



## EM Sensors Protect Sediment Coring Technicians

**FACT:** A new proprietary hybrid system combines Geonics and Rossfelder equipment with an Aqua Survey developed sediment coring barrel whose leading edge can detect metal objects such as utilities and Munitions and Explosives of Concern (MEC) in advance of the core barrel's penetration of the sub-bottom and its recovery. The vibracoring technician is alerted both visually and audibly when metal objects are detected allowing the technician to stop penetration of the sub-bottom and retrieve the coring equipment without making contact with the unknown metal object. This system provides a safe, efficient and cost effective alternative for the collection of sediment cores in high risk areas.

**FACT:** A Geonics' EM-61 MK.2 electromagnetic time domain system is the standard for detecting buried MEC and other metal targets of interest.

**FACT:** Rossfelder P-3 and P-5 electro-vibracoring systems are unquestionably the most effective commercially available sediment coring equipment. Recycle time between deployments is under 15 minutes. Up to 40-foot long continuous sediment cores can be collected.



**FACT:** Aqua Survey has collected thousands of sediment vibracores with Rossfelder equipment. Aqua Survey owns and operates six heavy-duty Rossfelder systems and over a half dozen vessels rigged for vibracoring. Often sediment coring can be performed from client-provided vessels or via crane from the shoreline.

**FACT:** Aqua Survey has extensive experience in utilizing Geonics' equipment underwater to detect MEC, cultural resources, utilities and other metal targets of interest.

**FACT:** Using a high-powered sediment vibracoring system near utilities and MEC places the field crew at risk. Counter-measures need to be taken to minimize the probability of the core barrel making contact with utilities and MEC or the actual inclusion of MEC into the core sample. An ASI Smart Core™ can cost-effectively increase project safety without significantly impacting efficiency. Up to a dozen cores can be collected safely in an 8-hour period.

## **DESIGN AND CAPABILITIES:**

The Smart Core™ barrel has electromagnetic sensor coils encircling its leading end. These coils are connected to the EM-61 MK.2 console aboard the sampling vessel. This sensor equipped 4-inch OD polycarbonate barrel is attached to the Rossfelder vibracore head. Barrel sensors combined with a Geonics' time domain metal detector console detects both ferrous and non-ferrous objects with excellent spatial resolution. Target response is a single, sharply defined peak.

Sediment samples can be collected into the polycarbonate barrel with or without a flexible inner liner. The system was designed to collect continuous sediment samples of unconsolidated to moderately consolidated sediments.

The system can detect the following vertical projectiles in advance of the core barrel:

20-mm at 10 inches  
40-mm at 13 inches  
80-mm at 16 inches  
105-mm at 21 inches

Detection ranges are based on the signal being 20 times that of background noise and the system being run at 24 volts.. The Smart Core™ can be operated at either 12 or 24 volts. The higher voltage gives a 5-10% increase in detection range. The core's sensors are tested as the barrel is deployed and again as it is retrieved (prior to being brought aboard the vessel) to make certain the system is functioning properly.

## **CONTACT:**

Contact Ken Hayes to learn more about how the fusion of Aqua Survey's, Rossfelder's and Geonics' technologies can bring greater safety and efficiency to your project.

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