



DRAINAGE

STOPPING AND PREVENTING LANDSLIDES, AND AVOIDING DAMAGE

Water is one of the main driving forces of landslides on slopes and a serious risk factor for structural damage. Our drainage systems are thus well suited for draining slopes, lowering the groundwater level of buildings and stabilizing buildings and road sections. This requires accurate information on the geological structure and hydrological conditions.

Our company is a reliable partner for drainage with any requirement. Thanks to many years of experience, we have acquired profound specialist knowledge and can offer two sophisticated systems. The two systems are unique technical solutions. Both of them offer unrivaled performance with low-permeability soils and varying flow rates, even with wastewater. The suction drainage system does not require an external energy input. Electro-pneumatic drainage systems use maintenance-free pumps operated by a central compressor. They are all designed for a long, cost-effective service life.

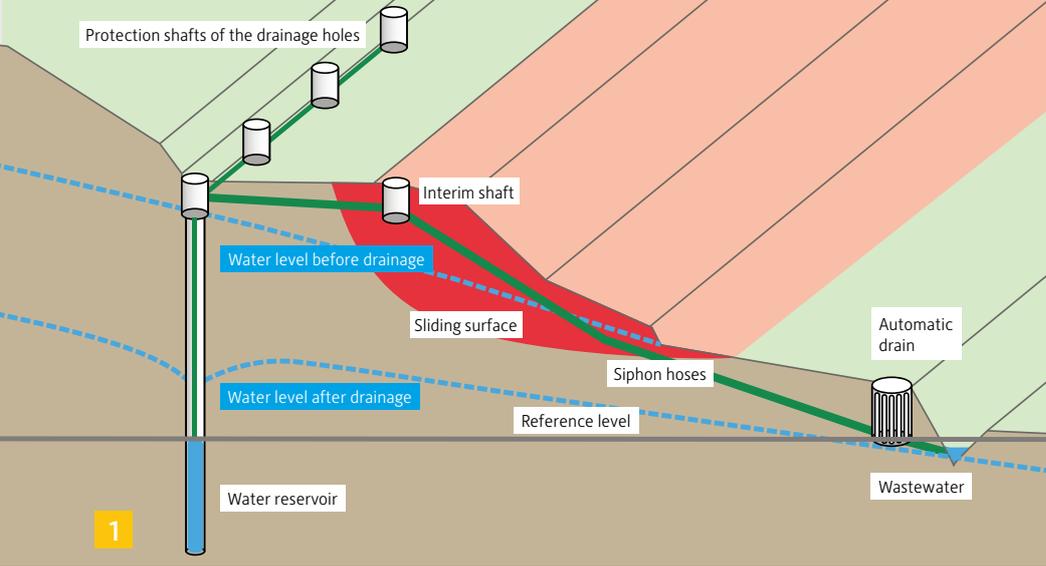
The services offered by our company include coordinated planning and project development based on existing data on the geology and hydrology of the underground, careful and professional installation (without drilling) with system adjustment, and monitoring throughout the whole operating time with data transmitters and software applications. Furthermore, should the installed system require any adjustments or extensions at a later date, we will be there for you once more.



DATA AND ACTS WITH DEPTH

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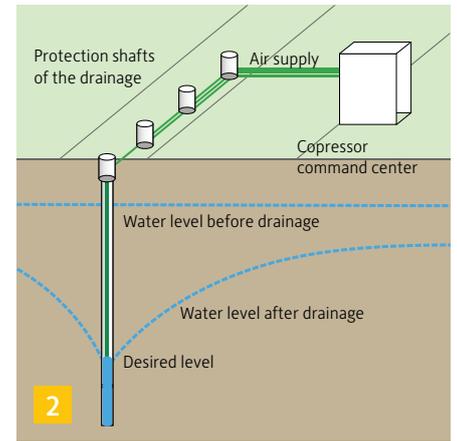


1 SUCTION DRAINAGE WITHOUT ELECTRICITY

Suction drainage works without electricity. In the hillside slope, gravitation causes a suction effect in the system, which lowers the water level.

Above the sliding zone, vertical holes are drilled along a line through to the layers to be drained. Here, the suction lifting method lowers the water level to a maximum of 10 meters below the terrain surface. As soon as the water level in the holes increases again and reaches a certain level, the drainage

process is automatically triggered by a drainage regulator. Ongoing drainage is possible without external energy input due to the slope. Accurate information is required on the geological structure and hydrological conditions. It enables a definition of the siphon system reference level which will correspond to the future groundwater level during drainage. The suction drainage system can be used in low-permeability soils from approximately $K < 10$ to 5 meters per second.

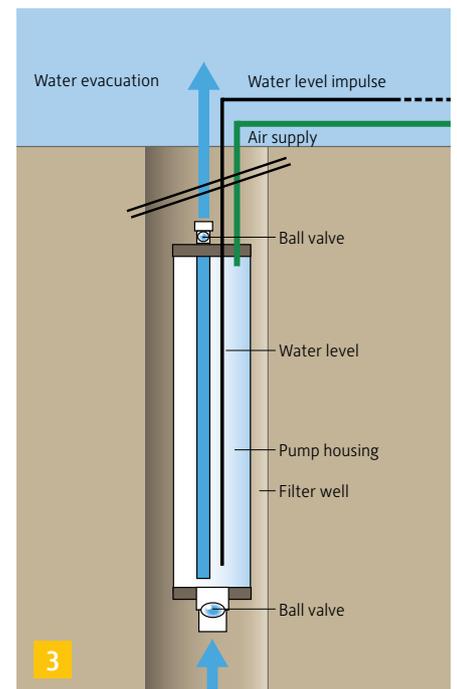


2 ELECTRO-PNEUMATIC DRAINAGE

Electro-pneumatic drainage involves an automatically controlled air compressor pump system.

The groundwater level in drilled holes can thus be lowered down to 40 meters. The maintenance-free pumps can also drain soiled landfill wastewater and silt-loaded water. The mean drainage quantity per pump is 30 to 40 liters per minute. In order to carry out the drainage, several holes must be drilled to the

desired depth and developed as 4.5-inch filter wells. PVC or polyethylene pumps are then installed to the desired depth. The housing of the pumps weighing two kilograms is equipped with a self-cleaning ball valve at the lower end for water ingress and two valves for the compressed air supply and the water evacuation at the top. Two electronic sensors measure the water level in the drilled hole and pump housing. An electrical signal to the control center



activates the compressor, which pushes compressed air into the pump housing and brings the water to the surface where it is fed into a sewage pipe. After the pump has been emptied, the air supply is interrupted until the next emptying cycle. Every pump can be controlled individually and is only activated when the water level exceeds the desired level.

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