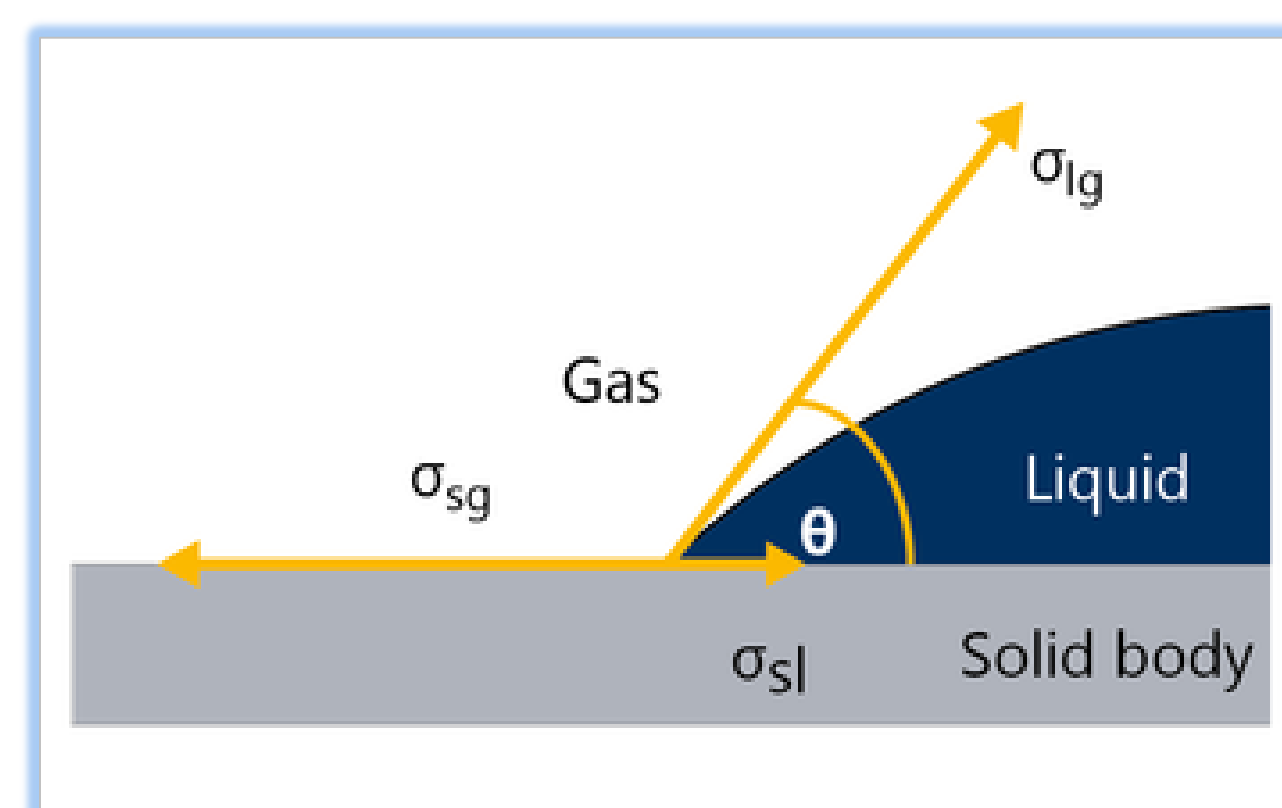


**Abstract:** One of the major problems arising in the Oil Industry is those associated with oil extraction. The ideal conditions on the rock surface should be water wet conditions, to facilitate the easy extraction of oil. Contact angle measurements are key to determine surface tension between solids and various fluids. If the rock wettability is oil wet, the oil company may need to change the rock wettability. We will determine wettability (water wet or oil wet), analyze how the effect of different brine concentrations on wettability and contact angle measurements using the Dynamic Contact Angle Analyzer (DCA 315).

## Introduction



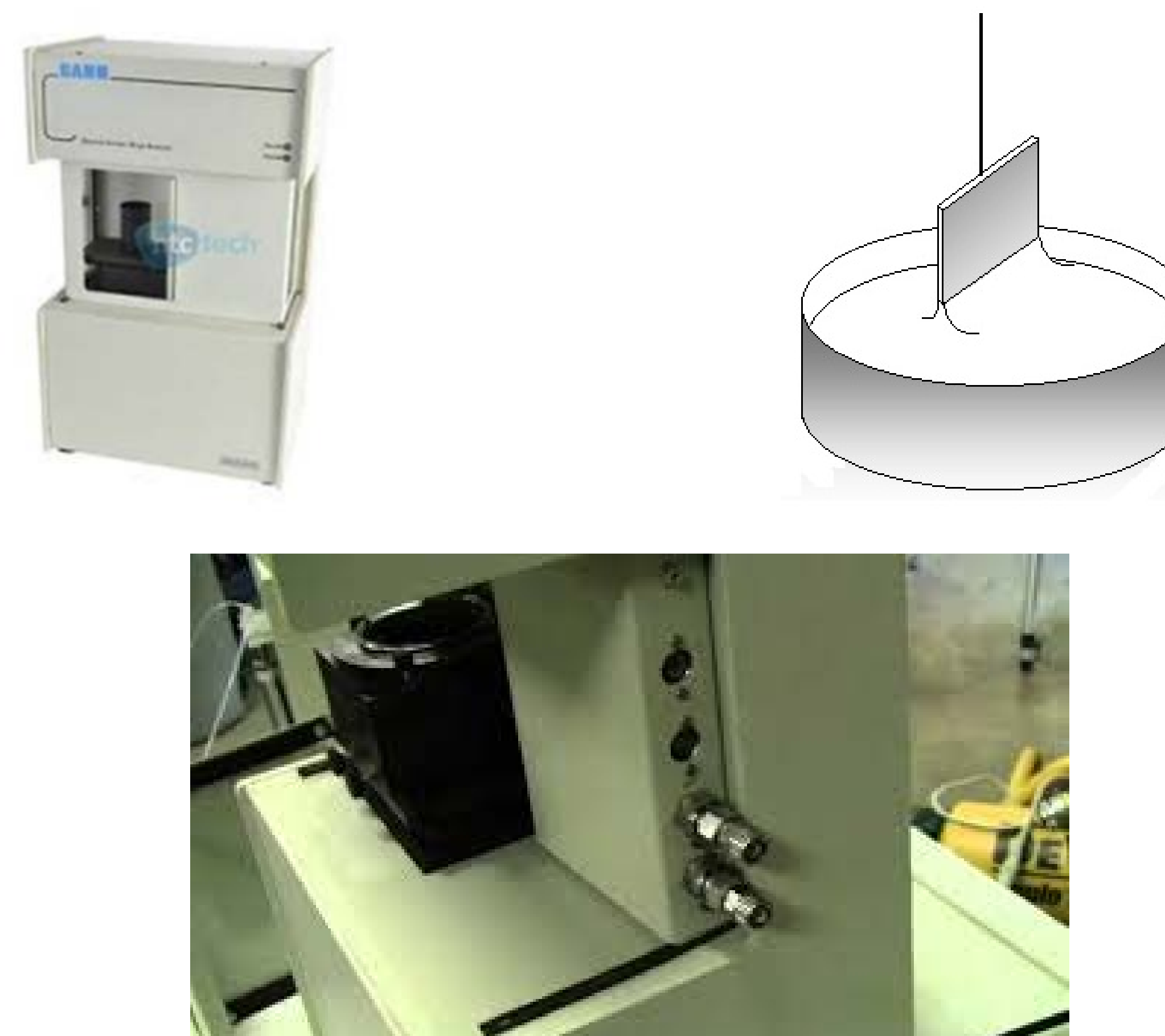
Keyword: **Wettability:** refers to the interaction between fluid and solid phases where the liquid phases can be water, oil or gas

**Surface Tension:** the tension of the surface film of a liquid caused by the attraction of the particles in the surface layer by the bulk of liquid, which tends to minimize surface area.

In the oil industry it is very important to have a water wet condition on the rock face in order to extract oil.

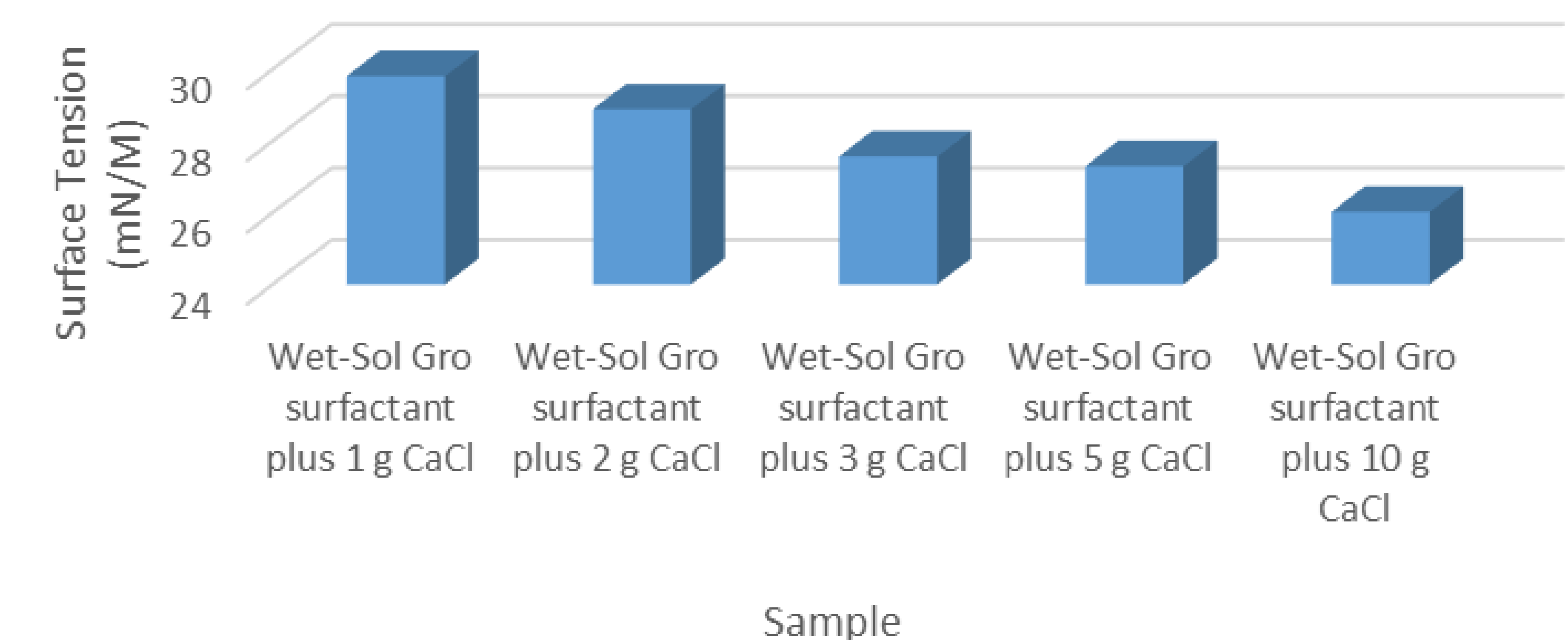
## Methodology

We used the Cahn Dynamic Contact Angle Analyzer DCA 315 analyzer which, is an instrument used to measure the surface properties such as surface tension of solid and liquid samples by using the Wilhelmy technique.



## Results

The Effect of Different CaCl Saturations on Wet-Sol Gro Surfactant's Surface Tension



**Future work:** We plan on going further with the project and analyzing the effect of temperature on the contact angles. We intend to remedy the problem that arose this semester with the connection between the DCA 315 and the water bath. Remediating this problem would achieve the temperature aspect of this project and would allow us to culminate this research in its entirety.

## Conclusion

As seen in the results, the effect of brine on surfactant brings about significant changes in the surface tension as the weight of different salts are added. Another determinant of the affectivity of the application surfactant in oil extraction is the brine concentration of the reservoir.