

# Geochemical monitoring

## Hydrological & groundwater monitoring

Water levels and the chemistry of the shallow (unconfined Port Campbell Limestone) and deep aquifers (confined Dilwyn aquifer) are monitored in the unlikely event of any injected CO<sub>2</sub> leaking into these freshwater aquifers.



## Tracers program

CO<sub>2</sub> and methane compounds of the injection stream are “tagged” using chemical tracers in order to verify the CO<sub>2</sub> plume behaviour. They will identify the travel time to Naylor-1 of CO<sub>2</sub> injected at CRC-1.

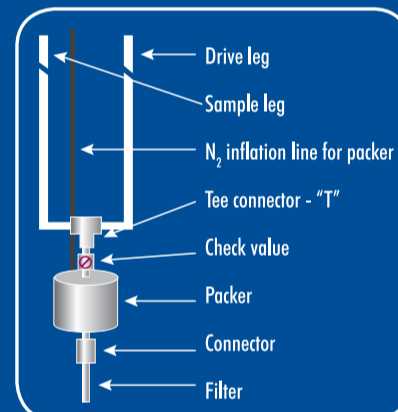
## Downhole fluid sampling

High quality well bore fluid and gas samples will be collected at reservoir pressure from multiple levels to detect the CO<sub>2</sub> arrival at Naylor-1 and to characterise chemical changes associated with the CO<sub>2</sub> arrival. Samples will be analysed in laboratory for their chemical and isotopic composition

## U-tube system

During injection, the CO<sub>2</sub> migrates from CRC-1 to accumulate below the residual methane cap at the Naylor-1 well pushing the gas-water contact (GWC) down. Injection will stop when the injected CO<sub>2</sub> is detected at U-tube 3.

The U-tube system developed by Lawrence Berkeley National Laboratory (LBNL) makes it possible to sample the deep groundwater.



Pictured left: U-tube sampler

Picture below (from top): inside the u-tube surface facility; schematic of bottom hole assembly.



## Soil gas sampling

In the unlikely event of any CO<sub>2</sub> seeping into the near surface (soils), it will be detected by sampling the air from the unsaturated soil zone above the water table. Samples will be analysed on site (portable gas chromatograph) and in the laboratory (advanced gas chromatography) for CO<sub>2</sub>, CH<sub>4</sub> and isotopes.

