

Groundwater / Bore Hole Monitoring



Application Background

Groundwater depth measurements (often called bore hole monitoring) help in the management of the important groundwater resource on which we depend for many purposes. In particular groundwater resources may be used up through agriculture or mining operations.

Instruments can easily measure the amount of water that resides in our groundwater so we can manage the resource better

Measurements can deepen our understanding of the factors that influence groundwater recharge and lead to more effective management.

Application Detail

Groundwater depth is measured with a small diameter sensor deep in an observation bore hole. Water depth can be measured with a pressure sensor lowered down the bore hole and immersed in the water. This is called hydrostatic depth method.

Alternatively a standard float-and-pulley sensor system with a small (50mm or 100mm) float and a pulley at the top of the bore hole can also be used to measure depth.

The hydrostatic depth method is widely used as it is convenient to install, however all pressure sensors have some drift which needs to be considered. The float and pulley method is less convenient, especially in narrow diameter bore holes of 100mm, however it is very accurate and is not subject to drift.

Unidata offers the 6542 Hydrostatic Water Depth and Temperature Probe which uses the hydrostatic pressure of water to measure water depths in various environments.

These systems are typically installed in existing bores, perhaps with a diameter of 100 to 200 mm and a depth of 5 to 50 meters, with a bore head cap, often in a valve box/ enclosure or some other form of bore head arrangement

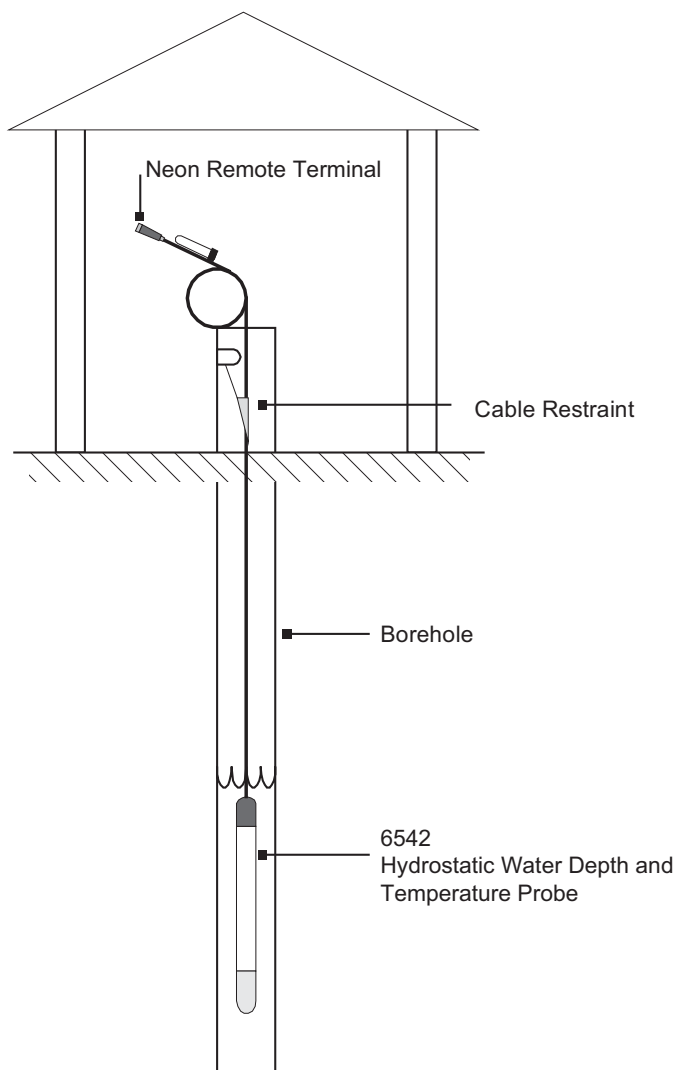
A data logger / RTU / NRT needs to be added at the top of the bore and data recorded and collected manually, or the data can be tele metered to a central location on a regular, perhaps 4 hourly basis.

There are generally two types of customer for these systems:

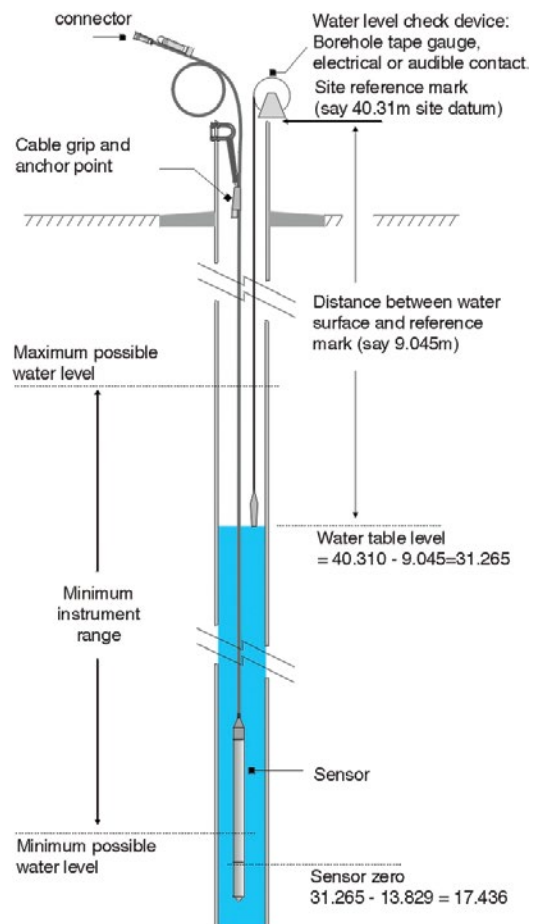
- A government authority which measures the groundwater levels for water table history generally
- A mining or oil and gas company which has some mining or drilling activity in the area and has a need to ensure there is no change to the groundwater during their mining or drilling processes for compliance reasons

The data collected can be then viewed and limit checked and alarms set in the event of a sudden change in the ground water level.

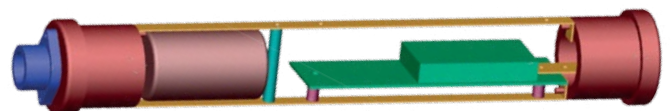
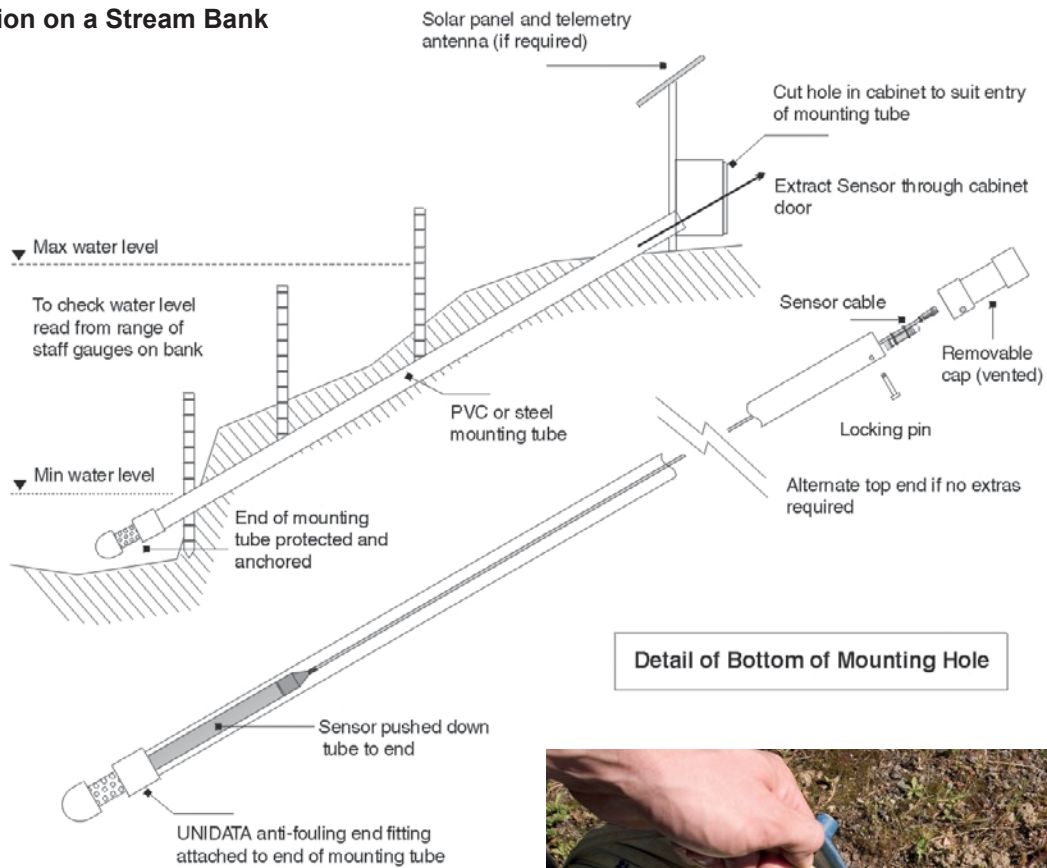
The data can then be passed to a statistical groundwater analysis software package for groundwater modeling purposes.



Typical Installation



Typical Installation on a Stream Bank



Unidata offers a tubular version of the Neon Remote Terminal, which can be inserted within the bore casing for convenience of installation.

The 2024F NBHTM terminal is designed as a telemetry system for bore holes with diameters of 50mm or greater via 3G /NextG/ WCDMA/ and 2G GPRS cellular networks

from any location within the cellular network coverage area. The tubular housing allows for easy insertion with clearance in bores as small as 50mm diameter. There is also a simple magnetic reset switch, which allows the user to easily reset the unit in the field without opening it to the elements

Typical Configuration

Application Specific Instruments/Inputs

Options	Unidata Part Number	Description
Water Depth Probes	6542D-	PT12 5PSIG Pressure/Temperature Sensor SDI-12 3.5m,10m or 20m
Water Depth Probes Titanium	6542D-T-	PT12 5PSIG Pressure/Temperature Sensor SDI-12 3.5m,10m or 20m

Neon Telemetry - NRT / RTU / Field Units

Options	Unidata Part Number	Description
Neon Bore Hole TM	2024F	Neon Bore Hole telemetry unit
Cellular RTU GPRS	2011E-AB0	Neon Metering Module GSM+Ant+Batt
Cellular RTU 3G	2013D-AB0	Neon Metering Module 3G+Ant+Batt
Cellular RTU GPRS-Industrial	2014E-AB0	Neon Remote Terminal-Terrestrial+Ant+Batt
Cellular RTU 3G-Industrial	2016D-AB0	Neon Remote Terminal-Terrestrial+Ant 3G+Bat
Low Earth Orbit Satellite - Globalstar	2015D-AB0	Neon Remote Terminal-Satellite Globalstar+Ant+3 Bat
Ethernet	2017E-0B0-1 or 3	NRT Ethernet - 1 or 3 Ethernet Ports with Batteries
Equatorial Orbit Satellite - Inmarsat	2018E-AB0-1	NRT Ethernet with Inmarsat M2M Modem & 1 Ethernet Port & Bat
WI-FI	2019E-AB0-1	NRT Ethernet Wi-Fi - 1 Ethernet Port & Batteries
LCD Display	2500E	NRT LCD Display
Field Termination Strip	2103E	2014E, 2015D, 2016D & 2017E NRT FTS
NRT Firmware Option	2303A-8M	8M Extended Memory
NRT Firmware Option	2303A-8M-CAM	8M Extended Memory & Camera Option
NRT Firmware Option	2303A-CAM	Camera Option

Neon Application Software - Customer Server

Options	Unidata Part Number	Description
Neon Applications Software	2302A	Neon Server Software Licence Incl 5 NAL
Neon Applications Software	2302A-10	Additional 10 NRT Access Licence
Neon Applications Software	2302A-20	Additional 20 NRT Access Licence
Neon Applications Software	2302A-50	Additional 50 NRT Access Licence

Neon Hosting Service - Unidata Server

Options	Unidata Part Number	Description
Neon Hosting Service	2301A	Neon Data Initial Subscription Setup Fee
Neon Hosting Service	2301A-01	Neon Data Service Fee for 1-50 NRT
Neon Hosting Service	2301A-02	Neon Data Service Fee for 51-100 NRT
Neon Hosting Service	2301A-10	Neon Data Service Fee Metering

Conventional Dataloggers / Field units

Options	Unidata Part Number	Description
Standard Starlogger	6004D-11	Red logger 512K + Alkaline Battery
Display Starlogger	6004D-21	Blue logger with LCD 512K + Alkaline Battery
Prologger	7001E-11	Green logger 1M + Alkaline Battery
Micrologger	8010B-EUR	Micrologger 512K
Field Termination Strip Starlogger	6103E	6004D FTS
Field Termination Strip Prologger	7100E	7001E FTS

Starlog Datalogger Management Software

Options	Unidata Part Number	Description
Starlog V4 Management Software	6308A-AUE	STARLOG V4 Full Licence Key



Available from:
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