technologies to meet the restrictive discharge standards set by the state environmental agency (CETESB). Such standards include no acute or chronic toxicity, which must be corroborated by laboratory testing.

The primary stages of treatment that were designed and implemented for the project were as follows:

- Equalization;
- Coagulation;
- Flocculation;
- Settling;
- Filtration;
- Adsorption with activated carbon;
- Oxidation with UV-activated hydrogen peroxide.

The engineering design included:

- Detailed specifications describing the processes, mechanical, electrical and civil engineering and safety requirements;
- Instrumentation and process flow diagrams;
- Mechanical and civil engineering layout;
- Equipment and instruments datasheets;
- Detailed mechanical, electric and civil engineering designs;
- The project's H&S requirements;
- Guidelines for system operation;
- Estimates of implementation and operation expenditures.

GEOKLOCK was also responsible for design implementation and for the acquisition of all equipment and instruments, as well as for hiring civil and electro-mechanical assemblage contractors.

In addition to managing the project, including the construction and execution of operational safety and security protocols during the work, GEOKLOCK developed the entire project within a very limited budget. This did not prevent us from implementing a technically strong system that could meet the complexity of the wastewater to be treated.

System startup was on time, meeting the deadlines and commitments made in the RoD entered with CETESB and the Public Prosecution Service.

Following its commissioning and the initial stage of system operation, the WWTP was fully capable of meeting the quality standards defined by the environmental agency.

### Contact Persons



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