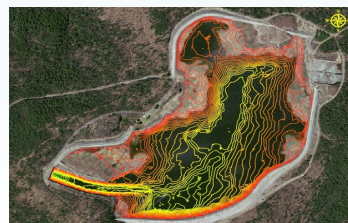
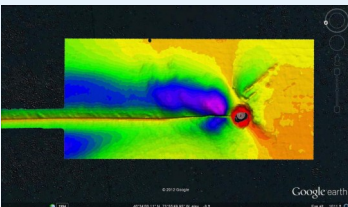
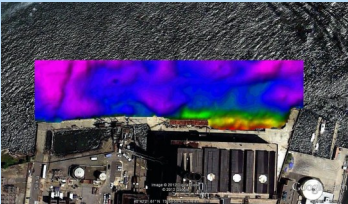
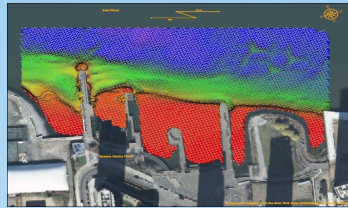
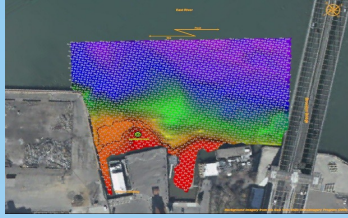


High-Resolution Underwater Surveys



Technique Description Multibeam bathymetric surveying is the technique whereby we collect high-resolution elevation data, underwater. A special bathymetric sonar, or echosounder, transmits multiple sound beams in a swath to collect bottom elevations at a rate of 5 to 20 times per second. Compared to a singlebeam echosounder that might collect as many as 20 individual soundings along a single profile in one second, a multibeam echosounder can collect between 1500 and 7500 discrete soundings along a swath during one second.

Project Applications As opposed to traditional singlebeam bathymetric survey techniques that produce soundings on discrete profiles, multibeam bathymetry affords the end user with a highly detailed, densely spaced grid of soundings in the form of a geographically referenced digital terrain model. This model can support engineering design, construction, and dredging projects. The key advantages to multibeam bathymetry, as opposed to singlebeam bathymetry, are: increased data coverage, greater data density, and greater survey production capacity. While cross-sections and contour drawings are standard derivative products, the high resolution and substantial underwater coverage of the data lends toward the generation of 2-D and 3-D models. These models can be fed into a variety of computer-aided design (CAD), geographic information system (GIS) packages, and even ubiquitous visualization software such as Google Earth®. Engineers, contractors, and even less technically experienced personnel may view the data and better understand underwater conditions. Features such as unique underwater geology, submerged debris, scour around bridges or other structures, and submerged pipelines/utilities can be better visualized using multibeam bathymetric survey techniques and the processing that Hibbard Inshore uses to deliver final products.

Our Approach Hibbard Inshore has been performing multibeam bathymetric surveys with a specific focus on delivering high-quality data that affords maximum suitability for a variety of design and visualization applications. We survey inshore in ports, harbors, rivers, lakes, and reservoirs, as well as offshore in the open ocean. Working in accordance with the standards set by the U.S. Army Corps of Engineers and the International Hydrographic Organization, we aim to meet or exceed the standards of accuracy, resolution, survey coverage, and delivery requirements set for every project.

Relevant Experience Hibbard Inshore has conducted bathymetric surveys for projects between Massachusetts and Florida and in California, and internationally including Canada, the Caribbean, and the U.S. Naval Facility at Diego Garcia, British Indian Ocean Territory. In support of several professional engineering, surveying, and marine construction services to waterfront property owners throughout the Port of New York and New Jersey, Hibbard Inshore has been supporting waterfront inspection, assessment, and construction projects by supplying critical bathymetric survey services that draw upon singlebeam and multibeam bathymetric survey techniques, RTK-GPS positioning, and integration with computer-aided drafting (CAD) and geographic information system (GIS) deliverable products. Site owners throughout the New York Metropolitan area include:

- U.S. Army Corps of Engineers
- Port Authority of New York and New Jersey
- New York City Economic Development Corporation (NYC EDC)
- NYC Department of Parks and Recreation
- NYC Department of Environmental Protection
- Triborough Bridge and Tunnel Authority (MTA Bridges and Tunnels)
- Consolidated Edison Company of New York
- Commercial Terminal Operators