

## Coastal Groundwater Geochemistry: Gamma Spectroscopy



### Well Detectors: Ortec model GWL-190210-S

Ortec model GWL-190210-S high purity Germanium coaxial well detector. The radiation background of standard cryostats used by ORTEC for germanium detectors is lower than that required for the majority of users. Net area peak counting rates ~0.1 counts/min are typical at energies of interest.

### Canberra model GCW4023



Canberra model GCW4023 closed-end coaxial well detector. This detector has a 4p counting geometry and a detection range past 3000keV. This detector is ideal for more efficient measurements on smaller samples. These well detectors are the most sensitive gamma counter designs available, thus providing high quality data and minimizing counting time.

### Canberra model GCW4023



We also operate a Canberra model GCW4023 closed-end coaxial well detector. This detector has a 4p counting geometry and a detection range past 3000keV. It is also coupled with a low background cryostat and cosmic shield. This detector is ideal for more efficient measurements on smaller samples. These well detectors are the most sensitive gamma counter designs available, thus providing high quality data and minimizing counting time.

### Planar Detectors: Canberra model GL2020RS

We have two Canberra model GL2020RS low energy Germanium (LeGe) planar detectors coupled with low background cryostats in low background shields. These have 2000 mm<sup>2</sup> active area crystals with a detection range from 10 kiloelectron volts(keV) to 1200 keV. Our detectors have been used regularly to detect <sup>210</sup>Pb or <sup>234</sup>Th in sediments and <sup>7</sup>Be from rainwater. With their large surface area and low background, these detectors are useful to anyone who is trying to detect environmental levels of a gamma emitting radioisotope in either a liquid or solid matrix. Samples are generally placed in 8 ounce polystyrene jars, set on top of the Ge crystal, and gamma events are counted. Since the detectors will accumulate a full spectrum of identifiable gamma peaks within each counting period, multiple radionuclides can be quantified during a single count. These instruments are coupled with windows based spectroscopy software by Aptec, for data processing.



*\*All of the well and planar detectors are controlled by [Aptec](#) software*

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