

UltraSeep / Trident

Subsurface Seepage Monitor and Water Sampler



The UltraSeep seepage monitor system allows you to survey, quantify, record and analyze fluid seepage from the bed into a body of water. The system monitors conductivity, temperature and fluid seepage rate. It then conditionally samples the seeping fluid for later laboratory analysis.

The UltraSeep system consists of two instruments: a survey probe (the Trident) and an integrated insitu seep monitor/water sampler (The UltraSeep). The Trident probe is used to map the area where seepage is likely, based on anomalous conductivity and temperature measurements. After mapping the extent of potential seepage using the included GIS software, the UltraSeep monitor/sampler is deployed for longer-term measurement and sample collection.

The Trident probe carries temperature and conductivity sensors and a water sampler. These are mounted on a lance that is pushed into the bed from a small boat with a 12-m push rod. Ambient C and T are measured with a second sensor set mounted above the sub-bottom sensors. The GPS is mounted on the top of the probe's deployment pushrod. C and T values, deviation from ambient, and position are recorded. Included is a GIS software package that maps the anomalies.

Using the resulting map of C and T deviation, the UltraSeep monitor is deployed. The seepage through the instrument is measured with a specially developed flow meter. Seep fluid is conditionally sampled when threshold levels of T,C or flow are exceeded. Data is recorded with an onboard logger.

System training classes are offered. A complete data package that includes survey, monitoring and data reports can be supplied.

This system was developed by the US Navy and Cornell University for investigation of seepage from contaminated terrestrial sites into estuaries.



Trident Probe

UltraSeep Seepage Monitor System Components

- Underwater controller with integrated water sampler
- Battery housing
- 316 stainless deployment frame with sample bag compartments
- Interface funnel with sensors

Specifications

UltraSeep Controller with integrated water sampler

- Construction Acetyl and marine grade aluminum
- Water sampler path PTFE
- Pump Pressure compensated, peristaltic pump
- Pumping rate Flow-proportional or manually set
- Pump capacity 0 - 13ml per minute
- Valve 10 port rotary
- Clock Battery backed real-time
- Data protocols available Analogue (16 bit resolution) and digital signals (RS232, SDI-12, frequency)
- Software Latest version of SeepTalk for Windows
- Spares Replacement peristaltic pump tube
- Data cable 2-m cable (switched communication between either flow meter or UltraSeep controller)
- Sample bag size 1 liter
- Standard system depth rating: 70 m

Conductivity and temperature sensor

- Construction PTFE body, titanium sensor rings.
- Temperature resolution 0.001 Deg C
- Conductivity output Specific conductance @25 Deg C
- Conductivity resolution 0.01 mS/cm
- Conductivity range 0 to 80 mS/cm

Underwater Battery Housing

- Construction Marine grade aluminum, anodized
- Capacity 3 x 12 volt 12 amp/hr gel cell batteries
- Includes Charging cable plug adaptor

Funnel

- Sensor ports Conductivity/temperature sensor, water sampler inlet filter
- Gas trap
- Dimensions 508mm diameter x 176mm high
- Construction 316 grade stainless steel, fully Teflon plated on all internal surfaces

Additional sensors or mounts may be supplied as custom options.

Trident Underwater Groundwater Seep Detection System

System includes:

- Water sampling probe
- Standard filter cartridge
- Sand pack filter system
- Conductivity and temperature sensing probe
- Reference conductivity and temperature probe
- Depth control plate
- GPS unit with antenna
- Deck unit
- Latest version TridentTalk for Windows software
- 12 meter total length push rod, 2 meter sections

Specifications

Conductivity/temperature sensors

- Depth rating 150 meters
- Temperature resolution 0.001 Deg C
- Conductivity output Specific conductance @25 Deg C
- Conductivity resolution 0.01 mS/cm
- Conductivity range 0 to 80 mS/cm
- Connectors Wet mateable

GPS

- WAAS capable

Deck Unit

- Connectors Wet mateable
- Power Internal battery or external 12V DC

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