

## Background

The Mississippi River has the third largest river basin in the world. It is the fabled river of Native Americans, the explorers Marquette and Joliet, the words and works of Mark Twain, and the scourge of steamboat pilots. Man's modern relationship with the Mississippi River began by using the river as the focal point for transportation, commerce, and trade. Favorable locations along the river, such as landings and river confluences, grew into settlements.

These settlements grew into towns, which grew into cities including Memphis, Vicksburg, Natchez, Baton Rouge, and New Orleans. Transportation progressed from canoes in the 1700's, to ferries and steamboats into the 1930's, and finally to a major transportation artery connecting the United States "Western Rivers." Today, dredging of the Mississippi River's Southwest Pass provides deep draft, ocean going vessels access to travel as far as 240 miles inland to the Port of Baton Rouge, LA.

The Mississippi River Commission (MRC) was established by an Act of Congress on June 28, 1879. Congress charged the MRC with the mission to develop plans to improve the condition of the Mississippi River, foster and give safety to navigation, promote commerce, and prevent destructive floods.

The MRC was charged with prosecuting the comprehensive river management program known as the Mississippi River and Tributaries (MR&T) project, which was authorized through the Flood Control Act of 1928. The MR&T project is the largest flood control project in the world, providing protection to the 36,000 square-mile lower Mississippi valley. The navigation features of the MR&T project seek to facilitate navigation and promote commerce on the nation's most vital commercial artery. The MR&T project has developed a river channel with the dimensions and alignments that carry floodwater flows efficiently and are also suitable for navigation. Waterborne commerce on the Mississippi River increased from 30 million tons in 1940 to nearly 435 million tons today.

In 2011, the Ports of South Louisiana, New Orleans, Baton Rouge, and Plaquemines were ranked by tonnage, as the first, fifth, tenth, and fourteenth largest United States ports. When combined this port complex, outranks the fourth largest port in the world in tonnage, that of Rotterdam, Netherlands.

## This Publication

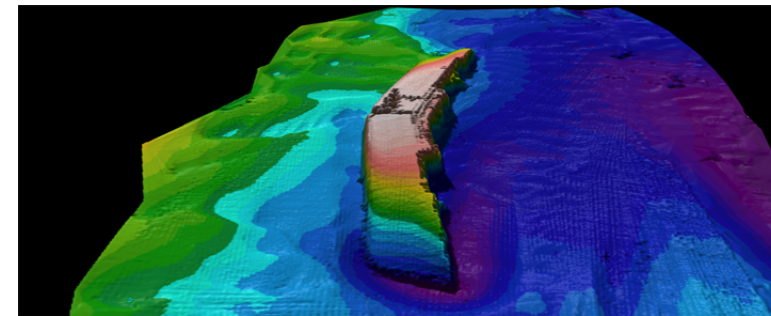
This publication of the 2013 Mississippi River Hydrographic Survey Book represents its 6th Edition in this format with prior surveys being published in 1949, 1961, 1973, 1985, and 1991. Prior comprehensive surveys were published by the Mississippi River Commission in 1883, 1913, and 1935.

This publication is produced at roughly ten year intervals or after a large flood event. Its supporting collected survey data will be used for the channel improvement, river engineering, and river management missions at the USACE New Orleans District.

## Survey Data Collection

The earliest comprehensive surveys took years to complete and were performed by dropping a heavy lead weight on a marked line (leadline survey) to collect each shot at approximate positions between markers placed on the bankline that defined a range line across the river. The first 1883 effort took 30 years to complete. The 2013 publications survey was collected under several contracts in phases, in February 2011, December 2012, and Mar 2013. A small portion in the vicinity of River Mile 320 was run in December 2009. This survey exploited modern technologies, using DPGS positioning and Multibeam sounding equipment. This survey collected well into the millions of soundings.

The density of multibeam surveys provides extraordinary levels of detail and allows representations of underwater obstructions and wrecks below the muddy Mississippi. For example, USACE has produced detailed renderings of the Union Faith wreckage located near River Mile 95.



Union Faith Wreckage Color Rendering

The Union Faith was a general cargo freighter of medium size: 7,301 GT (gross tons), 503.25 feet in length overall, and a breadth of 64.11 feet. The vessel currently rests on the bottom of the Mississippi River, approximately 100 yards downriver from the Greater New Orleans Bridge, due to an explosive collision with a barge in 1969.

However, representation of this dense multibeam sounding survey has limitations when developing contours. Multibeam soundings create a significant noise level at the map sheet's 1:20,000 scale. Therefore, a thinning process was used to provide a more cartographically pleasing interpretation of the original multibeam survey. The data was processed into DTMs from which depth values were extracted along the river range lines. Then these pseudo "single beam" cross-sections were contoured into depth curves. This data thinning results produce a representation of reality compatible with those in past hydrographic survey books.

Other data formats are available, if larger scale or other representations or analyses are required.

### Other Data Formats

Publication Date	Available Data Formats
2014	Maps: MicroStation DGN files Survey: Text files for range line survey and multibeam
2004	Maps: MicroStation DGN files Survey: Text files for range line survey and soundings
1991	Maps: MicroStation DGN files Survey: Text files for range line survey and soundings
1985	Maps: PDF files Survey: Data not available

Refer to USACE New Orleans WWW site for data available to download:  
<http://www.mvn.usace.army.mil/Missions/Engineering/GeospatialSection.aspx>

## Low Water Reference Plane

Low Water Reference Plane (LWRP) is a hydraulic-based reference plane established from long-term observations of the river's stage, discharge rates, and flow duration periods developed about the 97% flow duration line and/or the 97% stage exceedence of daily lows for the period of record at a specific site. Per EM 1110-2-1003, Engineering and Design - Hydrographic Surveying, construction and improvements along the middle and lower Mississippi River are performed relative to the LWRP at a particular point.

## Methodology of LWRP Depth Contouring

The Terra Scan software product running on top of Bentley MicroStation was utilized to both process the XYZ data of the 2'X2' gridded points of the Mississippi River multi-beam survey. The data along the river ranges was extracted using a 10' wide path. From this dense data, points were extrapolated every 100 feet along the range to develop a new XYZ dataset. The datasets were broken into reaches of similar LWRP values and the LWRP value subtracted from the Z values. The resultant XYZ datasets were triangulated within the Terra Scan software and contours displayed. The contours were modified to correct areas in which the software could not display the contours smoothly.

## Topographic Features

The topographic features within this publication were reused from the topographic feature layers found within the 2004 publication, with the exception of adding the John James Audubon bridge at River Mile 262 and updating of Mississippi River revetments. The 2004 book's stereocompilation was produced from aerial imagery collected in February 2002. Therefore, the topographic features should be considered for reference only. More current digital imagery and digital topographic data sets are readily available for other uses.

## Datums & Elevations

Source of Hydrographic Survey Data:  
The Mississippi River multi-beam survey was performed under Contract Number DACW912P8-09-C-0059. This survey covered River Miles 324 to 0. Survey was performed between December 2012 and to May 2013. The South and Southwest Pass surveys were performed in January 2013 and April 2013 respectively by the Corps of Engineers New Orleans Districts Operations Division maintenance surveys. The Pass A Loutre surveys were performed via separate contract, W912P8-10-D-0050 in September 2013.

Note: Pass A Loutre is not a federally maintained waterway.

The multi-beam surveys listed above provided coverage of the river bottom from as near to each bank as possible. The overbank survey data extending from the end of the multi-beam surveys were carried over from the 2003-2004 Hydrographic Survey Book.

All surveys were performed relative to NAD83, Louisiana South Zone 1702 horizontal datum and NAVD88, 2004.65 vertical datum.

Care must be taken when comparing LWRP contours from past products to the current product.

Care must be taken when comparing elevations from past products to the current product.

## Submerged Pipelines and other Depicted Utilities

Please note that this product should not be considered an authoritative source for placement and existence of submerged pipelines. Refer to the National Pipeline Mapping System ([www.npms.phmsa.dot.gov](http://www.npms.phmsa.dot.gov)), USACE permit and regulatory information, other data sources specifically tracking pipeline infrastructure, and ultimately reference the physical pipeline crossing signage found along the river.

## Authorization & Funding

The 1879 Mississippi River Commission Act (46th Congress, Sess. I. Ch. 43. 1879) empowered the MRC to make surveys and investigations necessary to prepare plans to improve the river channel, protect the banks, improve navigation, prevent destructive floods, and promote commerce.

Funding sources the current surveys came from Mississippi River O&M projects, the Channel Improvement Program, and the USACE Inland Electronic Navigational program. Funding to produce the publication was provided by Mississippi River O&M project.

## Not Suitable for Navigation

This publication is not a navigational product. It is not considered suitable for navigation nor acceptable to meet USCG Chart Carriage requirements.

## About the Cover

The 2013 Hydrographic Survey Book cover is a composite of the New Orleans "crescent" area of the Mississippi River. The left-most image is from Chart 76 of the 1913 Chart of the Mississippi River from the Mouth of the Ohio River to the Gulf of Mexico. The center image is from Sheet 50 of the 1973-1975 Mississippi River Hydrographic Survey Book. The right-most image is aerial photography from 2012.

MISSISSIPPI RIVER  
HYDROGRAPHIC SURVEY 2013

**NARRATIVE SHEET**  
CURRENT AND HISTORICAL RENDITION INFORMATION

U.S. ARMY ENGINEERS DISTRICT, NEW ORLEANS