

TECHNOLOGICAL ADVANCES IN BATHYMETRIC MAPPING METHODOLOGIES

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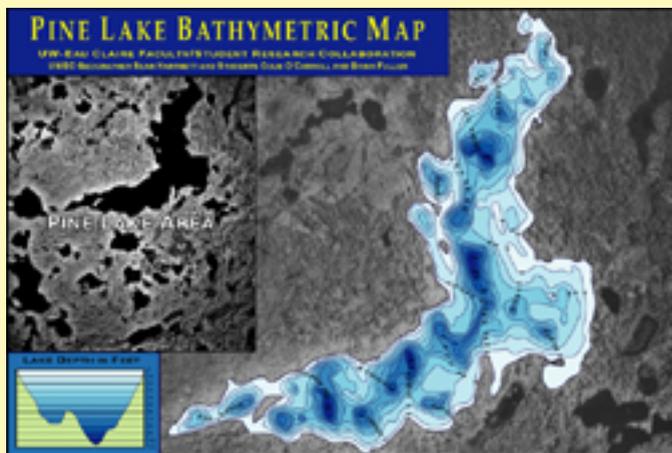
LAKE SURVEY

A detailed and thorough lake survey is crucial for the construction of an accurate bathymetric map. With the advent of GPS technologies, free format xy-z point surveys have replaced transect surveys and 'Game Boy' data entry techniques yields a high number of depth points.

Bathymetric mapping employs a diverse set of cartographic skills proceeding from the survey of lake depths, to the interpolation of depth contours, and the design and printing of maps that meet DNR standards. Over the past 20 years, advances in GPS, GIS and PostScript mapping technologies have reshaped bathymetric mapping methodologies. While the impact of these new technologies is evident in all three stages of bathymetric mapping, knowledge of glacial and fluvial landforms remains a critical asset for accurate mapping.

GEO-PROCESSING

The second stage of bathymetric mapping involves using the lake survey to locate depth contours and calculate lake statistics. Geographic Information System (GIS) technologies provide fast and accurate coordinate based measurements of lake area and volume, and can accurately locate depth contours for glacial lakes. However, fluvial lake structures are still most accurately mapped manually, using survey data and knowledge of fluvial features to locate contours.



MAP PRODUCTION

The final stage of bathymetric mapping may be considered 'presentation.' The design and production of a bathymetric map should facilitate easy interpretation of lake depths and structures. PostScript map production via *Adobe Illustrator* facilitates the construction of smooth contour lines, with shading applied to clarify the sequencing of depths. To further aid interpretation of locational features, depth contour features may be placed over scanned aerial photographs or DOQ images to create a bathymetric PhotoMap. PostScript graphics support high-resolution image setter printing of lake maps and booklets, and PDF files for web display.