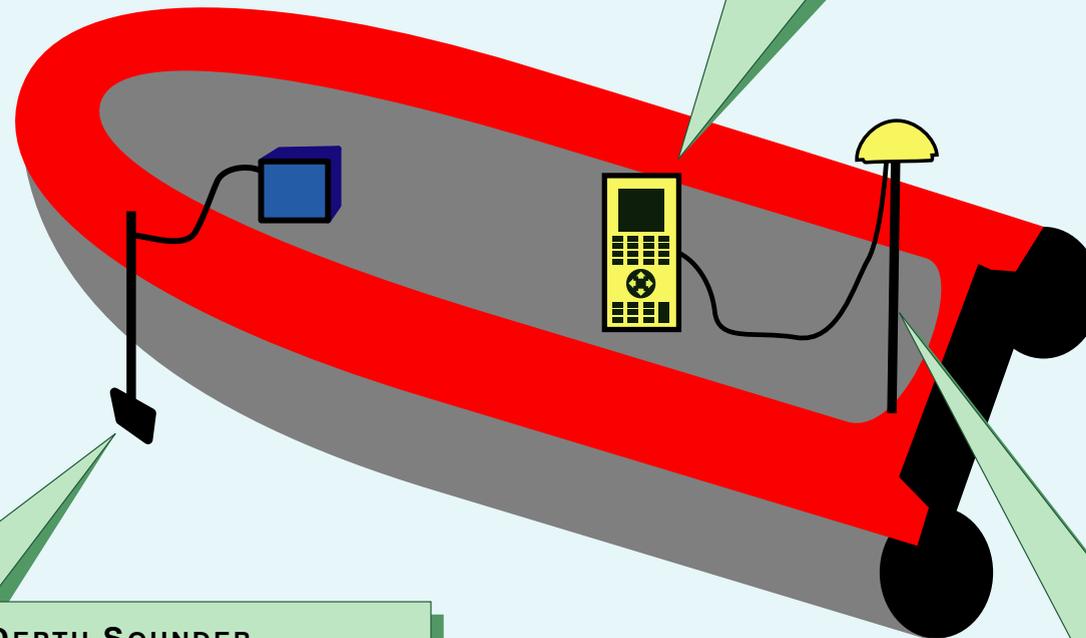


LAKE SURVEY TECHNOLOGY

TRIMBLE ASSET SURVEYOR DATA LOGGER

The Trimble Asset Surveyor Data Logger supports two modes of XY-Z data collection. First, the Data Logger may be interfaced with a sounder via a RS232 data port. The Data Logger reads NMEA depth data from the sounder every 10-20 seconds, and merges depths with lat-long coordinates. The 'Game Boy' method of hand-entered depths yields a much faster rate of data collection. First, a data dictionary is created that include point features for every one foot of lake depth (i.e. 1,2,...87). As the boat navigates the lake, the Data Entry Technician reads depths off the screen, and toggles through the data dictionary to the appropriate depth, and then records a GPS position named for its depth.



HUMMINBIRD WIDE3D DEPTH SOUNDER WITH SIX BEAM DISPLAY

The HumminBird Sounder provides an accurate reading of water depth directly below the boat, and with a 6 beam scan, generates a 3D plot of lake structure on either side of the boat. Bathymetric Data Entry Technicians read depths off the screen, and enter depths via the datalogger. The sounder is placed at the front of the boat, such that in the time it takes to enter the depth, the boat will move the GPS antenna over the point where the depth was recorded. The 3D plot is a rolling display of lake structure on either side of the boat - and is used to locate areas of complex structure.

TRIMBLE PATHFINDER PROXR GPS

The ProXR is a 12 channel GPS receiver with a radio beacon processing real-time Differential GPS corrections. With adequate satellite positions (PDOP <4), the ProXR attains sub-meter accuracy on the fly. The accuracy of the ProXR, combined with a sounder interface or 'Game Boy' data entry, facilitates a 'free format' survey, rather than the more restrictive transect navigation. Simply put, the boat can be navigated throughout the lake in any fashion. The goal is to collect a great number of XY-Z data points spatially distributed throughout the lake.