## **Hibbard Inshore**

## **Scanning Sonar and Multibeam Image Surveys**







## High-Resolution Underwater Surveys

**Technique Description** Recent advancements in mechanically scanning, highfrequency sonars and multibeam imaging sonars have yielded dramatic imagery that helps to better visualize near-field underwater conditions. These sonars, when utilized in plan view or in elevation view, can provide very high-resolution imagery that mimics underwater photographs but relies on sound rather than visibility.

**Project Applications** Scanning sonars are particularly valuable when doing close-up, high-resolution investigation of specific structures such as bridge abutments and structural piers, or in specific work areas where visibility and structural complexity may make it difficult for divers or remotely-operated vehicles (ROVs) to fully assess the layout and condition of a site. These sonars are typically positioned on the bottom when mounted to tripods or adjacent to bridge piers so that the sonar can scan in a specific sector (or even a 360-degree swath) and generate a very stable, high-resolution image of the bottom. The image can highlight existing structural layout, abandoned or derelict structural members that may be interspersed within structures, scour or deterioration in structural components, or mudline conditions and presence of debris.

**Our Approach** Hibbard Inshore utilizes high-resolution scanning sonars when very specific conditions require assessment, particularly in the vicinity of bridge piers, dams, and vessel mooring facilities. We focus specifically on acquiring top-notch imagery and presenting it with interpretations or above water imagery so that the images have perspective and are easily viewed and understood by lay personnel unfamiliar with the technique. Imagery can be qualitative (but scaled properly for dimensions) or quantitative in the form of high-resolution bathymetric datasets that can be integrated into 2-D or 3-D models of structures.

**Relevant Experience** Hibbard Inshore has conducted scanning sonar surveys throughout North American to assist engineers and contractors with their projects. Our clients include some of the largest marine construction, coastal engineering, and heavy civil contractors in the Northeast United States and project owners include the U.S. Army Corps of Engineers, major port authorities, and state Departments of Transportation.



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